



M/A-COM RF and Microwave
Product Solutions
June 2008

This Product Selection Guide contains information about our standard products. It is intended to assist in the selection of products to ensure availability, ease of use, and optimal performance.

These products represent more than five decades of innovation in design and manufacturing. Detailed specifications for our standard parts can be found quickly on our Web site at www.macom.com by typing the part number into the search box. We provide product samples, test boards, and applications support.

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About M/A-COM Business



Partner of Choice

A leader in the RF and microwave industry for more than 50 years, the M/A-COM business has earned a global reputation as the partner of choice in applications for RF, microwave and millimeter wave technology. Not only do we offer one of the industry's broadest range of solutions available today, but with our ongoing commitments to R&D, we continue to drive tomorrow's innovations.

Our technology and expertise extend across a broad range of solutions for the commercial wireless telecommunications, broadband, and aerospace and defense markets. M/A-COM products are utilized around the globe in some of the most challenging applications found in wireless infrastructure, handsets, WLAN, WiMAX, CATV, VSAT, RFID, automotive, test and measurement, radar, electronic warfare, missile guidance, and space.

The M/A-COM business is part of Tyco Electronics, a leading global provider of engineered electronic components, network solutions and wireless systems with 2006 sales of \$12.7 billion to customers in 150 countries.

RF and Microwave Capabilities

The M/A-COM business is one of the only vertically-integrated, non-captive RF and microwave suppliers in the industry. Therefore, we're uniquely able to produce and process semiconductor materials, design and manufacture complex devices, and combine these devices into multifunction components. We can manufacture integrated sub-assemblies using these components and devices, then combine the integrated subassemblies into complete systems driven by in-house software. Thus, we can offer customers low cost, high-volume solutions tailored to their need at any step of the process.

We are a leader in the industry in offering "dual use" technologies that allow us to participate successfully in both commercial and government markets. We have unique technologies and capabilities to offer innovative design solutions including:

- Si, GaAs, AlGaAs, InGaAs, InP, LDMOS, and SiGe IC products
- Unique MMIC processes: HMIC™, GMIC™, MSAG™, iHBT™
- In-house design, fabrication, assembly, and screening capabilities
- Multiple facilities for improved flexibility and local content manufacturing
- Wide spectrum coverage from RF to millimeter wave frequencies
- One of the broadest selection of standard and custom products in the industry

Commercial, Military, and Space Products

This guide features our standard commercial products and a sampling of our standard aerospace and defense products. Additionally, most commercial parts listed can be up-screened to meet defense or space applications. We also provide custom products for all markets to meet your specific requirements if a standard product is not available. If you cannot find a product that meets your requirements in this guide, please contact us and we will work together to develop or recommend an appropriate solution.

The M/A-COM business has fully equipped environmental screening labs designed to handle high-volume, high-reliability screening needs. When program screening requirements call for more than our standard catalog screening, custom screening programs can be created by either adding options to the standard screening or generating a program-specific sequence. We can perform screening per most military and space standards including MIL-STD-883, MIL-H-38534, MIL-PRF-19500, and ESA requirements.

For applications that involve more difficult customer requirements and critical schedules, We offer a dedicated program management team. Our staff of senior program managers is available to support all program and critical management needs and offer the experience and attention to detail that ensures success.

Operational Excellence

Our Quality Policy is to deliver error-free products and services on time. Therefore our product and services are developed and integrated throughout the entire supply chain into capable processes to achieve Six Sigma levels of performance.

The M/A-COM business operations are certified to ISO 9001, ISO 14001, AS 9100, and QS-9000. Everyone is involved in the continuous improvement effort from suppliers to customers. Best practices are identified and implemented throughout the company, with a continuing challenge to identify opportunities for innovation and improvement.

In our markets, superior reliability and a robust design aren't added benefits—they're often a matter of life and death. While all companies pledge their commitment to designing more reliable products, we literally wrote the book on reliability. It's called *Design for Reliability*, and it is required reading for many college engineering courses. The methodology encompasses the full engineering cycle, from design to verification to analysis.

How to Order

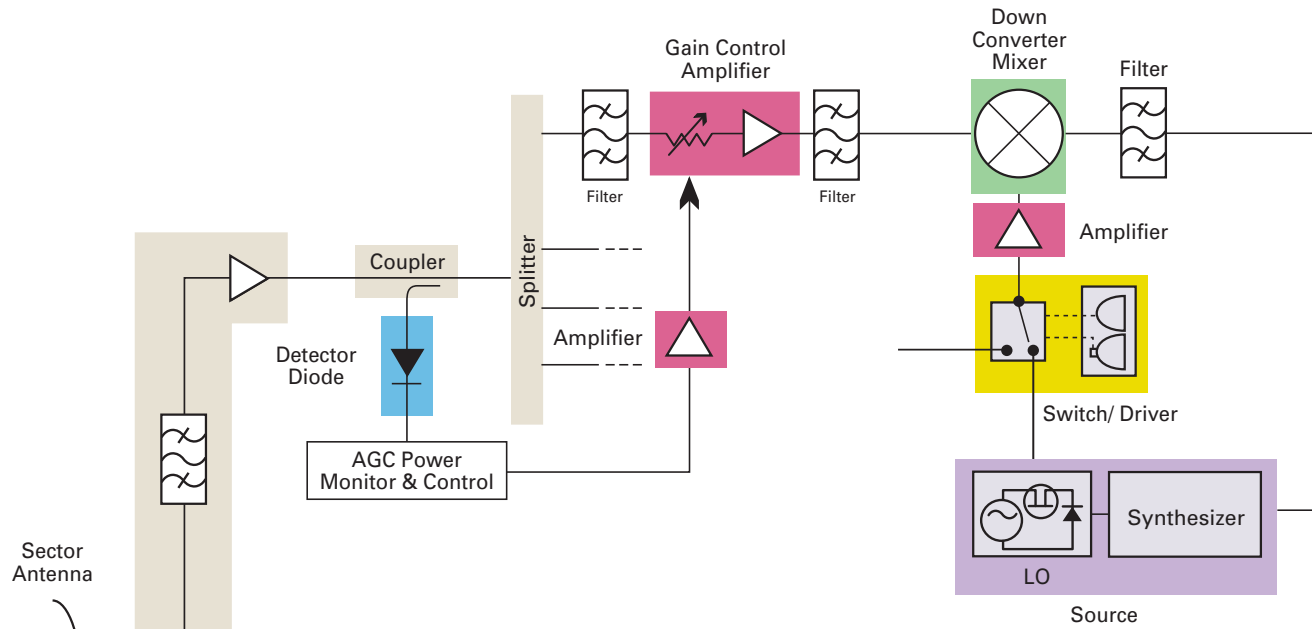
Most of the standard products listed in this selection guide are available directly from the distribution partners found on our web site at www.macom.com/distributors. In addition, your local M/A-COM sales office or nearest representative can assist you with ordering or service. Our regional phone numbers are listed on the back cover of this guide as well as on our web site at www.macom.com/sales.

We also produces custom products and modifications to standard products, so please contact us with your specifications if you cannot find a standard product that meets your needs. Most of our standard products can be up-screened to applications or we can design custom parts to your specific requirements.

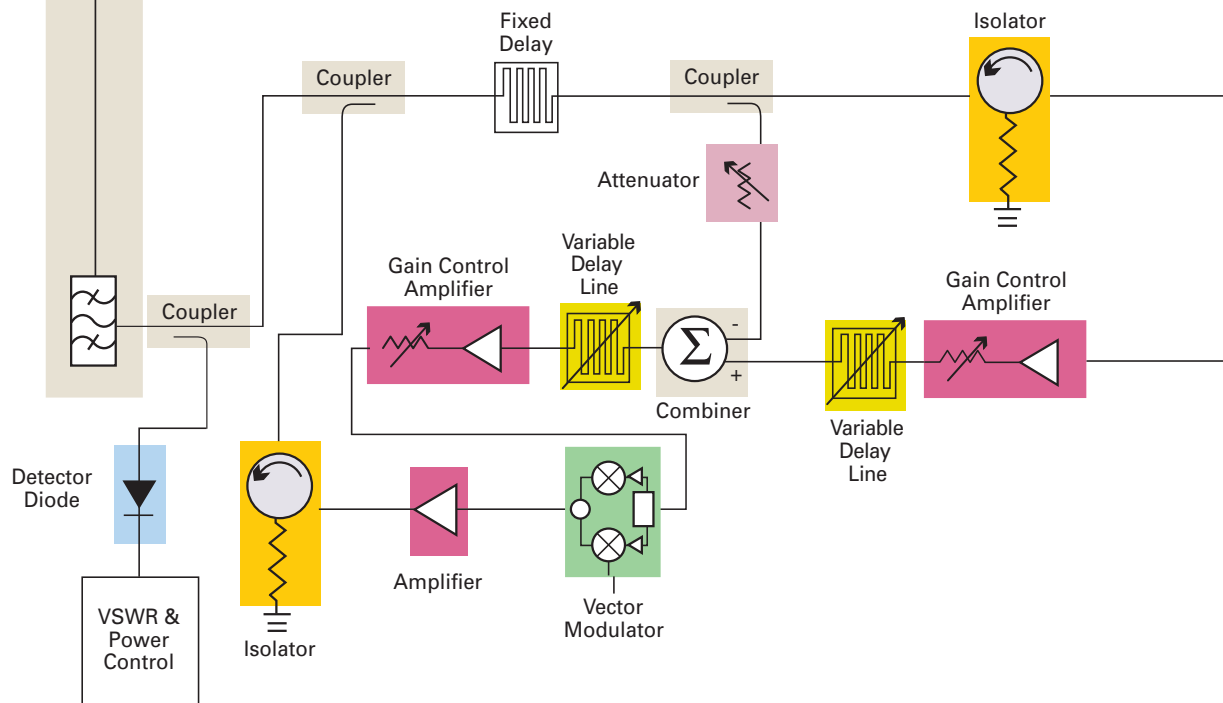
See the back cover catalog for contact information to request any of these items or to get more information.

Block Diagrams : Typical Transceiver

Receiver RF Front End

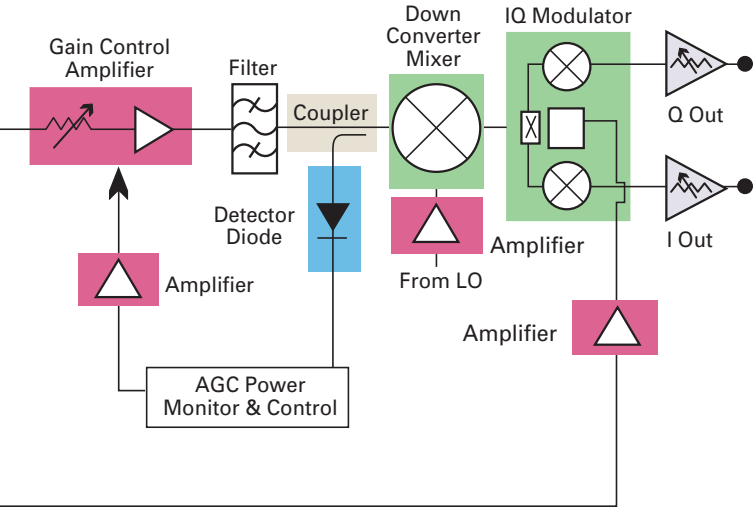


Power Amplifier

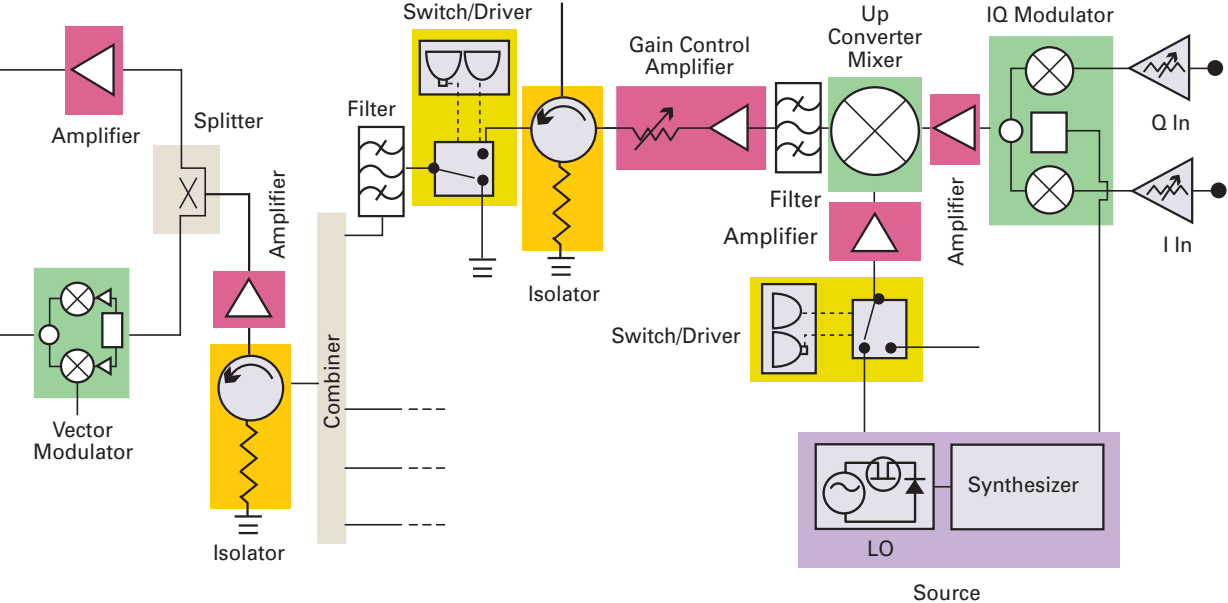


Block Diagrams : Typical Transceiver

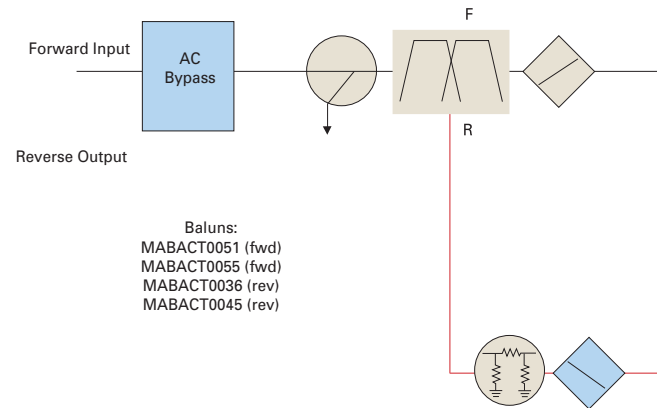
Receiver IF



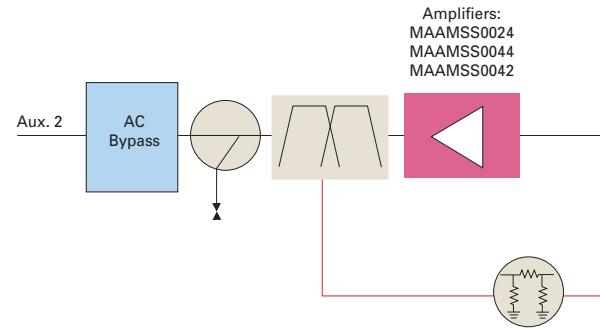
Transmitter



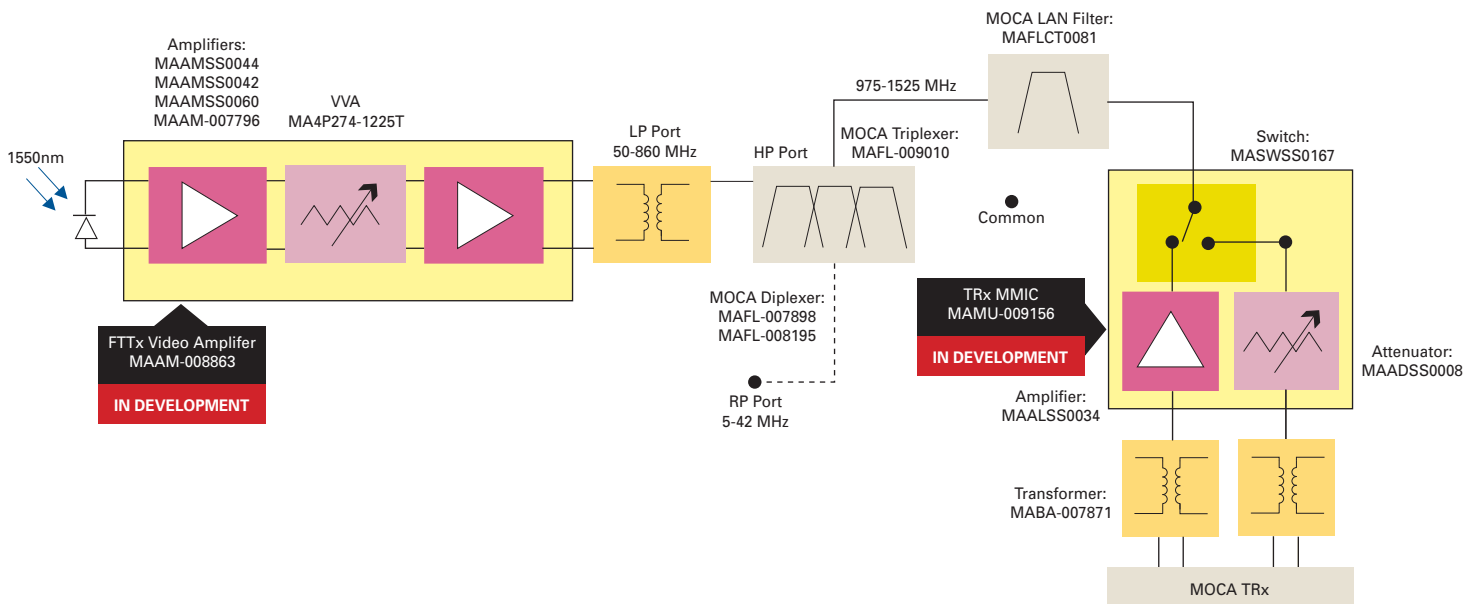
Block Diagrams : Parts for CATV/Broadband



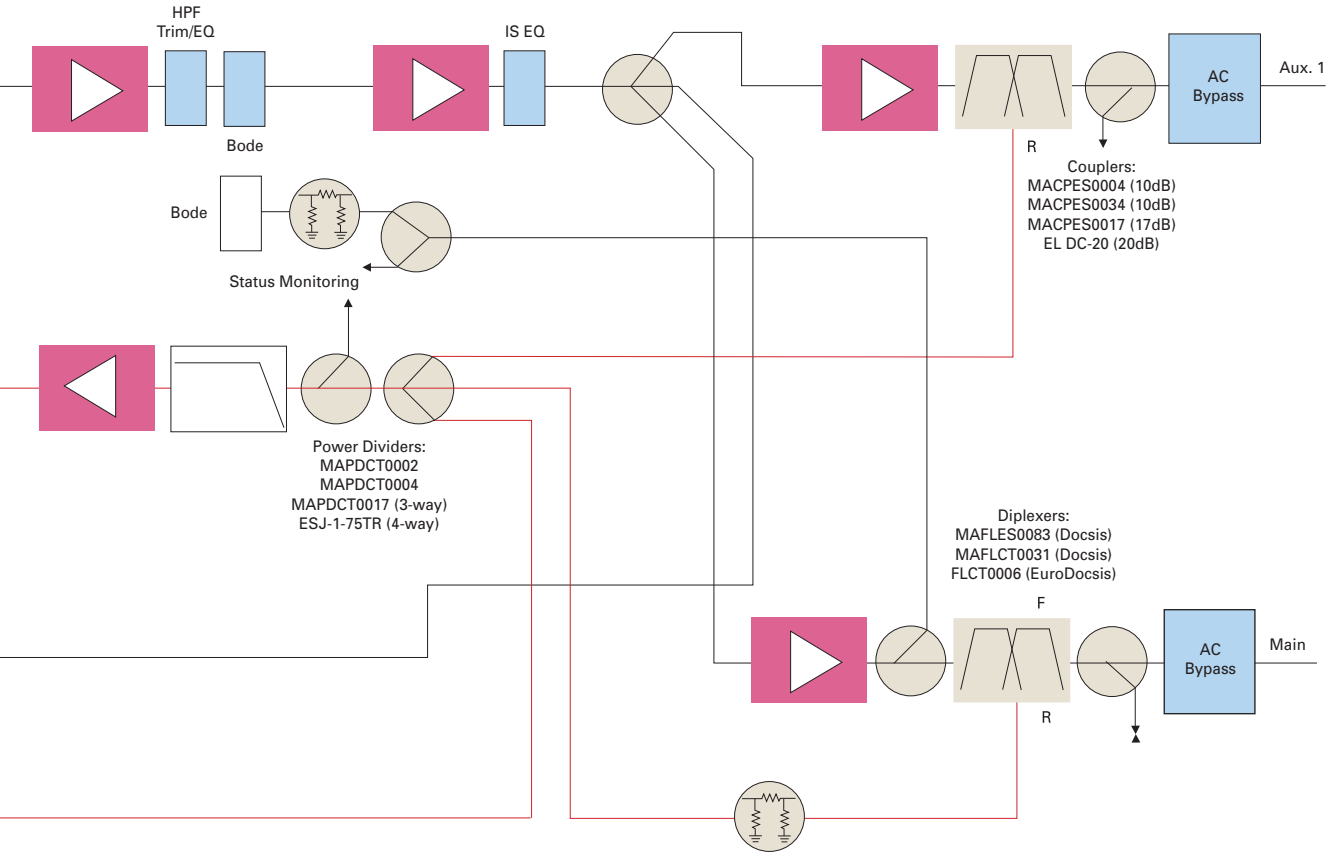
Amplifier/Optical Node



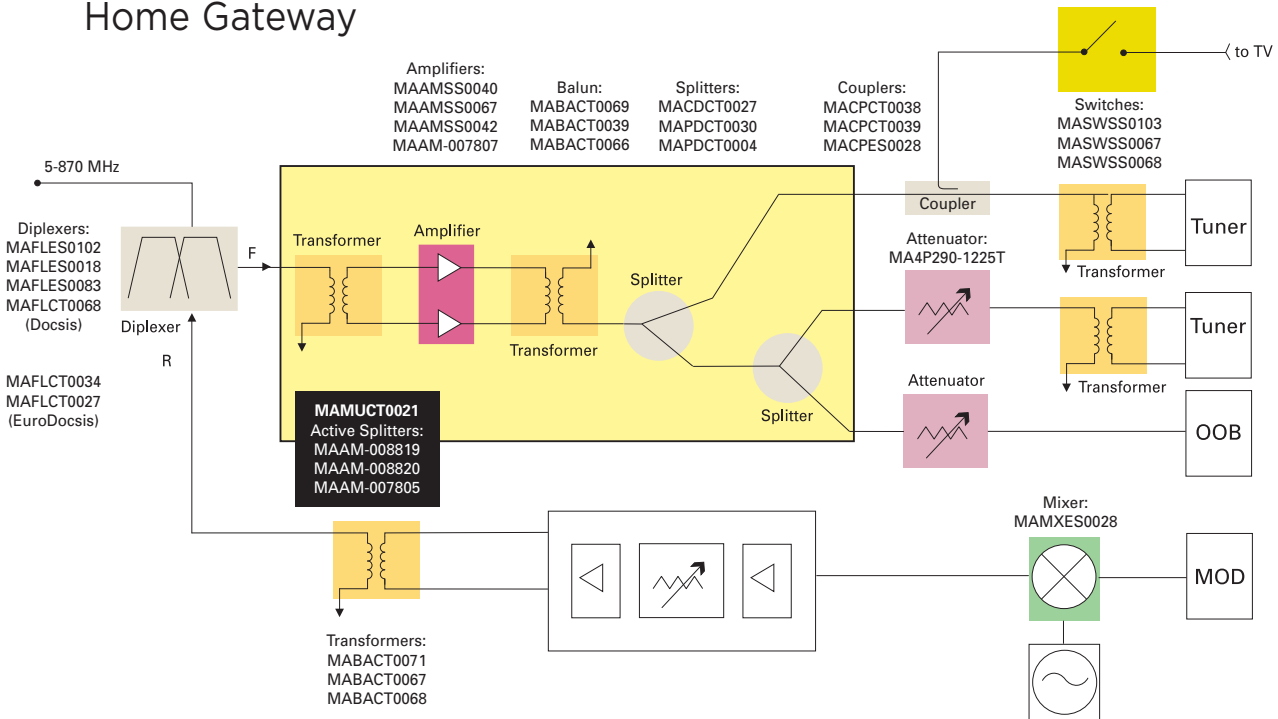
FTTx Video Amplifier with MOCA



Block Diagrams : Parts for CATV/Broadband



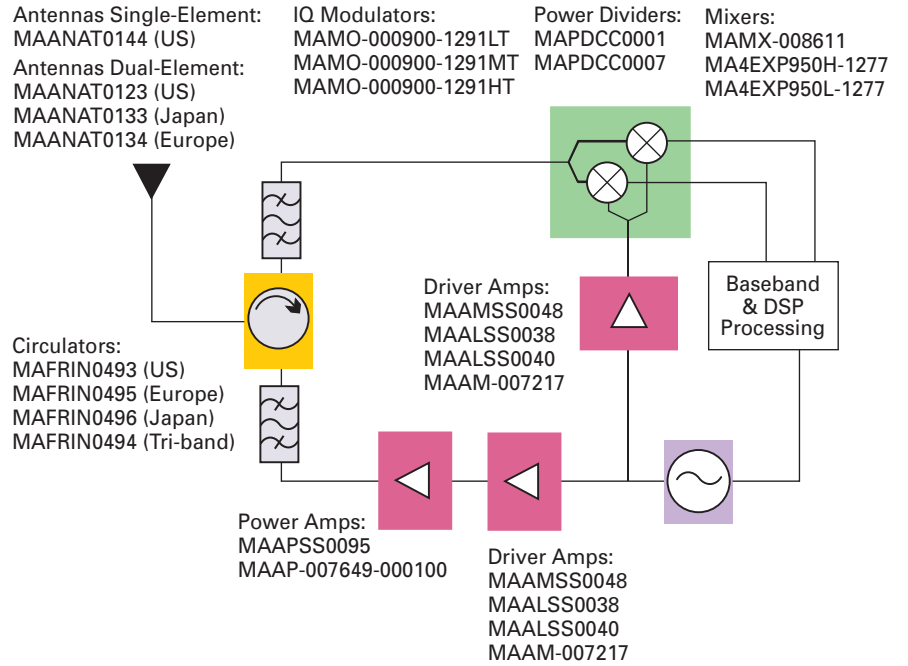
Home Gateway



Block Diagrams : RFID



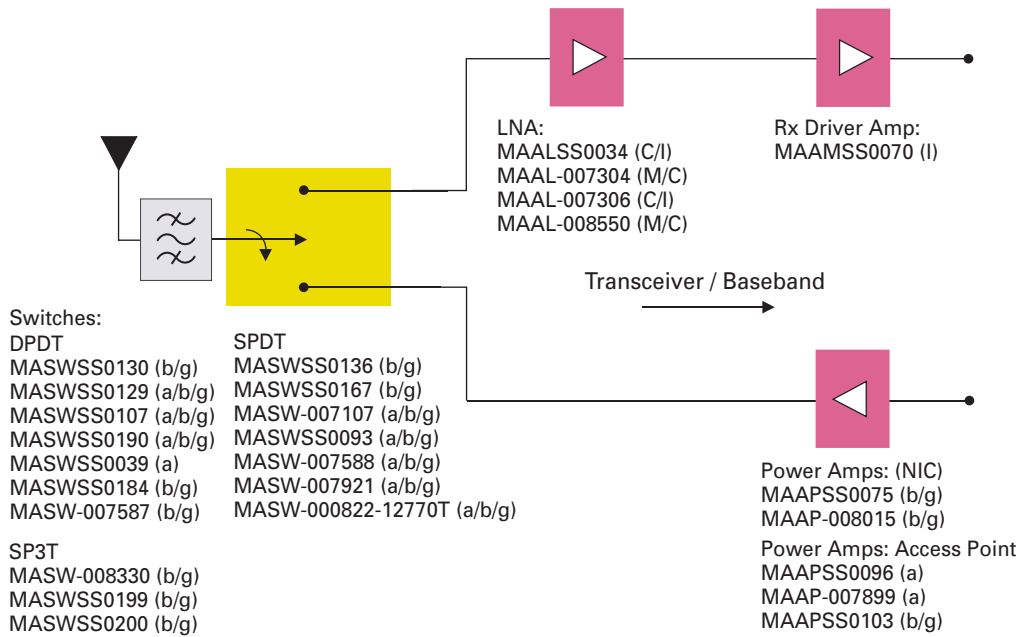
RFID Reader EPCglobal UHF Architecture



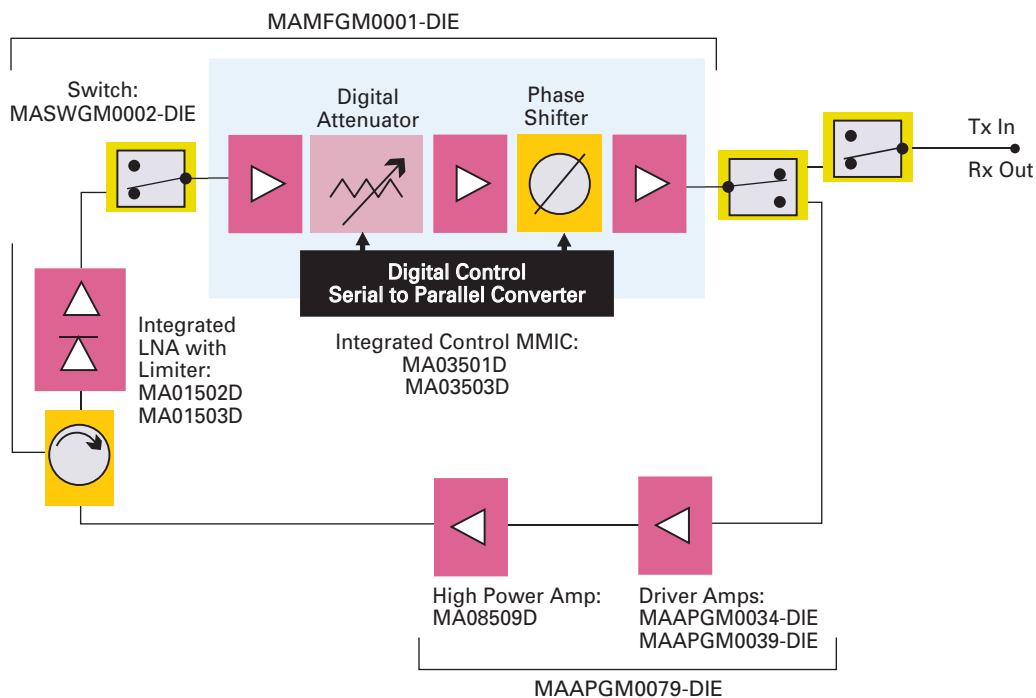
RFID UHF Modules

Transmit Module	Synthesizer Modules	Receive IQ Modules
MAIA-007851-000100	MASY-007028-XXXX	MAIA-007860-000100 (low barrier) MAIA-007859-000100 (med barrier) MAIA-007775-000100 (high barrier)

WLAN/802.11a/b/g RF Solutions

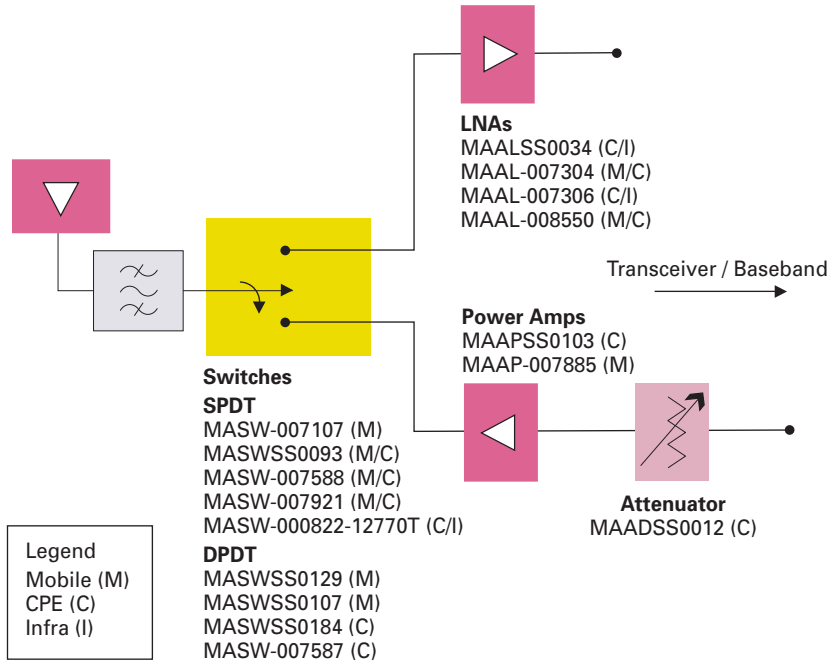


X-band Radar GaAs MMIC Chipset

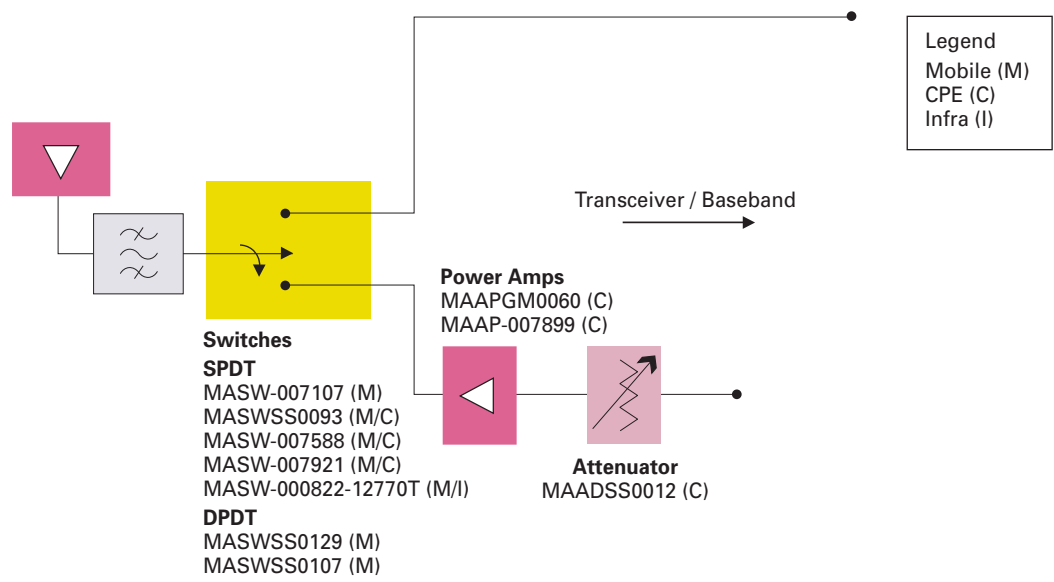


Block Diagrams : WiMAX

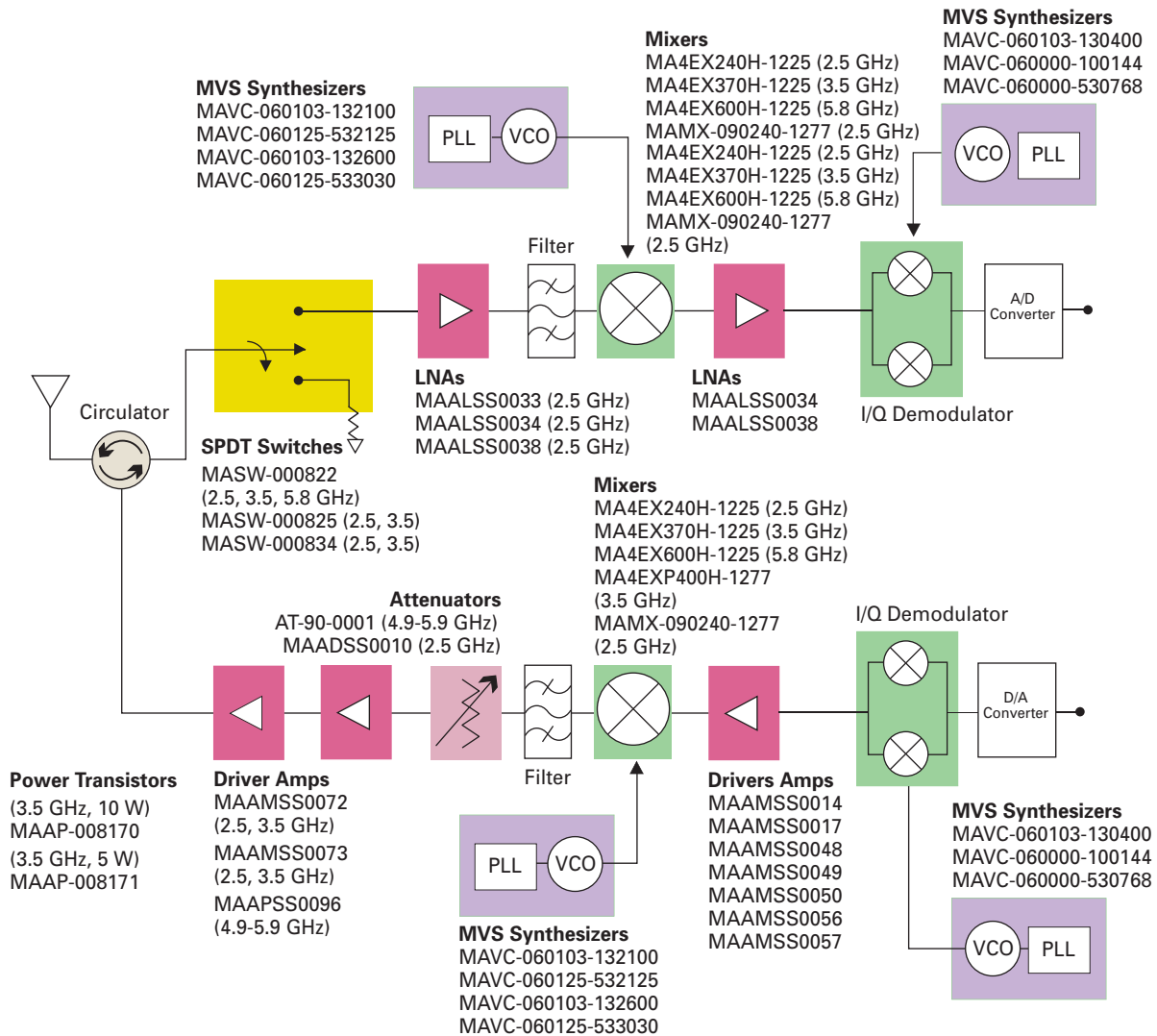
2.3-2.7 GHz and 3.3-3.8 GHz WiMAX Solutions



4.9-5.9 GHz WiMAX Solutions



WiMAX Base Station



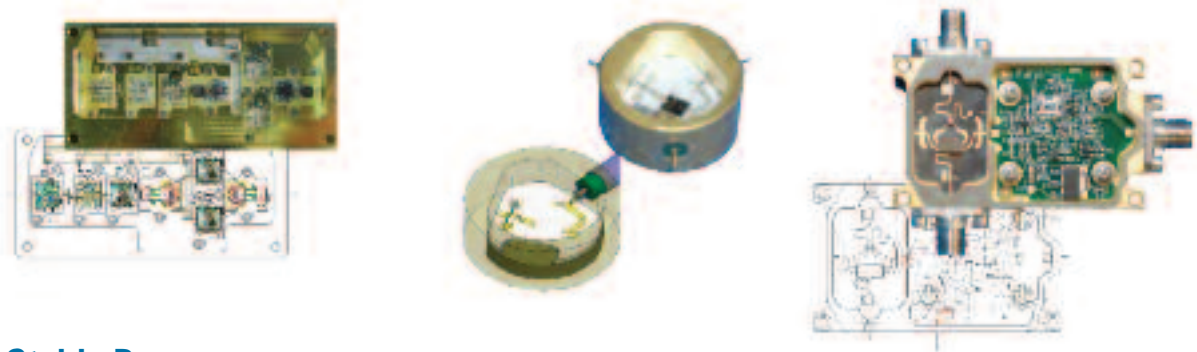
Aerospace and Defense



Application Specific Multi-chip Modules

For your demanding applications

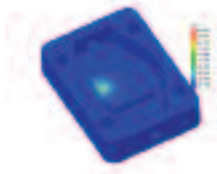
Custom Solutions



Stable Processes

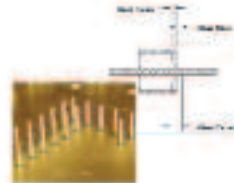
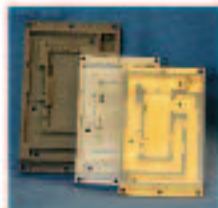
Design Methods

- Thermal simulation
- Electrical modeling
- Non-linear analysis



Fabrication Processes

- Metal injection molding
- Hermetic electrical interfaces



• Thin film

Assembly



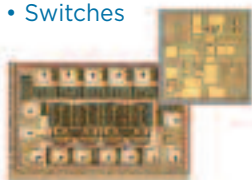
Test



Proven Designs and Materials

MMICs

- Amplifiers
- Limiters
- Attenuators
- Phase Shifters
- Switches



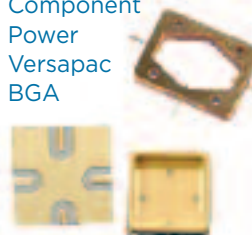
Components

- Mixers
- Amplifiers
- Limiters
- Attenuators
- Phase Shifters
- Switches
- Splitters
- Isolators



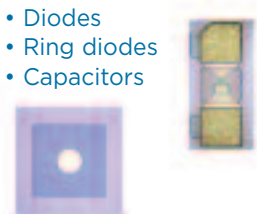
Packages

- Surface Mount
- Component
- Power
- Versapac
- BGA



Discretes

- Diodes
- Ring diodes
- Capacitors





Multifunction Assemblies

Value-added solutions through:

- Advanced technology
- Highly integrated assemblies
- Low cost techniques

Integrated functionality:

- Amplification
- Signal distribution
- Switching
- Phase shifting
- Frequency conversion
- Filtering
- Diplexing/multiplexing
- Power detection
- Frequency generation
- Attenuation



SIGINT

SMR-5550 Low Cost Microwave Receiver

- 1 to 18 GHz tuning range
- Synthesized in 10 kHz steps
- High dynamic range
- Optimized for PCM/TDM and FM/FDM reception
- Selectable wideband IF outputs: 70/140/160 MHz standard
- Excellent BER performance
- Five IF bandwidths for FM demodulation
- RS-232 control

SMR-5550i Low Cost Microwave Receiver

- 0.5 to 20 GHz tuning range
- Compatible with 40 GHz frequency extender
- Excellent phase noise performance 0.2 degrees RMS typical
- GHz IF output, 100 MHz bandwidth
- Selectable 70/140/160 MHz IF outputs:
 - fixed gain wideband output
 - variable gain wideband output
 - variable gain, post filtered IF output
- AM, FM and LOG video, and audio outputs
- Four selectable IF bandwidths
- Ethernet 10/100baseT, RS-232, RS-422

SMR-3822 Wideband Microwave Receiving System

- 0.5 to 20 GHz, extendable up to 40 GHz
- SEI certified
- IF outputs at 1 GHz, 160 MHz, and 70 MHz
- Built-in spectrum display processor for RF sweep and IF pan
- Eight IF bandwidths: 250 kHz to 100 MHz
- AM, FM, and log detectors
- Controlled from workstation or front panel controls
- Built-in test functions
- F1-F2 sweep and fixed frequencies
- Ethernet 10/100baseT control
- Integrated local control panel

TU-3840 Wideband ELINT Tuner

- 1 to 18 GHz, extendable up to 40 GHz
- Based on SEI certified SMR-3822 front-end
- IF outputs at 1 GHz and 160 MHz
- Controlled from remote workstation
- Built-in test functions
- F1-F2 sweep and fixed frequencies
- Ethernet 100baseT control
- RF blanking (optional)
- RF attenuation (optional)

TU-3822/IFD-3822 Wideband Microwave Receiving System

- 0.5 to 18 GHz (20 GHz optional), extendable to millimeter wave frequencies
- IF outputs centered at 70 MHz, and 160 MHz
- Built-in spectrum display processor for RF sweep and IF pan
- Eight IF bandwidths: 250 kHz to 50 MHz
- AM and FM demodulators
- Digitally controlled from PC or front panel controls
- Built-in test functions
- 100 channel Mmemory. F1-F2 sweep and fixed frequencies (optional)
- Remote tuner/local demodulator-controller or optional integrated tuner/demodulator/controller
- Ethernet 10base-2 control

SMR-4820 Compact Microwave Search Receiver

- 2 to 26.5 GHz frequency range (0.1-26.5 GHz optional)
- Compact, lightweight package, 17 lb (7.7 kg)
- Power consumption, 100 watts, typical
- Low phase noise less than 0.45° rms
- Selectable IF output frequency: 70/140 MHz
- Selectable IF bandwidths
- Ethernet, RS-422A or RS-232C remote control

MODEL 388 IF to Tape/ Baseband Converter

- Three fixed IF Inputs: 21.4, 70 and 160 MHz standard variable frequency input: 10 to 250 MHz
- Four preset output center frequencies: 1.075, 2.150, 3.225, 4.300 MHz
- Variable output center frequency: 100 kHz to 20 MHz (50 MHz optional)
- RS-232 control
- Group delay equalization
- Compact, half-rack package

MODEL 388A IF to Tape/ Baseband Converter

- Three fixed IF inputs: 21.4, 70 and 160 MHz standard variable frequency input: 10 to 250 MHz
- Four preset output center frequencies: 1.075, 2.150, 3.225, 4.300 MHz
- Variable output center frequency: 100 kHz to 20 MHz (50 or 80 MHz optional)
- RS-232 control, optional ethernet
- Group delay equalization
- Compact, half-rack package
- Improved carrier-to-noise ratio
- Selectable output level for compatibility with both analog & digital recorders

MODEL 391 Tape-to-IF Converter

- Input frequency: 1.075 and/or 3.225 MHz
- Output center frequency: 21.4 MHz — standard, 70 or 160 MHz (optional)
- Delay equalization 3200 ns
- External reference input
- Crystal controlled

SIGINT (continued)

FE-3820 18-40 GHz Frequency Extender

- Companion unit to SMR-3822 and SMR-5550i receivers
- Frequency range:
 - 18 to 40 GHz (converted)
 - 0.5 to 20 GHz (direct)
- Control modes:
 - remote from companion receiver
 - FE-3820 front panel
 - remote via ethernet or RS-232/RS-422
- Low noise figure
- Low phase noise
- 2U, half-rack chassis
- Will operate with other manufacturers' receivers

MODEL 410 HF Multicoupler

- 100 kHz to 32 MHz
- Eight or sixteen outputs
- Wide dynamic range
- Input protection

MODEL 410VXI HF Multicoupler

- 100 kHz to 32 MHz
- 2-slot C-size VXI card
- Eight outputs
- Wide dynamic range
- Excellent reverse isolation

MODEL 414 VHF/UHF Multicoupler

- 20 to 1200 MHz
- Switchable dual input option
- 70 dB reverse isolation
- Wide dynamic range
- Low noise
- Fourteen outputs (max)

MODEL 418 VHF/UHF Multicoupler

- Wide passband 20-3000 MHz
- Half rack chassis
- Eight outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

MODEL 418VXI VHF/UHF Multicoupler

- Wide passband 20-3000 MHz
- 6U, single-slot, C-size VXI
- Eight outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

MODEL 418S Miniature VHF/UHF Multicoupler

- Wide passband 20-3000 MHz
- Miniature chassis
8.25" D x 7.25" W x 2.6" H
- Eight outputs
- Wide dynamic range
- Input protection
- High port-to-port isolation

MODEL 510 Microwave Multicoupler

- Wide passband 0.5-18 GHz
- Half rack chassis
- Eight outputs
- Wide dynamic range
- Input protection
- High IP2 & IP3
- High channel-to-channel isolation (optional)

SPECTRE (Special Purpose Emitter Collection & Tactical Receiving Equipment)

- Flexible carry-on system for ELINT or COMINT survey and analysis
- 0.5 - 40 GHz frequency coverage
- Programmable RF spectrum and IF signal analysis displays
- Wideband, low phase noise receivers
- Windows NTO graphical user interface (GUI)
- AM, FM, LOG, baseband, and audio outputs

TELEMETRY

Transmitter Products

- MA05935 - 200 mW round lower S-band transmitter
- MA06836 - 500 mW square lower S-band programmable transmitter
- MA06936 - 500 mW round lower S-band programmable transmitter
- MA06838 - 1 W square lower S-band programmable transmitter
- MA06000-AP frequency selection application note

Telemetry Module Units (TMU)

- MATMTMU001 - telemetry module unit (transmitter/encoder/sensor)
- MATMTMU002 - packaged 200 mW transmitter & PCM encoder
- MATMTMU003 - packaged 200 mW transmitter
- MATMTMU004 - single card telemetry solution
- MATMTMU008 - telemetry module unit (transmitter/encoder)
- MATMTMU010 - packaged 500 mW transmitter

Receiver & Antenna Products

- TMR-5550T - telemetry band microwave receiver
- Airborne GPS antenna

Encoder Products

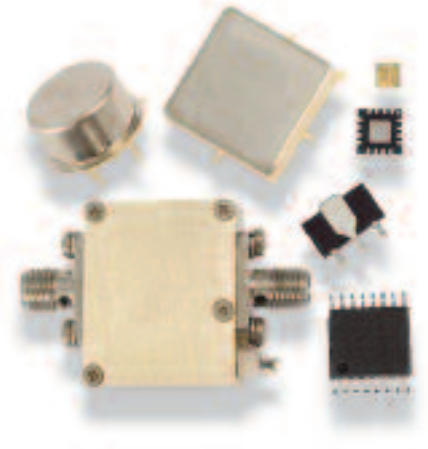
- MATM07A01 - non-randomized PCM encoder
- MATM07A02 - randomized PCM encoder
- MATM07C01 - multi-input PCM encoder

M/A-COM Amplifiers



M/A-COM amplifiers are used extensively in commercial and military electronics applications. M/A-COM produces low noise amplifiers (LNA), power amplifiers (PA), driver amplifiers and wideband amplifiers ranging from 50 MHz to 77 GHz designed specifically for voice and data applications for the consumer and military market.

- Cordless and mobile phones
- Infrastructure cellular base stations for
 - GSM
 - CDMA
 - PHS
 - UMTS
- Satellite radios
- Mobile GPS radios
- VSAT
- CATV and broadband
- WLAN cards and access points
- Aerospace and Defense products
- Bluetooth
- RFID



Broadband Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
200 - 3000	MAAM02350	17	3.7	14	24	6	65	Die
1000 - 15000	MAAMGM0003-DIE	7.5	—	25	39	7/-2	480	Die
1000 - 18000	MAAMGM0002-DIE	9	4	20	31	5/-0.6	75	Die
Packaged Products								
50 - 2000	MAAM-007865-OP1R00	20	5	18.5	29.5	5	42	3 mm PQFN-12
2 - 2400	A33-1	9	4	6	19	15	19	TO-8, SMT, SMA
2 - 2400	A35-1	9	4.2	9.5	23	15	26	TO-8, SMT, SMA
100 - 2600	A36-2	15	7	14	30	15	63	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
200 - 3000	MAAM02350-A2	18	4	14	24	6	65	CR-3
100 - 3200	A43	11.5	7	8.5	21	15	45	TO-8, SMT, SMA
50 - 3300	MAAM-007866-OP1R00	27	5	22.7	36.5	5	175	3 mm PQFN-12
2000 - 12000	6884-700	27	2.7	14.2	25	15	138	SMA Connectorized
8000 - 12000	MAAMML0018	14	6	16	—	—	—	Co-axial Hermetic SMA
1000 - 18000	MAAMGM0002	10	4	20	31	5/-0.6	100	5 mm PQFN-20

CATV Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB	CTB (dBm)	CSO (dBm)	Channel Loading (dBmV/Ch)	Package
Amplifiers								
35 - 350	PAW1027 ♦	38.5	3.7	31	—	—	—	SOT115J
35 - 500	PAW1027-1 ♦	38	4.2	31	—	—	—	SOT115J
50 - 870	MAAMSS0040	12	2.8	23	-72.5	-75	135 @ 25dBmV O/P	SOIC-16
50 - 1000	MAAM-007796-000000	21	3.8	20	-70	-70	132 @ 20dBmV O/P	4 mm PQFN-20
50 - 1000	MAAM-007807-000000	9	3.8	17	-75	-65	132 @ 15dBmV O/P	SOT-89
50 - 1000	MAAMSS0041	14.8	2.7	23	-80	-70	132 @ 23dBmV O/P	SOT-89
50 - 1000	MAAMSS0042	15	3	21	-70	-70	132 @ 30dBmV O/P	SOT-89
50 - 1000	MAAMSS0044	12.5	3.7	24	75	80	79 @ 34dBmV O/P	4 mm PQFN-20
50 - 1000	MAAMSS0060	17	1.8	23	-75	-60	132 @ 30dBmV O/P	SOT-89
50 - 1000	MAAMSS0067	12.2	3.3	24	-78	-78	135 @ 13dBmV I/P	4 mm PQFN-20
50 - 1005	MAAM-007724-000000	12.2	3.3	24	-78	-78	135 @ 13dBmV I/P	4 mm PQFN-20
50 - 2000	MAAM-007865-OP1R00	20	5	18.5	—	—	—	3 mm PQFN-12

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Isolation (dB)	CTB (dBm)	CSO (dBm)	Channel Loading (dBmV/Ch)	Package
Active Splitter Modules								
50 - 860	MAMUCT0021 (3 splits)	8.5	3.4	24	-78	-78	+13 dBmV/channel	SMTBoard
50 - 1100	MAAM-007805 (2 splits)	8.5	4	25	-75	-60	+15 dBmV/channel	3 mm PQFN-12
50 - 1100	MAAM-007239 (3 splits)	4.6	4.5	30	-83	-70	+15 dBmV/channel	3 mm PQFN-16
50 - 1100	MAAM-008819 (3 splits)	2.5	3.8	24	-67	-65	+15dBmV/channel	2 mm PDFN-8
50 - 1100	MAAM-008820 (4 splits)	3	3.1	21	-70	-68	+15dBmV/channel	3 mm PQFN-12
950 - 2150	MAAM-008970 (2 splits)	4.5	4	25	-60	-60	+15dBmV/channel	3 mm PQFN-12

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

Blue listings indicate standard stock items widely available from our franchised distribution partners.

Detailed specifications for our standard parts can be found quickly on our web site at www.macom.com by typing the part number into the search box.

All specifications are subject to change.

Driver Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
4900 - 8500	MAAM-007523-DIE000	23	4	18	32	8/5	120	Die
2000 - 18000	MAAMGM0007-DIE	7.5	6	19	—	7/-2	170	Die
10000 - 15400	MAAM-007524-DIE000	18	5	18	32	8/5	150	Die
Packaged Products								
500 - 2400	MAAMSS0014 ♦	19	5	24	38	5	110	SOT-89
1700 - 2500	MAAMSS0007 ♦	13	5.5	23	40	5	100	3 mm PQFN-12
50 - 2500	MAAMSS0017 ♦	18	4.8	20	38.5	5	70	SOT-89
50 - 2500	MAAMSS0046	18	4.8	20	38.5	5	70	SOT-89
250 - 3800	MAAMSS0070	12	3.3	22	41	5	150	SOT-89
250 - 4000	MAAMSS0048	15.5	3.5	27	40	5	160	SOT-89
250 - 4000	MAAMSS0049	15.5	3.5	28.5	43	5	230	SOT-89
250 - 4000	MAAMSS0050	13	4.5	30	43	5	420	SOT-89
250 - 4000	MAAMSS0056	22	3.5	27.5	42	5	190	SOIC-8EP
250 - 4000	MAAMSS0057	21	4.5	31	45	5	490	SOIC-8EP
300 - 4000	MAAMSS0071	16	3.2	26	37	5	115	SOT-89
250 - 4000	MAAMSS0072	23	3.7	27	39	5	200	4 mm PQFN-16
250 - 4000	MAAMSS0073	23	3.8	29	43	5	490	4 mm PQFN-16
4900 - 8500	MAAM-007523-PKG003	23	4	18	32	8/5	120	4 mm PQFN-16
10000 - 15400	MAAM-007524-PKG003	17.5	5	19	32	8/5	150	4 mm PQFN-16

Low Noise Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
1200 - 1750	MAAM12000	26	1.25	14	24	5	80	Die
8500 - 12000	MA01502D	14	2.7	20	—	5/-5	130	Die
8500 - 12000	MA01503D	19	2.7	20	—	5/-5	190	Die
Packaged Products								
10 - 100	AM-162-PIN	12.5	1.5	15	30	15	11	TO-8-1
10 - 100	AMS-162-PIN	12.5	1.5	15	30	15	11	SF-1
5 - 200	A71	18	2.1	-2.5	10	15	9	TO-8, SMT, SMA
10 - 200	A80-1	27.3	2	16	28	15	30	TO-8, SMT, SMA
10 - 250	A231	26	1.7	10	22	5	16	TO-8, SMT, SMA
10 - 250	A70	8	1.6	8	24	15	10	TO-8, SMT, SMA
10 - 250	A70-1	8	1.8	14	28	15	15	TO-8, SMT, SMA
10 - 250	A70-2	8	2.2	19	38	15	25	TO-8, SMT, SMA
5 - 500	A1	16	2.4	-1	11	15	9	TO-8, SMT, SMA
10 - 500	A531	31.7	2	2.5	14	5	17	TO-8, SMT, SMA
5 - 500	A75	21	2.1	9	21	15	24	TO-8, SMT, SMA
10 - 500	A75-3	20.5	1.7	3	16	15	14	TO-8, SMT, SMA
20 - 500	A80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
400 - 500	MAAL-008624-000000	21	0.9	28	28	5	60	SOIC-8
400 - 500	MAALSS0025 ♦	21	0.9	16.5	28	5	60	SOIC-8
800 - 960	PA1162 ♦	27	1.8	35.5	50	12	780	Flange Mount Carrier
800 - 1000	AM50-0003 ♦	15	1.2	16.5	30	5	60	SOIC-8
800 - 1000	AM50-0011 ♦	17	0.95	14	30	5	40	SOT-26

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Low Noise Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
800 - 1000	AM55-0016 ♦	16	1.6	—	40	2.7	—	MSOP-8 Lead
800 - 1000	MAAL-008091-000000	15	1.2	16.5	30	5	60	SOIC-8
800 - 1000	MAALSS0040 ♦	16.8	0.95	14	30	5	40	SOT-26
100 - 1200	A1212	14	1.8	19	29	5	70	TO-8, SMT, SMA
5 - 1200	SMA21-1	15.5	2.4	-1	11	15	10	TO-8, SMT, SMA
1550 - 1600	AM50-0002 ♦	27	1.15	1	13	5	20	SOIC-8
1550 - 1600	MAALSS0042	27	1.15	1	13	5	20	SOIC-8
1500 - 1600	MAALSS0044	21	1.55	6	19	5	8	SOIC-8
1500 - 1600	MAAM12021 ♦	21	1.55	6	19	5	8	SOIC-8
1500 - 1700	MAALSS0027 ♦	20	1.5	8.5	17	3	9.5	SOT-26
1500 - 1700	MAALSS0049 ♦	20	1.5	8.5	17	3	9.5	SOT-26
1200 - 1750	MAAM12000-A1	26	1.35	14	24	5	80	CR-3, CR-10
100 - 2000	A32	13	2.1	22	32	15	92	TO-8, SMT, SMA
500 - 2000	MAAL-008550-000000	12.5	0.75	1	16.5	3	7.5	SC-70
1800 - 2000	PA2001 ♦	21	2	30.3	46.5	12	345	Flange Mount Carrier
1400 - 2000	AM50-0004 ♦	14	1.4	16	29	5	45	SOIC-8
1400 - 2000	AM50-0006 ♦	18	1.6	1	12	3	6.5	SOT-26
1400 - 2000	MAALSS0048	18	1.6	1	13	3	6.5	SOT-26
1700 - 2000	MAAL-007673-000000	20	1.65	7	19	5	8	SOIC-8
1700 - 2000	MAAM12031 ♦	20	1.65	7	19	5	8	SOIC-8
1400 - 2000	MAAMSS0045	14	1.4	16	29	5	45	SOIC-8
1700 - 2100	MAALSS0024 ♦	20	1	11	26	5	30	SOT-26
1700 - 2400	AM50-0012 ♦	19	1.4	20	32	5	80	3 mm PQFN-12
2200 - 2400	MAALSS0013 ♦	17	0.9	10	26	5	26	SOT-26
2200 - 2400	MAALSS0033	17	0.9	10	26	5	26	SOT-26
1700 - 2400	MAALSS0045	19	1.4	20	32	5	80	3 mm PQFN-12
500 - 3000	MAAL-007304-000000	25.5	.7	7	19	3	11.5	SOT-26
500 - 3000	MAAL-007306-000000	27.5	0.7	16	27	3	90	SOT-26
70 - 3000	MAALSS0012 ♦	12	1.5	21	32	5	87	SOT-363
70 - 3000	MAALSS0034	12	1.6	23	36	5	88	SOT-89
70 - 3000	MAALSS0038 ♦	12	1.5	21	32	5	87	SC-70
1000 - 4000	A4011	15.5	2	18.3	29	5	65	TO-8, SMT, SMA
2000 - 6000	A6011	14.8	1.5	18	30	5	58	TO-8, SMT, SMA

Power Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
1200 - 3200	MAAPGM0036-DIE	20	5	30	40	8/-2	460	Die
1500 - 3300	MAAPGM0026-DIE	20	6	27	36	8/-2	230	Die
2000 - 4000	MAAPGM0027-DIE	22	6	29	37	8/-2	230	Die
2500 - 5500	MAAPGM0035S-DIE	17	7	31	42	8/-5	600	Die
2500 - 6000	MAAPGM0066-DIE	33.5	—	33.3	42	8/-2	650	Die
3500 - 6500	MAAPGM0029-DIE	20	7	30	42	8/-2	300	Die
4800 - 6700	MAAPGM0060-DIE	18	—	37	—	8/-2	1800	DIE
4400 - 7000	MAAPGM0073-DIE	25	—	30	—	8/-2	500	DIE
5700 - 8500	MAAPGM0067-DIE	31	—	33	—	8/-2	640	DIE
5700 - 8500	MAAPGM0068-DIE	28	—	31	38	8/-2	320	DIE

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Power Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Die Products								
4500 - 9000	MAAPGM0021-DIE	17	9	31	41	8/-2	590	Die
5000 - 9000	MAAPGM0030-DIE	17	8	29	38	8/-2	240	Die
6500 - 9500	MAAPGM0064-DIE	20	9.5	32	41	8/-2	600	Die
8500 - 10500	MA08509D	27	—	41	—	10/-4	4000	Die
8500 - 11500	MAAPGM0063-DIE	25	—	36	—	10/-2	1400	Die
7100 - 11700	MAAPGM0069-DIE	30	—	32	—	8/-2	750	Die
9500 - 12000	MAAPGM0062-DIE	23	—	35	—	10/-2	900	Die
8000 - 12500	MAAPGM0034-DIE	15	8	26	33	10/-2	126	Die
6500 - 12500	MAAPGM0037-DIE	13	8	29	37	8/-1.8	310	Die
2000 - 13000	MAAPGM0057-DIE	7	8	30	—	10/-2	510	Die
10000 - 13250	MAAPGM0070-DIE	34	—	32	39	8/-2	900	Die
7500 - 13500	MAAPGM0038-DIE	19	8	29	30	8/-2	700	Die
12000 - 15000	MAAPGM0016-DIE	20	—	36	—	8/-2	2400	Die
12750 - 15350	MAAPGM0071-DIE	27	—	31	—	8/-2	900	Die
12000 - 15500	MAAPGM0018-DIE	18	—	32	—	8/-2	830	Die
11500 - 16000	MAAPGM0041-DIE	20	7	30	35	8/-2	450	Die
11500 - 16000	MAAPGM0042-DIE	20	10	28	35	8/-2	460	Die
11500 - 16500	MAAPGM0044-DIE	19	8	26	36	8/-2	210	Die
6000 - 18000	MAAPGM0052-DIE	13	6	25	—	8/-2	500	Die
2000 - 18000	MAAPGM0053-DIE	6	7	26	—	8/-2	250	Die
17700 - 19700	MAAPGM0072-DIE	22	—	30	38	8/-2	500	Die
Packaged Products								
5 - 100	A101	17	3	23	36	12	105	TO-8, SMT, SMA
35 - 350	PAW1027 ♦	38.5	3.7	31	43	24	300	SOT115J
100 - 400	AM55-0024	22.5	4	17.5	30	5	400	8 mm PBGA
10 - 500	PA511	12.7	4.6	24.8	40	15	118	TO-8, SMT, SMA
10 - 500	PA512	18	5.2	27.5	40	15	200	TO-8, SMT, SMA
35 - 500	PAW1027-1	38	4.2	31	43	24	300	SOT115J
900 - 942	MA02104AF-R13 ♦	30.8	—	31	41	3.6	740	TSSOP-16
900 - 942	MA02107AF-R13 ♦	30.8	—	31	40	3.4	645	TSSOP-16
800 - 960	PA1162 ♦	27	1.8	35.5	50	12	780	Flange Mount Carrier
850 - 960	MAAPSS0095	37	—	31.5	41.5	3.3	1000	3 mm PQFN-16
10 - 1000	SMRA69	25	4.5	23	34	15	130	TO-8B, SMT, SMA
800 - 1000	MAAP-007649-000100	19	—	34	49	7.5	540	4 mm PQFN-16
1435 - 1525	AM42-0054	26	—	—	—	—	—	R380
1880 - 1900	MAAM-007219-000000	24.5	—	25.5	—	3.6	350	SOIC-16
1710 - 1910	AM40-0023	11	0.9	-13	—	—	—	CR-5
1800 - 1930	MA02204AF-R13 ♦	32	—	27	37	3.3	360	TSSOP-16
1800 - 1930	MA02206GJ-R13 ♦	29	—	27	37	3.6	228	MSOP-8EP
1880 - 1930	MAAP-000082-000000	36	—	26.5	23	3	280	3 mm PQFN-12
1880 - 1930	MAAPSS0071	26	—	26	36	2.4	400	3 mm PQFN-12
1880 - 1930	MAAPSS0076	25	—	25.5	36.5	2.4	320	3 mm PQFN-12
1800 - 2000	PA1132 ♦	21	2.5	33.5	48	12	495	Flange Mount Carrier
1800 - 2000	PA2003 ♦	21	2.5	33.5	49	12	495	Flange Mount Carrier
1800 - 2000	AM55-0004	24	—	24	—	—	—	SSOP-28
1800 - 2000	MAAPSS0107	29	—	27	37	3.6	228	MSOP-8EP
200 - 2000	PA2010	10	5	25.5	33	15	179	TO-8, SMT, SMA
200 - 2000	PA38	10	4	23	34	15	150	TO-8, SMT, SMA
1800 - 2000	PA2001 ♦	21	2	30.3	46.5	12	345	Flange Mount Carrier

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Power Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output PldB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
2200 - 2400	AM42-0055	29	—	—	—	—	—	R380
2400 - 2500	AM52-0024 ♦	29.5	—	27.5	40	3.3	230	MSOP-8EP
2400 - 2500	MA02303GJ-R13 ♦	29.5	—	26.5	43	3.3	265	MSOP-8EP
1300 - 2500	MAAP-000076-PED000	25	—	41	—	10/-2	3800	Ceramic
1300 - 2500	MAAP-000076-PKG001	25	—	41	46	10/-2	3800	Ceramic
2400 - 2500	MAAPSS0066	27	—	25	35	2.4	400	3 mm PQFN-12
2400 - 2500	MAAPSS0075	29.5	—	26.5	52	3.3	185	3 mm PQFN-12
2400 - 2500	MAAP-008516	30	—	23	—	3.3	80	2.5 x 2 mm PQFN-14
2200 - 2600	MAAPSS0093	29.5	3.6	26.5	43	3.3	265	MSOP-8EP
200 - 2600	PA38-2	8.5	4.5	23.5	33	15	150	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
2300 - 2800	MAAPSS0103	34	—	32	42	5	600	4 mm PQFN-16
1200 - 3200	MAAPGM0036	20	5	31	40	8/-2	460	Ceramic
3300 - 3800	MAAPSS0104	32	—	32	42	5	600	4 mm PQFN-16
1000 - 4000	PA48	16	5.5	24	34	15	225	TO-8B, SMT, SMA
2000 - 4000	MAAPGM0027	22	6	29	37	8/-2	230	Plastic
2500 - 5000	MAAP-000066-PKG003	28	—	33	42	8/-2	660	5 mm PQFN-20
2500 - 5500	MAAPGM0035S	18	7	31	42	8/-2	700	Ceramic
5700 - 5900	MAAP-007899	23	—	28	—	5	700	4 mm PQFN-16
2000 - 6000	MAAP-000078-PED000	18	—	30.5	—	10/-2	2200	Ceramic
2000 - 6000	MAAP-000078-PKG001	19	—	39.5	44	10/-2	2200	Ceramic
4900 - 6000	MAAPSM0008	20.5	—	29.5	40	7	500	4 mm PQFN-16
4900 - 6000	MAAPSS0096	20.5	5.3	29.5	40	7	500	4 mm PQFN-16
3600 - 6500	MAAPGM0029	19	8	30	42	8/-2	300	Ceramic Bolt-down
4800 - 6700	MAAPGM0060	18	—	37	—	8/-2	1850	Ceramic
4400 - 7000	MAAP-000073-PKG003	26	—	29	38	8	330	5 mm PQFN-20
2000 - 8000	MAAP-000074-PED000	14	—	37	—	10/-2	2100	Ceramic
2000 - 8000	MAAP-000074-PKG001	14	—	37	—	10/-2	2100	Ceramic
5000 - 8500	MAAP-000021-PKG003	17	—	32	40	8/-2	600	5 mm PQFN-20
5700 - 8500	MAAP-000067-PKG003	22	—	33	40	8/-2	640	5 mm PQFN-20
5700 - 8500	MAAP-000068-PKG003	25	—	30	40	8/-2	320	5 mm PQFN-20
5000 - 8500	MAAPGM0021	17	9.5	32	40	8/-2	600	Ceramic
5000 - 9000	MAAPGM0030	14	9	30	38	8/-2	300	Ceramic
6500 - 9500	MAAP-000064-PKG003	17	—	32	40	8/-2	600	5 mm PQFN-20
6500 - 9500	MAAPGM0064	17	9.5	32	41	8/-2	600	Ceramic
8500 - 10500	MAAP-000038-PKG003	17	—	30	41	8/-2	710	5 mm PQFN-20
7500 - 10500	MAAP-000079-PED000	29	—	42	48	10/-2	4000	Ceramic
7500 - 10500	MAAP-000079-PKG001	26	—	41	46	10/-2	3200	Ceramic
8500 - 10500	MAAP-008509-PED000	27	—	40	—	10/-4	4000	Die-on-Pedestal
7100 - 11700	MAAP-000069-PKG003	27	—	31.5	40.5	8/-2	750	5 mm PQFN-20
9000 - 12000	MAAPGM0038	21	9	30	40	8/-2	710	Ceramic
8000 - 12500	MAAPGM0034	14.5	8.5	27	33	10/-2	126	Ceramic
10000 - 13250	MAAP-000070-PKG003	29	—	32	41	8/-2	880	5 mm PQFN-20
14000 - 14500	AM42-0002	22	—	29.5	39	9	800	CR-15
14000 - 14500	AM42-0007	22	—	32	41	9	1000	CR-15
13750 - 14500	MAAPSS0111	34	—	31.5	43.5	8	530	6 mm PQFN-28
12750 - 15350	MAAP-000071-PKG003	24	—	31	34	8/-2	1170	5 mm PQFN-20
12700 - 15400	MAAP-000044-PKG003	17	—	26	33	8/-2	210	5 mm PQFN-20
11500 - 16000	MAAPGM0041	19	7	30	34	8/-2	460	Ceramic

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Power Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
12000 - 16000	MAAP-000042-PKG003	20	—	29	38	8/-2	470	5 mm PQFN-20
2000 - 18000	MAAP-000080-DIE000	11.5	—	29.5	—	10/-2	750	Ceramic
17700 - 19700	MAAP-000072-PKG003	18	—	31	40	8/-2	500	5 mm PQFN-20
24000 - 30000	MAAMML0016	31	11	25	—	—	—	Co-axial Hermetic K

General Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 100	A101	17	3	23	36	12	105	TO-8, SMT, SMA
10 - 100	AM-162-PIN	12.5	1.5	15	30	15	11	TO-8-1, CONN
10 - 100	AMS-162-PIN	12.5	1.5	15	30	15	11	SF-1
15 - 100	AM05-0005	15	5	23	37	—	—	LGA-1
15 - 100	AM05-0006	10.6	5	23	40	—	—	LGA-1
5 - 200	A71	18	2.1	-2.5	10	15	9	TO-8, SMT, SMA
10 - 200	A80-1	27.3	2	16	28	15	30	TO-8, SMT, SMA
5 - 250	A74-1	31	4.5	8.5	21	15	40	TO-8, SMT, SMA
5 - 250	A75-2	21	4.2	8	19	15	24	TO-8, SMT, SMA
5 - 250	EA54	27	3.8	5	16	5	30	TO-5
10 - 250	A83-1	35.5	2.5	-1.5	9	15	31	TO-8, SMT, SMA
10 - 250	A181	16.5	3.8	22	35	15	95	TO-8, SMT, SMA
10 - 250	A231	26	1.7	10	22	5	16	TO-8, SMT, SMA
10 - 250	A70	8	1.6	8	24	15	10	TO-8, SMT, SMA
10 - 250	A70-1	8	1.8	14	28	15	15	TO-8, SMT, SMA
10 - 250	A70-2	8	2.2	19	38	15	25	TO-8, SMT, SMA
20 - 250	A70-3	8	2.8	21	40	15	37	TO-8, SMT, SMA
20 - 250	A81	25.5	3	17	28	15	35	TO-8, SMT, SMA
20 - 250	A81-1	25	2.5	13.5	27	15	25	TO-8, SMT, SMA
20 - 250	A82	25	2.8	20	31	15	50	TO-8, SMT, SMA
20 - 250	A82-1	19	2.8	15	26	15	50	TO-8, SMT, SMA
30 - 250	AM-119-PIN	8	2.5	21	35	15	50	TO-8-1, CONN
5 - 300	A78	14	3.5	19.5	35	15	65	TO-8, SMT, SMA
5 - 300	A79	14	4	22	38	15	88	TO-8, SMT, SMA
10 - 300	A87-2	16	2.9	11	24	5	15	TO-8, SMT, SMA
35 - 350	PAW1027 ♦	38.5	3.7	31	43	24	300	SOT1115J
5 - 400	A56	26	5.5	13.5	27	15	69	TO-8, SMT, SMA
5 - 400	EA1	14	4.3	-4.5	13	15	10	TO-5
5 - 400	EA2	13.5	5.7	9	21	15	27	TO-5
10 - 400	A411	15.8	3	10	24	5	16	TO-8, SMT, SMA
10 - 400	A87	14	3.8	17.5	33	15	33	TO-8, SMT, SMA
10 - 400	A87-1	16	3.4	17	31	15	30	TO-8, SMT, SMA
10 - 400	MAAM-008199-000A51	15	2.7	-3.5	10	15	7	TO-8, SMT, SMA
5 - 500	A5	14.8	4.5	8.5	22	15	25	TO-8, SMT, SMA
5 - 500	A514	28	4	19	32	15	96	TO-8, SMT, SMA
5 - 500	A515	27.5	3.5	22	33	15	127	TO-8, SMT, SMA
5 - 500	A54	15.5	4	9	21	15	34	TO-8, SMT, SMA
5 - 500	A5-5	15.5	4	9	21	15	24	TO-8, SMT, SMA
5 - 500	A58	11.5	4	19	34	15	65	TO-8, SMT, SMA

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General Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 500	A59	11.5	4.3	22	36	15	88	TO-8, SMT, SMA
5 - 500	A72	15	3.3	12.5	26	15	30	TO-8, SMT, SMA
5 - 500	A73	32	3.5	1.5	15	15	20	TO-8, SMT, SMA
5 - 500	A74	30	3	8.5	20	15	40	TO-8, SMT, SMA
5 - 500	A74-2	26	3.8	-1	10	5	13	TO-8, SMT, SMA
5 - 500	A76	28	3	14.7	28	15	62	TO-8, SMT, SMA
5 - 500	A76-1	27.5	3	12.7	26	5	47	TO-8, SMT, SMA
5 - 500	A77	16.5	4.5	16.5	30	15	50	TO-8, SMT, SMA
5 - 500	A88	18.7	6.5	20.5	30	15	79	TO-8, SMT, SMA
5 - 500	AM-123-PIN	10	5.5	18	30	15	62	FP-9, CONN
5 - 500	AM-131-PIN	10	5	19	35	15	65	TO-8-1
5 - 500	AM-143-PIN	15.8	2.5	6	20	15	13	TO-8-1, CONN
5 - 500	AM-147-PIN	17	3.4	21	33	15	52	TO-8-1, CONN
5 - 500	AM-151-PIN	12	4.3	22	36	15	88	TO-8-1, CONN
5 - 500	EA53-2	19	3.6	11	24	15	33	TO-5
5 - 500	EA54-2	29.5	4.5	9.5	20	15	55	TO-5
5 - 500	A1	16	2.4	-1	11	15	9	TO-8, SMT, SMA
5 - 500	A75	21	2.1	9	21	15	24	TO-8, SMT, SMA
5 - 500	RA89	26.5	3.7	21.5	35	15	130	TO-8B, SMT, SMA
10 - 500	A180	16.5	3.4	18	33	15	63	TO-8, SMT, SMA
10 - 500	A511	17	3.4	21	33	15	52	TO-8, SMT, SMA
10 - 500	A513	20	5.5	18	30	12	120	TO-8, SMT, SMA
10 - 500	A53	15	3	3.5	16	15	12	TO-8, SMT, SMA
10 - 500	A55	14.7	5	11	24	15	30	TO-8, SMT, SMA
10 - 500	A57	14.7	4.8	14	28	15	44	TO-8, SMT, SMA
10 - 500	AM-146-PIN	21	4.5	22	35	15	130	FP-9, CONN
10 - 500	MAAM-008200-000A83	30	3	-1	10	5	13	TO-8, SMT, SMA
10 - 500	A531	31.7	2	2.5	14	5	17	TO-8, SMT, SMA
10 - 500	A75-3	20.5	1.7	3	16	15	14	TO-8, SMT, SMA
10 - 500	PA511	12.7	4.6	24.8	40	15	118	TO-8, SMT, SMA
10 - 500	PA512	18	5.2	27.5	40	15	200	TO-8, SMT, SMA
10 - 500	RA89-1	30	3.2	21.5	36	15	130	TO-8B, SMT, SMA
20 - 500	A81-2	24.5	3	15	28	15	29	TO-8, SMT, SMA
20 - 500	A81-3	17	4	8	20	15	29	TO-8, SMT, SMA
20 - 500	A80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
20 - 500	SMA80	29	2.3	14.3	27	15	45	TO-8, SMT, SMA
35 - 500	PAW1027-1	38	4.2	31	43	24	300	SOT115J
5 - 600	A77-1	16	5	16.5	30	15	50	TO-8, SMT, SMA
6 - 600	A5-6	16	4.5	8.5	21	15	24	TO-8, SMT, SMA
10 - 600	A67-1	15	3.7	17	30	15	36	TO-8, SMT, SMA
10 - 600	CA67-1	15	3.7	17	30	15	36	TO-8, SMT, SMA
100 - 600	AM-160-PIN	28.2	2.5	19	30	15	70	FP-9
100 - 600	AM-191-PIN	23.5	3	22	32	15	77	FP-2
5 - 700	A611	15	3.2	12.5	24	5	31	TO-8, SMT, SMA
10 - 700	A59-1	10.5	6	22	36	15	88	TO-8, SMT, SMA
10 - 800	A67	14	4	16	30	15	32	TO-8, SMT, SMA
100 - 800	A89	22	4.5	17.5	30	15	42	TO-8, SMT, SMA
800 - 960	PA1162 ♦	27	1.8	35.5	50	12	780	Flange Mount Carrier
5 - 1000	A11	14.7	3.1	-2	10	15	9	TO-8, SMT, SMA

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General Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 1000	A11-2	16	2.5	-1	10	15	9	TO-8, SMT, SMA
5 - 1000	A63	16	3	4	15	15	14	TO-8, SMT, SMA
5 - 1000	AM-176-PIN	13.2	4	13	27	15	38	TO-8-1, CONN
5 - 1000	AM-182-PIN	28.2	3.5	10	20	15	44	TO-8-1, CONN
10 - 1000	A1021	26	3.8	14.5	26	5	60	TO-8, SMT, SMA
10 - 1000	A1031	28.5	2.7	10	22	5	36	TO-8, SMT, SMA
10 - 1000	A12	16	2.8	8	22	15	22	TO-8, SMT, SMA
10 - 1000	A17	12	6	15.3	27	15	44	TO-8, SMT, SMA
10 - 1000	A18-1	14.7	3.8	16	30	15	44	TO-8, SMT, SMA
10 - 1000	A19-1	11.5	5.5	22.5	35	15	90	TO-8, SMT, SMA
10 - 1000	A66-1	27.5	2.9	15	28	15	66	TO-8, SMT, SMA
10 - 1000	A66-3	26	3	3	13	5	16	TO-8, SMT, SMA
10 - 1000	AM-145-PIN	10.7	3	18	32	15	50	TO-8-1, CONN
10 - 1000	AM-177-PIN	12	6.5	22	35	15	105	TO-8-1
10 - 1000	AM-183-PIN	28.5	4	14	23	15	72	TO-8-1, CONN
10 - 1000	RA66	37	3.5	15.5	30	15	81	TO-8B, SMT, SMA
10 - 1000	RA69	25	4.5	23	34	15	130	TO-8B, SMT, SMA
800 - 1000	MAAP-007649-000100	19	—	34	49	7.5	540	4 mm PQFN-16
5 - 1200	A21-1	15.5	2.4	-1	11	15	10	TO-8, SMT, SMA
10 - 1200	A1211	14	2.8	6	20	5	15.5	TO-8, SMT, SMA
10 - 1200	A64	26	3.4	8	20	15	35	TO-8, SMT, SMA
10 - 1200	A66	23.5	4	15	28	15	64	TO-8, SMT, SMA
10 - 1200	MAAM-008198-00A162	13	3.5	6	18	5	15	TO-8, SMT, SMA
100 - 1200	A1212	14	1.8	19	29	5	70	TO-8, SMT, SMA
2 - 1500	A25-1	13.5	3	9	22	15	25	TO-8, SMT, SMA
5 - 1500	A24	20	4.2	8	21	15	34	TO-8, SMT, SMA
5 - 1500	A25	10	6	9	21	15	24	TO-8, SMT, SMA
10 - 1500	A26	20.5	5	16	27	15	64	TO-8, SMT, SMA
10 - 1500	A27	8.5	7.5	15.5	28	15	50	TO-8, SMT, SMA
10 - 1500	A28	11	6	15	29	15	45	TO-8, SMT, SMA
10 - 1500	A28-2	14	3.5	10.5	24	5	27	TO-8, SMT, SMA
10 - 1500	A29-1	9	5.5	22	32	15	90	TO-8, SMT, SMA
300 - 1800	AM-153-PIN	12.4	2.5	7.5	17	15	13	TO-8-1
300 - 1800	AM-155-PIN	12.3	3.5	20	30	15	50	TO-8-1, CONN
10 - 2000	A31-1	11.5	3.5	-2	9	15	9	TO-8, SMT, SMA
10 - 2000	A33	9.5	4.5	3	15	15	14	TO-8, SMT, SMA
10 - 2000	A35	10	5	9	21	15	24	TO-8, SMT, SMA
10 - 2000	A37	10	6.8	15	28	15	47	TO-8, SMT, SMA
10 - 2000	A38	9.5	6.5	19	30	15	65	TO-8, SMT, SMA
10 - 2000	A39	7.5	8.5	22	34	15	90	TO-8, SMT, SMA
10 - 2000	AM-180-PIN	9.7	6	14.5	2.8	15	45	TO-8-1, CONN
10 - 2000	AM-184-PIN	20.0	5	11	21	15	52	TO-8-1, CONN
50 - 2000	MAAM-007865-OP1R00	20	5	18.5	29.5	5	42	3 mm PQFN-12
100 - 2000	A32-1	11.5	2.5	15.5	25	5	44	TO-8, SMT, SMA
100 - 2000	A34	16	5.5	7	18	15	35	TO-8, SMT, SMA
100 - 2000	A36	16.5	5.5	12	23	15	63	TO-8, SMT, SMA
100 - 2000	A32	13	2.1	22	32	15	92	TO-8, SMT, SMA
100 - 2000	RA36	24	5.5	13	22	15	76	TO-8B, SMT, SMA
200 - 2000	PA2010	10	5	25.5	33	15	179	TO-8, SMT, SMA

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General Amplifiers (continued)

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products								
200 - 2000	PA38	10	4	23	34	15	150	TO-8, SMT, SMA
900 - 2000	MAAM-007217-000000	15.5	2.8	6	17	3	5	SOT-143
900 - 2000	MAAMSS0005	15.5	2.8	6	17	3	5	SOT-143
1800 - 2000	PA1132 ◆	21	2.5	33.5	48	12	495	Flange Mount Carrier
1800 - 2000	PA2003 ◆	21	2.5	33.5	49	12	495	Flange Mount Carrier
1800 - 2000	PA2001 ◆	21	2	30.3	46.5	12	345	Flange Mount Carrier
100 - 2300	A36-1	16.2	6	12	23	15	63	TO-8, SMT, SMA
2 - 2400	A33-1	9	4	6	19	15	19	TO-8, SMT, SMA
2 - 2400	A35-1	9	4.2	9.5	23	15	26	TO-8, SMT, SMA
0.01 - 2500	A3010	9.5	4.5	19	35	12	160	TO-8, SMA
100 - 2600	A36-2	15	7	14	30	15	63	TO-8, SMT, SMA
200 - 2600	PA38-2	8.5	4.5	23.5	33	15	150	TO-8, SMT, SMA
20 - 2700	MAAM-007501-SA2002	11.5	2.5	27	40	9	165	TO-8, SMT, SMA
50 - 3300	MAAM-007866-OP1R00	27	5	22.7	36.5	5	175	3mm PQFN-12
1000 - 4000	A4012	18	3.5	15.5	26	5	65	TO-8, SMT, SMA
1000 - 4000	A45	17.5	4	19.5	29	15	120	TO-8, SMT, SMA
1000 - 4000	A45-1	17.5	4	13	26	5	65	TO-8, SMT, SMA
1000 - 4000	A4011	15.5	2	18.3	29	5	65	TO-8, SMT, SMA
1000 - 4000	PA48	16	5.5	24	34	15	225	TO-8B, SMT, SMA
1000 - 4000	RA46	25.5	4.5	19	30	12	175	TO-8B, SMT, SMA
2000 - 6000	A61	7.5	3.2	12.5	25	5	35	TO-8, SMT, SMA
2000 - 6000	A6011	14.8	1.5	18	30	5	58	TO-8, SMT, SMA
2000 - 6000	RA62	16	4	13	28	15	65	TO-8B, SMT, SMA
2000 - 6000	RA63-1	22	5.5	16	32	5	120	TO-8B, SMT, SMA
2000 - 12000	6884-700	27	2.7	14.2	25	15	138	SMA Connectorized

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M/A-COM Antennas



M/A-COM antennas are used extensively in automotive and aerospace/defense applications, as well as in other wireless markets. Broadband operation is available from 20 MHz to 40 GHz.

Major applications include the following:

Automotive Telematics

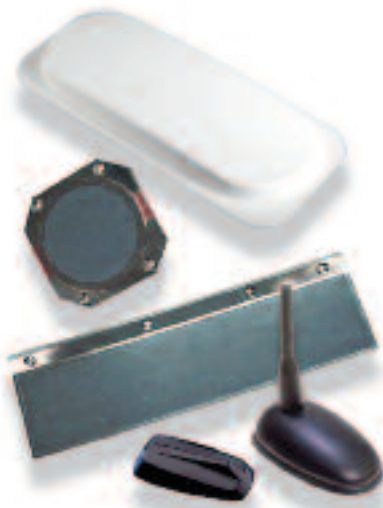
- Satellite radio antennas
 - XM
 - Sirius
- Mobile GPS and Bluetooth antennas
- Multi-band antennas
 - GPS
 - Cellular
 - PCS
 - SDARS

Aerospace & Defense

- Military aviation
- Space launch antennas
- Missiles
- Electronic warfare
- Telemetry

RFID

- Single and dual elements
- Lightweight
- Rugged construction



RFID Antennas

Frequency (MHz)	Part Number	Elements	Polarization	Size (inches)	Weight (lbs.)	Typ. Max. Gain (dBil)	Avg Gain (dBic)
865 - 868	MAANAT0134	Dual	CP	19.6 x 8.8 x 1.6	1.8	5.8	7.9
865 - 868	MAAN-000199-AT0000	Single	CP	8.5 x 8.5 x 1	1	6.2	8
902 - 928	MAANAT0123	Dual	CP	19.6 x 8.8 x 1.6	1.8	6.9	8.9
902 - 928	MAANAT0144	Single	CP	8.5 x 8.5 x 1	1	7.2	9
902 - 928	MAAN-000210-AT0000	Single	Linear	9.6 x 6 x 2	2.5	2.5	N/A
950 - 956	MAANAT0133	Dual	CP	19.6 x 8.8 x 1.6	1.8	7	8.9

GPS Antennas

Frequency (MHz)	Part Number	Types	Gain (dBi)	Size (inches)
1575.42	MAAN000232-ATXXXX ♦	Active	27	34 x 34.7 x 13

SDARS Antennas

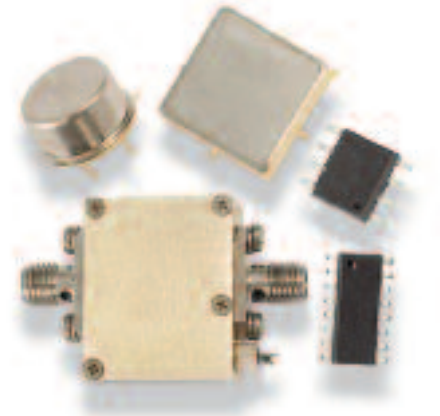
Frequency (MHz)	Part Number	Types	Size (inches)
2332.5 - 2345	MAANIN0050 ♦	XM	3 x 4.5 x 1.56
2320 - 2332.5	MAANIN0055 ♦	Sirius	3 x 4.5 x 1.56

M/A-COM Attenuators



M/A-COM attenuators are used in various applications for automotive and wireless markets. There are serial and parallel logic controlled digital attenuators and voltage variable analog attenuators (VVAs) that range from DC to 20 GHz.

- Cellular infrastructure
- Handset gain control
- Radar systems
- Satellite radios
- Test equipment



Voltage Variable Attenuators

Frequency (MHz)	Part Number	I.L. (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products							
0 - 2000	AT-250 ◆	3.2	12	36	-4	0.020	SOIC-8
0 - 2000	MAAV-007941	3.2	12	36	-4	0.020	SOIC-8
0 - 2000	AT-259 ◆	3.2	12	36	-4	0.020	SOT-143
0 - 2000	MAAVSS0005	3.2	12	36	-4	0.020	SOT-143
0 - 2000	AT-635 ◆	7.2	35	36	-4	0.020	SOIC-14
0 - 2000	MAAVSS0004	7.2	35	36	-4	0.020	SOIC-14
0 - 2500	AT-255 ◆	3.6	25	36	-3	0.025	SOT-25
0 - 2000	MAAVSS0006	3.6	25	36	-3	0.025	SOT-25
5 - 2000	G1*	2.5	25	—	+15	15	TO-8, SMT, SMA
5 - 2000	G2	2.6	23	—	+5	15	TO-8, SMT, SMA
5 - 3000	MA4P274-1225T ◆	1	30	43	—	—	SOT-25
5 - 3000	MA4P7455-1225T	1	30	43	—	—	SOT-25
5 - 3000	MA4P290-1225T ◆	2.8	25	50	—	—	SOT-25
5 - 3000	MADP-007167-12250T	2.8	25	50	—	—	SOT-25
50 - 1000	MAAV-007088-000100	2.8	42	34	—	—	SOW-16
100 - 2000	G30**	2.5	35	—	+15	10	TO-8, SMT, SMA
500 - 2000	AT-109 ◆	2.5	35	25	+5	0.050	SOIC-8
500 - 2000	AT-110 ◆	2.8	30	28	+5	0.300	SOIC-8
500 - 2000	AT-110-2 ◆	2.8	39	28	+5	0.300	SOIC-8
500 - 2000	MAAVSS0008	2.8	39	28	+5	0.300	SOIC-8
500 - 2000	AT-113 ◆	2.7	40	28	+3	0.050	SOIC-8
500 - 2000	MAAV-008022	2.7	40	28	+3	0.050	SOIC-8
500 - 3000	AT-108 ◆	2.5	40	28	+5	0.050	SOIC-8
500 - 3000	MAAVSS0007	2.5	40	32	+5	0.050	SOIC-8
500 - 4000	G40	2.5	25	—	+15	12	TO-8, SMT, SMA
600 - 1200	MA4VAT904-1061T	1	24	49	—	—	SOIC-8
600 - 1200	MA4VAT907-1061T	1	24	49	—	—	SOIC-8
600 - 2000	MA4VAT900-1277T	1	24	40	—	—	3mm PQFN
800 - 1000	MAAV-007089-000100	4.2	35	35	—	30	SOW-16
800 - 1000	MAAV-007092-000100	3.6	38	40	—	30	CSP-8
824 - 960	AT65-0009 ◆	1.7	25	40	—	—	SOT-25
1200 - 2500	MA4VAT2000-1277T	1.2	25	21	—	—	1277
1500 - 2500	MA4VAT2004-1061T	1.4	24	49	—	—	SOIC-8
1500 - 2500	MA4VAT2007-1061T	1.4	24	52	—	—	SOIC-8
1700 - 2000	MAAV-007090-000100	3.5	35	31	—	—	SOW-16
1700 - 2200	MAAV-007091-000100	2.9	33	31	—	30	CSP-8
1800 - 2500	AT-119 ◆	2.4	42	32	+2.25	0.050	SOT-25
1800 - 2500	MAAVSS0001	2.4	42	32	+2.25	0.050	SOT-25

*LG1 Linearizer is compatible with the G1 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

**LG30 Linearizer is compatible with the G30 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

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Digital Attenuators

Frequency (MHz)	Part Number	I.L. (dB)	Step Size (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Package
Die Products						
0 - 2000	MADA2030G ♦	1.9	0.5	15.5	45	Die
0 - 6000	MAATGM0001-DIE ♦	3.5	0.56	35	36	Die
2000 - 20000	MAATGM0004-DIE ♦	4	0.75	23	32	Die
Packaged Products						
0 - 2000	AT-210 ♦	1.5	1	15	50	SOIC-16
0 - 2000	MAATSS0015	1.5	1	15	50	SOIC-16
0 - 2000	AT-220 ♦	1.6	2	30	50	SOIC-16
0 - 2000	MAADSS0009	1.6	2	30	50	SOIC-16
0 - 2000	AT-230 ♦	1.6	4	28	50	SOIC-14
0 - 2000	AT-232	2.5	2	30	50	CR-6
0 - 2000	AT-260 ♦	1.9	1	31	50	SSOP-20
0 - 2000	MAATSS0020	1.9	1	31	50	SSOP-20
0 - 2000	AT-266 ♦	0.3	10	10	50	SOT-25
0 - 2000	MAATSS0018	0.3	10	10	50	SOT-25
0 - 2000	AT-267 ♦	0.3	15	15	50	SOT-25
0 - 2000	MAADSS0008	0.3	15	15	50	SOT-25
0 - 2000	AT-280 ♦	1.5	0.5	15.5	45	SOIC-16
0 - 2000	MAATSS0021	1.5	0.5	15.5	45	SOIC-16
0 - 2000	AT-357 ♦	6.5	1	31	47	C-46
0 - 2000	AT15-0001	7.3	1	31	40	Ceramic
0 - 3000	AT-213	2.5	1	15	50	CR-11
0 - 6000	MAATGM0001 ♦	4	0.56	35	36	5 mm PQFN
20 - 2000	AT-358 ♦	2.7	10	10	35	TO-8-2
100 - 20000	MAATGM0004	4	.75	22	—	4 mm PQFN
400 - 2500	MAATSS0001 ♦	1.9	0.5	15.5	46	QSOP-16 (SSOP-16)
400 - 2500	MAATSS00017	1.9	0.5	15.5	46	QSOP-16 (SSOP-16)
400 - 2500	MAATSS0002 ♦	1.8	1	31	43	QSOP-16 (SSOP-16)
400 - 2500	MAADSS0010	1.8	1	31	43	QSOP-16 (SSOP-16)
500 - 2000	AT-264 ♦	2.2	2	30	47	TSSOP-16
500 - 2000	MAATSS0016	2.2	2	30	47	TSSOP-16
500 - 2500	MAATSS0022	1.75	0.5	15.5	46	MSOP-10
500 - 4000	MAATSS0019	1.6	1	15	47	TSSOP-16
Attenuators with Drivers						
0 - 2000	AT-106	4.6	1	50	46	CR-13
0 - 2000	AT-107	4	0.5	31.5	48	CR-13
0 - 2000	AT-233	2.8	2	30	50	CR-12
0 - 2000	AT-263	3	1	31	48	CR-12
0 - 2000	AT-273	1.9	16	32	48	CR-11
0 - 2000	AT-283	2.9	0.5	15.5	47	CR-12
0 - 2000	AT20-0106	4.6	1	50	46	CR-13
0 - 2000	AT20-0107	3.8	0.5	31.5	48	CR-13
0 - 2000	AT20-0263	3	1	31	48	CR-12
0 - 2000	AT20-0273	1.9	16	32	48	CR-11
0 - 2000	MAAD-007086-000100	4.7	1	50	48	SOW-24
0 - 2000	MAATCC0005	4.2	0.5	31.5	48	SOW-24
0 - 2000	MAATCC0007	3.2	1	31	48	SOW-16
0 - 2000	MAAD-007084-000100	3	0.5	15.5	48	SOW-16
0 - 2400	MAAD-007082-000100	6	1	50	48	CSP-1

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Digital Attenuators (continued)

Frequency (MHz)	Part Number	I.L. (dB)	Step Size (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Package
Attenuators with Drivers						
0 - 2400	MAAD-007080-000100	6	1	50	48	CSP-1
0 - 2500	MAATCC0012	2.7	2	30	48	CSP-1
0 - 2500	MAAD-007079-000100	2.7	2	30	48	CSP-1
0 - 3000	MAAD-007085-000100	2.8	1	15	50	SOW-16
0 - 3000	MAATCC0006	3.1	2	30	50	SO-16
0 - 3000	MAATCC0008	1.7	1	15	50	SO-16
0 - 3000	MAATCC0010	4	1	31	48	CSP-1
0 - 3000	MAATCC0012	3.1	2	30	50	SO-16
0 - 3000	MAAD-007078-000100	3.8	1	31	48	CSP-1
0 - 3500	MAAD-007081-000100	3.2	0.5	15.5	48	CSP-1
0 - 3500	MAATCC0014	3.2	0.5	15.5	48	CSP-1
0 - 4000	MAATCC0009	5.1	0.5	31.5	48	CSP-1
0 - 4000	MAADCC0006	2.5	1	15	48	CSP-1
0 - 4000	MAATCC0011	5.1	0.5	31.5	48	CSP-1
0 - 4000	MAAD-007077-000100	2.5	1	15	48	CSP-1
0 - 6000	MAAD-007083-000100	5.8	1	31	48	CSP-1

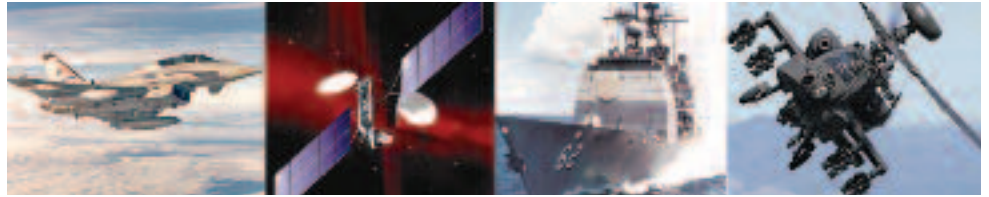
Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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M/A-COM Cables



M/A-COM durable **test cables** have the flexibility and reliability required for testing applications, as well as excellent electrical characteristics. Customer-replaceable interfaces allow a single cable to interconnect a variety of male and female interfaces without degrading the low loss and VSWR of the cable assembly.

Other cables available from M/A-COM:

Instrument test cables

- Protection for your ANA investment

Super flexible coaxial cables

- For interconnecting RF and microwave modules, sub-assemblies and instruments

EW cables

- MIL-qualifies for high performance airborne, shipboard and ground-based applications

Space cables

- Low weight, radiation resistant, long-term stable for launch vehicles and satellites

Full Cable Catalog available.

Request Catalog #4-1773446-8.



Test Cables

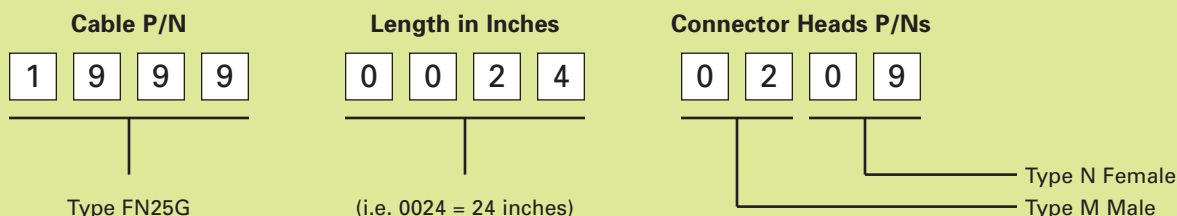
Freq. (GHz)	Part Number	VSWR (Max)	Ins. Loss (dB/ft)	Imped. (Ohms)	Velocity of Prop.	Time Delay (nS/ft)	Cap. (pF/ft)	RF Leakage (dB/ft Max)	Power (Rm Temp.)*	Con. Load (lbs/in)	Bend Radius	Outside Dia. (in min.)	Temp. (deg. C)**
18	FN25G	1.25:1	0.5 + 0.4	50	76%	1.34	27	-90	40W	100	1.25	0.25	-65 to 110
18	FN25GA	1.25:1	0.5 + 0.4	50	76%	1.34	27	-90	40W	Con. Fctry.	1.5	0.35	-65 to 110
18	FN35G	1.25:1	0.5 + 0.4	50	76%	1.34	27	-90	40W	100	1.75	0.35	-65 to 110
18	FE25G	1.25:1	0.5 + 0.4	50	76%	1.34	27	-90	40W	Con. Fctry.	1.25	0.25	-65 to 110
26.5	FN24G	1.40:1	0.5 + 0.52	50	76%	1.34	27	-90	25W	100	1.2	0.24	-65 to 110

*Dependent upon connector style.

**Power handling decreases to 1 Watt maximum at 18 GHz at 110°C during operation.

Ordering Information

Design your own test cable using this simple format. The example below illustrates the part number formulation for a FN25G cable, 24" long with Nf and Nm connectors.



Cables

Cable Type	Part Number
FN25G	1999
FN25G Armored	1998
FN35G	1997
FE25G	1996
FN24G	1985

Connector Heads

Type	On Cable Assy's	For Individual Purchase	
		18 GHz Test Cables	26.5 GHz Test Cables
ETNCm	01	1550-0067	1550-0389
TNCf	08	1550-0165	1550-0390
Nm	02	1550-0068	1550-0392
Nf	09	1550-0166	1550-0393
SMAm	03	1550-0070	1550-0384
SMAf	07	1550-0164	1550-0385
3.5 mm (m)	10	1550-0168	1550-0386
3.5 mm (f)	11	1550-0167	1550-0387
7 mm	04	1550-0069	1550-0391
K/2.92 mm (m)	13	—	1550-0398
K/2.92 mm (f)	14	—	1550-0393
2.4 mm (m)	15	—	1550-0603
2.4 mm (f)	16	—	1550-0602

Accessories

Accessories (for 18 GHz models)	Part Number
Interlink	1600-8207
90° Interlink	1600-5136
Storage Box	9604-0250
Torque Wrench	9604-0251
Pat Wrench	9604-0321
Test Kit	9613-0001

(contains 2 each: ETNCm, SMAm, Nm and 7mm
1 each: Flat and torque wrench)

M/A-COM Ceramic Packages



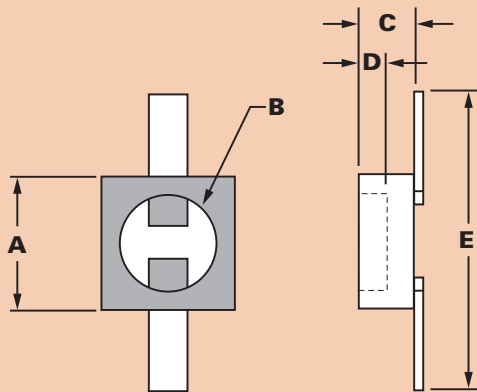
An industry leader in RF and microwave technology, M/A-COM is also an industry leader in [ceramic packages](#) for RF, microwave and optoelectronic devices. M/A-COM manufactures high thermal conductivity, low loss packages for a broad spectrum of advanced semiconductor devices, including:

- RF bipolar transistors
- RF LDMOS transistors
- GaAs FETs and MMICs
- GaN/SiC FETs
- Microwave diodes/varactors
- Hermetic, surface-mount component packages for mixers, LNAs, doublers, etc
- Photodiodes
- LEDs
- Laser diodes
- VCSELs and MEMS
- Both hermetic and non-hermetic packages

Our modern facility is fully equipped with all of the preparation, tooling, firing, brazing, plating, and inspection equipment necessary to produce state-of-the-art custom designs, as well as to execute high volume production runs. Progressive quality concepts are applied at all levels of business, with dedication to continuous process improvement.



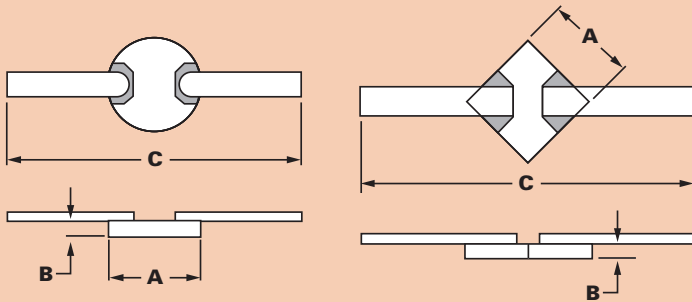
J-Packs



A	B	C	D	E Available lead lengths
.070" Sq."	ø.050"	.030"	.015"	.155"
.070" Sq."	ø.055"	.030"	.015"	.165"
.100" Sq."	ø.055"	.030"	.015"	.400"
.100" Sq."	ø.063"	.030"	.015"	.500"
.100" Sq."	ø.072"	.030"	.015"	.540"

Parts are available in 2, 3, or 4 lead configurations

W-Packs



A	B	C Available lead lengths
ø.053"	.010" or .015"	.270"
ø.100"	.010 or .015"	.290"
.050" Sq.	.010" or .015"	.300"
.070" Sq.	.010" or .015"	.330"
.100" Sq.	.010" or .015"	.400"

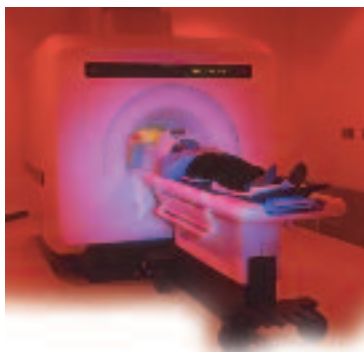
Parts are available in 2, 3, or 4 lead configurations

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Detailed specifications for our standard parts can be found quickly on our web site at www.macom.com by typing the part number into the search box.

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RF and Microwave Diodes: PIN, Schottky, and Varactor Devices

M/A-COM produces one of the widest variety of PIN, Schottky, and varactor diodes in the industry for microwave circuit applications from 1 MHz to 40 GHz. Diodes are manufactured in die form, plastic, ceramic, and metal packaging.

- Broadband and high power switch circuits: silicon and GaAs PIN switch diodes
- Analog and digital attenuator circuits: silicon PIN attenuator diodes
- High power limiter circuits: silicon PIN limiter diodes
- Detector and mixer circuits: GaAs and silicon Schottky diodes
- Multiplier circuits: GaAs and silicon Schottky diodes
- Filter and VCO circuits: GaAs and silicon varactor diodes

Limiter Diodes

- Die series for chip and wire high frequency microwave frequency applications
- Ceramic package series for wave guide, coaxial and surface mount applications

Multiplier Diodes

- Flip chip series for higher frequency millimeter wave applications
- Plastic package series for microwave frequency surface mount applications
- Ceramic package series for waveguide and coaxial circuit higher power applications

Mixer and Detector Diodes

- SURMOUNT™ “0502” style diodes for surface mount high performance applications
- GaAs Flip Chip and GaAs beam lead series for surface mount millimeter frequency applications
- Plastic series for cost effective, surface mount applications
- Ceramic series for microwave frequency surface mount applications

Switch and Attenuator PIN Diodes

- CERMACHIP and OFFSET BOND PAD series for microwave frequency applications
- Plastic series for cost effective, surface mount applications AlGaAs series for low loss, high isolation millimeter frequency applications
- GaAs & silicon flip chip series for surface mount millimeter frequency applications
- SURMOUNT™ “0502” style diodes for surface mount high performance applications
- HIPAX series for high average power surface mount UHF applications
- KILOVOLT series for high peak voltage HF and VHF applications
- HIPAX non-magnetic series for high average power MRI HF & VHF applications

Tuning Diodes

- GaAs constant gamma series for higher frequency and high Q applications
- Plastic packaged silicon hyperabrupt varactor diodes for surface mount applications, including VCOs, tunable filters, and phase shifters



Limiter

Part Number	Junction Capacitance (pf)	Max. Peak Power (W) @ 1_S P.W. 0.1% Duty	Carrier Lifetime (ns)	Voltage Rating (V)	Input P1dB (dBm)	Packages
Die and Packaged Products						
MA4L011 Series	0.13 - 0.24	80	10	15-35	7	Die, Ceramic
MA4L021 Series	0.14 - 0.24	90	10	20-35	8	Die, Ceramic
MA4L022 Series	0.13 - 0.23	90	10	20-35	8	Die, Ceramic
MA4L031 Series	0.14 - 0.21	125	15	30-50	10	Die, Ceramic
MA4L032 Series	0.13 - 0.2	125	15	30-50	11	Die, Ceramic
MA4L062 Series	0.07 - 0.15	200	40	50-75	15	Die, Ceramic
MA4L101 Series	0.15 Max	250	90	100	20	Die, Ceramic
MA4L401 Series	0.3 Max	1000	800	250	30	Die, Ceramic

Multiplier

Standard Part Number Series	Junction Capacitance @Vr=6V (pf)	Breakdown Voltage (Vb)	Carrier Lifetime (ns)	Typical Transition Time (ns)	Package
Discrete Die Products					
MA44621A-134	0.2 - 0.3	20	7	50	Die
MA43543-134	0.2 - 0.55	20	25	60	Die
MA44631A-134	0.3 - 0.5	30	8	70	Die
MA44641A-134	0.4 - 0.6	40	12	90	Die
MA44631C-134	0.7 - 0.9	30	8	70	Die
Ceramic Packaged Products					
MA43543 Series	0.2 - 0.55	20	25	60	
MA43592 Series	0.2 - 0.3	25	27	90	
MA43004 Series	0.45 - 0.85	30	50	150	
MA43000 Series	3.0 - 4.5	85	500	600	
Standard Part Number Series	RoHS Compliant Part Number	Total Capacitance @Vr=6V (pf)	Breakdown Voltage (Vb)	Carrier Lifetime (ns)	Typical Transition Time (ns)
Plastic Packaged Products					
MA44769 Series ♦	MA144769, MAVR-044769 Series	0.8 - 1.2	30	50	150
MA44768 Series ♦	MAVR-044768 Series	1.6 - 2.4	30	225	250
MA44767 Series ♦	MAVR-044767 Series	3 - 4.5	30	500	600

Mixing Detector

Part Number	Junction Capacitance (pf)	Tss (dBm)	Frequency (MHz)	Package
Die and Packaged Products — GaAs				
MA4E1317	0.045	-55	0 - 26000	Flip Chip
MADS-001317-1296AG	0.045	-55	0 - 26000	Flip Chip
MA4E1318	0.045	-55	0 - 26000	Flip Chip
MA4E1319-1	0.045	-55	0 - 26000	Flip Chip
MA4E1319-2	0.045	-55	0 - 26000	Flip Chip
MA4E2160	0.045	-56	1 - 26000	Flip Chip
MA4E2037	0.05	-55	0 - 26000	Beam Lead
MA4E2039	0.05	-55	0 - 26000	Beam Lead
MA4E2040	0.05	-55	0 - 26000	Beam Lead

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Mixing Detector

Part Number	Junction Capacitance (pf)	Tss (dBm)	Frequency (MHz)	Package
Die and Packaged Products — Silicon				
MA4E931Z2-1261A	0.11	-55	0 - 18000	Die
MADS-002054-1296LR	0.15	-55	0 - 18000	Die
MA4E2099-1284	0.16	-53	0 - 18000	Die
MA4E2062 Series	0.4	—	0 - 20000	Die
MADS-002545-1307MG	0.11	-53	1 - 18000	Surmount
MA4E2501L-1290	0.12	-53	0 - 26000	Surmount
MA4E2502 Series	0.12	-53	0 - 26000	Surmount
MA4E2513L-1289	0.12	-53	0 - 26000	Surmount
MA4E2514 Series	0.12	-53	0 - 26000	Surmount
MA4E2532 Series	0.16	-53	0 - 26000	Surmount
MA4E2544L-1282	0.22	-53	0 - 26000	Surmount
MA4E2508 Series	0.24	-53	0 - 26000	Surmount

Standard Part Number Series	RoHS Compliant Part Number	Junction Capacitance (pf)	Total Capacitance (pf)	Tss (dBm)	Frequency (MHz)
Plastic Packaged Products					
MA4E2200 Series ♦	MA4E2200X1*, MADS-002200 Series	0.11	0.25	-55	0 - 4000
MA4E2054 Series ♦	MA4E2054X1*, MADS-002054 Series	0.15	0.3	-50	0 - 4000
	MADS-003000 Series	0.4	0.5	-50	0 - 4000
	MA4E2062, MADS-002062 Series	0.4	0.5	-50	0 - 4000
	MA4E2072, MADS-002072 Series	0.5	0.63	-50	0 - 4000
MA4E1338 Series ♦	MA4E1338X1*, MADS-001338 Series	0.7	1	-47	0 - 4000
MA4E1340 Series ♦	MA4E1340X1*, MADS-001340 Series	0.9	2	-45	0 - 4000
MA4E1339 Series ♦	MA4E1339X1*, MADS-001339 Series	1	1.2	-45	0 - 4000

*Note: The "X" in the above RoHS compliant part numbers varies depending upon the specific part configuration.

Standard Part Number Series	Junction Capacitance (pf)	Total Capacitance (pf)	Tss (dBm)	Frequency (MHz)
Ceramic Packaged Products				
MA40045-137	0.10	0.30	—	0 - 6000
MA40064-119	0.12	0.32	-55	0 - 6000
MA40115-276	0.12	0.32	—	0 - 16000
MA40126-186	0.12	0.32	—	0 - 16000
MA40143-213	0.12	0.32	-50	0 - 10000
MA40147-213	0.12	0.32	-50	0 - 10000
MA40201-119	0.12	0.32	-55	0 - 10000
MA40205-119	0.12	0.32	-55	0 - 10000
MA40215-120	0.12	0.32	-55	0 - 10000
MA40261-186	0.12	0.32	-55	0 - 10000
MA40264-186	0.12	0.32	-55	0 - 10000
MA4E914-276	0.14	0.35	—	0 - 18000
MA4E920-276	0.14	0.35	—	0 - 18000
MA4E185-276	0.2	0.4	—	0 - 12000
MA4E190-276	0.2	0.4	—	0 - 12000
MA4E197-186	0.2	0.4	—	0 - 12000
MA4E926-276	0.2	0.4	—	0 - 18000
MA4E929A-119	0.25	0.45	-55	0 - 18000
MA4E929B-119	0.25	0.45	-55	0 - 18000

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Switch Attenuator

Part Number	Total Capacitance (pF)	Dynamic Resistance (ohms)	Frequency (MHz)	Package
Discrete Die Products — GaAs				
MA4GP907	0.025	4.2	100 - 30000	Flip Chip
Discrete Die Products — AlGaAs				
MA4AGP907	0.025	3	100 - 30000	Flip Chip
MA4AGFCP910	0.018	5.2	100 - 40000	Flip Chip
MA4AGBLP912	0.02	4	100 - 40000	Beam Lead
Discrete Die Products — Silicon				
MADP-042505-130600	0.6	0.6	50 - 2000	Surmount
MADP-042405-130600	0.27	0.8	50 - 4000	Surmount
MA4SPS302	0.4	1	50 - 4000	Surmount
MADP-042305-130600	0.14	1.3	50 - 6000	Surmount
MA4SPS502	0.14	2.4	10 - 18000	Surmount
MA4SPS552	0.06	2.5	50 - 15000	Surmount
MADP-042905-130600	0.06	3.1	50 - 16000	Surmount
MA4SPS422	0.18	3.1	1 - 6000	Surmount
MA4SPS402	0.04	4.5	50 - 18000	Surmount
MADP-064908-131000	0.05	5	50 - 18000	Surmount
MA4SPS421	0.09	6	1 - 10000	Surmount
MA4FCP305	0.05	2.1	100 - 18000	Flip Chip
MA4FCP300	0.025	2.6	100 - 30000	Flip Chip
MA4FCP200	0.02	2.8	100 - 40000	Flip Chip
MA4PBL027	0.030	2.8	100 - 18000	Beam Lead
Ceramic Packaged Products — GaAs				
MA4GP030 Series	0.06	2.0	100 - 18000	Ceramic, Die
MA4GP032 Series	0.12	1.5	100 - 15000	Ceramic, Die
MA4GP022 Series	0.15	1.0	100 - 10000	Ceramic, Die
Ceramic Packaged Products — Silicon				
MA4P203 Series	0.15	1.5	30 - 18000	Ceramic, Die
MA4P303 Series	0.15	1.5	20 - 18000	Ceramic, Die
MA4P202 Series	0.25	2.5	50 - 18000	Ceramic, Die
MA4P604 Series	0.3	1	0.5 - 8000	Ceramic, Die
MA4P606 Series	0.6	0.7	0.5 - 1000	Ceramic, Die
MA4P607 Series	1.3	0.4	0.5 - 500	Ceramic, Die
MA4PK2000 Series	2.7	0.2	0.1 - 500	Ceramic, Die
MA4PK3000 Series	3.2	0.15	0.1 - 500	Ceramic, Die
MA4P504 Series	0.20	0.6	1 - 10000	Ceramic, Die, MELF
MA4P404 Series	0.20	0.8	5 - 10000	Ceramic, Die, MELF
MA4P505 Series	0.35	0.45	1 - 6000	Ceramic, Die, MELF

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Switch Attenuator (continued)

Part Number	Total Capacitance (pF)	Dynamic Resistance (ohms)	Frequency (MHz)	Package
HIPAX/MELF Products				
MA4P1450-1091T	1.4	0.35	1 - 300	MELF
MA4P1250-1072T	0.7	0.5	5 - 500	MELF
MA4P7100 Series	0.7	0.5	1 - 1000	MELF, HIPAX
MA4PH235-1072T	0.8	0.5	50 - 500	MELF
MA4P4000 Series	1.8	0.5	0.1 - 500	MELF, HIPAX
MA4PH237-1072T	1.2	0.6	10 - 300	MELF
MA4P7000 Series	0.4	0.8	1 - 1000	MELF, HIPAX
MA4P4300 Series	1.6	1	0.1 - 500	MELF, HIPAX
MA4PH236-1072T	0.2	3	50 - 1000	MELF
MA4PH238-1072T	0.2	6	10 - 1000	MELF
MA4PH239-1072T	0.5	25	10 - 1000	MELF
MA4P7464F-1072T	0.4	0.5	1 - 500	MELF Non-Magnetic Pkg
MA4P7461F-1072T	0.6	0.5	1 - 500	MELF Non-Magnetic Pkg
MA4P7441F-1091T	1.8	0.5	0.5 - 500	MELF Non-Magnetic Pkg
MA4P7446F-1091T	1.8	0.5	0.5 - 500	MELF Non-Magnetic Pkg
MA4P7470F-1072T	0.4	0.8	0.5 - 1000	MELF Non-Magnetic Pkg
MA4P7452F-1072T	0.4	0.9	0.5 - 1000	MELF Non-Magnetic Pkg

Standard Part Number Series	RoHS Compliant Part Number	Total Capacitance (pF)	Dynamic Resistance (ohms)	Frequency (MHz)
Plastic Packaged Products				
	MADP-008120-12790T	0.13	2.5	5 - 6000
MA4P274 Series ♦	MA4P7455, MADP-007455 Series	0.15	3	5 - 2500
MA4P277 Series ♦	MA4P7437, MADP-007437 Series	0.15	6	5 - 4000
MA4P278 Series ♦	MA4P7438, MADP-007438 Series	0.15	10	1 - 4000
MA4P789 Series ♦	MA4P7433, MADP-007433 Series	0.2	1.5	25 - 4000
MA4P290 Series ♦	MADP-007167 Series	0.2	16	1 - 4000
MA4P275 Series ♦	MA4P7436, MADP-007436 Series	0.8	0.5	25 - 2500
MA4P282 Series ♦	MA4P7447, MADP-007155 Series	1.0	0.6	15 - 2500

Tuning

Part Number	Total Capacitance @ Vr = 4.0V (pF)	Reverse Breakdown Voltage (Vb)	Gamma	Q (Min) @ 50 MHz	Package
Discrete Die Products — GaAs					
MA46H146	0.06	25	1	5000	Flip Chip
MA46H120	0.35	15	1	3000	Flip Chip
MA46585-1209	0.5	18	1	3000	Beam Lead
MA46580-1209	0.5	18	1.25	3000	Beam Lead
Ceramic Packaged Products — GaAs					
MA46600 Series	0.30	30	0.5	8000	
MA46602 Series	0.5	30	0.5	7000	
MA46504 Series	0.6	30	0.5	6000	
MA46603 Series	0.60	30	0.5	6500	
MA46604 Series	0.80	30	0.5	6000	
MA46505 Series	1	30	0.5	5700	
MA46H070 Series	0.6	20	0.75	4500	
MA46H071 Series	1	20	0.75	4500	

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Tuning (continued)

Part Number	Total Capacitance @ Vr = 4.0V (pF)	Reverse Breakdown Voltage (Vb)	Gamma	Q (Min) @ 50 MHz	Package
Ceramic Packaged Products — GaAs					
MA46H072 Series	3	20	0.75	3000	
MA46H073 Series	5	20	0.75	2200	
MA46450 Series	0.5	22	1.0	4000	
MA46451 Series	0.70	22	1.0	4000	
MA46457 Series	2.20	22	1.0	3000	
MA46461 Series	4.7	22	1.0	1500	
MA46470 Series	0.5	22	1.25	4000	
MA46H200 Series	0.6	22	1.25	3000	
MA46471 Series	0.7	22	1.25	4000	
MA46472 Series	1	22	1.25	3000	
MA46H201 Series	1	22	1.25	3000	
MA46473 Series	1.2	22	1.25	3000	
MA46474 Series	1.5	22	1.25	3000	
MA46475 Series	1.8	22	1.25	3000	
MA46476 Series	2	22	1.25	3000	
MA46477 Series	2.2	22	1.25	3000	
MA46H202 Series	3	22	1.25	2000	
MA46479 Series	3.30	22	1.25	2000	
MA46480 Series	3.8	22	1.25	2000	
MA46H203 Series	5	22	1.25	1500	
MA46483 Series	6.8	22	1.25	1500	
MA46485 Series	10	22	1.25	1500	
MA46H204 Series	10	22	1.25	1500	
MA46410 Series	0.5	18	1.5	3000	
MA46H500 Series	0.6	18	1.5	2500	
MA46413 Series	1	18	1.5	2500	
MA46H501 Series	1	18	1.5	2500	
MA46416 Series	1.8	18	1.5	2500	
MA46418 Series	2.7	18	1.5	1800	
MA46420 Series	3.8	18	1.5	1800	
MA46H503 Series	5	18	1.5	1200	
MA46425 Series	10	18	1.5	1200	

Standard Part Number	RoHS Compliant Series	Total Capacitance @ 0.5V (pF)	Breakdown Voltage (Vb)	Gamma	Q (Min) @ 50 MHz
Plactic Packaged Products — Silicon					
MA4ST1350 Series ♦	MAVR-001350 Series	11	12	1	1100
MA4ST350 Series ♦	MAVR-000350 Series	11.8	12	1	400
MA4ST1340 Series ♦	MAVR-001340 Series	18	12	1	1050
MA4ST340 Series ♦	MAVR-000340 Series	18.5	12	1	350
MA4ST1330 Series ♦	MAVR-001330 Series	25	12	1	900
MA4ST330 Series ♦	MAVR-000330 Series	26	12	1	350
MA4ST1320 Series ♦	MAVR-001320 Series	55	12	1	550
MA4ST320 Series ♦	MAVR-000320 Series	58	12	1	300

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Tuning (continued)

Standard Part Number	RoHS Compliant Series	Total Capacitance @ 2.0V (pF)	Breakdown Voltage (Vb)	Gamma	Q (Min) @ 50 MHz
Plastic Packaged Products					
MA4ST250 Series ♦	MAVR-000250 Series	2.7	12	1	450
MA4ST1240 Series ♦	MA4ST1241, MAVR-001240 Series	3.4	12	1	1200
MA4ST240 Series ♦	MAVR-000240 Series	3.5	12	1	450
MA4ST1230 Series ♦	MA4ST1231, MAVR-001230 Series	4.7	12	1	850
MA4ST230 Series ♦	MAVR-000230 Series	5.0	12	1	400
Plastic Packaged Products					
MA4ST083 Series ♦	MAVR-000083 Series	5	12	1.3	450
MA4ST082 Series ♦	MAVR-000082Series	7.3	12	1.3	350
MA4ST081 Series ♦	MAVR-000081 Series	10.1	12	1.3	300
MA4ST080 Series ♦	MAVR-000080 Series	24.8	12	1.3	150
MA4ST079 Series ♦	MAVR-000079 Series	54.1	12	1.3	80
Plastic Packaged Products					
MA45436 Series ♦	MAVR-045436 Series	4.7	30	0.5	1800
MA45438 Series ♦	MAVR-045438 Series	6.8	30	0.5	1600
MA45439 Series ♦	MAVR-045439 Series	8.2	30	0.5	1500
MA45440 Series ♦	MAVR-045440 Series	10	30	0.5	1300
MA4ST401 Series ♦	MAVR-000401 Series	10	22	1	250
MA45441 Series ♦	MAVR-045441 Series	12	30	0.5	1200
MA4ST402 Series ♦	MAVR-000402 Series	12	22	1	250
MA4ST1103-1141T ♦	—	14	22	1.5	350
MA4ST403 Series ♦	MAVR-000403 Series	15	22	1	250
MA4ST404 Series ♦	MAVR-000404 Series	18	22	1	175
MA4ST405 Series ♦	MAVR-000405 Series	22	22	1	175
MA45445 Series ♦	MAVR-045445 Series	27	30	0.5	900
MA4ST406 Series ♦	MAVR-000406 Series	27	22	1	150
MA45446 Series ♦	MAVR-045446 Series	33	30	0.5	750
MA4ST407 Series ♦	MAVR-000407 Series	33	22	1	150
MA4ST408 Series ♦	MAVR-000408 Series	39	22	1	150
MA4ST409 Series ♦	MAVR-000407 Series	47	22	1	150
Plastic Packaged Products					
MA4ST2200 Series ♦	MAVR-002200 Series	0.5	12	1.5	1750
MA4ST2300 Series ♦	MAVR-002300 Series	1.9	12	1.5	1850
MA4ST2400 Series ♦	MAVR-002400 Series	3.3	12	1.5	1450
MA4ST2500 Series ♦	MAVR-002500 Series	4.6	12	1.5	1150
MA4ST2600 Series ♦	MAVR-002600 Series	6.3	12	1.5	1000

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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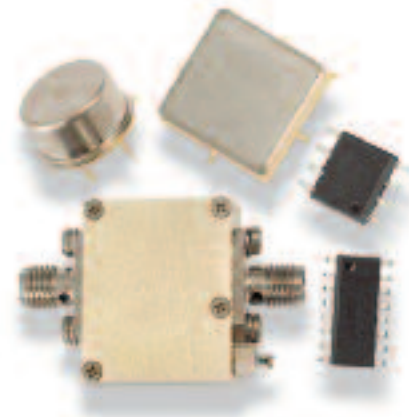
Detailed specifications for our standard parts can be found quickly on our web site at www.macom.com by typing the part number into the search box.

All specifications are subject to change.



M/A-COM drivers are used extensively in wireless infrastructure base stations as well as military and defense applications. Drivers are typically used to translate TTL control voltages for attenuators and switches.

- Cordless and mobile phones
- Cellular base stations/wireless infrastructure
- Satellite radio
- GPS & DAB
- 2.4 GHz and 5.0 GHz WLAN
- VSAT
- CATV and broadband
- Bluetooth
- Fixed Wireless Access (FWA)
- Instrumentation
- Commercial and military radar
- Radar systems
- Test equipment



Drivers

Vcc (V)	Part Number	Type	Rise Time/Fall Time (ns)	Vee (-V)	Package
Die Products					
5	MADRMA-0001 ◆	Quad	500	-5	Die
Packaged Products					
5	MADR007097-000100	Single	35	-7	SO-8
5	MADRCC0004	Quad	500	-5	SO-16
5	MADR-007098-000100	PIN	—	—	SOW-16
5	MADRCC0005	Single	500	-5	SO-8
5	MADRCC0006	Single	500	-5	SO-8
5	MADRCC0007	Quad	500	-5	SO-16
5	MADRMA-0002	Quad	500	-5	QFN-20, Tin Plating
5	MADR-007131-000100	Dual Pin Driver	—	—	CSP-9
5	MADR-007690-DR0002 ◆	Quad	500	-5	QFN-20, Tin-Lead Plating
15	LG1 ◆	PIN	30000	-15	TO-8, SMT, SMA
15	LG30 ◆	PIN	2000	-15	TO-8, SMT, SMA

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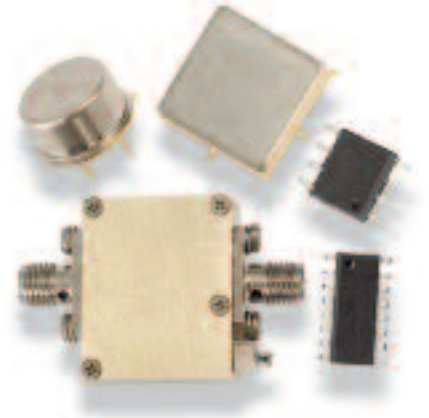
M/A-COM Frequency Doublers



Frequency Doublers

M/A-COM frequency doublers are a specialized class of broadband mixers and are used in a variety of communications applications.

- Surface mount, connectorized and drop-in packaging available for standard components
- Multi-octave input frequency coverage in the range of 5 MHz -12 GHz high performance applications



Frequency Doublers

Input Frequency (MHz)	Part Number	VSWR (ratio)	Input Power (dBm)	Conversion Loss (dB)	Package
Packaged Products					
5 - 2400	FD25 ◆	1.5:1	10	11.5	TO-8
5 - 2400	FD25C ◆	1.5:1	10	11.5	SMA
5 - 2400	FD25E ◆	1.5:1	10	11.5	FP
5 - 2400	FD25H ◆	1.5:1	23	12	TO-8
5 - 2400	FD25HC ◆	1.5:1	23	12	SMA
5 - 2400	SFD25 ◆	1.5:1	10	11.5	SMT
5 - 2400	SFD25H ◆	1.5:1	23	12	SMT
5 - 2400	FMS-109 ◆	1.5:1	10	11	SMT
10 - 750	FM-105 ◆	2.0:1	13	14.5	Relay Header
10 - 2400	CSFD25 ◆	2.0:1	10	11.5	SMT
10 - 2400	CSFD25H ◆	2.0:1	23	12	SMT
50 - 3300	CSFD26 ◆	2.0:1	10	12.5	SMT
50 - 3300	FD26 ◆	2.0:1	10	13	TO-8
50 - 3300	FD26C ◆	2.0:1	10	13	SMA
50 - 3300	FD26E ◆	2.0:1	10	13	FP
50 - 3300	SFD26 ◆	2.0:1	10	13	SMT
75 - 1500	FM-104 ◆	2.5:1	13	12	FP
200 - 3000	FM-106 ◆	2.0:1	13	13	FP
2000 - 9000	FD93 ◆	1.5:1	12	12	Hermetic Module
2000 - 9000	FD93C ◆	1.5:1	12	12	SMA
2000 - 9000	FD93H ◆	1.5:1	19	12	Hermetic Module
2000 - 9000	FD93HC ◆	1.5:1	19	12	SMA
3000 - 12000	FDZ5013 ◆	2.0:1	13	12	Hermetic Module
3000 - 12000	FDZ5013C ◆	2.0:1	13	12	SM

Note: Part numbers are RoHS compliant. ◆ indicates non-RoHS compliant.

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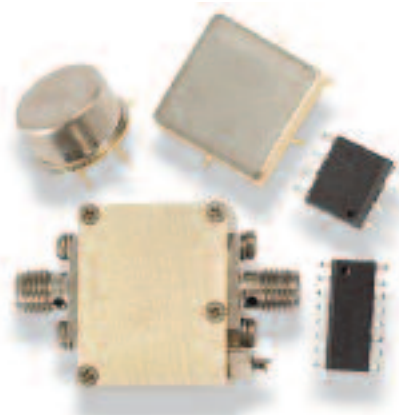
Detailed specifications for our standard parts can be found quickly on our web site at www.macom.com by typing the part number into the search box.

All specifications are subject to change.

M/A-COM Limiters



M/A-COM offers a complete line of RF and Microwave **limiters**, limiting amplifiers and LNA/limiters up to 18 GHz. M/A-COM limiters and limiting amplifiers use the latest thin-film hybrid manufacturing techniques to obtain the highest levels of performance, repeatability, reliability and cost-effectiveness. These products use the latest technology available in the industry for silicon and GaAs MMICs, silicon bipolar, and GaAs FET devices.



Limiting Amplifiers

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Max. Limiting (dBm)	VSWR In/Out	Voltage (Volts)	Current (mA)	Package
Packaged Products									
10 - 500	SMLA88	16.5	6	17	20.5	1.7	15	89	TO-8, SMT, SMA
10 - 1000	LA17	11.5	5.8	10	15	1.7	15	55	TO-8, SMT, SMA
50 - 500	AL7	13	5	-1.5	0.5	1.5	15	54	TO-8, SMT, SMA
50 - 500	LA7	12.5	7	12	15.5	1.5	15	54	TO-8, SMT, SMA
1000 - 4000	LA45	11.5	8	14	15.5	1.7	15	110	TO-8, SMT, SMA
1000 - 4000	LA45-1	14	7.5	17	18.5	1.8	15	110	TO-8, SMT, SMA

LNA with Integrated Limiter

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Input IP3 (dBm)	Output IP3 (dBm)	Sat. P Out (dBm)	Package
Die Products								
8500 - 12000	MA01502D	14	2.7	20	11	25	–	Die
8500 - 12000	MA01503D	19	2.7	20	6	25	–	Die

Package Limiters

Frequency (MHz)	Part Number	I.L. (dB)	Avg. Power (W)	Peak Power (W)	Leakage (mw)	Recovery Time (ns)	Package
Packaged Products							
1000 - 2000	2690-1001 ◆	0.7	1	100	75	100	Coax
1000 - 2000	2690-1003 ◆	0.9	3	1000	100	1000	Coax
2000 - 8000	2690-1005 ◆	1.1	1	100	50	100	Coax
2000 - 8000	2690-1007 ◆	1.3	3	1000	100	1000	Coax
2000 - 18000	2690-1013 ◆	2	1	100	50	100	Coax
2000 - 18000	2690-1014 ◆	2.2	2	500	75	250	Coax
2000 - 18000	2690-1015 ◆	2.3	3	1000	100	1000	Coax
8000 - 18000	2690-1009 ◆	1.8	1	100	50	100	Coax
8000 - 18000	2690-1011 ◆	2.3	3	1000	100	1000	Coax

Signal Limiters

Frequency (MHz)	Part Number	I.L. (dB)	Limiting Level (dB)	Input VSWR	Output VSWR	Voltage (Volts)	Current (mA)	Package
Packaged Products								
5 - 3000	L1	3	4	1.7	1.9	+15	7	TO-8, SMT, SMA
50 - 4000	L42	4	4.5	1.7	2	+15	7	TO-8, SMT, SMA

Aerospace and Defense Receiver Protectors

Band/Frequency	Part Number	Application/ Type	Protection Capability	Drive	Insertion Loss	Leakage	Recovery Time
Packaged Products							
C-Band - 5.2-5.8 GHz	MALI-007213-0000000 ◆	Military shipborne radar, WG	1.2kW pk, 30W avg.	Quasi-passive	0.5 dB	50mW flat, 500mW spike	500 ns
Ka-Band - 33.8-34.4 GHz	MALI-007214-0000000 ◆	Military airborne radar, WG	130W pk, 15W avg.	Active	1.3 dB	15mW flat, 15mW spike	150 ns
Ka-Band - 34.2-35.3 GHz	MALI-008636-0000000	Military airborne radar, WG	4W CW.	Passive	1.2 dB	20mW flat, 80mW spike	150 ns
Ka-Band - 35.0-35.6 GHz	Contact Factory ◆	Military airborne radar, WG	30W pk, 5W avg.	Quasi-passive	1.2 dB	30mW flat, 250mW pk	75 ns
S-Band - 2-4 GHz	MALIML0035	Phase array radar Drop-in	50W pk	Passive	0.42 dB	100mW flat	3 ns
S-Band - 2.7-2.9 GHz	MALI-008799-0000000 ◆	Commercial land based radar, WG	4.0kW pk, 400W avg.	Quasi-passive	0.5 dB	40mW flat, 500mW spike	800 ns
X-Band - 9.0-9.6 GHz	MALI-007212-0000000 ◆	Military airborne radar, WG	5.0kW pk, 150W avg.	Quasi-passive	1.0 dB	500W flat, 500mW spike	1.0 us
X-Band - 9.1-9.5 GHz	MALIML0028 ◆	Military airborne radar, WG	500W pk, 35W avg.	Quasi-passive	1.0 dB	45mW flat, 450mW spike	1.0 us
X-Band - 9.4-10.0 GHz	Contact Factory ◆	Military shipborne radar, WG	2.0kW pk, 150W avg.	Quasi-active	1.0 dB	20mW flat, 50mW spike	200 ns

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M/A-COM Mixers and Modulators



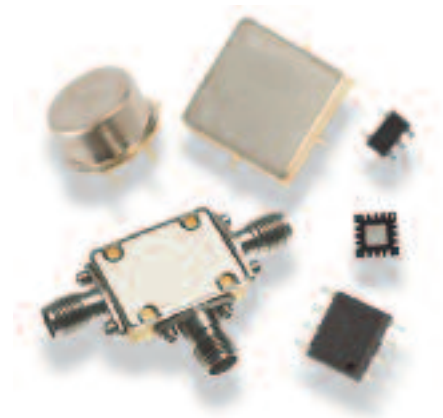
M/A-COM mixers and modulators are widely used in aerospace and defense, wireless and broadband communications applications. M/A-COM offers a variety of connectorized, flat pack, drop-in and surface mount packages with a broad range of operating frequency ranges and performance specifications for these markets.

Mixers

- Double and triple balanced designs
- Variety of technologies
 - Hybrid assemblies using Schottky quad diodes
 - GaAs pHEMT
 - Si HMIC
- Products available in subsets of the frequency range
 - RF/LO: 50 KHz - 24 GHz
 - IF: DC - 8 GHz

Modulators

- I/Q mod/demod versions available
- Products available in subsets of the 9 - 960 MHz frequency range
- Surface mount packaging for maximum performance



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IQ Modulators

Frequency RF/LO (MHz)	Frequency IQ (MHz)	Part Number	LO Carrier Suppression (dBc)	SSB Rejection (dBc)	Package
Packaged Products					
850 - 960	0 - 0	MA4IQP900L-1291T ◆	34	35	6 mm PFQN
850 - 960	0 - 0	MA4IQP900M-1291 ◆	50	40	6 mm PFQN
850 - 960	0 - 0	MA4IQP900H-1291T ◆	26	30	6 mm PFQN
850 - 960	0 - 0	MAMO-000900-1291HT	34	36	6 mm PQFN
850 - 960	0 - 0	MAMO-000900-1291LT	42	38	6 mm PQFN
850 - 960	0 - 0	MAMO-000900-1291MT	40	42	6 mm PFQN
921 - 960	0.001 - 0.27	MAMO-007252-IN2960 ◆	27/34	55	SM-28

Demodulators

Frequency Fmin (MHz)	Fmax (MHz)	Part Number	Conversion Loss (dB)	Amplitude Unbalance (dB)	Phase Unbalance (deg)	Harmonic 3X I/Q (dBc)	Package
Packaged Products							
70	90	MAAD-007251 ◆					6 mm PFQN
850	960	MA4IQP900L-1291T ◆	12.6	0.09	3		6 mm PFQN
850	960	MA4IQP900M-1291 ◆	13	0.12	0.5	70	6 mm PFQN
850	960	MA4IQP900H-1291T ◆	12.5	0.2	2		6 mm PFQN
850	960	MAMO-000900-1291HT	12	.05	1	68	6 mm PQFN
850	960	MAMO-000900-1291LT	12.2	.06	1	58	6 mm PQFN
850	960	MAMO-000900-1291MT	12	0.05	0.5		6 mm PFQN

Mixers: Space Products

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Package
Packaged Products						
0.5 - 500	0.5 - 500	MD20-0016-S	7	35	1	FP-2
5 - 1500	5 - 1500	MD20-0018-S	9	30	1	FP-2
10 - 3000	10 - 3000	MD20-0017-S	8	25	6	FP-2

Up/Down Converters

Frequency (MHz)	Part Number	Gain (dB)	NF (dB)	Input IP3 (dBm)	Carrier Suppression (dBc)	I _{dd} (ma)	Package
Packaged Products							
869	MADCSM0001 ◆	10	8	10	—	10	PQFN, 4 mm, 20 Lead
869	MADCSM0011 ◆	12.5	7.5	8	—	12	PQFN, 3 mm, 12 Lead
1500	SA65-0003 ◆	8	1.5	25	—	45	QSOP-16
1800	MADCSM0012 ◆	25	2.3	-9	—	25	PQFN, 3 mm, 16 Lead

Vector Modulators

Part Number	I.L. (dB)	Phase Shift (Degrees)	Amplitude Flatness (dB)	Dev. from Linear Phase (deg)	Return Loss (-dB)	Output IP3 (dBm)	Package
Packaged Products							
MAMDCC0002 ◆	11.5	360	0.1	0.2	17	41	CSP-6
MAMDCC0005 ◆	—	360	0.05	0.75	18	—	CSP-6
SA90-0001 ◆	15	360	0.25	0.5	17	—	CSP-5

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Mixers

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Die Products							
20000 - 26000	0 - 6000	MA4EX2401	13	8	30	10.5	CHIP
Packaged Products							
— - 960	820 - 915	MAMXES0072	7	7	40	5	SM-89
0.05 - 200	0 - 200	M6D-50 ♦	7	7	50	0	RH
0.05 - 200	0 - 200	SM6D ♦	7	7	45	—	SMT
0.2 - 200	0 - 200	MAC-50 ♦	7	6	25	1	TO-52
0.2 - 200	0.2 - 200	MDS-222 ♦	7	7.5	35	2	SF-1
0.4 - 500	0 - 500	M6V, SM6V ♦	7	6.5	47	0	TO-5, SMT
0.5 - 500	0 - 500	ELCM-1	7	6.2	27	1	SM-89
0.5 - 500	0 - 500	ELCM-1H	17	7.2	35	14	SM-87
0.5 - 500	0 - 500	EMRS-1	7	6.2	27	1	SM-1
0.5 - 500	0 - 500	M9BC ♦	17	7	52	8	RH
0.5 - 500	0 - 500	MAMXES0022	7	6.5	30	1	SM-134
0.5 - 500	0 - 500	MD-124 ♦	7	7	25	2	FP-2
1 - 400	0 - 400	M9E ♦	27	7	40	20	RH
1 - 500	0 - 500	MD-161 ♦	13	8	25	10	FP-2
1 - 1000	0 - 1000	ESMD-C1	7	7.5	45	1	SM-2
1 - 1000	1 - 1000	MAMXES0028 ♦	7	7.5	30	1	SM-134
1 - 1500	1 - 1000	MD-160 ♦	13	9	25	—	RH-3
1 - 3400	1 - 2000	CSM4T	10	8	35	7	SMT
1 - 3400	1 - 2000	CSM4T17	17	8	35	14	SMT
1 - 3400	1 - 2000	M4T ♦, SM4T	10	8	35	6	FP, SMT
1 - 3400	1 - 2000	M4TH, SM4TH ♦	23	8	35	17	FP, SMT
1 - 3400	1 - 2000	M8T, M8TC ♦	10	7	38	7	TO-8, SMA
1 - 3400	1 - 2000	M8TH, M8THC ♦	23	7.5	36	17	TO-8, SMA
1 - 3400	1 - 2000	SM4T17	17	8	35	13	SMT
1 - 3500	1 - 3500	MD-189 ♦	23	8	35	20	FP-2
1 - 3500	1 - 3500	MDC-169 ♦	10	10	35	7	C-7
1 - 3500	1 - 3500	MD-169 ♦	10	10	35	7	FP-2
1 - 3500	5 - 1500	MDS-169v	10	8	35	7	SF-1
1 - 3500	1 - 3500	MDS-189 ♦	23	8	35	20	SF-1
1 - 4000	5 - 1500	MD-179 ♦	7	10.5	35	5	FP-2
1 - 4000	5 - 1500	MDC-179 ♦	7	10.5	35	5	C-7
2 - 500	0 - 500	ELCM-1MH	13	6	30	9	SM-89
5 - 500	0 - 500	M6E-50v	7	7.5	43	—	RH
5 - 500	0 - 500	MAC-51 ♦	7	7	25	2	TO-5-2
5 - 500	0 - 500	MD-108 ♦	7	9	35	2.5	RH-3
5 - 750	0 - 500	SM6EH ♦	20	6	45	13	SMT
5 - 750	0 - 500	M6EHv	20	6	47	13	RH
5 - 1000	0 - 1000	ELCM-2	7	7	25	1	SM-89
5 - 1000	0 - 1000	MAMXES0115	7	7	25	1	SM-89
5 - 1000	0 - 1000	MD-113 ♦	7	8	25	0	FP
5 - 1000	0 - 1000	EMRS-2	7	7	25	1	SM-1
5 - 1500	0 - 1000	ELCM-5	7	7.5	30	1	SM-87
5 - 1500	0 - 1000	EMRS-5MH	13	9	30	7.5	SM-1
5 - 1500	0 - 1000	MD-158 ♦	7	9	20	1	FP
5 - 1900	5 - 1000	ELCM-11X	7	7.4	27	1	SM-87
5 - 1900	5 - 1000	MAMXES0041 ♦	7	7.4	30	1	SM-134
5 - 2500	5 - 1500	EMRS-25MH	13	7.3	30	9	SM-1

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Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
5 - 2500	5 - 1500	ELCM-25MH	13	6.5	30	13	SM-2
10 - 500	10 - 500	MDS-223 ♦	7	7	40	2.5	SF-1
10 - 1000	0 - 600	M2E, SM2E, M2EC ♦	20	8	33	—	TO-8, SMT, SMA
10 - 1200	0 - 1000	M6R ♦	7	8	40	0	TO-5
10 - 1500	0 - 800	M2A, M2AC ♦	7	7.5	40	0	TO-8, SMA
10 - 1500	0 - 1000	M4A, SM4A ♦	7	7.5	35	0	FP, SMT
10 - 1500	0 - 1000	M4B, SM4B ♦	13	7.5	35	7	FP, SMT
10 - 1500	0 - 600	M9H, M9HC ♦	20	8	29	15	TO-8, SMA
10 - 1500	10 - 1500	MD-148 ♦	10	6	40	5	FP
10 - 1500	10 - 1500	MD-149 ♦	7	7.5	40	0	FP
10 - 1500	10 - 1500	MDS-148 ♦	10	6	40	5	SMT
10 - 1500	10 - 1500	MDS-149 ♦	7	7.5	40	0	SMT
10 - 1600	0 - 800	M2B, M2BC ♦	13	7.5	43	7	TO-8, SMA
10 - 2000	10 - 800	ESMD-C15	10	6.5	30	5	SM-2
10 - 2400	1 - 1000	M2T, M2TC ♦	13	8	40	11	TO-8, SMA
50 - 4800	50 - 3000	CSM5Tv	10	7.2	35	7	SMT
50 - 4800	50 - 3000	CSM5T17 ♦	17	7.8	33	14	SMT
50 - 4800	50 - 3000	CSM5THv	23	7	35	17	SMT
50 - 5000	50 - 3000	M5Tv	10	8	32	7	FP
50 - 5000	50 - 3000	SM5T ♦	10	7.5	32	7	SMT
50 - 5000	50 - 3000	SM5T17 ♦	17	7.5	32	13	SMT
50 - 5000	50 - 3000	SM5TH ♦	23	7.7	32	17	SMT
80 - 2500	0 - 1000	ESMD-C50H	17	7.3	28.9	14	SM-2
80 - 2500	0 - 1000	MAMXES0117	17	7.3	29	14	SM-2
80 - 2500	0 - 1000	ESMD-C50L	10	7.7	30	5	SM-2
80 - 2500	0 - 1000	ESMD-C50M	13	7.4	29.1	8	SM-2
300 - 5000	0.1 - 3000	MD-154 ♦	10	10	11	7	FP
350 - 2000	0 - 400	EMRS-11F	7	6.8	25	1	SM-1
500 - 9000	10 - 2000	MDC-164 ♦	13	6.5	17	8	SMA
500 - 19000	30 - 5000	M87, M87C ♦	13	9	24	8	Minpac, SMA
600 - 3000	0 - 1000	MD-156 ♦	7	9	20	0	FP
700 - 1000	10 - 150	MD22-0002-MUC	5	—	22	8	SM-41
700 - 1000	0 - 400	MA4EX900L-1226T ♦	5	6.5	26	1	MSOP-8
700 - 1200	0 - 400	MA4EX950H-1225T ♦	15	6.6	27.5	8.3	SOT-25
700 - 1200	0 - 400	MA4EX950L-1225T ♦	5	6.5	28	1.5	SOT-25
700 - 1200	0 - 400	MA4EX950M-1225T ♦	10	7	26	4.3	SOT-25
700 - 1400	0 - 400	MAMX-000900-1061LT	7	7	37	14	SOIC-8
700 - 1400	0 - 400	EMD40-900L	17	9	28	2.5	SOIC-8
700 - 2000	0 - 300	MD-614 ♦	7	8	25	0	FP
800 - 1000	1 - 150	CSM11-13 ♦	13	7.5	35	9	SMT
800 - 1000	0 - 100	MD54-0004 ♦	13	7.5	38	21	SOIC-8
800 - 1000	0 - 100	MAMXSS0011	13	7.5	38	21	SOIC-8
800 - 1000	0 - 200	MD54-0005 ♦	5	8	35	15	SOT-25
800 - 1000	0 - 200	MAMXSS0012	5	8	35	15	SOT-25
800 - 1000	170	MD57-0001 ♦	-5	9.3	28	14	SOT-26
800 - 1000	170	MAMX-008611	-5	9.3	28	14	SOT-26
800 - 2400	0 - 1500	M4G, SM4G ♦	7	7.5	32	0	FP, SMT
800 - 3500	0 - 1500	M2G, M2GC ♦	7	8	28	0	TO-8, SMA
810 - 1000	10 - 100	EFM-900	13	8.5	22	22	SM-108

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Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
850 - 1050	0 - 200	MA4EXP950H-1277T ♦	15	8.3	55	12.7	MLP 3 mm
850 - 1050	0 - 400	MA4EXP950L-1277T ♦	5	8.5	62	4.3	MLP 3 mm
850 - 1050	0 - 400	MA4EXP950M-1277T ♦	10	8.2	62	8.1	MLP 3 mm
880 - 915	150 - 170	EMRS-6HX1	17	5.5	30	13	SM-1
880 - 915	150 - 170	MAMXES0120	17	5.5	30	17	SM-1
925 - 1880	45 - 95	EMRS-6X1	7	9.5	30	7	SM-1
925 - 1880	45 - 95	MAMXES0118	7	9.5	35	7	SM-1
1000 - 6000	10 - 2000	MDC-163 ♦	0	7	10	-2	SMA
1000 - 7000	10 - 2000	MDC-162 ♦	13	6	15	8	SMA
1000 - 18000	0 - 500	DM1-18A ♦	7	6	22	3	SMA
1000 - 18000	30 - 5000	M83, M83C ♦	13	7.5	25	6	Minpac, SMA
1000 - 18000	1000 - 8000	M88, M88C ♦	13	8	28	7	Minpac, SMA
1000 - 18000	1000 - 8000	M89, M89C ♦	10	8	28	4	Minpac, SMA
1300 - 1900	0 - 500	MA4EX180H-1225T ♦	15	6.5	27	8.5	SOT-25
1300 - 1900	0 - 500	MA4EX180M-1225T ♦	10	5.5	17	5	SOT-25
1400 - 2000	0 - 400	EMD40-1800L	7	7.9	29	1	SOIC-8
1400 - 2100	0 - 500	MD54-0006 ♦	5	8	28	12	SOT-25
1400 - 2100	0 - 500	MAMXSS0013	5	8	28	12	SOT-25
1400 - 2500	0 - 400	EMD40-2400L	7	8	29	1	SOIC-8
1500 - 2200	160 - 390	CSM2N-17	17	7.3	43	14	SMT
1700 - 2000	0 - 200	MD54-0003 ♦	13	8.5	27	21	SOIC-8
1700 - 2000	0 - 200	MAMXSS0010	13	8	28	21	SOIC-8
1700 - 2200	100 - 400	MD57-0002 ♦	0	8.5	18	15	SOT-26
1700 - 2200	0 - 400	MA4EXP190H-1277T ♦	15	8.4	48	11.3	MLP 3 mm
1700 - 2300	0 - 500	MA4EX190H-1225T ♦	15	6.6	30	10.5	SOT-25
1700 - 2300	0 - 500	MA4EX190L-1225T ♦	5	6.1	25	2	SOT-25
1700 - 2500	0 - 500	MA4EX240H-1225T ♦	15	5.4	17	8.5	SOT-25
1700 - 2500	0 - 400	MA4EX240L-1225T ♦	5	7	17.5	1	SOT-25
1700 - 2500	0 - 500	MA4EX240M-1225T ♦	10	5.5	17	5.3	SOT-25
1700 - 2500	0 - 500	MAMX-000240-1225MT	10	5.5	17	5.3	SOT-25
1800 - 2000	10 - 150	CSM12-13 ♦	13	6.7	30	8	SMT
1800 - 10000	0 - 1000	MY84, MY84C ♦	9	6.5	39	4	Versapac, SMA
1850 - 1980	100 - 500	EFM-1900 ♦	13	7.5	19	24	SM-106
1900 - 2200	160 - 390	CSM2-17	17	8	40	14	SMT
2000 - 10000	0 - 2000	MC4110 ♦	10	6.2	22	3	Open Carrier
2000 - 18000	30 - 5000	MY82, MY82C ♦	13	7.5	20	6	Versapac, SMA
2000 - 18000	0 - 1000	MY85, MY85C ♦	7	8	35	1	Versapac, SMA
2000 - 18000	1000 - 8000	MY88, MY88C ♦	13	8	28	7	Versapac, SMA
2000 - 18000	1000 - 8000	MY89, MY89C ♦	10	8	28	4	Versapac, SMA
2000 - 18000	30 - 4000	MY93, MY93C ♦	10	8	29	4	Versapac, SMA
2000 - 18000	2000 - 18000	M50A, M50AC ♦	10	8	26	5	Minpac, SMA
2000 - 18000	0 - 1000	M85, M85C ♦	7	8	35	1	Minpac, SMA
2000 - 18000	2000 - 8000	M88H, M88HC ♦	21	8	28	17	Minpac, SMA
2000 - 18000	30 - 4000	M93, M93C ♦	10	8	29	4	Minpac, SMA
2000 - 18000	1000 - 8000	MZ8810, MZ8810C ♦	10	7.5	25	6	Versapac, SMA
2000 - 18000	1000 - 8000	MZ8813, MZ8813C ♦	13	7	25	8	Versapac, SMA
2000 - 18000	30 - 5000	MZ9310, MZ9310C ♦	10	7.5	23	6	Versapac, SMA
2000 - 18000	30 - 5000	MZ9313, MZ9313C ♦	13	7	24	8	Versapac, SMA

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Mixers (continued)

Frequency (RF/LO) (MHz)	Frequency (IF) (MHz)	Part Number	LO Drive (dBm)	Conversion Loss (dB)	Isol. (LO/RF) (dB)	Input P1dB (dBm)	Package
Packaged Products							
2000 - 24000	100 - 5000	MZ5210, MZ5210C ◆	10	9	20	4	Versapac, SMA
2000 - 24000	100 - 5000	MZ5210, MZ5210C ◆	10	9	20	4	Versapac, SMA
2000 - 24000	1000 - 15000	M51, M51C ◆	10	8	25	5	Minpac, SMA
2000 - 24000	100 - 5000	M52, M52C ◆	10	8	22	5	Minpac, SMA
2000 - 24000	1000 - 15000	MY51, MY51C ◆	10	8	25	5	Versapac, SMA
2000 - 24000	100 - 5000	MY52, MY52C ◆	10	8	22	5	Versapac, SMA
2000 - 26000	100 - 6000	M53, M53C ◆	10	8	22	5	Minpac, SMA
2000 - 26000	1000 - 15000	M50, M50C ◆	10	8	26	5	Minpac, SMA
2000 - 26000	1000 - 15000	MY50, MY50C ◆	10	8	26	5	Versapac, SMA
2000 - 26000	1000 - 12000	MY50A, MY50AC ◆	10	8	26	5	Versapac, SMA
2100 - 2700	0 - 300	MD54-0007 ◆	13	8	25	18	SOT-25
2110 - 2170	100 - 500	EFM-2100 ◆	13	8.5	16	22	SM-106
2110 - 2170	134 - 246	MAMXES0050 ◆	7	10	22	1	SM-87
2300 - 2800	0 - 200	MA4EXP240L-1277T ◆	5	8.3	51	4.8	MLP 3 mm sq.
2300 - 2800	0 - 500	MAMX-090240-1225MT	15	9	54	9.4	SOT-25
2400 - 6000	0 - 2000	M8H-7, M8HC-7 ◆	7	6	40	0	TO-8, SMA
2500 - 5500	0 - 1500	M63, M63C ◆	9	5.5	40	2	Minpac, SMA
2500 - 6500	0 - 1500	M63H, M63HC ◆	20	6	37	14	Minpac, SMA
2500 - 6500	0 - 1500	MY63H, MY63HC ◆	20	7.5	26	14	Versapac, SMA
3000 - 4000	0 - 1050	MA4EX370H-1225T ◆	15	6.8	27.5	8	SOT-25
3000 - 4000	0 - 1050	MA4EX370L-1225T ◆	5	8.5	14	2	SOT-25
3000 - 4000	0 - 1050	MA4EX370M-1225T ◆	10	6.3	27	5	SOT-26
3500 - 4500	0 - 1000	MA4EXP400H-1277T ◆	15	7.7	44	13	MLP 3 mm sq.
3500 - 18000	0 - 3000	M86, M86C ◆	7	7	34	3	Minpac, SMA
3700 - 4200	0 - 2000	M8H-3, M8HC-3 ◆	7	5	40	0	TO-8, SMA
4000 - 18000	0 - 3000	M80, M80C ◆	7	6.5	34	3	Minipac, SMA
4000 - 20000	0 - 4000	MC4520 ◆	20	7	30	11	Open Carrier
4200 - 6000	0 - 2000	MA4EX600H-1225T ◆	15	5.8	28	6.9	SOT-25
4200 - 6000	0 - 2000	MA4EX600L-1225T ◆	5	6.4	26	0.3	SOT-25
4200 - 6000	0 - 2000	MA4EX600M-1225T ◆	10	6.5	27	2.7	SOT-25
4500 - 9500	0 - 2000	M76, M76C ◆	10	6	35	3	Minpac, SMA
4500 - 9500	0 - 2000	M76H, M76HC ◆	20	7	35	15	Minpac, SMA
4500 - 9500	0 - 2000	MY76, MY76C ◆	10	6	35	3	Versapac, SMA
4500 - 9500	0 - 2000	MY76H, MY76HC ◆	20	7	35	15	Versapac, SMA
4700 - 6000	0 - 1050	MA4EX580L-1225T ◆	5	8.5	23	1.5	SOT-25
5000 - 18000	0 - 3000	M79, M79C ◆	10	7	32	4	Minpac, SMA
5000 - 18000	0 - 3000	M79H, M79HC ◆	20	7.5	33	15	Minpac, SMA
5600 - 6000	2300 - 2700	MA4EX585L-1225T ◆	5	8.3	28	1.1	SOT-25
6000 - 14000	0 - 2000	M14A ◆	7	6.5	32	2	SMA
6000 - 18000	0 - 3000	MZ7407, MZ7407C ◆	7	6.5	34	3	Versapac, SMA
6000 - 18000	0 - 3000	MZ7410, MZ7410C ◆	10	6.5	34	4	Versapac, SMA
6000 - 18000	0 - 3000	MZ7420, MZ7420C ◆	20	7.5	33	15	Versapac, SMA
7000 - 18000	0 - 3000	M74, M74C ◆	10	6.5	35	4	Minpac, SMA
8000 - 12500	0 - 2500	M77, M77C ◆	10	5.5	35	4	Minpac, SMA
8000 - 12500	0 - 2500	MY77, MY77C ◆	10	5.5	35	4	Versapac, SMA
9000 - 15000	0 - 2500	M67, M67C ◆	10	6.5	35	4	Minpac, SMA

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M/A-COM Multifunction Devices

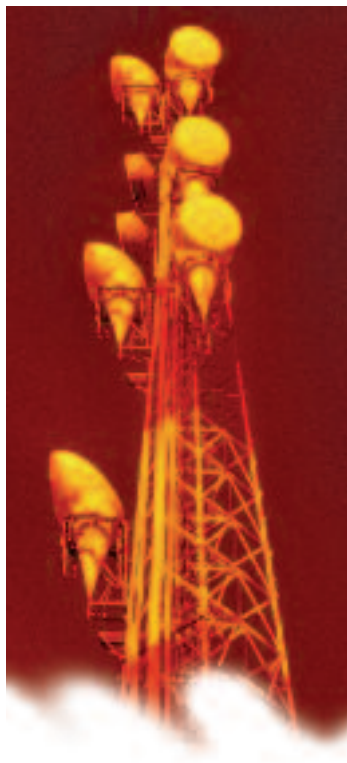


M/A-COM offers a wide variety of **multifunction devices** from MMICs to sub-assemblies. We have several unique MMIC processes including Si HMIC, Si GMIC, GaAs MSAG, and AlGaAs iHBT. We also integrate several ICs into a single package form to offer multifunction solutions. We offer some of the most highly integrated GaAs MMICs in the industry such as our dual path X-band T/R control MMIC that integrates a phase shifter, attenuator, gain block, driver amplifier, and switches on a single chip.



We also offer LNA/limiters, multifunction control chips, delay lines, vector modulators, upconverter/drivers and more.

Please contact us for additional solutions including custom or military products.



Multifunction Amplifiers

Freq (MHz)	Part Number	Gain (dB)	NF (dB)	Output P1dB (dBm)	Output IP3 (dBm)	Sat Pout (dBm)	Voltage (Volts)	Current (mA)	Package
Packaged Products									
7000 - 12000	MAMFGM0001-DIE	28/21	10.5	22/18	26	—	+5/-5	400	Die
7000 - 12000	MAMF-000002-DIE000	21/15	10.5	22/19	26	—	+5/-5	340	Die
7000 - 12000	MAMF-000003-DIE000	25/19	10.5	23/18	30	—	+5/-5	500	Die
7000 - 12000	MAMF-000004-DIE000	19/13	10.5	23/18	31	—	+5/-4	430	Die
8000 - 11000	MAO3501D	18	10	21	26	—	+5/-4	275	Die
8000 - 11000	MAO3503D	18	10	22.5	28	—	+5/-4	325	Die

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M/A-COM Passives



M/A-COM Couplers

Couplers are used extensively in a wide range of Aerospace and Defense, wireless and wireline communications applications. M/A-COM offers a variety of connectorized and surface mount packages with a broad range of coupling values for these markets.

Hybrid Couplers

- Magic Tee (1800) and Quadrature (900) configurations
- Products available in subsets of the 2-3000 MHz frequency range
- Available as TO-cans, flatpacks, surface mount and connectorized

Directional Couplers

- Coupling values of 6-30 dB
- Products available in subsets of the 2 MHz to 18 GHz frequency range
- 75W products available for CATV, DTV and DBS applications

Filters/Diplexers

M/A-COM offers a variety of highpass, lowpass and diplex filter components and assemblies used in common wireless communications standards and CATV, DBS and DTV applications.

- 50 ohms and 75 ohms diplexers
- Low cost surface mount packaging
- Multi-chip and MMIC products
- Higher functionality assemblies available

Circulators/Isolators

M/A-COM circulators and isolators are used in a variety of wireless and Defense applications.

- Single and dual junction devices
- Surface mount and drop-in packaging available for standard components

Splitters/Combiners

Splitters and combiners are used in a wide range of Aerospace and Defense, wireless and wireline communications applications. M/A-COM offers a variety of connectorized and surface mount packages for these markets.

- 50W and 75W devices
- Products available in subsets of 400 KHz to 26 GHz frequency range
- 2, 3, 4, 5, 6 and 8 channel versions available

Transformers

M/A-COM offers many standard transformers used for a variety of wireless, wireline and Aerospace and Defense communications applications.

- Available in a variety of surface mount, flat pack and connectorized packages
- Standard impedance ratios up to 4:1
- Balanced/unbalanced versions available
- 50W and 75W nominal impedance devices available

Inductors

M/A-COM offers a line of high Q toroidal inductors useful for any application requiring RF or electromagnetic suppression.

- Standard devices are in the 53 to 273 nH inductance range
- Q of 90 minimum
- Surface mount wire wound toroid construction

MNS Microwave Chip Capacitors

- Suitable for D.C. blocking and RF bias networks in a variety of control and filter circuits
- Capacitance-temperature coefficient provides < 200 ppm/C
- Insertion loss < 0.1 dB at 15 GHz
- Ideal for chip and wire/ribbon microwave high performance circuits



Transformers

Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	I.L. (dB)	RF Power (W)	Package
Packaged Products						
0.06 - 60	ET16-6T-SM1 ♦	50	16:1	3	0.25	SM-1
0.3 - 200	ETC1-1T ♦	50	1:1	1.5	0.25	SM-22
0.3 - 200	MABACT0062	75	1:1	0.8	0.25	SM-22
0.3 - 200	MABACT0071	75	1:1	0.5	0.25	SM-164
0.3 - 200	MABAES0060	50	1:1	1.5	0.25	SM-22
0.3 - 200	MABA-008482-CF1A40	75	1.78:1	1	1	SM-156
0.5 - 1000	TP-103 ♦	—	4:1	0.6	3	FP
0.5 - 1000	TP-105 ♦	—	1.4:1	0.5	1.5	FP
0.5 - 1500	TP-101 ♦	—	1.6:1	0.5	3	FP
0.75 - 400	TP-104 ♦	—	2:1	0.55	0.4	FP
1 - 350	ETC4-1 ♦	50	4:1	3	0.25	SM-22
1 - 350	MABA-007493-CF4160	75	4:1	1.6	0.25	SM-22
1 - 350	MABAES0008 ♦	75	1:4	3	0.25	SM-22
1 - 350	MABAES0040 ♦	50	2:1	2.6	0.25	SM-138
1 - 500	TP-102 ♦	—	4:1	0.75	1	FP
1 - 650	MABACT0064	75	4:1	3	0.25	SM-138
1 - 650	MABA-009298-CT48A0	50	4:1	2.23	0.25	SM-138
2 - 200	TP-75 ♦	—	1.5:1	0.25	10	SMA
2 - 800	ETC4-1-2 ♦	50	4:1	3	0.25	SM-22
2 - 800	MABAES0061	50	4:1	3	0.25	SM-22
2 - 800	MABAES0010 ♦	50	4:1	2.2	0.25	SM-119
2 - 800	MABAES0015 ♦	50	4:1	3.5	0.25	SM-52
2 - 1000	ETK4-2T ♦	50	4:1	3	0.25	SM-22
2 - 1000	MABA-007569-GTK42T	-50	4:1	3	0.25	SM-22
4.5 - 1000	MABACT0059	75	1:1	0.8	0.25	SM-22B
4.5 - 2000	MABACT0056	75	1:1	3.5	0.25	SM-136
4.5 - 3000	MABA-007327-CT1490	75	1:1	1.6	0.25	SM-155
4.5 - 3000	ETC1-1-13 ♦	50	1:1	2	0.25	SM-22
4.5 - 3000	MABA-007159-000000	50	1:1	2	0.25	SM-22
4.5 - 3000	MABA-007327-CT1A40	75	1:1	2.5	0.25	SM-164
4.5 - 3000	MABA-008757-CT1160	50	1:1	4.2	0.25	SM-22B
5 - 50	MABA-007532-CF18A0	75	1:1	0.3	1	SM-138
5 - 65	MABA-007902-CF38A0	75	2.56:1	0.8	0.25	SM-138
5 - 65	MABA-007902-CF3840	75	2.56:1	0.8	0.25	SM-138
5 - 100	MABACT0043	50	1:1	0.7	0.25	SM-138
5 - 100	MABA-008124-CF1FA0	75	1:1	0.7	0.25	SM-250-5
5 - 120	MABA-008182-CF1160	75	1:1	0.5	0.25	SM-22A
5 - 120	MABA-009005-CF1A40	75	1:1	0.3	0.25	SM-164A
5 - 120	MABA-008965-CF1160	75	1:1	0.3	0.25	SM-22A
5 - 120	MABA-009109-CF1A40	75	1:1	0.3	0.25	SM-164A
5 - 200	MABACT0048	75	2:1	0.4	0.25	SM-164
5 - 200	MABA-007819-CF48A0	—	4:1	0.9	0.05	SM-138-A
5 - 200	MABACT0045 ♦	75	4:1	0.8	0.25	SM-164
5 - 200	MABA-008354-CF4A40	75	4:1	3.6	1	SM-164
5 - 200	MABA-008260-CF4A40	75	4:1	0.8	0.25	SM-164
5 - 200	MABACT0056	75	1:1	0.9	0.25	SM-136
5 - 200	MABACT0068 ♦	75	2:1	0.3	0.25	SM-164
5 - 220	MABAES0022 ♦	75	9:1	0.8	0.25	SM-55
5 - 220	MABA-007488-CT9550	75	9:1	0.8	0.25	SM-55

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All specifications are subject to change.

Transformers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Impedance Ratio	I.L. (dB)	RF Power (W)	Package
Packaged Products						
5 - 350	MABACT0067	—	4:1	0.9	0.25	SM-164
5 - 350	MABA-007766-CF28A0	75	1.5:1	1.4	0.25	SM-138
5 - 350	MABAES0025	—	1.5:1	1.4	0.25	SM-138
5 - 1000	MABACT0063	75	1.5:1	1	0.25	SM-22
5 - 1000	MABAES0032 ♦	75	1:1	1.03	0.25	SM-138
5 - 1000	MABACT0066	75	4:1	1.5	0.25	SM-138
5 - 1000	MABACT0044 ♦	75	1.33:1	0.9	0.25	SM-164
5 - 1000	MABACT0040	75	1:1	1.1	0.25	SM-164
5 - 1000	MABA-009092-CT1A40	75	1:1	1	0.25	SM-22A
5 - 1200	MABA-009232-CT4A4B	50	4:1	1.3	0.25	SM-187
5 - 1200	MABA-009231-CT1A4B	50	1:1	1.28	0.25	SM-187
5 - 1200	MABACT0055	50	1:1	0.9	0.25	SM-164
5 - 1200	MABACT0061	50	4:1	2.1	0.25	SM-22
5 - 1200	MABACT0072	—	1:1	0.8	—	SM-136
5 - 1200	MABA-007748-CT1160	75	1:1	1.62	0.25	SM-22
5 - 1200	MABA-007681-CT2010	75	2:1	0.6	0.25	SM-118
5 - 3000	MABA-007871-CT1A40	50	1:1	2.5	0.25	SM-164
5 - 3000	MABACT0039	75	1:1	2	0.25	SM-138
5 - 3000	MABA-007489-CT18A0	75	1:1	0.8	0.25	SM-138
10 - 1000	ETC1.5-7 ♦	50	1.5:1	1	0.25	SM-22
10 - 1500	TPX-75-4 ♦	—	1.5:1	0.25	2	SMA
20 - 1000	MABAES0034 ♦	50	4:1	2.2	0.25	SM-22
50 - 870	MABACT0074	75	2.66:1	1.5	1	SM-152
50 - 870	MABA-008184-CT1760	75	1:1	0.5	0.25	SM-118A
50 - 1200	MABA-009057-CT19E0	75	1:1	1.23	0.25	SM-158
50 - 1200	MABA-009210-CT1760	75	1:1	0.63	0.25	SM-118A
50 - 1200	MABACT0069	75	1:1	0.8	0.25	SM-158
50 - 2150	MABA-00731-CT1980	75	1:1	1.2	0.25	SM-152
50 - 2150	MABA-007731-CT1980	75	1:1	1.2	1	SM-152
350 - 1125	TP-108 ♦	—	2.5:1	1	3	FP
500 - 2500	ETC1.6-4-2-3 ♦	50	4:1	3	0.25	SM-22
500 - 2500	MABA-007236-C16423	-50	4:1	3	0.25	SM-22
500 - 3000	MABACT0065	50	4:1	3	0.25	SM-22
760 - 960	ETC1-1-6 ♦	50	1:1	2	0.25	SM-22
1710 - 1910	ETC1-1-10 ♦	50	1:1	2	0.5	SM-22

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Power Splitters/Combiners

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
0.2 - 300	DS-310 ◆	50	4	25	4	0.2	FP-5
0.4 - 400	DS-113 ◆	50	2	25	1	0.15	FP-2
0.4 - 400	DSS-113 ◆	50	2	25	1.5	0.15	SF-1
1 - 100	M3H-50 ◆	50	3	55	0.5	0.1	TO-5
1 - 100	MTH-50 ◆	50	2	30	1	0.1	TO-5-1
1 - 300	DS-117 ◆	50	3	20	4	0.25	FP-3
1 - 300	DS-308 ◆	50	3	20	4	0.25	C-8
2 - 200	THV-50 ◆	50	2	35	0.5	0.1	Conn
2 - 1000	GS-4-7TR ◆	50	4	23	10	0.5	SM-46
2 - 1000	MAPD-007246-ES4700	50	4	23	10	0.5	SM-46
2 - 2000	DS-4-4 ◆	50	4	30	2	0.5	Conn
2 - 2000	H-8-4 ◆	50	2	35	1	0.05	Conn
3 - 700	DS-328 ◆	50	3	20	4	0.4	TO-8-2
5 - 100	MAPDCT0010 ◆	75	2	32	2.5	0.25	SM-150
5 - 120	ESSM-2-9-75 ◆	75	2	21	2	0.5	SM-53
5 - 200	MAPD-008109-C30040	75	3	28	—	—	SM-4
5 - 500	ESSM-2-16	—	2	30	—	—	SM-1
5 - 500	DS-309 ◆	50	8	30	2	0.15	C-18
5 - 500	DS-318 ◆	50	2	18	2	0.2	RH-1
5 - 500	ESML-2-1 ◆	50	2	30	5	0.6	SM-24
5 - 500	MAPD-007249-ESML21	50	2	30	3	0.3	SM-24
5 - 900	ESSM-2-6 ◆	50	2	28	3	0.3	SM-1
5 - 900	MAPD-008072-GSSM26	50	2	28	3	0.3	SM-1
5 - 1000	DS-327 ◆	50	2	20	3	0.2	FP-2
5 - 1000	DSS-327 ◆	50	2	16	3	0.3	SF-1
5 - 1000	ELPD-20-1 ◆	75	2	22	4	0.5	SM-93
5 - 1000	ESSMJ-2-12-75 ◆	75	2	30	—	0.3	SM-44
5 - 1000	ESSM-2-2-75 ◆	75	2	18	6	0.6	SM-55
5 - 1000	H-81-4 ◆	50	2	25	2	0.1	Conn
5 - 1000	MACPES0007 ◆	75	2	21	—	—	Surface Mount
5 - 1000	MAPDCT0002 ◆	75	2	32	1.5	0.4	SM-150
5 - 1000	MAPDCT0005 ◆	75	3	22	4	0.3	SM-4
5 - 1000	MAPDCT0027	75	2	20	1	0.32	SM-55A
5 - 1000	MAPD-008108-C202C0	75	2	30	—	—	SM-44
5 - 1000	MAPDCT0028	75	4	21	1	0.3	SM-46
5 - 1000	MAPDCT0029	75	2	21	1	0.28	SM-55
5 - 1000	MAPDCT0030	75	2	20	1.5	0.4	SM-150
5 - 1000	MAPDCT0013	75	2	18	1.5	0.15	SM-156
5 - 1000	ESSM-2-8-75	—	2	10	—	—	SM-55
5 - 1000	MAPD-007778-C402E0	—	4	21	—	—	SM-46
5 - 1000	MAPDCT0033	75	2	22	0.8	0.1	SM-139
5 - 1200	MAPDCT0032	75	4	24	3	0.3	SM-4
5 - 1200	MAPDCT0024	75	2	—	2.1	0.27	SM-169
5 - 2400	MAPDCT0026	75	2	18	4	1.3	SM-156
5 - 2400	MAPDCT0012 ◆	75	2	18	2	0.2	SM-156
10 - 500	DS-109 ◆	50	2	35	1	0.15	FP-2
10 - 500	DS-112 ◆	50	4	25	5	0.2	FP-5
10 - 500	DS-312 ◆	50	4	25	2	0.2	C-14

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Power Splitters/Combiners (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
10 - 500	DS-319 ◆	50	2	25	1	0.2	TO-8-2
10 - 500	DSS-333 ◆	50	2	25	2	0.15	SF-1
10 - 1000	T-1000 ◆	50	2	45	1	0.1	Conn
10 - 1000	ESML-2-4 ◆	50	2	15	5	0.7	SM-24
10 - 2000	DS-409-4 ◆	50	4	30	2	0.1	Conn
10 - 2000	DSS-313 ◆	50	2	22	5	0.3	SF-1
10 - 2000	DS-313 ◆	50	2	23	4	0.3	FP-2
10 - 2000	PD10-0042-S	50	2	23	6	0.4	FP-2
20 - 400	TU-50 ◆	50	2	40	1	0.1	Conn
20 - 2000	DS-808-4 ◆	50	8	30	2	0.1	Conn
25 - 1000	DS-323 ◆	50	3	24	4	0.4	FP-3
25 - 1000	DS-324 ◆	50	4	20	6	0.25	FP-5
40 - 400	MTV-50 ◆	50	2	30	2	0.2	TO-5-1
400 - 820	MAPDCT0004 ◆	75	2	40	0.5	0.5	SM-55
40 - 1000	MAPD-007874-C20960	75	2	25	3	0.35	SM-138
50 - 300	M3V-50 ◆	50	3	40	1	0.1	TO-5
50 - 120	MAPD-008185-C20720	75	2	21	—	—	SM-114
750 - 1500	DS-331 ◆	50	2	10	6	0.2	TO-8
800 - 900	QH01-0016-G ◆	50	2	17	1.5	0.3	SOT-26
800 - 900	MAHYCC0001	50	2	17	1.5	0.3	SOT-26
800 - 980	MAPD-000900-12920T	50	2	27	1	0.2	SOT-26
820 - 980	ELPD-290 ◆	50	2	20	7	1.2	SM-8
824 - 896	MAPDCC0016	50	5	26	5	0.2	SOIC-16
824 - 960	MAPDCC0001	50	2	23	0.5	0.05	SOIC-8
824 - 960	MAPDCC0011	50	2	15	3	0.1	SOT-26
824 - 960	MAPDCC0005	50	3	18	2	0.6	SOIC-8
824 - 960	MAPDCC0007	50	4	23	2	0.3	SOW-16
824 - 960	MAPDCC0009	50	4	24	3	0.3	SOIC-8
824 - 960	MAPDCC0017	50	6	25	6	0.2	SOW-16
824 - 960	MAPDCC0019	50	6	25	4	0.5	SOIC-16
824 - 960	MAPDCC0021	50	8	30	5	0.4	SSOP-20
850 - 950	MAHYB900-1292T ◆	50	3	18	2	0.4	SOT-26
1000 - 2000	DS-332 ◆	50	2	10	6	0.2	TO-8
1000 - 18000	2089 Series ◆	50	2	20	4	0.2	Conn
1000 - 18000	2090-6204-00 ◆	50	2	23	5	0.3	Conn
1000 - 26000	2090 Series ◆	50	2	20	5	0.3	Conn
1510 - 1660	MAPDCC0003	50	2	20	1	0.05	SOIC-8
1700 - 1900	MAPDCC0004	50	2	20	2	0.1	SOIC-8
1700 - 2000	MAPD-007530-000/00	50	2	20	1.5	0.2	SOT-26
1700 - 2000	MAPDCC0008	50	4	18	4	0.1	SOW-16
1700 - 2000	MAPDCC0014	50	4	23	5	0.8	SOIC-16
1700 - 2000	MAPDCC0018	50	6	22	8	0.5	SOW-16

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Power Splitters/Combiners (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products							
1700 - 2000	MAPDCC0020	50	6	25	4	0.5	SOIC-16
1850 - 1990	MAPDCC0002	50	2	21	1	0.05	SOIC-8
1850 - 1990	MAPDCC0006	50	3	18	7	0.3	SOIC-8
1850 - 1990	MAPDCC0015	50	5	28	6	0.2	SOIC-16
2000 - 18000	2090-6205-00 ◆	50	2	23	5	0.3	Conn
2200 - 2500	MAPDCC0010	50	2	22	2	0.1	SOT-25
3650 - 4050	MAHYB390-1303T ◆	50	3	20	3	1.4	2mm MLP
8000 - 18000	2090-6210-00 ◆	50	2	18	5	0.3	Conn

Circulators/Isolators

Frequency (MHz)	Part Number	Junctions	Isol. (dB)	I.L. (dB)	Size	Package
Packaged Products						
869 - 894	FR11-0001 ◆	1	22	0.3	1	Drop In
869 - 894	FR12-0001 ◆	1	24	0.3	1	Drop In
925 - 960	FR11-0002 ◆	1	22	0.3	1	Drop In
925 - 960	FR12-0002 ◆	1	24	0.3	1	Drop In
925 - 960	FR32-0002 ◆	1	24	0.25	0.883	Surface Mount
1805 - 1880	FR11-0003 ◆	1	22	0.3	1	Drop In
1805 - 1880	FR12-0003 ◆	1	24	0.3	1	Drop In
1805 - 1880	FR32-0003 ◆	1	24	0.25	0.883	Surface Mount
1930 - 1990	FR11-0004 ◆	1	22	0.3	1	Drop In
1930 - 1990	FR12-0004 ◆	1	24	0.3	1	Drop In
2110 - 2170	FR11-0009 ◆	1	22	0.3	1	Drop-In
2110 - 2170	FR12-0009 ◆	1	24	0.25	1	Drop-In
2110 - 2170	FR32-0009 ◆	1	24	0.25	0.883	Surface Mount
2110 - 2170	MAFRIN0166 ◆	1	20	0.3	1 x 1.25	Drop In

Couplers

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
0.2 - 35	HH-108 ◆	50	3.5	0.1	25	40	SMA
0.5 - 400	CH-137 ◆	50	20	0.5	3	30	RH
0.5 - 400	CHS-137 ◆	50	20	0.5	3	30	SMT
1 - 1000	CH-132 ◆	50	20	0.7	5	20	SMA/BNC
2 - 32	CD-920-4 ◆	50	20	0.2	50	40	BNC
2 - 32	CH-130-4 ◆	50	30	0.1	500	30	SMA/BNC
2 - 200	HH-106 ◆	50	—	1	1	30	FP
2 - 200	HH-107 ◆	50	—	1	1	30	SMA/BNC
2 - 2000	H-9 ◆	50	4	0.4	25	55	SMA/N
5 - 120	MACPCT0017 ◆	75	17.3	—	—	45	Surface Mount
5 - 120	MACP-008249-CH09B0	75	17	-0.4	0.25	-45	SM-155
5 - 200	HH-109 ◆	50	—	1.4	0.5	30	FP
5 - 200	HHS-109 ◆	50	—	1.4	0.5	30	SMT

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Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
5 - 870	MACP-008248-CH0670	75	17	0.9	1	—	SM-103-A
5 - 870	ELDC-10 ♦	75	10	1	0.25	21	SM-55
5 - 870	MACPCT0038	75	17	0.6	0.25	32	SM-103
5 - 870	MACPES0004 ♦	75	10	1.3	0.25	28	SM-132
5 - 1000	ELDC-17 ♦	75	17	0.6	0.25	12	SM-55
5 - 1000	ELDC-14 ♦	75	14.3	1	0.25	34	SM-55
5 - 1000	ELDC-16 ♦	75	16	0.9	0.25	28	SM-55
5 - 1000	ELDC-12 ♦	75	11.8	1.2	0.25	12	SM-55
5 - 1000	CH-140 ♦	50	19.75	0.3	3	20	FP
5 - 1000	ELDC-20 ♦	75	20	0.6	0.25	29	SM-55
5 - 1000	ELDC-7 ♦	75	7	2.5	0.25	22	SM-55
5 - 1000	ELDC-8 ♦	75	8	1.5	0.25	21	SM-55
5 - 1000	ELDC-8X1 ♦	75	8	2.1	0.25	13.5	SM-55
5 - 1000	EMDC-10-1-75 ♦	75	10	1.5	0.25	12	SM-22
5 - 1000	EMDC-13-1-75 ♦	75	13	1.5	0.25	13	SM-22
5 - 1000	MACP-007486-CH0010	75	17	0.7	0.25	—	SM-1
5 - 1000	MACP-007490-CA0010	75	10.5	1.4	0.25	—	SM-1
5 - 1000	MACPCT0020	75	—	—	0.25	—	SM-155
5 - 1000	MACP-008125-CK07F0	75	20	0.4	0.25	40	SM-127
5 - 1000	MACP-008764-CH0370	75	17	0.5	0.25	—	SM-55
5 - 1000	MACP-008311-CE0370	75	14	0.8	0.25	—	SM-55
5 - 1000	MACP-009404-C80370	75	8	2.1	0.25	—	SM-55
5 - 1000	EMDC-13-2 ♦	75	13	1.4	0.25	13	SM-22
5 - 1000	EMDC-17-1-75 ♦	75	17	0.9	0.25	24	SM-22
5 - 1000	EMDC-17-5-75 ♦	75	17	0.8	0.25	29	SM-127
5 - 1000	EMDC-17-8-75 ♦	75	17	0.8	0.25	29	SM-127
5 - 1000	H-1-4 ♦	50	4	1.2	7	45	SMA/BNC
5 - 1000	MACPCT0039	75	10	1.6	0.25	23	SM-138
5 - 1000	MACPES0050 ♦	75	20	0.8	0.25	37	SM-55
5 - 1200	MACP-007727-CI07B0	75	18.7	1.4	0.25	26.25	SM-123
5 - 1200	MACPCT0030	75	16.8	1.2	0.25	27	SM-55
5 - 1200	MACPES0017	75	17.1	0.8	0.25	—	SM-103
5 - 1200	MACP-007741-CG09E0	75	17	0.8	0.25	—	SM-22
6 - 600	EMDC-16-1 ♦	50	16	0.6	0.25	21	SM-22
7 - 14	JH-113 ♦	50	—	0.5	4	20	FP
7 - 14	JHS-113 ♦	50	—	0.5	4	20	SMT
10 - 500	CH-134 ♦	50	10.8	1.6	1	20	FP
10 - 500	CH-138 ♦	50	10.8	1.6	1	17	TO-8
10 - 500	CHS-134 ♦	50	10.8	1.6	1	20	SMT
10 - 500	HH-110 ♦	50	—	1.4	1	20	FP
10 - 500	HH-127 ♦	50	—	1.4	1	20	TO-8
10 - 500	HHS-110 ♦	50	—	1.4	1	20	SMT
15 - 1000	MACPCT0040	50	9.9	1.3	0.25	25	SM-22B
20 - 40	JH-114 ♦	50	3	0.5	5	20	FP
20 - 40	JH-133 ♦	50	3	0.5	5	20	TO-8

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Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
20 - 40	JHS-114 ♦	50	—	0.5	5	20	SMT
20 - 140	JH-10-4 ♦	50	1	0.6	4	20	SMA
20 - 200	JH-131 ♦	50	—	1	0.25	20	SMA
20 - 300	HH-105 ♦	50	—	1	0.5	28	TO-5
20 - 2000	HH-128 ♦	50	—	3	0.5	15	FP
30 - 1000	DCG-10-4 ♦	50	11	1.5	5	30	SMA
30 - 3000	H-183-4 ♦	50	4.5	0.7	5	35	SMA
40 - 80	JH-115 ♦	50	3	0.5	5	20	FP
40 - 80	JHS-115 ♦	50	3	0.5	1	20	SMT
40 - 1000	EMDC-16-2-75 ♦	75	16	0.6	0.25	23	SM-55
40 - 1000	MACPES0028 ♦	75	7	1.9	0.25	22	SM-137
80 - 160	JH-119 ♦	50	3	0.75	4	20	FP
80 - 160	JHS-119 ♦	50	3	0.75	4	20	SMT
100 - 200	JH-121 ♦	50	—	0.75	4	20	FP
100 - 200	JHS-121 ♦	50	—	0.75	4	20	SMT
175 - 350	JH-136 ♦	50	—	0.5	4	20	FP
175 - 350	JHS-136 ♦	50	—	0.5	4	20	SMT
200 - 400	JHS-142 ♦	50	0	0.5	5	18	SMT
250 - 500	JH-139 ♦	50	—	0.5	4	15	FP
250 - 500	JHS-139 ♦	50	—	0.5	4	15	SMT
350 - 450	EMDC-20-1 ♦	50	20	0.25	0.25	38	SM-22
500 - 1000	2020-6600-06 ♦	50	6	0.15	50	31	Conn
500 - 1000	2020-6601-10 ♦	50	10	0.15	50	35	Conn
500 - 1000	2020-6602-20 ♦	50	20	0.15	50	45	Conn
500 - 1000	2020-6603-30 ♦	50	30	0.15	50	55	Conn
500 - 1000	JH-140 ♦	50	—	0.3	25	18	FP
500 - 18000	2025Series ♦	50	6-20	0.3-0.7	50	15-22	Conn
500 - 18000	2026-6010-10 ♦	50	10	0.9	50	15	Conn
500 - 18000	2026-6012-20 ♦	50	20	0.9	50	15	Conn
500 - 18000	203XSeries ♦	50	3	0.2	—	25	Conn
824 - 960	MACPCC0002	50	17	0.3	2	32	SOIC-8
1000 - 2000	2020-4015-06 ♦	50	6	0.2	50	31	Conn
1000 - 2000	2020-4015-10 ♦	50	10	0.2	50	35	Conn
1000 - 2000	2020-4015-20 ♦	50	20	0.2	50	45	Conn
1000 - 2000	2020-4015-30 ♦	50	30	0.2	50	55	Conn
1000 - 2000	2020-6604-06 ♦	50	6	0.2	50	31	Conn
1000 - 2000	2020-6605-10 ♦	50	10	0.2	50	35	Conn
1000 - 2000	2020-6606-20 ♦	50	20	0.2	50	45	Conn
1000 - 2000	2020-6607-30 ♦	50	30	0.2	50	55	Conn
1000 - 2000	JH-141 ♦	50	—	0.3	25	18	FP
1000 - 12400	2026-6001-10 ♦	50	10	0.35	50	18	Conn
1000 - 12400	2026-6003-20 ♦	50	20	0.35	50	17	Conn
1000 - 18000	2026-6007-10 ♦	50	10	0.3	50	15	Conn
1000 - 18000	2026-6009-20 ♦	50	20	0.3	50	17	Conn
1700 - 2000	MACPCC0001	50	17	0.3	2	34	SOIC-8

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All specifications are subject to change.

Couplers (continued)

Frequency (MHz)	Part Number	Impedance (Ohms)	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products							
2000 - 4000	2020-4016-06 ◆	50	6	0.2	50	28	Conn
2000 - 4000	2020-4016-10 ◆	50	10	0.2	50	32	Conn
2000 - 4000	2020-4016-20 ◆	50	20	0.2	50	42	Conn
2000 - 4000	2020-4016-30 ◆	50	30	0.2	50	52	Conn
2000 - 4000	2020-6608-06 ◆	50	6	0.2	50	28	Conn
2000 - 4000	2020-6609-10 ◆	50	10	0.2	50	32	Conn
2000 - 4000	2020-6610-20 ◆	50	20	0.2	50	42	Conn
2000 - 4000	2020-6611-30 ◆	50	30	0.2	50	52	Conn
2000 - 18000	2026-6004-10 ◆	50	10	30	50	15	Conn
2000 - 18000	2026-6006-20 ◆	50	20	30	50	18	Conn
2600 - 5200	2020-6612-06 ◆	50	6	0.25	50	26	Conn
2600 - 5200	2020-6613-10 ◆	50	10	0.25	50	30	Conn
2600 - 5200	2020-6614-20 ◆	50	20	0.25	50	40	Conn
2600 - 5200	2020-6615-30 ◆	50	30	0.25	50	50	Conn
4000 - 8000	2020-4017-06 ◆	50	6	0.25	50	28	Conn
4000 - 8000	2020-4017-10 ◆	50	10	0.25	50	30	Conn
4000 - 8000	2020-4017-20 ◆	50	20	0.25	50	40	Conn
4000 - 8000	2020-6616-06 ◆	50	6	0.25	50	28	Conn
4000 - 8000	2020-6617-10 ◆	50	10	0.25	50	30	Conn
4000 - 8000	2020-6618-20 ◆	50	20	0.25	50	40	Conn
4000 - 8000	2020-6619-30 ◆	50	30	0.25	50	50	Conn
7000 - 12400	2020-4018-06 ◆	50	6	0.4	50	21	Conn
7000 - 12400	2020-4018-10 ◆	50	10	0.4	50	30	Conn
7000 - 12400	2020-4018-20 ◆	50	20	0.3	50	38	Conn
7000 - 12400	2020-4018-30 ◆	50	30	0.3	50	47	Conn
7000 - 12400	2020-6620-06 ◆	50	6	0.4	50	21	Conn
7000 - 12400	2020-6621-10 ◆	50	10	0.4	50	30	Conn
7000 - 12400	2020-6622-20 ◆	50	20	0.3	50	38	Conn
7000 - 12400	2020-6623-30 ◆	50	30	0.3	50	47	Conn
7000 - 18000	2020-6624-06 ◆	50	6	0.6	50	21	Conn
7000 - 18000	2020-6625-10 ◆	50	10	0.4	50	30	Conn
7000 - 18000	2020-6626-20 ◆	50	20	0.5	50	35	Conn
7000 - 18000	2020-6627-30 ◆	50	30	0.5	50	45	Conn
12400 - 18000	2020-4114-20 ◆	50	20	0.5	50	35	Conn
12400 - 18000	2020-6628-06 ◆	50	6	0.6	50	21	Conn
12400 - 18000	2020-6629-10 ◆	50	10	0.4	50	30	Conn
12400 - 18000	2020-6630-20 ◆	50	20	0.5	50	35	Conn
12400 - 18000	2020-6631-30 ◆	50	30	0.5	50	42	Conn

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Inductors

Self Resonant Frequency (MHz)	Part Number	Inductance (nH)	Qmin	Package
Packaged Products				
480	EIN8 ◆	273	90	SM-52
570	EIN9 ◆	246	90	SM-52
580	EIN11 ◆	165	90	SM-52
635	EIN12 ◆	193	90	SM-52
700	EIN10 ◆	180	90	SM-52
800	EIN14 ◆	146	90	SM-52
840	EIN15 ◆	123	90	SM-52
970	EIN13 ◆	97	90	SM-52
1440	EIN16 ◆	53	90	SM-52

Passives — Space Products

Couplers: Space Products

Frequency (MHz)	Part Number	Coupling (dB)	I.L. (dB)	Max. Power (W)	Isol. (dB)	Package
Packaged Products						
5 - 1000	CH35-0008-S ◆	19.75	—	3	—	FP-2
10 - 500	CH35-0009-S ◆	10.8	—	1	—	FP-2
500 - 1000	CH20-0059-S ◆	10.8	—	1	—	FP-1
1500 - 2000	CH20-0058-S ◆	10.8	—	1	—	FP-1

Power Splitters/Combiners: Space Products

Frequency (MHz)	Part Number	Channels	Isolation (dB)	Phase Balance (degrees)	Amplitude Balance (dB)	Package
Packaged Products						
0.4 - 400	PD10-0041-S ◆	2	25	1	0.15	FP-2
10 - 500	PD10-0040-S ◆	2	25	1	1.3	FP-2
10 - 2000	PD10-0042-S ◆	2	23	6	0.4	FP-2
25 - 1000	PD20-0010-S ◆	3	24	4	0.4	FP-3

Capacitors

Capacitance (pf)	Part Number	Pad Types	Standoff Voltage (V)	Package
Die Products				
50	MA4M1050	Round Bonding Pad	100	Die
100	MA4M1100	Round Bonding Pad	100	Die
200	MA4M2100	Round Bonding Pad	100	Die
10	MA4M3010	Square Bonding Pad	200	Die
30	MA4M3030	Square Bonding Pad	200	Die
50	MA4M3050	Square Bonding Pad	200	Die
100	MA4M3100	Square Bonding Pad	50	Die
150	MA4M3150	Square Bonding Pad	50	Die

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CATV Diplexers

Frequency (MHz)	Part Number	Crossover Isol. (dB)	LP/HP Isol. (dB)	LP/HP RL (dB)	Common RL (dB)	Flatness (dB)	LP Ins Loss (dB)	HP Ins Loss (dB)	Package
Packaged Products									
5 - 30 / 46 - 1000	MAFL-007492-CD0A00	—	47/20/46	18/18	18	—	0.7	0.75	SMT
5 - 40 / 52 - 870	MAFLCT0031	—	55/55	22/20	22/20	—	0.5	0.5	SMT-142
5 - 40 / 52 - 870	MAFLES0122	41	50	22/22	22	0.85	1	1	Vertical plug-in
5 - 42 / 53 - 870	MAFLES0118	34	55/50	24/24	24	0.85	1	1.1	Horizontal Plug-in
5 - 42 / 54 - 870	MAFLES0102	—	45/45	18/18	18	—	0.5	0.5	SMT
5 - 42 / 54 - 1000	MAFL-007576-CD0910	34	55/50	24/24	24	1	1	1.1	Horizontal Plug-in
5 - 42 / 54 - 1000	MAFLES0018	—	48/50	—	16	—	1.1	1.2	SM-162
5 - 42 / 54 - 1100	MAFLCT0068	—	55/50	—	12	—	1.1	1.2	SM-161
5 - 55 / 70 - 870	MAFLCT0010	30	50/50	25	25	0.85	1	1	Horizontal Plug-in
5 - 65 / 85 - 870	MAFLCT0006	36	55/55	22/24	22	0.85	1	1.1	Horizontal Plug-in
5 - 65 / 85 - 870	MAFL-007575-CD0910	36	55/55	22/24	22	0.85	1	1	Horizontal Plug-in
5 - 65 / 88 - 1000	MAFLCT0027	—	50/50	20	20	—	0.5	0.5	SMT
5 - 65 / 94 - 860	MAFLCT0034	—	55/50	16	16	—	0.9	1.0	SM-161
5 - 1000	EDF-2E ♦	75	—	0.5	45	—	—	—	SM-85
5 - 1000	MAFLCT0027 ♦	75	—	0.5	50	—	—	—	SMT
50 - 870 / 975 - 1525	MAFL-007898-CD0ACO	—	40	15/14	15/14	—	1.8	1.2	SMT

MoCA Filters

Frequency (MHz)	Part Number	LP/HP Isol (dB)	Common RL (dB)	LP Ins Loss ((dB))	HP Ins Loss (dB)	Package
Packaged Products						
5 - 42/54 - 1002/1125 - 1525	MAFL-009010-CT0B90	45/48	12	1.8	2.0	—
5 - 1002 / 1125 - 1550	MAFL-008290-CD0ACO	40/40	13/13	1.4	1.7	SM-172
50 - 870 / 975 - 1525	MAFL-007898-CD0ACO	40/42	15/14	1.8	1.2	SM-172
50 - 870 / 950 -1550	MAFL-008195-CD0ACO	39/37	14/12	1.5	2.0	SM-172
50 - 870	MAFL-008070-CLOAD0	50/50	13	1.5	30	SM-173
50 - 870 / 975 - 1025	MAFL-008571-CD0AFO	37/37	12	2.0	6	SM-175
870 - 925	MAFLCT0081	45/45	18	1.2	-	SM-171
975 - 1025	MAFL-008867-CB0B40	14/14	15	2.0	-	SM-180
1125 - 1175	MAFL-008868-CB0B50	14/14	15	2.0	-	SM-180
1300 - 1350	MAFL-008869-CB0B60	14/14	15	2.0	-	SM-180
1475 - 1525	MAFL-008870-CB0B70	14/14	15	2.0	-	SM-180

Filters/Diplexers

Frequency (MHz)	Part Number	Impedance (Ohms)	Passband (MHz)	I.L. (dB)	Rejection (dB)	Rejection BW (dB)	Package
Packaged Products							
824 - 1990	MAFLCC0001	50	140	0.5	18	—	SOIC-8
824 - 1990	MAFLCC0003	50	140	0.7	19	—	SOT-26
825 - 1990	MA4DP918-1277 ♦	50	280	0.9	28	270	3mm sq MLP
843 - 925	CDMA 900 ♦	50	27	0.5	105	0	Conn

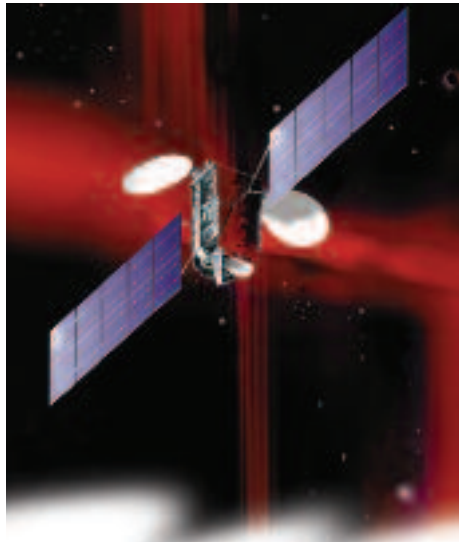
Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Detailed specifications for our standard parts can be found quickly on our web site at www.macom.com by typing the part number into the search box.

All specifications are subject to change.

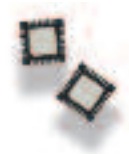
M/A-COM Phase Shifters



M/A-COM Phase Shifters are fabricated using our repeatable, high performance and highly reliable GaAs Multifunction Self-Aligned Gate MESFET Process. Each device is 100% RF tested to ensure performance compliance.

M/A-COM's MSAG™ process features robust silicon-like manufacturing processes, planar processing of ion implanted transistors, multiple implant capability, and polyimide scratch protection for ease of use with automated manufacturing processes.

Primary applications include satellite communication and phased array radar.



Phase Shifters

Frequency (GHz)	Part Number	No. of Bits	LSB (degrees)	Phase Range (degrees)	Loss (dB)	Package
Packaged Products						
1.4 - 2.4	MAPS-008342-PKG003	4	22.5	360	4	4 mm PQFN 24 lead
2.3 - 3.8	MAPS-008343-PKG003	4	22.5	360	4	4 mm PQFN 24 lead
10.7 - 15.5	MAPS-008345-PKG003	4	22.5	360	6	4 mm PQFN 24 lead

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M/A-COM Signal Generation



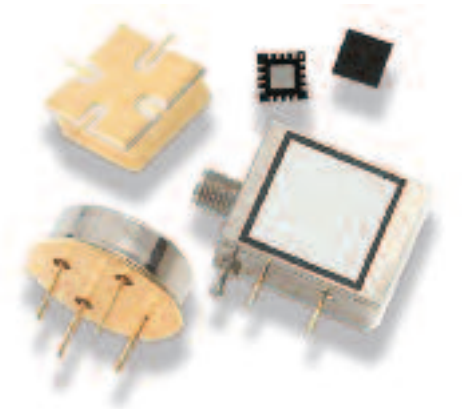
M/A-COM offers a variety of synthesizers and Voltage Controlled Oscillators (VCOs) used to generate frequency references in Aerospace and Defense, as well as commercial wireless communications applications.

Synthesizers

- Incorporates PLL circuitry with VCO
- Standard components available to cover wireless interfaces from 109 - 1854 MHz
- Variety of different step sizes available
- Available in hybrid, surface mount packaging

VCOs

- Low phase noise performance
- Highly linear tuning capability
- Standard components available to cover wireless interfaces from 920 - 2300 MHz



VCOs

Frequency (MHz)	Part Number	Phase Noise (dBc/Hz)	Tuning Sensitivity (MHz/V)	Pout (dBm)	Vcc (V)	Package
Packaged Products						
920 - 960	MLO80100-00940 ◆	-130	14	0	5	LSM1
1000 - 1040	MLO80100-01020 ◆	-127	17	0	5	LSM1
1435 - 1525	FE55-0005 ◆	—	60	10	3	4mm PQFN-16
2200 - 2300	FE55-0006 ◆	—	60	10	3	4mm PQFN-16
2200 - 2300	MA05836 ◆	—	—	27	3	Board

Aerospace and Defense VCOs

Frequency (MHz)	Part Number	Tuning Voltage	Phase Noise +25°C (dBc/Hz)	Power dBm (min)	Harmonics dBc (max)	Temp Range (Operating)	Power Supply V & mA	Package
Packaged Products								
400 - 600	MAVCML0059 ◆	0V - 15V	-110 @ 100KHz	10 (min)	-10	-30 to 70°C	+15V, 50mA	TO8
420 - 550	MAVCML0025 ◆	2V - 12V	-100 @ 100 KHz	12+/-1.0	-10	-45 to 85°C	8V/50mA	TO8
600 - 860	MAVCML0026 ◆	1.5V - 13V	-110 @ 100KHz	13+/-1.5	-15	-35 to 85°C	15V/50mA	TO8
600 - 860	MAVCML0027 ◆	1V - 13V	-113 @ 100KHz	3.5+/-3.5	-15	-35 to 85°C	5V/18mA	SMT TO8
700 - 900	MAVCML0028 ◆	0V - 30V	-105 @ 100KHz	13+/-3.0	-13	-35 to 100°C	12V/50mA	TO8
1100 - 2100	MAVCML0030 ◆	0V - 20v	-98 @ 100kHz	10+/-2.5	-10	-40 to 85°C	15V/100mA	TO8
1200 - 1300	MAVCML0029 ◆	2V - 12V	-100 @ 100 KHz	10+/-1.0	-10	-40 to 85°C	8V/40mA	TO8
1550 - 2250	MAVCML0031 ◆	3V - 20V	-100 @ 100KHz	9+/-2.5	-10	-40 to 100°C	12V/50mA	TO8
2850 - 4350	MAVCML0032 ◆	0V - 15V	-100 @ 100KHz	10+/-2.0	-10	-40 to 85°C	15V/125mA	SMT TO8
3020 - 4410	MAVCML0033 ◆	4V - 11V	-98 @ 100kHz	12+/-1.0	-13	-40 to 85°C	15V/120mA	SMT TO8
4200 - 4400	MAVCML0034 ◆	0V - 10V	-100 @ 100KHz	7.5+/-2.5	-12	-40 to 85°C	9V/50mA	LCC1
4230 - 4370	MAVCML0035 ◆	1V - 7V	-100 @ 100KHz	15+/-2.5	-25	-55 to 75°C	10V/130mA	SMT TO8
4510 - 5740	MAVCML0036 ◆	1V - 13V	-98 @ 100KHz	12.5+/-1.5	-15	-35 to 85°C	5V/100mA	SMT TO8
5700 - 5900	MAVCML0058 ◆	0V - 15V	-100 @ 100KHz	10 (min)	-12	-55 to 85°C	+15V, 50mA	TO8
5790 - 5820	MAVCML0039 ◆	0.5V - 4.5V	-100 @ 100KHz	10+/-2.0	-12	-45 to 85°C	15V/100mA	TO8
8650 - 9250	MAVCML0041 ◆	5V -15V	-95 @ 100KHz	19.5+/-1.5	-30	-40 to 85°C	+/-15V 175/125mA	Custom Co-ax SMA
8950 - 9550	MAVCML0040 ◆	-10 to +10	-85 @ 100KHz	16+/-2.0	-20	-55 to 85°C	-24V/250 mA	VCO B
10000 - 11000	MAVCML0043 ◆	2V - 12V	-65 @ 100KHz	16+/-2	-30	-45 to 85°C	8V/110mA	Leadless
13000 - 17000	MAVCML0044 ◆	2V - 12V	-63 @ 100KHz	13.5+/-1.5	-30	-45 to 85°C	8V/125mA	Leadless

Synthesizers

Frequency (MHz)	Part Number	Step Size (KHz)	Phase Noise (dBc/Hz)	Spurious Output (dBc)	Switching Time (ms)	Pout (dBm)	Package
Packaged Products							
1046 - 1085	MASYVS0061-1066 ◆	200	-157	-97	0	5	LSM6
1780 - 1860	MASYVS0006-1810 ◆	50	-140	-75	20	0	LSM6

Receivers / Transceivers

Specifications at 25°C. • Other frequencies and power levels available. • Recommended IF load: 1000 Ohms

Frequency (GHz)	Part Number	Output (mW)	Current (mA)	Voltage (VDC)	Temp (°C)	Phase Angle(°)	IF Bandwidth	Waveguide Output	Min Detectible Signal (dBc)
24.125 +/- 25 MHz	MACS-007800-0MIR00	5	90	5	-30 to +70	—	10 Hz - 1 kHz	W/R 42, UG-595/U	—
24.125 +/- 25 MHz	MACS-007801-0MIRMO	5	90	5	-30 to +70	—	10 Hz - 1 kHz	W/R 42, UG-595/U	-90
24.125 +/- 25 MHz	MACS-007802-0MIRSO	5	90	5	-30 to +70	50 - 120	10 Hz - 1 kHz	W/R 42, UG-595/U	-90

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M/A-COM Switches

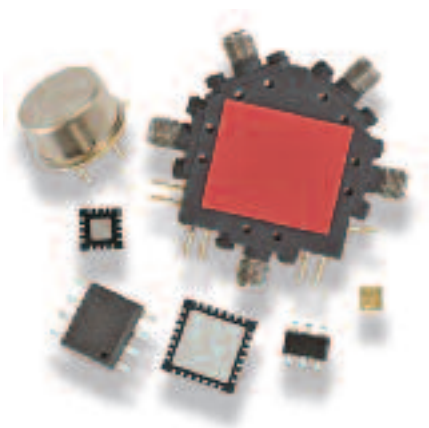


M/A-COM IC-based switches are used extensively in commercial and military electronics applications. The switches range from DC to 20 GHz designed specifically for voice and data applications.

- Cordless and mobile phones
- Cellular base stations
- Satellite radio
- GPS & DAB
- 2.4 GHz and 5.0 GHz WLAN
- VSAT
- CATV and broadband
- Bluetooth
- RFID
- Fixed Wireless Access (FWA)
- Instrumentation
- Commercial and military radar
- Aerospace and Defense products

M/A-COM diode-based HMIC silicon series-shunt PIN diode switches provide outstanding frequency performance from 50 MHz to 20 GHz. M/A-COM AlGaAs series-shunt PIN diode switches provide remarkable frequency performance from 50 MHz to 50 GHz.

- HMIC & AlGaAs switches are suitable for microwave and millimeter wave control circuits for military, instrumentation, and optoelectronic applications.
- HMIC switches: 0.9 dB loss and 42 dB isolation at 20 GHz
- AlGaAs switches: 0.7 dB loss and 35 dB isolation at 50 GHz



Aerospace/Defense Switches

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	R.L. (DB)	Switching Speed (ns)	I/P Power (mW)	Power Supply V & mA	Dimensions
Packaged Products									
0.01 - 6	MASWML0002 ◆	SPST	2.7	50	12	50	100	+5 -5	13.5x6.2x3.3
6 - 9	(MMIC)		4	50	9.5			50 50	1110135-4
9 - 10			4	45	9.5				
8 - 10	MASWML0004 ◆	SPST	1.9	60	12	50	100	+5 -15	16.4x13.5x5.6
								50 10	
6 - 18	MASWML0005 ◆	SPST	2.3	60	10	15	500	+5 -15	38.1x33.6x10.3
								50 10	30801-4
0.5 - 18	MASWML0010 ◆	SPDT	3.3	55	9.5	30	100	+5 -15	22x16x8
	(N/R & Miniature)							70 50	1110775-4
0.5 - 2	MASWML0011 ◆	SPDT	1.8	50	11.7	15	100	+5 -12	22x16x8
2 - 8	(MMIC & MMIC)		2.5	40	9.5				
8 - 18			2.9	32	9.5			25 25	1110506-4
0.5 - 18	MASWML0012 ◆	SPDT	2.6	55	9.5	30	100	+5 -15	22x16x8
	(Miniature)							70 50	1110634-4
6.4 -18	MASWML0013 ◆	SPDT	3.85	52	7.4	10 micro Second	2 W (CW)	+5 -15	40.7x40.7x12.9
								250 50	
6 - 12	MASWML0014 ◆	SPDT	2.2	60	11	30	100	+5 -15	22x16x8
	(Miniature)							70 50	1110775-4
10.5 - 13.5	MASWML0017 ◆	SPDT	1.7	65	11.7	30	3 W (CW)	-5 to -15	22x16x8
								0.5 1	1104260
0.5 - 2.0	MASWML0021 ◆	SP3T	1	50	14	250	100	5 -15	38.1x38.1x19.1
							100	50	A4-30805-4
0.5 -18.0	MASWML0022 ◆	SP3T	3.4	60	9.5	250	500	5 -15	38.1x39.1x19.1
								100 50	A4-30805-4
0.5 - 18.0	MASWML0023 ◆	SP3T	2.9	60	9.5	30	100	5 -15	24.5x24.5x6.1
	(Miniature)							100 50	
0.5 - 17.0	MASWML0024 ◆	SP4T	3.6	50	9	30	100	5 -5	24.5x24.5x6.1
17.0 - 18.0	(Miniature)		4					120 50	1110770-4
0.5 - 18.0	MASWML0025 ◆	SP4T	4.5	60	9.5	500 (100 typ)	100	5 -15	38.1x32.1x19.1
								180 100	
0.5 - 18.0	MASWML0026 ◆	SP5T	3.3	60	9.5	30	100	5 -15	21.5x24.5x6.1
	(Miniature)							140 50	1110771-4
0.5 - 2.0	MASWML0027 ◆	SP5T	1.8	65	15.5	30	100	5 -15	38.1x38.1x19.1
								140 50	
0.85 - 18.0	MASWML0028 ◆	SP6T	4	55	9.5	900	100	5 -5.2V	38.1x38.1x19.1
								190 50	

Delay Line

Frequency (MHz)	Part Number	I.L. (dB)	Input P1db (dBm)	Bits (#)	LSB (degree)	Range (degree)	Package
Packaged Products							
1800 - 2400	MAMUSM0008	5	27	50	20	—	15mm BGA

Switches with Drivers

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Switching Speed (ns)	Input IP3 (dBm)	Package
Die Products							
2000 - 14000	MASWGM0001-DIE	DPDT	3	40	—	33	Die
0 - 5000	MASWGM0005-DIE	SPDT	1.6	58	—		Die
2000 - 8000	MASWGM0003-DIE	SPDT	3	45	15	35	Die
2000 - 20000	MASWGM0002-DIE	SPDT	4.3	35	29		Die

Note: Part numbers are RoHS compliant. ◆ indicates non-RoHS compliant.

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All specifications are subject to change.

Switches with Drivers (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Switching Speed (ns)	Input IP3 (dBm)	Package
Packaged Products							
10 - 3000	MASW-007076-000100	SPST	2.2	35	50	46	SOW-24
10 - 500	S10 ♦	SPST	2	55	5	25	TO-8
10 - 500	S11 ♦	SPST	2	55	2	25	TO-8
0 - 3000	SW-313	SPDT	1.2	35	18	46	CR-9
0 - 3000	MASW-007075-000100	SPDT	2.2	33	50	46	SOW-24
0 - 3000	MASW-007074-000100	SP3T	2.3	30	50	46	SOW-24
0 - 3000	SW-314	SP4T	1.8	30	25	46	CR-14
0 - 3000	MASW-007073-000100	SP4T	2.3	25	50	46	SOW-24
0 - 3000	MASWCC0009	SP4T	2.5	25	50	46	QSOP-24

General

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Die Products						
0 - 2000	MASW2040	DPDT	0.4	20	46	Die
0 - 6000	MASW6030G	DPDT	0.6	40	45	Die
0 - 6000	MASW6020G	SPST	0.9	64	46	Die
50 - 20000	MA4SW110	SPST	0.7	42	50	Die
50 - 20000	MASW-001100-1190	SPST	0.7	42	50	Die
50 - 50000	MA4AGSW1	SPST	0.3	46	40	Die
10000 - 50000	MA4AGSW1A	SPST	1.2	30	40	Die
0 - 3000	MASW2000	SPDT	0.6	35	53	Die
0 - 4000	MASW4030G	SPDT	0.8	50	46	Die
0 - 6000	MASW6010G	SPDT	0.5	45	46	Die
0 - 20000	MASW20000	SPDT	1.7	50	43	Die
50 - 20000	MA4SW210	SPDT	0.7	42	50	Die
50 - 20000	MASW-002100-1191	SPDT	0.7	42	50	Die
50 - 50000	MA4AGSW2	SPDT	0.7	33	40	Die
2000 - 18000	MA4SW210B-1	SPDT	1.25	40	47	Die
2400 - 5800	MASW-008206-000DIE	SPDT	0.7	30	54	Die
77000	MA4GC6773	SPDT	1.2	24	40	Die
50 - 20000	MA4SW310	SP3T	0.9	42	50	Die
50 - 20000	MASW-003100-1192	SP3T	0.9	42	50	Die
50 - 50000	MA4AGSW3	SP3T	0.8	31	40	Die
500 - 2500	MASWSS0100 ♦	SP3T	0.5	20	69	Die
2000 - 18000	MA4SW310B-1	SP3T	1.25	40	47	Die
77000	MA4GC6774	SP3T	1.4	24	40	Die
0 - 4000	MASW40606	SP4T	1.3	50	46	Die
50 - 20000	MA4SW410	SP4T	0.9	34	50	Die
50 - 50000	MA4AGSW4	SP4T	1	32	40	Die
2000 - 18000	MA4SW410B-1	SP4T	1.4	35	47	Die
50 - 20000	MA4SW510	SP5T	0.9	38	50	Die
50 - 50000	MA4AGSW5	SP5T	1.9	30	40	Die
2000 - 18000	MA4SW510B-1	SP5T	1.8	35	47	Die
77000	MA4GC6772	SP5T	4	24	40	Die
500 - 2500	MASWSS0091	SP6T	0.5	38	70	Die
2000 - 18000	MA4SW610B-1	SP6T	1.9	39	47	Die
50 - 40000	MA4AGSW8-1	SP8T	2	32	40	Die
50 - 40000	MA4AGSW8-2	SP8T	2	35	35	Die
1800 - 4000	MA4BN1840-1	Bias Network	0.15	35		Die

General (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Packaged Products						
0 - 4000	MASWSS0184	DPDT	0.7	30	57.5	3 mm PQFN 12
0 - 4000	MASW-007587	DPDT	0.7	38	59	3 mm PQFN 12
0 - 6000	MASWSS0094 ◆	DPDT	0.8	43	45	3 mm PQFN 12
0 - 6000	MASWSS0107	DPDT	0.95	22	52	3 mm PQFN 12
0 - 6000	MASWSS0129	DPDT	0.75	30	49	3 mm PQFN 12
500 - 3000	MASWSS0040 ◆	DPDT	0.8	19	55	3 mm PQFN 12
500 - 3000	MASWSS0130	DPDT	0.6	25	55	3 mm PQFN 12
2000 - 6000	MASWSS0190	DPDT	0.75	43	50	2 mm UTDFN 8
4500 - 6000	MASWSS0039 ◆	DPDT	0.8	30	52	3 mm PQFN 12
4500 - 6000	MASWSS0175	DPDT	0.8	30	52	3 mm PQFN 12
0 - 2500	SW-259 ◆	SPST	1	70	46	SOIC-8
0 - 2500	MASWSS0162	SPST	1	70	46	SOIC-8
0 - 3000	SW-214	SPST	1.3	25	46	FP-13
0 - 3000	SW-311	SPST	1.3	27	46	CR-9
0 - 3000	SW05-0311	SPST	1.3	25	46	CR-9
0 - 4000	MASW-007070-000100	SPST	0.85	25	48	CSP-1
5 - 3000	SW-215 ◆	SPST	2.9	27	46	DI-1
5 - 3000	SW-216 ◆	SPST	2.9	27	46	DI-1
5 - 4000	SW-231 ◆	SPST	2.8	22	46	FP-16
10 - 1000	SW-121 ◆	SPST	1	40	30	DI-1
50 - 4000	MA4SW101-287T ◆	SPST	0.4	38	40	SOT-23
50 - 6000	MA4AGSW900-287T ◆	SPST	0.6	40	37	SOT-23
300 - 4000	MASWSS0148	SPST	55	1.6	49	3 mm PQFN 12
500 - 2000	SW-393 ◆	SPST	1.6	42	39	SOIC-8
0 - 2000	SW-224	SPDT	0.8	30	46	TO-5-3
0 - 2000	SW-225	SPDT	0.8	30	46	FP-13
0 - 2000	SW-395 ◆	SPDT	0.5	20	45	SOT-26
0 - 2000	MASWSS0179	SPDT	0.5	20	45	SOT-26
0 - 2500	SW-239 ◆	SPDT	0.6	70	46	SOIC-8
0 - 2500	MASWSS0201	SPDT	1.1	46	45	3 mm PQFN 12
0 - 2500	MASWSS0157	SPDT	0.6	70	46	SOIC-8
0 - 2500	SW-277 ◆	SPDT	0.5	40	61	SOIC-8
0 - 2500	MASWSS0161	SPDT	0.5	40	61	SOIC-8
0 - 2500	SW-338 ◆	SPDT	0.5	33	46	SOIC-8
0 - 2500	MASWSS0180	SPDT	0.5	33	46	SOIC-8
0 - 3000	MASWSS0192	SPDT	0.18	30	53	SC-70 (SOT-363)
0 - 3000	MASWSS0115	SPDT	0.3	22	46	SC-70 (SOT-363)
0 - 3000	MASW-008075	SPDT	0.4	25	48	SC-70 (SOT-363)
0 - 3000	MASWSS0005 ◆	SPDT	0.3	21	45	SOT-26
0 - 3000	MASWSS0136	SPDT	27	0.4	51.5	SC-70 (SOT-363)
0 - 3000	MASWSS0176	SPDT	0.3	21	45	SOT-26
0 - 3000	MASWSS0006 ◆	SPDT	0.4	20	60	SOT-26
0 - 3000	MASWSS0181	SPDT	0.4	20	60	SOT-26
0 - 3000	MASWSS0029 ◆	SPDT	0.4	24.5	60	SOT-26
0 - 3000	SW-110	SPDT	1.1	18	46	CR-9
0 - 3000	SW-276	SPDT	0.4	70	61	CR-2
0 - 3000	SW-312	SPDT	1.2	30	48	CR-9
0 - 3000	SW-313	SPDT	1.2	35	46	CR-9
0 - 3000	SW-425 ◆	SPDT	0.4	20	53	SOT-26

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General (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Packaged Products						
0 - 3000	MASWSS0143	SPDT	0.4	20	53	SOT-26
0 - 3000	SW-437 ♦	SPDT	0.3	21	55	SC-70 (SOT-363)
0 - 3000	MASWSS0166	SPDT	0.3	21	55	SC-70 (SOT-363)
0 - 3000	SW-438 ♦	SPDT	0.7	25	55	SC-70 (SOT-363)
0 - 3000	MASWSS0151	SPDT	0.7	25	55	SC-70 (SOT-363)
0 - 3000	SW-439 ♦	SPDT	0.8	50	85	MSOP-10
0 - 3000	MASWSS0169	SPDT	0.8	50	85	MSOP-10
0 - 3000	SW-442 ♦	SPDT	28	0.8	50	SOT-26
0 - 3000	MASW-007935	SPDT	28	0.8	50	SOT-26
0 - 3000	SW-456 ♦	SPDT	0.3	22	52	SC-70 (SOT-363)
0 - 3000	MASW-007221	SPDT	0.3	22	52	SC-70 (SOT-363)
0 - 3000	MASW-008899	SPDT	0.4	27	48	SC-70 (SOT-363)
0 - 3000	SW10-0312	SPDT	1.2	27	46	CR-9
0 - 3000	SW10-0313	SPDT	1.2	35	46	CR-9
0 - 3000	MASWSS0117 ♦	SPDT	0.3	25	56	SC-70 (SOT-363)
0 - 3000	MASWSS0204	SPDT	0.3	25	56	SC-70 (SOT-363)
0 - 4000	SW-226	SPDT	1.5	25	46	CR-2
0 - 4000	SW-227	SPDT	1.4	35	46	CR-2
0 - 4000	SW-228	SPDT	1	22	46	CR-2
0 - 4000	MASW-007071-000100	SPDT	1.8	30	46	CSP-1
0 - 5000	MASW-008853	SPDT	0.45	15	56	SC-70 (SOT-363)
0 - 6000	MASW-000822-12770T	SPDT	0.35	26	65	3 mm PQFN
0 - 6000	MASWSS0070 ♦	SPDT	0.55	24	52	3 mm PQFN 12
0 - 6000	MASWSS0200	SPDT	0.55	24	52	3 mm PQFN 12
0 - 6000	MASW-007107	SPDT	0.75	20	50	2 mm PQFN 8
0 - 6000	MASWSS0093	SPDT	0.85	28	53	3 mm PQFN 12
0 - 6000	MASW-007588	SPDT	0.85	30	53	3 mm PQFN 12
0 - 7000	MASW-007921	SPDT	0.6	25	59	2 mm PQFN 8
5 - 2000	SW-233 ♦	SPDT	1.5	40	46	FP-16
5 - 2000	SW-236 ♦	SPDT	1.5	40	46	FP-16
5 - 3000	SW-205 ♦	SPDT	2.6	35	46	DI-1
5 - 3000	SW-206 ♦	SPDT	2.6	35	46	DI-1
5 - 3000	SW-207 ♦	SPDT	2.3	18	46	DI-1
10 - 3000	SW-137	SPDT	1.6	32	46	DI-1
20 - 1500	SW-162 ♦	SPDT	1.5	40	25	DI-1
20 - 2000	SW-112 ♦	SPDT	2.2	50	30	DI-1
50 - 3000	SW-485 ♦	SPDT	0.25	23	46	SC-70 (SOT-363)
500 - 3000	MASWSS0167	SPDT	25	0.3	48	1.2x1.5 mm PQFN 6
500 - 2000	SW-394 ♦	SPDT	1.5	35	47	SOIC-8
500 - 3000	MASWSS0024 ♦	SPDT	0.7	50	43	MSOP-8-EP
500 - 3000	MASWSS0178	SPDT	0.7	50	43	MSOP-8-EP
500 - 3000	SW-475 ♦	SPDT	0.6	54	43	4 mm PQFN 16
500 - 3000	MASWSS0121	SPDT	0.6	54	43	4 mm PQFN 16
800 - 2000	SW-335 ♦	SPDT	0.8	50	50	SOIC-8
2010 - 2025	MASW-000823-12770T	SPDT	0.35	31	65	3 mm PQFN
0 - 2500	MASWSS0060 ♦	SP3T	0.55	21	62	3 mm PQFN 12
0 - 2500	MASWSS0065 ♦	SP3T	0.5	20	59	3 mm PQFN 12
0 - 2500	MASWSS0199	SP3T	0.5	20	59	3 mm PQFN 12
0 - 2500	SW-489 ♦	SP3T	0.5	18.5	66	3 mm PQFN 12

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General (continued)

Frequency (MHz)	Part Number	Type	I.L. (dB)	Isol. (dB)	Input IP3 (dBm)	Package
Packaged Products						
0 - 3000	MASWSS0144	SP3T	24	0.6	55	3 mm PQFN 12
0 - 3000	MASWSS0028 ◆	SP3T	0.3	24	50	2 mm PQFN 8
0 - 3000	MASW-008330	SP3T	0.3	24	50	2 mm PQFN 8
5 - 2000	SW-241 ◆	SP3T	2.5	35	46	DI-5
20 - 1500	SW-163 ◆	SP3T	2	35	25	DI-2
500 - 3000	MASWSS0191	SP3T	0.5	30	58	2 mm STDFN
0 - 2000	SW-415	SP4T	1.8	37	46	FP-25
0 - 2000	SW-419 ◆	SP4T	1	39	46	SO-24
0 - 3000	MASW-007813	SP4T	0.8	27	58	3 mm PQFN 16
0 - 3000	MASWSS0118 ◆	SP4T	0.65	23	57	4 mm PQFN 16
0 - 3000	MASW-008566	SP4T	0.65	23	57	4 mm PQFN 16
0 - 3000	SW-314	SP4T	1.8	30	46	CR-14
0 - 3000	SW15-0314	SP4T	1.8	25	46	CR-14
0 - 4000	SW-243 ◆	SP4T	0.7	35	46	CR-4
0 - 4000	MASWCC0010	SP4T	2.3	38	40	CSP-2
5 - 2000	SW-255 ◆	SP4T	2.1	35	68	DI-5
5 - 2000	SW-261 ◆	SP4T	2.1	35	46	FP-17
10 - 1000	SW-124 ◆	SP4T	1.4	40	30	DI-2
10 - 2000	SW-114 ◆	SP4T	2.8	35	30	DI-2
20 - 1500	SW-164 ◆	SP4T	2	35	25	DI-2
20 - 2000	SW-369 ◆	SP4T	2.8	40	44	FP-26
0 - 2000	SW-284	SP6T	2.8	28	46	FP-27
0 - 4000	MASWCC0006	SP6T	2.1	25	40	CSP-2
0 - 3000	SW-283	Transfer	2.1	20	50	CR-4
5000 - 6000	MAOS506AJ ◆	T/R	1.4	28	44	MSOP-8
75 Ohm or CATV						
5 - 1000	MASWSS0067 ◆	SPST	0.65	53	52	3 mm PQFN 12
5 - 1000	MASW-008177 ◆	SPST	0.65	53	52	3 mm PQFN 12
5 - 1000	MASW-009155	SPST	1	55	47	3 mm PQFN 12
5 - 3000	MASW-008544	SPST	1.5	40	—	3 mm PQFN 12
5 - 1000	MASWSS0068 ◆	SPDT	0.65	50	52	4 mm PQFN 20
5 - 1000	MASWSS0103 ◆	SPDT	1	63	52	4 mm PQFN 20
5 - 1000	MASW-008153	SPDT	1	63	52	4 mm PQFN 20
5 - 1000	MASW-009101	SPDT	1.2	55	47	3 mm PQFN 16
5 - 3000	MASW-008801	SPDT	1	52	47	3 mm PQFN 16

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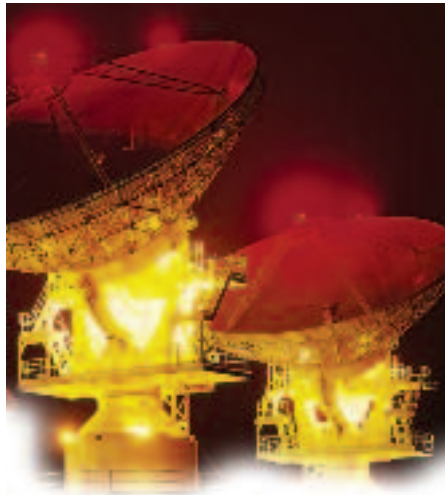
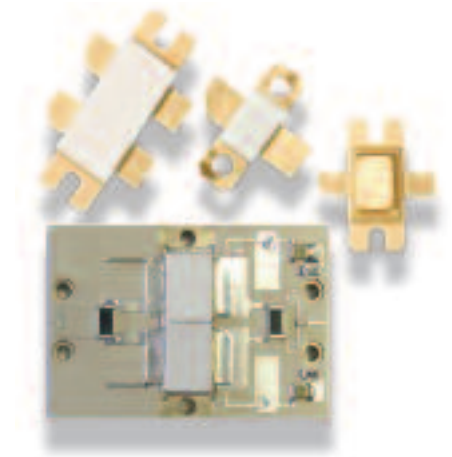
All specifications are subject to change.

M/A-COM Transistors



M/A-COM manufactures a broad range of RF power solutions using a variety of [silicon and GaAs transistor technologies](#) for commercial and military applications.

- Bipolar industrial transistors
- TMOS/MOSFET industrial transistors
- TMOS/MOSFET communications transistors
- LDMOS communications transistors
- Bipolar communications transistors
- Communications module amplifiers
- TMOS/MOSFET broadcast transistors
- LDMOS broadcast transistors
- Bipolar avionics transistors
- LDMOS cellular infrastructure transistors
- Bipolar radar transistors
- Radar pallet amplifiers
- GaAs power transistors



Bipolar

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
1 - 30	MRF421	12.5	100	10	40	P208
1.5 - 30	MRF422	28	150	10	40	P208
1.5 - 30	MRF426	28	25	22	35	P-222
1.5 - 30	MRF428	50	150	13	45	P-208
2 - 60	MRF429	50	150	13	45	P-208
2 - 30	MRF448	50	250	12	45	P208
2 - 30	MRF454	12.5	80	12	50	P-208A
2 - 30	MRF455	12.5	60	13	55	P-222
30 - 200	MRF314	28	30	10	50	P-222A
30 - 200	MRF316	28	80	10	55	P209
30 - 200	MRF317	28	100	9	55	P-210
100 - 400	MRF313	28	1	15	45	P-227
100 - 400	MRF392	28	125	10	55	P-226
100 - 500	MRF393	28	100	9.5	55	P-226
100 - 500	MRF587	15	—	13	—	Ceramic
150 - 400	MRF321	28	10	12	50	P-232
150 - 400	MRF323	28	20	10	50	P-221
225 - 400	2N6439	28	60	7.8	55	P209
225 - 400	MRF327	28	80	7.3	50	P209
850 - 1400	PH0814-40	28	42	6.8	40	Ceramic
960 - 1215	MAPRST0912-50	50	50	9.1	40	P51H
960 - 1215	MAPRST0912-350	50	300	9.5	40	P-94C
960 - 1215	MAPR-000912-500S00	50	500	9	45	P-94C
960 - 1215	MRF10005	28	5	8.5	45	P-213
960 - 1215	MRF1000MB	18	0.7	10	—	P-224
960 - 1215	MRF10031	36	30	9	40	P-203
960 - 1215	MRF1004MB	35	4	10	40	P-224
960 - 1215	MRF10120	36	120	8	50	P-217
960 - 1215	MRF1090MA	50	90	8.4	35	P-230
960 - 1215	MRF1090MB	50	90	8.4	35	P-224
960 - 1215	MRF1150MA	50	150	7.8	35	P-230
960 - 1215	MRF1150MB	50	150	7.8	35	P-224
1025 - 1150	MRF10150	50	150	9.5	40	P-203
1025 - 1150	MRF10350	50	350	8.5	40	P-219
1025 - 1150	MRF10502	50	500	8.5	40	P-212
1025-1150	MAPR-001011-850S00	50	850	—	—	P-94I
1030	MAPRST1030-IKS	50	1000	8	45	P94I
1030 - 1090	PH1090-15L	45	15	9	40	P-8TF
1030 - 1090	PH1090-175L	45	175	8.3	55	P-51F
1030 - 1090	PH1090-350L	45	350	8	55	P-94C
1030 - 1090	PH1090-550S	50	550	7.4	55	P-94C
1030 - 1090	PH1090-700B	50	700	7.5	50	P-154C
1030 - 1090	PH1090-75L	45	75	9	45	P-51D
1200 - 1400	MAPRST0002	40	50	9.5	50	P-8T
1200 - 1400	MAPRST1214-6UF	36	6	8.75	40	P-8TF
1200 - 1400	MAPRST1214-30UF	36	30	7.5	45	P-51H
1200 - 1400	MAPRST1214-150UF	36	150	7.4	45	P-94C
1200 - 1400	PH1214-0.85L	11.5	0.85	9.3	30	P-8TA
1200 - 1400	PH1214-100EL	28	100	6	52	P-51I

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Bipolar (continued)

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
1200 - 1400	PH1214-110M	40	110	7.4	50	P-23C
1200 - 1400	PH1214-12M	28	12	9	45	P-8TF
1200 - 1400	PH1214-20EL	28	20	9.5	50	P-8TA
1200 - 1400	PH1214-220M	40	220	7.4	50	P-94C
1200 - 1400	PH1214-25L	28	25	9.5	50	P-8TA
1200 - 1400	PH1214-25M	28	25	9.5	50	P-8TA
1200 - 1400	PH1214-25S	28	25	9.5	50	P-8TA
1200 - 1400	PH1214-2M	28	2	7	45	P-8TA
1200 - 1400	PH1214-300M	40	300	8.75	50	P-94C
1200 - 1400	PH1214-30EL	28	30	7.8	50	P-8TA
1200 - 1400	PH1214-3L	16.5	3	5.7	40	P-8TA
1200 - 1400	PH1214-40M	40	40	8.5	50	P-8TA
1200 - 1400	PH1214-4M	28	4	7	45	P-8TF
1200 - 1400	PH1214-55EL	28	55	6.6	50	P-98
1200 - 1400	PH1214-6M	28	6	7	45	P-8TF
1200 - 1400	PH1214-80M	40	80	7.5	50	P-51D
1200 - 1400	PH1214-8M	28	8	7	45	P-8TF
1450 - 1600	PH1516-10	25	10	10	40	Ceramic
1450 - 1500	PH1516-100	26	100	8	30	Ceramic
1450 - 1500	PH1516-60	26	60	8	30	Ceramic
1600 - 1640	MRF16006	28	6	7.4	40	P-206
1600 - 1640	MRF16030	28	30	7.5	40	P-207
1600 - 1640	MRF3104	20	0.5	10.5	—	P-228
1600 - 1700	PH1617-2	25	2	10	35	Ceramic
1600 - 1700	PH1617-30	25	30	10	40	Ceramic
1615 - 1685	PH1617-60	26	60	9	40	Module
2200 - 2600	PH2226-110M	36	110	8	45	P-94D
2200 - 2600	PH2226-50M	36	50	8	45	P-51D
2300	PH2323-1	28	1	8	30	Ceramic
2300	PH2323-14	28	14	7.6	35	Ceramic
2300	PH2323-3	28	3	8	30	Ceramic
2300	PH2323-5	28	5	8	35	Ceramic
2700 - 2900	PH2729-110M	36	110	6.8	35	P-94D
2700 - 2900	PH2729-130M	36	130	7.5	40	P-51G
2700 - 2900	PH2729-150M	38	150	8.3	38	P-94D
2700 - 2900	MAPR-002729-170M00	36	170	8.5	40	P-94D
2700 - 2900	PH2729-25M	36	25	9.2	45	P-98
2700 - 2900	PH2729-65M	36	65	8.5	40	P-51E
2700 - 2900	PH2729-8.5M	36	8.5	8.1	35	P-51D
2700 - 3100	PH2731-20M	36	20	8.2	45	P-98
2700 - 3100	PH2731-5M	36	5	7	30	P-51D
2700 - 3100	PH2731-75L	36	75	7	40	P-51G
2856	MAPRST2856-200	40	200	7.5	38	P-94C
2856	PH2856-160	40	160	7.5	40	Ceramic
2900 - 3100	PH2931-135S	42	135	7.5	40	P-94D
2900 - 3100	PH2931-20M	36	20	8.2	45	P-98
2900 - 3100	PH2931-5M	36	5	7	30	P-51D
2900 - 3300	MAPRST2933-100M	36	100	8	38	P-51G
3100 - 3400	PH3134-11S ♦	36	11	8	35	P-8TF

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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All specifications are subject to change.

Bipolar (continued)

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
3100 - 3400	PH3134-20L	36	20	7.5	35	P-51D
3100 - 3400	PH3134-30S	36	30	7.5	35	P-51D
3100 - 3400	PH3134-55L	36	55	7.5	35	P-51E
3100 - 3400	PH3134-65M	36	65	7.5	35	P-51E
3100 - 3400	PH3134-75S	36	75	7.5	35	P-51E
3100 - 3400	PH3134-9L	36	9	8	35	P-8TF
3100 - 3500	PH3135-20M	36	20	7.5	35	P-51D
3100 - 3500	PH3135-25S	36	25	7.5	35	P-51D
3100 - 3500	PH3135-30M	36	30	7.5	35	P-51D
3100 - 3500	PH3135-5M	33	5	8.5	30	P-51D
3100 - 3500	PH3135-5S ♦	33	5	8.5	30	P-51D
3100 - 3500	PH3135-65M	36	65	7.5	35	P-51E
3100 - 3500	PH3135-90S	36	90	7.5	35	P-51E

High Power Transistor Modules

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
20 - 512	MAPM-020512-010C00	30	10	25	30	Module
20-512	MAPM-020512-040C00	30	40	10	35	Module
30 - 400	PHA4000-1 ♦	27	13	28	25	Module
30 - 400	PHA4000-2 ♦	27	64	7	35	Module
2700 - 2900	MAPPST2729-300M ♦	36	300	8.3	40	Pallet
2700 - 3100	PHA2731-140L ♦	36	140	7	35	Pallet
2700 - 3100	PHA2731-190M ♦	38	190	7.5	33	Pallet
2900 - 3300	MAPPST2933-190M ♦	36	190	7.5	35	Pallet
3100 - 3400	MAPPST3134-120L ♦	36	120	8	36	Pallet
3100 - 3500	PHA3135-130M ♦	36	130	7	35	Pallet

LDMOS (Lateral Double Diffused MOSFET)

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
800 - 1700	MAPL-000817-015CPC ♦	26V	15W	15	50	Ceramic
800 - 2200	MAPLST0822-002PP ♦	28V	2W	14	40	Ceramic
1600 - 1700	MAPLST1617-030CF	26V	30W	14	40	P-237

DMOS (Double Diffused MOSFET)

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
30 - 88	FH2114	24	75	13	65	P58
30 - 88	FH2164	12	8	13	55	P-82
30 - 175	DU1215S	12	15	9.5	60	P54
30 - 175	DU1230S	12	30	10	60	P54
30 - 175	DU1260T	12	60	8	60	P70

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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DMOS (Double Diffused MOSFET) continued

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
30 - 175	DU2805S	28	5	11	55	P54
30 - 175	DU2810S	28	10	13	55	P54
30 - 175	DU28120T	28	120	13	60	P-70
30 - 175	DU28120V	28	120	13	60	P-34A
30 - 175	DU28200M	28	200	13	55	P-25
30 - 175	DU2820S	28	20	13	60	P-54
30 - 175	DU2840S	28	40	13	60	P54
30 - 175	DU2860T	28	60	13	60	P70
30 - 175	DU2860U	28	60	13	60	P-90
30 - 175	DU2880T	28	80	13	60	P-58
30 - 175	DU2880U	28	80	13	60	P90
30 - 175	DU2880V	28	80	13	60	P34A
100 - 500	UF2805B	28	5	10	50	P-83B
100 - 500	UF28100H	28	100	10	50	BAL-3
100 - 500	UF28100M	28	100	10	50	P-25
100 - 500	UF28100V	28	100	10	50	P-34A
100 - 500	UF2810P	28	10	10	50	P-82
100 - 500	UF28150J	28	150	8	55	P-84
100 - 500	UF2815B	28	15	10	50	P-83B
100 - 500	UF2820P	28	20	10	50	P-82
100 - 500	UF2820R	28	20	10	50	P-56
100 - 500	UF2840G ♦	28	40	10	50	SS-1E
100 - 500	UF2840P	28	40	10	50	P-82
500 - 1000	LF2802A ♦	28	2	10	40	SS-1D
500 - 1000	LF2805A ♦	28	5	10	50	SS-1D
500 - 1000	LF2810A ♦	28	10	10	50	SS-1D

TMOS (Transverse Structure MOSFET)

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
2 - 80	MRF154	50	600	17	45	P-214
2 - 80	MRF157	50	600	21	45	P-214
2 - 150	MRF140	28	150	15	40	P208
2 - 128	MAPF250128-150000	100	150	20, typ, 30 MHz	45, typ	Case 211-11, style 2
2 - 150	MRF150	50	150	17	45	P208
2 - 175	MRF141	28	150	18	40	P208
2 - 175	MRF141G	28	300	12	50	P-217
2 - 175	MRF148A	50	30	18	40	P-216
2 - 175	MRF151	50	150	13	40	P208
2 - 175	MRF151A	50	150	18	40	P244
2 - 175	MRF151G	50	300	14	50	P-217
2 - 175	MRF173	28	80	11	60	P208
2 - 175	MRF173CQ	28	80	13	60	P209
2 - 200	MRF174	28	125	9	50	P208
2 - 225	MRF175GV	28	200	14	65	P-218
2 - 225	MRF176GV	50	200	17	55	P-218

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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TMOS (Transverse Structure MOSFET) continued

Frequency (MHz)	Part Number	Operating Voltage (V)	Pout (W)	Min. Gain (dB)	Min. Efficiency (%)	Package
Packaged Products						
2 - 400	MRF175GU	28	150	12	55	P-218
2 - 400	MRF134	28	5	11	50	P-222
2 - 400	MRF136	28	15	16	60	P-222
2 - 400	MRF136Y	28	30	14	54	P-215
2 - 400	MRF137	28	30	13	60	P-222
2 - 400	MRF175LU	28	100	10	55	P-225
2 - 400	MRF176GU	50	150	14	50	P-218
2 - 400	MRF177	28	100	12	60	P-226
2 - 500	MRF158	28	2	16	55	P-228
2 - 500	MRF160	28	4	16	55	P-221
2 - 500	MRF166C	28	20	13.5	50	P-204
2 - 500	MRF166W	28	40	14	50	P-202
2 - 500	MRF275G	28	150	10	50	P-218
2 - 500	MRF275L	28	100	8.8	55	P-225
100 - 200	MRF171A	28	45	17	60	P-216

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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M/A-COM Package Selection Guide

Plastic Leadless Packages

Package Type (mm)	Approx Outline Dimensions	
1.2 x 1.5 mm PDFN	1.2 x 1.5 x 0.75	
2 mm 8LD PQFN	2 x 2 x 0.9	
2 mm 8LD STDFN	2 x 2 x 0.55	
3 mm 12LD/16LD PQFN	3 x 3 x 0.9	
3 mm 12LD/16LD PQFN (LP)	3 x 3 x 0.75	
4 mm 16LD/20LD/24LD PQFN	4 x 4 x 0.9	
4 mm 16LD/20LD PQFN (LP)	4 x 4 x 0.75	
5 mm 20LD/28LD/32LD PQFN	5 x 5 x 0.9	
6 mm 28LD PQFN	6 x 6 x 0.9	
4 x 6 mm 32LD PQFN	4 x 6 x 0.9	
4 x 7 mm 36LD PQFN	4 x 7 x 0.9	

Plastic Leaded Packages

SC-79	0.8 x 1.6 x 0.6	
SOD-323	1.3 x 2.5 x 1.1	
SOT-23	2.9 x 2.4 x 1	
SOT-25	2.9 x 2.8 x 1.3	
SOT-26	2.9 x 2.8 x 1.3	
SOT-89	4.5 x 4 x 1.5	
SOT-143	2.9 x 2.4 x 1	
SC70 3LD (SOT-323)	2 x 2.1 x 1	
SC70 6LD (SOT-363)	2 x 2.1 x 1	

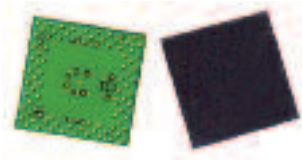
Plastic Leaded Packages (continued)

Package Type	Approx Outline Dimensions (mm)	
SOIC-8/SOIC-8EP	4.9 x 6 x 1.6	
SOIC-14	8.7 x 6 x 1.6	
SOIC-16	9.9 x 6 x 1.6	
SOW-16	10.3 x 10.3 x 2.5	
SOW-24	15.4 x 10.3 x 2.5	
TSSOP-16	5 x 6.4 x 1.1	
SSOP-20	7.2 x 7.8 x 1.9	
MSOP-8	3 x 4.9 x 1	
MSOP-8EP	3 x 4.9 x 1	
MSOP-10/MSOP-10EP	3 x 4.9 x 1	
QSOP-16	4.9 x 6 x 1.6	
QSOP-24	8.7 x 6 x 1.6	
QSOP-28	9.9 x 6 x 1.6	

Plastic Ball Grid Arrays Packages (PBGA)*

8 mm 64 I/O PBGA	8 x 8 x 1.7	
15 mm 90 I/O PBGA	15 x 15 x 3	


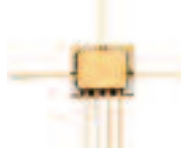









*other package outlines available













Ceramic/Chip Diode Packages

Package Type	Approx Outline Dimensions (mm)	
30 Ceramic	3.2 dia. x 5.7	
132 Ceramic	0.6 x 0.6 x 0.2	
134 Die	0.4 x 0.4 x 0.2	
186 Ceramic	11.2 x 2.5 x 1.1	
401 Axial Lead	2.3 dia. x 55	
1027 Ceramic	8 dia. x 6.9	
1056 Ceramic	1.9 x 1.9 x 1	
1072 Ceramic	2.4 x 2.4 x 3.4	
1073 Ceramic	12.3 dia. x 10	
1038 Ceramic	8 dia. x 17	
1080 Ceramic	8 dia. x 22.2	
1082 Ceramic	8 dia. x 19.8	
1088 Ceramic	2.4 x 1.3 x 1	
1246 Surmount	1.2 x 0.5 x 0.2	




Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
CR2-6LD	18.3 x 11.3 x 1.3	
CR2	18.3 x 17.1 x 1.3	
CR3	16.2 x 4.6 x 1.6	
CR4	12.4 x 12.4 x 1.6	
CR5	8.9 x 8.0 x 1.6	
CR6	11.4 x 8.9 x 1.6	
CR12	11.4 x 11.4 x 2.0	
CR13	16.5 x 11.4 x 2.0	
CR15	17.8 x 11.4 x 2	
CR16	9.8 x 8.3 x 1.5	
1000017733	23.5 x 13.8 x 2.8	









Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
MOD2 (3/4 size)	20.3 x 15 x 6.6	
MOD3 (3/4 size)	20.3 x 15 x 4.8	
SMA-AMP (3/4 size)	23.4 x 27.9 x 13.3	
SMA-MXR (3/4 size)	22.9 x 22.9 x 14	
SMT-01	11.4 x 11.4 x 4.3	
SMT-02	10 x 13 x 4	
SMT-88	13.4 x 13.4 x 4.3	
SMT-88F	11.4 x 11.4 x 4.3	
TO-8-01	12.7 dia. x 11	
TO-8-02	12.7 dia. x 9.7	
TO-8-03	15.2 dia. x 9.7	

Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
CSM	12.5 x 9.4 x 4.8	
FP	13 x 9.8 x 3.6	
MOD1	14.2 x 13.2 x 4.8	

Passive Packages

Package Type	Approx Outline Dimensions (mm)	
SM-2	12.5x 9.4 x 6.4	
SM-4	12.4 x 9.4 x 5.8	
SM-22	3.8 x 3.8 x 3.8	
SM-55	7.1 x 6.4 x 3.6	
SM-85 (3/4 size)	30 x 30 x 9	
SM-89	8 x 6.4 x 0.15	
SM-138	4.2 x 5.3 x 3.9	
SM-152	4.2 x 5.3 x 4.3	

Transistor Packages

Package Type	Approx Outline Dimensions (mm)	
P-237 Ceramic	20 x 15 x 4	
P-238 Ceramic	34 x 19.6 x 4	
P-239 Ceramic	21 x 1 x 4	
355E-01, Style 1 Ceramic	23 x 21 x 5	
368-03, Style 2 Ceramic	38 x 50 x 9	
PH1214-M Series Ceramic	23 x 10 x 4.5	
P-8TF	20.8 x 6.4 x 3.5	

Transistor Packages (continued)

Package Type	Approx Outline Dimensions (mm)	
P-51H	22.9 x 10.2 x 5.5	
P-94C	22.9 x 10.2 x 5.5	
P-94D	22.9 x 10.2 x 4.2	
P-94I	22.9 x 10.2 x 4.2	
P-154C	25.4 x 15.2 x 5.1	
Pallet (1/4 size)	50.8 x 35.8 x 7	
Pallet (1/4 size)	50.8 x 35.8 x 7	

Decibels - Volts - Watts Conversion Table

50-Ohm System Terminated											
dBm	V	P _o	dBm	V	P _o	dBm	mV	P _o	dBm	QV	P _o
53	100	200W									
50	70.7	100W	0	0.225	1 mW	-49	0.8		-97	3.2	
49	64	80W	-1	0.2	0.8 mW	-50	0.71	.01 QW	-98	2.9	
48	58	64W	-2	0.18	0.64 mW	-51	0.64		-99	2.51	
47	50	50W	-3	0.16	0.5 mW	-52	0.57		-100	2.25	0.1 pW
46	44.5	40W	-4	0.141	0.4 mW	-53	0.5		-101	2	
45	40	32W	-5	0.125	0.32 mW	-54	0.45		-102	1.8	
44	32.5	25W	-6	0.115	0.25 mW	-55	0.4		-103	1.6	
43	32	20W	-7	0.1	0.2 mW	-56	0.351		-104	1.41	
42	28	16W	-8	0.09	0.16 mW	-57	0.32		-105	1.27	
41	26.2	12.5W	-9	0.08	0.125 mW	-58	0.286		-106	1.18	
40	22.5	10W	-10	0.071	0.1 mW	-59	0.251				
39	20	8W	-11	0.064		-60	0.225	0.001 QW	dBm	nV	
38	18	6.4W	-12	0.058		-61	0.2		-107	1000	
37	16	5W	-13	0.05		-62	0.18		-108	900	
36	14.1	4W	-14	0.045		-63	0.16		-109	800	
35	12.5	3.2W	-15	0.04		-64	0.141		-110	710	0.01 pW
34	11.5	2.5W	-16	0.0355					-111	640	
33	10	2W				dBm	QV		-112	580	
32	9	1.6W	dBm	mV		-65	128		-113	500	
31	8	1.25W	-17	31.5		-66	115		-114	450	
30	7.1	1W	-18	28.5		-67	100		-115	400	
29	6.4	800 mW	-19	25.1		-68	90		-116	355	
28	5.8	640 mW	-20	22.5	.01 mW	-69	80		-117	825	
27	5	500 mW	-21	20		-70	71	0.1 nW	-118	285	
26	4.45	400 mW	-22	17.9		-71	65		-119	251	
25	4	320 mW	-23	15.9		-72	58		-120	225	0.001 pW
24	3.55	250 mW	-24	14.1		-73	50		-121	200	
23	3.2	200 mW	-25	12.8		-74	45		-122	180	
22	2.8	160 mW	-26	11.5		-75	40		-123	160	
21	2.52	125 mW	-27	10		-76	35		-124	141	
20	2.25	100 mW	-28	8.9		-77	32		-125	128	
19	2	80 mW	-29	8		-78	29		-126	117	
18	1.8	64 mW	-30	7.1	.001 mW	-79	25		-127	100	
17	1.6	50 mW	-31	6.25		-80	22.5	0.01 nW	-128	90	
16	1.41	40 mW	-32	5.8		-81	20		-129	80	0.1 fW
15	1.25	32 mW	-33	5		-82	18		-130	71	
14	1.15	25 mW	-34	4.5		-83	16		-131	61	
13	1	20 mW	-35	4		-84	11.1		-132	58	
12	0.9	16 mW	-36	3.5		-85	12.9		-133	50	
11	0.8	12.5 mW	-37	3.2		-86	11.5		-134	45	
10	0.71	10 mW	-38	2.85		-87	10		-135	40	
9	0.64	8 mW	-39	2.5		-88	9		-136	35	
8	0.58	6.4 mW	-40	2.25	1 QW	-89	8		-137	33	
7	0.5	5 mW	-41	2		-90	7.1	0.001 nW	-138	29	
6	0.445	4 mW	-42	1.8		-91	6.1		-139	25	
5	0.4	3.2 mW	-43	1.6		-92	5.75		-140	23	0.01 fW
4	0.355	2.5 mW	-44	1.4		-93	5				
3	0.32	2 mW	-45	1.25		-94	4.5				
2	0.28	1.6 mW	-46	1.18		-95	4				
1	0.252	1.25 mW	-47	1		-96	3.51				
			-48	0.9							

Frequency Band Designations

Previous Frequency Designations	P	L	S	C	X	Ku	K	Ka					
Current Frequency Designations	C	D	E	F	G	H	I	J	K				
	0.5	1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.4	18.0	20.0	26.5	40.0
	Frequency (GHz)												

Wavelength and Frequency

For all forms of wave, the velocity, wavelength, and frequency are related such that

$$\lambda F \sqrt{\epsilon_r \mu_r} = c$$

- λ = wavelength in meters (m)
- F = frequency in hertz (Hz)
- ϵ_r = relative dielectric constant of propagation medium
- c = velocity of light (300,000,000 m/s)
- μ_r = relative permeability of propagation medium

The dielectric (ϵ) is a property of the medium in which the wave propagates. The value of ϵ is defined as 1.000 for a perfect vacuum, and very nearly 1.0 for dry air (typically 1.006). In most practical applications, the value of ϵ in dry air is taken to be 1.000. For mediums other than air or vacuum, however, the velocity of propagation is slower, and the value of ϵ relative to a vacuum is higher. Teflon[®], for example, can be made with dielectric constant values (ϵ) from about 2 to 11.

Frequency vs. Wavelength

Frequency	Wavelength
1 MHz	300 meters (m)
10 MHz	30 m
100 MHz	3 m
300 MHz	1 m–100 centimeters (cm)
1 GHz	30 cm
10 GHz	3 cm
100 GHz	3 millimeters (mm)
300 GHz	1 mm–10 ⁻³ m
3 x 10 ¹⁴	1 micron–10 ⁻⁶ m

The Effect of VSWR on Transmitted Power

VSWR	VSWR (dB)	Return Loss (dB)	Trans. Loss (dB)	Voltage Refl. Coeff.	Power Trans. (%)	Power Refl. (%)	VSWR	VSWR (dB)	Return Loss (dB)	Trans. Loss (dB)	Voltage Refl. Coeff.	Power Trans. (%)	Power Refl. (%)
1.00	.0		.000	.00	100	.0	1.64	4.3	12.3	.263	.24	94.1	5.9
1.01	.1	46.1	.000	.00	100	.0	1.66	4.4	12.1	.276	.25	93.8	6.2
1.02	.2	40.1	.000	.01	100	.0	1.68	4.5	11.9	.289	.25	93.6	6.4
1.03	.3	36.6	.001	.01	100	.0	1.7	4.6	11.7	.302	.26	93.3	6.7
1.04	.4	34.2	.002	.02	100	.0	1.72	4.7	11.5	.315	.26	93	7
1.05	.4	32.3	.003	.02	99.9	.1	1.74	4.8	11.4	.329	.27	92.7	7.3
1.06	.5	30.7	.004	.03	99.9	.1	1.76	4.9	11.2	.342	.28	92.4	7.6
1.07	.6	29.4	.005	.03	99.9	.1	1.78	5	11	.356	.28	92.1	7.9
1.08	.7	28.3	.006	.04	99.9	.1	1.8	5.1	10.9	.37	.29	91.8	8.2
1.09	.7	27.3	.008	.04	99.8	.2	1.82	5.2	10.7	.384	.29	91.5	8.5
1.10	.8	26.4	.010	.05	99.8	.2	1.84	5.3	10.6	.398	.30	91.3	8.7
1.11	.9	25.7	.012	.05	99.7	.3	1.86	5.4	10.4	.412	.3	91	9
1.12	1	24.9	.014	.06	99.7	.3	1.88	5.5	10.3	.426	.31	90.7	9.3
1.13	1.1	24.3	.016	.06	99.6	.4	1.9	5.6	10.2	.440	.31	90.4	9.6
1.14	1.1	23.7	.019	.07	99.6	.4	1.92	5.7	10	.454	.32	90.1	9.9
1.15	1.2	23.1	.021	.07	99.5	.5	1.94	5.8	9.9	.468	.32	89.9	10.2
1.16	1.3	22.6	.024	.07	99.5	.5	1.96	5.8	9.8	.483	.32	89.5	10.5
1.17	1.4	22.1	.027	.08	99.4	.6	1.98	5.9	9.7	.497	.33	89.2	10.8
1.18	1.4	21.7	.030	.08	99.3	.7	2	6	9.5	.512	.33	88.9	11.1
1.19	1.5	21.2	.033	.09	99.2	.8	2.5	8	7.4	.881	.43	81.6	18.4
1.20	1.6	20.8	.036	.09	99.2	.8	3	9.5	6	1.249	.5	75	25
1.21	1.7	20.4	.039	.1	99.1	.9	3.5	10.9	5.1	1.603	.56	69.1	30.9
1.22	1.7	20.1	.043	.1	99	1	4	12	4.4	1.938	.6	64	36
1.23	1.8	19.7	.046	.1	98.9	1.1	4.5	13.1	3.9	2.255	.64	59.5	40.5
1.24	1.9	19.4	.05	.11	98.9	1.1	5	14	3.5	2.553	.67	55.6	44.4
1.25	1.9	19.1	.054	.11	98.8	1.2	5.5	14.8	3.2	2.834	.69	52.1	47.9
1.26	2	18.8	.058	.12	98.7	1.3	6	15.6	2.9	3.1	.71	49	51
1.27	2.1	18.5	.062	.12	98.6	1.4	6.5	16.3	2.7	3.351	.73	46.2	53.8
1.28	2.1	18.2	.066	.12	98.5	1.5	7	16.9	2.5	3.59	.75	43.7	56.2
1.29	2.2	17.9	.07	.13	98.4	1.6	7.5	17.5	2.3	3.817	.76	41.5	58.5
1.3	2.3	17.7	.075	.13	98.3	1.7	8	18.1	2.2	4.033	.78	39.5	60.5
1.32	2.4	17.2	.083	.14	98.1	1.9	8.5	18.6	2.1	4.24	.79	37.7	62.3
1.34	2.5	16.8	.093	.15	97.9	2.1	9	19.1	1.9	4.437	.8	36	64
1.36	2.7	16.3	.102	.15	97.7	2.3	9.5	19.6	1.8	4.626	.81	34.5	65.5
1.38	2.8	15.9	.112	.16	97.5	2.5	10	20	1.7	4.807	.82	33.1	66.9
1.4	2.9	15.6	.122	.17	97.2	2.8	11	20.8	1.6	5.149	.83	30.6	69.4
1.42	3	15.2	.133	.17	97	3	12	21.6	1.5	5.466	.85	28.4	71.6
1.44	3.2	14.9	.144	.18	96.7	3.3	13	22.3	1.3	5.762	.86	26.5	73.5
1.46	3.3	14.6	.155	.19	96.5	3.5	14	22.9	1.2	6.04	.87	24.9	75.1
1.48	3.4	14.3	.166	.19	96.3	3.7	15	23.5	1.2	6.301	.88	23.4	76.6
1.5	3.5	14	.177	.2	96	4	16	24.1	1.1	6.547	.88	22.1	77.9
1.52	3.6	13.7	.189	.21	95.7	4.3	17	24.6	1	6.78	.89	21	79
1.54	3.8	13.4	.201	.21	95.5	4.5	18	25.1	1	7.002	.89	19.9	80.1
1.56	3.9	13.2	.213	.22	95.2	4.8	19	25.6	.9	7.212	.9	19	81
1.58	4	13	.225	.22	94.9	5.1	20	26	.9	7.413	.90	18.1	81.9
1.6	4.1	12.7	.238	.23	94.7	5.3	25	28	.7	8.299	.92	14.8	85.2
1.62	4.2	12.5	.25	.24	94.4	5.6	30	29.5	.6	9.035	.94	12.5	87.5

Worldwide Wireless Telecommunications Standards

Standard	Designation	Transmit Frequency Range (MHz)		Generation
		Handset	Base Station	
AMPS		824 - 849	869 - 894	Analog
TDMA	Cellular	824 - 849	869 - 894	2G
	PCS	1850 - 1910	1930 - 1990	2G
GSM	400	450.4 - 457.6	460.4 - 467.6	2G
	400	478.8 - 486	488.8 - 496	2G
	850	824 - 849	869 - 894	2G
	900	880 - 915	925 - 960	2G
	1800	1710 - 1785	1805 - 1880	2G
	1900	1850 - 1910	1930 - 1990	2G
CDMAone	Cellular	824 - 849	869 - 894	2G
	PCS	1850 - 1910	1930 - 1990	2G
GPRS/EDGE	400	450.4 - 457.6	460.4 - 467.6	2.5G
	400	478.8 - 486	488.8 - 496	2.5G
	850	824 - 849	869 - 894	2.5G
	900	880 - 915	925 - 960	2.5G
	1800	1710 - 1785	1805 - 1880	2.5G
	1900	1850 - 1910	1930 - 1990	2.5G
CDMA2000 1x	450	452.5 - 457.475	462.5 - 467.475	3G
EV-DO/EV-DV	800	824 - 849	869 - 894	3G
	1700	1750 - 1780	1840 - 1870	3G
	1900	1850 - 1910	1930 - 1990	3G
	2100	1920 - 1980	2110 - 2170	3G
W-CDMA (UMTS)		1920 - 1980	2110 - 2170	3G
TD-SCDMA1		2010 - 2025	2010 - 2025	3G

¹ Several additional frequency ranges have been set aside for use at the operator's or granting authority's discretion

Cordless Telephone/Wireless Data

Standard	Frequency (MHz)
CT2 Cordless	864 - 868
CT2+ Cordless	944 - 948
DECT Cordless	1880 - 1900
Bluetooth	2402 - 2495
IEEE 802.11a	5150 - 5350
IEEE 802.11b	2401 - 2483
IEEE 802.11g	2401 - 2483
ISM (US)	902 - 928
ISM (US)	2400 - 2500
ISM (US)	5725 - 5875

Part Number 1985 to AM55-0024

Part Number	Page No.	Part Number	Page No.	Part Number	Page No.	Part Number	Page No.
1985	33	2026-6009-20 ♦	63	A35	24	A75-2	22
1996	33	2026-6010-10 ♦	63	A35-1	17	A75-3	18
1997	33	2026-6012-20 ♦	63	A35-1	25	A75-3	23
1998	33	203XSeries ♦	63	A36	24	A76	23
1999	33	2089 Series ♦	60	A36-1	25	A76-1	23
1600-5136	33	2090 Series ♦	60	A36-2	17	A77	23
1600-8207	33	2090-6204-00 ♦	60	A36-2	25	A77-1	23
2020-4015-06 ♦	63	2090-6205-00 ♦	61	A37	24	A78	22
2020-4015-10 ♦	63	2090-6210-00 ♦	61	A38	24	A79	22
2020-4015-20 ♦	63	2690-1001 ♦	47	A39	24	A80	18
2020-4015-30 ♦	63	2690-1003 ♦	47	A4011	19	A80	23
2020-4016-06 ♦	64	2690-1005 ♦	47	A4011	25	A80-1	18
2020-4016-10 ♦	64	2690-1007 ♦	47	A4012	25	A80-1	22
2020-4016-20 ♦	64	2690-1009 ♦	47	A411	22	A81	22
2020-4016-30 ♦	64	2690-1011 ♦	47	A43	17	A81-1	22
2020-4017-06 ♦	64	2690-1013 ♦	47	A45	25	A81-2	23
2020-4017-10 ♦	64	2690-1014 ♦	47	A45-1	25	A81-3	23
2020-4017-20 ♦	64	2690-1015 ♦	47	A5	22	A82	22
2020-4018-06 ♦	64	2N6439	77	A511	23	A82-1	22
2020-4018-10 ♦	64	6884-700	17	A513	23	A83-1	22
2020-4018-20 ♦	64	6884-700	25	A514	22	A87	22
2020-4018-30 ♦	64	9604-0250	33	A515	22	A87-1	22
2020-4114-20 ♦	64	9604-0251	33	A53	23	A87-2	22
2020-6600-06 ♦	63	9604-0321	33	A531	18	A88	23
2020-6601-10 ♦	63	9613-0001	33	A531	23	A89	23
2020-6602-20 ♦	63	A1	18	A54	22	AL7	46
2020-6603-30 ♦	63	A1	23	A55	23	AM05-0005	22
2020-6604-06 ♦	63	A101	20	A5-5	22	AM05-0006	22
2020-6605-10 ♦	63	A101	22	A56	22	AM-119-PIN	22
2020-6606-20 ♦	63	A1021	24	A5-6	23	AM-123-PIN	23
2020-6607-30 ♦	63	A1031	24	A57	23	AM-131-PIN	23
2020-6608-06 ♦	64	A11	23	A58	22	AM-143-PIN	23
2020-6609-10 ♦	64	A11-2	24	A59	23	AM-145-PIN	24
2020-6610-20 ♦	64	A12	24	A59-1	23	AM-146-PIN	23
2020-6611-30 ♦	64	A1211	24	A6011	19	AM-147-PIN	23
2020-6612-06 ♦	64	A1212	19	A6011	25	AM-151-PIN	23
2020-6613-10 ♦	64	A1212	24	A61	25	AM-153-PIN	24
2020-6614-20 ♦	64	A17	24	A611	23	AM-155-PIN	24
2020-6615-30 ♦	64	A180	23	A63	24	AM-160-PIN	23
2020-6616-06 ♦	64	A181	22	A64	24	AM-162-PIN	18
2020-6617-10 ♦	64	A18-1	24	A66	24	AM-162-PIN	22
2020-6618-20 ♦	64	A19-1	24	A66-1	24	AM-176-PIN	24
2020-6619-30 ♦	64	A21-1	24	A66-3	24	AM-177-PIN	24
2020-6620-06 ♦	64	A231	18	A67	23	AM-180-PIN	24
2020-6621-10 ♦	64	A231	22	A67-1	23	AM-182-PIN	24
2020-6622-20 ♦	64	A24	24	A70	18	AM-183-PIN	24
2020-6623-30 ♦	64	A25	24	A70	22	AM-184-PIN	24
2020-6624-06 ♦	64	A25-1	24	A70-1	18	AM-191-PIN	23
2020-6625-10 ♦	64	A26	24	A70-1	22	AM40-0023	20
2020-6626-20 ♦	64	A27	24	A70-2	18	AM42-0002	21
2020-6627-30 ♦	64	A28	24	A70-2	22	AM42-0007	21
2020-6628-06 ♦	64	A28-2	24	A70-3	22	AM42-0054	20
2020-6629-10 ♦	64	A29-1	24	A71	18	AM42-0055	21
2020-6630-20 ♦	64	A31-1	24	A71	22	AM50-0002 ♦	19
2020-6631-30 ♦	64	A32	19	A72	23	AM50-0003 ♦	18
2025Series ♦	63	A32	24	A73	23	AM50-0004 ♦	19
2026-6001-10 ♦	63	A32-1	24	A74	23	AM50-0006 ♦	19
2026-6003-20 ♦	63	A33	24	A74-1	22	AM50-0011 ♦	18
2026-6004-10 ♦	64	A33-1	17	A74-2	23	AM50-0012 ♦	19
2026-6006-20 ♦	64	A33-1	25	A75	18	AM52-0024 ♦	21
2026-6007-10 ♦	63	A34	24	A75	23	AM55-0004	20

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

90 Blue listings indicate standard stock items widely available from our franchised distribution partners.

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Part Number	Page No.	Part Number	Page No.	Part Number	Page No.	Part Number	Page No.
AMS-162-PIN	18	CSM5THv	51	ELCM-1	50	FD25C	45
AMS-162-PIN	22	CSM5Tv	51	ELCM-11X	50	FD25E	45
AT-106	30	DCG-10-4	63	ELCM-1H	50	FD25H	45
AT-107	30	DM1-18A	52	ELCM-1MH	50	FD25HC	45
AT-108	29	DS-109	59	ELCM-2	50	FD26	45
AT-109	29	DS-112	59	ELCM-25MH	51	FD26C	45
AT-110	29	DS-113	59	ELCM-5	50	FD26E	45
AT-110-2	29	DS-117	59	ELDC-10	62	FD93	45
AT-113	29	DS-308	59	ELDC-12	62	FD93C	45
AT-119	29	DS-309	59	ELDC-14	62	FD93H	45
AT15-0001	30	DS-310	59	ELDC-16	62	FD93HC	45
AT20-0106	30	DS-312	59	ELDC-17	62	FDZ5013	45
AT20-0107	30	DS-313	60	ELDC-20	62	FDZ5013C	45
AT20-0263	30	DS-318	59	ELDC-7	62	FE25G	33
AT20-0273	30	DS-319	60	ELDC-8	62	FE55-0005	69
AT-210	30	DS-323	60	ELDC-8X1	62	FE55-0006	69
AT-213	30	DS-324	60	ELPD-20-1	59	FH2114	79
AT-220	30	DS-327	59	ELPD-290	60	FH2164	79
AT-230	30	DS-328	59	EMD40-1800L	52	FM-104	45
AT-232	30	DS-331	60	EMD40-2400L	52	FM-105	45
AT-233	30	DS-332	60	EMD40-900L	51	FM-106	45
AT-250	29	DS-409-4	60	EMDC-10-1-75	62	FMS-109	45
AT-255	29	DS-4-4	59	EMDC-13-1-75	62	FN24G	33
AT-259	29	DS-808-4	60	EMDC-13-2	62	FN25G	33
AT-260	30	DSS-113	59	EMDC-16-1	62	FN25GA	33
AT-263	30	DSS-313	60	EMDC-16-2-75	63	FN35G	33
AT-264	30	DSS-327	59	EMDC-17-1-75	62	FR11-0001	61
AT-266	30	DSS-333	60	EMDC-17-5-75	62	FR11-0002	61
AT-267	30	DU1215S	79	EMDC-17-8-75	62	FR11-0003	61
AT-273	30	DU1230S	79	EMDC-20-1	63	FR11-0004	61
AT-280	30	DU1260T	79	EMRS-1	50	FR11-0009	61
AT-283	30	DU2805S	80	EMRS-11F	51	FR12-0001	61
AT-357	30	DU2810S	80	EMRS-2	50	FR12-0002	61
AT-358	30	DU28120T	80	EMRS-25MH	50	FR12-0003	61
AT-635	29	DU28120V	80	EMRS-5MH	50	FR12-0004	61
AT65-0009	29	DU28200M	80	EMRS-6HX1	52	FR12-0009	61
CA67-1	23	DU2820S	80	EMRS-6X1	52	FR32-0002	61
CD-920-4	61	DU2840S	80	ESMD-C1	50	FR32-0003	61
CDMA 900	66	DU2860T	80	ESMD-C15	51	FR32-0009	61
CH-130-4	61	DU2860U	80	ESMD-C50H	51	G1*	29
CH-132	61	DU2880T	80	ESMD-C50L	51	G2	29
CH-134	62	DU2880U	80	ESMD-C50M	51	G30**	29
CH-137	61	DU2880V	80	ESML-2-1	59	G40	29
CH-138	62	EA1	22	ESML-2-4	60	GS-4-7TR	59
CH-140	62	EA2	22	ESSM-2-16	59	H-1-4	62
CH20-0058-S	65	EA53-2	23	ESSM-2-2-75	59	H-183-4	63
CH20-0059-S	65	EA54	22	ESSM-2-6	59	H-81-4	59
CH35-0008-S	65	EA54-2	23	ESSM-2-8-75	59	H-8-4	59
CH35-0009-S	65	EDF-2E	66	ESSM-2-9-75	59	H-9	61
CHS-134	62	EFM-1900	52	ESSMJ-2-12-75	59	HH-105	63
CHS-137	61	EFM-2100	53	ET16-6T-SM1	57	HH-106	61
CSFD25	45	EFM-900	51	ETC1.5-7	58	HH-107	61
CSFD25H	45	EIN10	65	ETC1.6-4-2-3	58	HH-108	61
CSFD26	45	EIN11	65	ETC1-1-10	58	HH-109	61
CSM11-13	51	EIN12	65	ETC1-1-13	57	HH-110	62
CSM12-13	52	EIN13	65	ETC1-1-6	58	HH-127	62
CSM2-17	52	EIN14	65	ETC1-1T	57	HH-128	63
CSM2N-17	52	EIN15	65	ETC4-1	57	HHS-109	61
CSM4T	50	EIN16	65	ETC4-1-2	57	HHS-110	62
CSM4T17	50	EIN8	65	ETK4-2T	57	JH-10-4	63
CSM5T17	51	EIN9	65	FD25	45	JH-113	62

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

Blue listings indicate standard stock items widely available from our franchised distribution partners.

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Part Number	Page No.	Part Number	Page No.	Part Number	Page No.	Part Number	Page No.
JH-114 ♦	62	M79H, M79HC ♦	53	MA46416 Series	41	MA4E1338X1, MADS-001338 Series	38
JH-115 ♦	63	M80, M80C ♦	53	MA46418 Series	41	MA4E1339 Series ♦	38
JH-119 ♦	63	M83, M83C ♦	52	MA46420 Series	41	MA4E1339X1, MADS-001339 Series	38
JH-121 ♦	63	M85, M85C ♦	52	MA46425 Series	41	MA4E1340 Series ♦	38
JH-131 ♦	63	M86, M86C ♦	53	MA46450 Series	41	MA4E1340X1, MADS-001340 Series	38
JH-133 ♦	62	M87, M87C ♦	51	MA46451 Series	41	MA4E185-276	38
JH-136 ♦	63	M88, M88C ♦	52	MA46457 Series	41	MA4E190-276	38
JH-139 ♦	63	M88H, M88HC ♦	52	MA46461 Series	41	MA4E197-186	38
JH-140 ♦	63	M89, M89C ♦	52	MA46470 Series	41	MA4E2037	37
JH-141 ♦	63	M8H-3, M8HC-3 ♦	53	MA46471 Series	41	MA4E2039	37
JHS-113 ♦	62	M8H-7, M8HC-7 ♦	53	MA46472 Series	41	MA4E2040	37
JHS-114 ♦	63	M8T, M8TC ♦	50	MA46473 Series	41	MA4E2054 Series ♦	38
JHS-115 ♦	63	M8TH, M8THC ♦	50	MA46474 Series	41	MA4E2054X1, MADS-002054 Series	38
JHS-119 ♦	63	M93, M93C ♦	52	MA46475 Series	41	MA4E2062 Series	38
JHS-121 ♦	63	M9BC ♦	50	MA46476 Series	41	MA4E2062, MADS-002062	38
JHS-136 ♦	63	M9E ♦	50	MA46477 Series	41	?Series	38
JHS-139 ♦	63	M9H, M9HC ♦	51	MA46479 Series	41	MA4E2072, MADS-002072	38
JHS-142 ♦	63	MA01502D	18	MA46480 Series	41	?Series	38
L1	47	MA01502D	47	MA46483 Series	41	MA4E2099-1284	38
L42	47	MA01503D	18	MA46485 Series	41	MA4E2160	37
LA17	46	MA01503D	47	MA46504 Series	40	MA4E2200 Series ♦	38
LA45	46	MA02104AF-R13 ♦	20	MA46505 Series	40	MA4E2200X1, MADS-002200 Series	38
LA45-1	46	MA02107AF-R13 ♦	20	MA46580-1209	40	MA4E2501L-1290	38
LA7	46	MA02204AF-R13 ♦	20	MA46585-1209	40	MA4E2502 Series	38
LF2802A ♦	80	MA02206GJ-R13 ♦	20	MA46600 Series	40	MA4E2508 Series	38
LF2805A ♦	80	MA02303GJ-R13 ♦	21	MA46602 Series	40	MA4E2513L-1289	38
LF2810A ♦	80	MA05836 ♦	69	MA46603 Series	40	MA4E2514 Series	38
LG1 ♦	43	MA08509D	20	MA46604 Series	40	MA4E2532 Series	38
LG30 ♦	43	MA0S506AJ ♦	75	MA46H070 Series	40	MA4E2544L-1282	38
M14A ♦	53	MA40045-137	38	MA46H071 Series	40	MA4E914-276	38
M2A, M2AC ♦	51	MA40064-119	38	MA46H072 Series	41	MA4E920-276	38
M2B, M2BC ♦	51	MA40115-276	38	MA46H073 Series	41	MA4E926-276	38
M2E, SM2E, M2EC ♦	51	MA40126-186	38	MA46H120	40	MA4E929A-119	38
M2G, M2GC ♦	51	MA40143-213	38	MA46H146	40	MA4E929B-119	38
M2T, M2TC ♦	51	MA40147-213	38	MA46H200 Series	41	MA4E931Z2-1261A	38
M3H-50 ♦	59	MA40201-119	38	MA46H201 Series	41	MA4EX180H-1225T ♦	52
M3V-50 ♦	60	MA40205-119	38	MA46H202 Series	41	MA4EX180M-1225T ♦	52
M4A, SM4A ♦	51	MA40215-120	38	MA46H203 Series	41	MA4EX190H-1225T ♦	52
M4B, SM4B ♦	51	MA40261-186	38	MA46H204 Series	41	MA4EX190L-1225T ♦	52
M4G, SM4G ♦	51	MA40264-186	38	MA46H500 Series	41	MA4EX2401	50
M4T ♦, SM4T	50	MA43000 Series	37	MA46H501 Series	41	MA4EX240H-1225T ♦	52
M4TH, SM4TH ♦	50	MA43004 Series	37	MA46H503 Series	41	MA4EX240L-1225T ♦	52
M50, M50C ♦	53	MA43543 Series	37	MA4AGBLP912	39	MA4EX240M-1225T ♦	52
M50A, M50AC ♦	52	MA43543-134	37	MA4AGFCP910	39	MA4EX370H-1225T ♦	53
M51, M51C ♦	53	MA43592 Series	37	MA4AGP907	39	MA4EX370L-1225T ♦	53
M52, M52C ♦	53	MA44621A-134	37	MA4AGSW1	72	MA4EX370M-1225T ♦	53
M53, M53C ♦	53	MA44631A-134	37	MA4AGSW1A	72	MA4EX580L-1225T ♦	53
M5Tv	51	MA44631C-134	37	MA4AGSW2	72	MA4EX585L-1225T ♦	53
M63, M63C ♦	53	MA44641A-134	37	MA4AGSW3	72	MA4EX600H-1225T ♦	53
M63H, M63HC ♦	53	MA44767 Series	37	MA4AGSW4	72	MA4EX600L-1225T ♦	53
M67, M67C ♦	53	MA44768 Series	37	MA4AGSW5	72	MA4EX600M-1225T ♦	53
M6D-50 ♦	50	MA44769 Series	37	MA4AGSW8-1	72	MA4EX900L-1226T ♦	51
M6E-50v	50	MA45436 Series	42	MA4AGSW8-2	72	MA4EX950H-1225T ♦	51
M6EHv	50	MA45438 Series	42	MA4AGSW900-287T ♦	73	MA4EX950L-1225T ♦	51
M6R ♦	51	MA45439 Series	42	MA4BNI840-1	72	MA4EX950M-1225T ♦	51
M6V, SM6V ♦	50	MA45440 Series	42	MA4DP918-1277 ♦	66	MA4EXP190H-1277T ♦	52
M74, M74C ♦	53	MA45441 Series	42	MA4E1317	37	MA4EXP240L-1277T ♦	53
M76, M76C ♦	53	MA45445 Series	42	MA4E1318	37		
M76H, M76HC ♦	53	MA45446 Series	42	MA4E1319-1	37		
M77, M77C ♦	53	MA46410 Series	41	MA4E1319-2	37		
M79, M79C ♦	53	MA46413 Series	41	MA4E1338 Series ♦	38		

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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Part Number	Page No.	Part Number	Page No.	Part Number	Page No.	Part Number	Page No.
MA4EXP400H-1277T ♦	53	MA4P7436, MADP-007436 Series	40	MA4ST403 Series ♦	42	MAAM-007239 (3 splits)	17
MA4EXP950H-1277T ♦	52	MA4P7437, MADP-007437 Series	40	MA4ST404 Series ♦	42	MAAM-007501-SA2002	17
MA4EXP950L-1277T ♦	52	MA4P7438, MADP-007438 Series	40	MA4ST405 Series ♦	42	MAAM-007501-SA2002	21
MA4EXP950M-1277T ♦	52	MA4P7441F-1091T	40	MA4ST406 Series ♦	42	MAAM-007501-SA2002	25
MA4FCP200	39	MA4P7446F-1091T	40	MA4ST407 Series ♦	42	MAAM-007523-DIE000	18
MA4FCP300	39	MA4P7447, MADP-007155 Series	40	MA4ST408 Series ♦	42	MAAM-007523-DIE000	18
MA4FCP305	39	MA4P7452F-1072T	40	MA4ST409 Series ♦	42	MAAM-007524-DIE000	18
MA4GC6772	72	MA4P7455, MADP-007455 Series	40	MA4SW101-287T ♦	73	MAAM-007524-PKG003	18
MA4GC6773	72	MA4P7455-1225T	29	MA4SW110	72	MAAM-007724-000000	17
MA4GC6774	72	MA4P7461F-1072T	40	MA4SW210	72	MAAM-007796-000000	17
MA4GP022 Series	39	MA4P7464F-1072T	40	MA4SW210B-1	72	MAAM-007805 (2 splits)	17
MA4GP030 Series	39	MA4P7470F-1072T	40	MA4SW310	72	MAAM-007807-000000	17
MA4GP032 Series	39	MA4P789 Series ♦	40	MA4SW310B-1	72	MAAM-007865-OP1ROO	17
MA4GP907	39	MA4PBL027	39	MA4SW410	72	MAAM-007865-OP1ROO	24
MA4IQP900H-1291T ♦	49	MA4PH235-1072T	40	MA4SW410B-1	72	MAAM-007866-OP1ROO	17
MA4IQP900H-1291T ♦	49	MA4PH236-1072T	40	MA4SW510	72	MAAM-007866-OP1ROO	25
MA4IQP900L-1291T ♦	49	MA4PH237-1072T	40	MA4SW510B-1	72	MAAM-008198-00A162	24
MA4IQP900L-1291T ♦	49	MA4PH239-1072T	40	MA4SW610B-1	72	MAAM-008199-00A51	22
MA4IQP900M-1291 ♦	49	MA4PH238-1072T	40	MA4VAT2000-1277T	29	MAAM-008200-000A83	23
MA4IQP900M-1291 ♦	49	MA4PH237-1072T	40	MA4VAT2004-1061T	29	MAAM-008819 (3 splits)	17
MA4L011 Series	37	MA4PH239-1072T	40	MA4VAT2007-1061T	29	MAAM-008820 (4 splits)	17
MA4L021 Series	37	MA4PH238-1072T	40	MA4VAT900-1277T	29	MAAM-008970 (2 splits)	17
MA4L022 Series	37	MA4PH239-1072T	40	MA4VAT904-1061T	29	MAAM02350	17
MA4L031 Series	37	MA4PK2000 Series	39	MA4VAT907-1061T	29	MAAM02350-A2	17
MA4L032 Series	37	MA4PK3000 Series	39	MAAD-007077-000100	31	MAAM12000	18
MA4L062 Series	37	MA4SPS302	39	MAAD-007078-000100	31	MAAM12000-A1	19
MA4L101 Series	37	MA4SPS402	39	MAAD-007079-000100	31	MAAM12021 ♦	19
MA4L401 Series	37	MA4SPS421	39	MAAD-007080-000100	31	MAAM12031 ♦	19
MA4M1050	65	MA4SPS422	39	MAAD-007081-000100	31	MAAMGM0002	17
MA4M1100	65	MA4SPS502	39	MAAD-007082-000100	30	MAAMGM0002-DIE	17
MA4M2100	65	MA4SPS552	39	MAAD-007083-000100	31	MAAMGM0003-DIE	17
MA4M3010	65	MA4ST079 Series ♦	42	MAAD-007084-000100	30	MAAMGM0007-DIE	18
MA4M3030	65	MA4ST080 Series ♦	42	MAAD-007085-000100	31	MAAMML0016	22
MA4M3050	65	MA4ST081 Series ♦	42	MAAD-007086-000100	30	MAAMML0018	17
MA4M3100	65	MA4ST082 Series ♦	42	MAAD-007251 ♦	49	MAAMSS0005	25
MA4M3150	65	MA4ST083 Series ♦	42	MAADCC0006	31	MAAMSS0007 ♦	18
MA4P1250-1072T	40	MA4ST1103-1141T ♦	42	MAADSS0008	30	MAAMSS0014 ♦	18
MA4P1450-1091T	40	MA4ST1230 Series ♦	42	MAADSS0009	30	MAAMSS0017 ♦	18
MA4P202 Series	39	MA4ST1231, MAVR-001230 Series	42	MAADSS0010	30	MAAMSS0040	17
MA4P203 Series	39	MA4ST1240 Series ♦	42	MAAL-007304-000000	19	MAAMSS0041	17
MA4P274 Series ♦	40	MA4ST1241, MAVR-001240 Series	42	MAAL-007306-000000	19	MAAMSS0042	17
MA4P274-1225T ♦	29	MA4ST1320 Series ♦	41	MAAL-007673-000000	19	MAAMSS0044	17
MA4P275 Series ♦	40	MA4ST1330 Series ♦	41	MAAL-008091-000000	19	MAAMSS0045	19
MA4P277 Series ♦	40	MA4ST1340 Series ♦	41	MAAL-008550-000000	19	MAAMSS0046	18
MA4P278 Series ♦	40	MA4ST1350 Series ♦	41	MAAL-008624-000000	18	MAAMSS0048	18
MA4P282 Series ♦	40	MA4ST2200 Series ♦	42	MAALSS0012 ♦	19	MAAMSS0049	18
MA4P290 Series ♦	40	MA4ST230 Series ♦	42	MAALSS0013	19	MAAMSS0050	18
MA4P290-1225T ♦	29	MA4ST2300 Series ♦	42	MAALSS0024 ♦	19	MAAMSS0056	18
MA4P303 Series	39	MA4ST240 Series ♦	42	MAALSS0025 ♦	18	MAAMSS0057	18
MA4P4000 Series	40	MA4ST2400 Series ♦	42	MAALSS0027 ♦	19	MAAMSS0060	17
MA4P404 Series	39	MA4ST250 Series ♦	42	MAALSS0033	19	MAAMSS0067	17
MA4P4300 Series	40	MA4ST2500 Series ♦	42	MAALSS0034	19	MAAMSS0070	18
MA4P504 Series	39	MA4ST2600 Series ♦	42	MAALSS0038 ♦	19	MAAMSS0071	18
MA4P505 Series	39	MA4ST320 Series ♦	41	MAALSS0040 ♦	19	MAAMSS0072	18
MA4P604 Series	39	MA4ST330 Series ♦	41	MAALSS0042	19	MAAMSS0073	18
MA4P606 Series	39	MA4ST340 Series ♦	41	MAALSS0044	19	MAAN-000199-AT0000	27
MA4P607 Series	39	MA4ST350 Series ♦	41	MAALSS0045	19	MAAN-000210-AT0000	27
MA4P7000 Series	40	MA4ST401 Series ♦	42	MAALSS0048	19	MAAN00232-ATXXXX ♦	27
MA4P7100 Series	40	MA4ST402 Series ♦	42	MAALSS0049 ♦	19	MAANAT0123	27
MA4P7433, MADP-007433 Series	40			MAAM-007217-000000	25	MAANAT0133	27
				MAAM-007219-000000	20	MAANAT0134	27

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

Blue listings indicate standard stock items widely available from our franchised distribution partners.

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MAANIN0050	27	MAAPGM0064	21	MABA-00731-CT1980	58	MABAES0040	57
MAANIN0055	27	MAAPGM0064-DIE	20	MABA-007327-CT1490	57	MABAES0060	57
MAAP-000021-PKG003	21	MAAPGM0066-DIE	19	MABA-007327-CT1A40	57	MABAES0061	57
MAAP-000038-PKG003	21	MAAPGM0067-DIE	19	MABA-007488-CT9550	57	MAC-50	50
MAAP-000042-PKG003	22	MAAPGM0068-DIE	19	MABA-007489-CT18A0	58	MAC-51	50
MAAP-000044-PKG003	21	MAAPGM0069-DIE	20	MABA-007493-CF4160	57	MACP-007486-CH0010	62
MAAP-000064-PKG003	21	MAAPGM0070-DIE	20	MABA-007532-CF18A0	57	MACP-007490-CA0010	62
MAAP-000066-PKG003	21	MAAPGM0071-DIE	20	MABA-007569-GTK42T	57	MACP-007727-CI07B0	62
MAAP-000067-PKG003	21	MAAPGM0072-DIE	20	MABA-007681-CT2010	58	MACP-007741-CG09E0	62
MAAP-000068-PKG003	21	MAAPGM0073-DIE	19	MABA-007731-CT1980	58	MACP-008125-CK07F0	62
MAAP-000069-PKG003	21	MAAPSM0008	21	MABA-007748-CT1160	58	MACP-008248-CH0670	62
MAAP-000070-PKG003	21	MAAPSS0066	21	MABA-007766-CF28A0	58	MACP-008249-CH09B0	61
MAAP-000071-PKG003	21	MAAPSS0071	20	MABA-007819-CF48A0	57	MACP-008311-CE0370	62
MAAP-000072-PKG003	22	MAAPSS0075	21	MABA-007871-CT1A40	58	MACP-008764-CH0370	62
MAAP-000073-PKG003	21	MAAPSS0076	20	MABA-007902-CF3840	57	MACP-009404-C80370	62
MAAP-000074-PED000	21	MAAPSS0093	21	MABA-007902-CF38A0	57	MACPCC0001	63
MAAP-000074-PKG001	21	MAAPSS0095	20	MABA-008124-CF1FA0	57	MACPCC0002	63
MAAP-000076-PED000	21	MAAPSS0096	21	MABA-008182-CF1160	57	MACPCT0017	61
MAAP-000076-PKG001	21	MAAPSS0103	21	MABA-008184-CT1760	58	MACPCT0020	62
MAAP-000078-PED000	21	MAAPSS0104	21	MABA-008260-CF4A40	57	MACPCT0030	62
MAAP-000078-PKG001	21	MAAPSS0107	20	MABA-008354-CF4A40	57	MACPCT0038	62
MAAP-000079-PED000	21	MAAPSS0111	21	MABA-008482-CF1A40	57	MACPCT0039	62
MAAP-000079-PKG001	21	MAATCC0005	30	MABA-008757-CT1160	57	MACPCT0040	62
MAAP-000080-DIE000	22	MAATCC0006	31	MABA-008965-CF1160	57	MACPES0004	62
MAAP-000082-000000	20	MAATCC0007	30	MABA-009005-CF1A40	57	MACPES0007	59
MAAP-007649-000100	20	MAATCC0008	31	MABA-009057-CT19E0	58	MACPES0017	62
MAAP-007649-000100	24	MAATCC0009	31	MABA-009092-CT1A40	58	MACPES0028	63
MAAP-007899	21	MAATCC0010	31	MABA-009109-CF1A40	57	MACPES0050	62
MAAP-008509-PED000	21	MAATCC0011	31	MABA-009210-CT1760	58	MACS-007800-0M1R00	69
MAAP-008516	21	MAATCC0012	31	MABA-009231-CT1A4B	58	MACS-007801-0M1RMO	69
MAAPGM0016-DIE	20	MAATCC0012	31	MABA-009232-CT4A4B	58	MACS-007802-0M1R50	69
MAAPGM0018-DIE	20	MAATCC0014	31	MABA-009298-CT48A0	57	MADA2030G	30
MAAPGM0021	21	MAATGM0001	30	MABACT0039	58	MADCSM0001	49
MAAPGM0021-DIE	20	MAATGM0001-DIE	30	MABACT0040	58	MADCSM0011	49
MAAPGM0026-DIE	19	MAATGM0004	30	MABACT0043	57	MADCSM0012	49
MAAPGM0027	21	MAATGM0004-DIE	30	MABACT0044	58	MADP-007167 Series	40
MAAPGM0027-DIE	19	MAATSS0001	30	MABACT0045	57	MADP-007167-12250T	29
MAAPGM0029	21	MAATSS00017	30	MABACT0048	57	MADP-008120-12790T	40
MAAPGM0029-DIE	19	MAATSS0002	30	MABACT0055	58	MADP-042305-130600	39
MAAPGM0030	21	MAATSS0015	30	MABACT0056	57	MADP-042405-130600	39
MAAPGM0030-DIE	20	MAATSS0016	30	MABACT0056	57	MADP-042505-130600	39
MAAPGM0034	21	MAATSS0018	30	MABACT0059	57	MADP-042905-130600	39
MAAPGM0034-DIE	20	MAATSS0019	30	MABACT0061	58	MADP-064908-131000	39
MAAPGM0035S	21	MAATSS0020	30	MABACT0062	57	MADR-007097-000100	43
MAAPGM0035S-DIE	19	MAATSS0021	30	MABACT0063	58	MADR-007098-000100	43
MAAPGM0036	21	MAATSS0022	30	MABACT0064	57	MADR-007131-000100	43
MAAPGM0036-DIE	19	MAAV-007088-000100	29	MABACT0065	58	MADR-007690-DRO002	43
MAAPGM0037-DIE	20	MAAV-007089-000100	29	MABACT0066	58	MADRCC0004	43
MAAPGM0038	21	MAAV-007090-000100	29	MABACT0067	58	MADRCC0005	43
MAAPGM0038-DIE	20	MAAV-007091-000100	29	MABACT0068	57	MADRCC0006	43
MAAPGM0041	21	MAAV-007092-000100	29	MABACT0069	58	MADRCC0007	43
MAAPGM0041-DIE	20	MAAV-007941	29	MABACT0071	57	MADRMA-0001	43
MAAPGM0042-DIE	20	MAAV-008022	29	MABACT0072	58	MADRMA-0002	43
MAAPGM0044-DIE	20	MAAVSS0001	29	MABACT0074	58	MADS-001317-1296AG	37
MAAPGM0052-DIE	20	MAAVSS0004	29	MABAES0008	57	MADS-002054-1296LR	38
MAAPGM0053-DIE	20	MAAVSS0005	29	MABAES0010	57	MADS-002545-1307MG	38
MAAPGM0057-DIE	20	MAAVSS0006	29	MABAES0015	57	MADS-003000 Series	38
MAAPGM0060	21	MAAVSS0007	29	MABAES0022	57	MAFL-007492-CD0A00	66
MAAPGM0060-DIE	19	MAAVSS0008	29	MABAES0025	58	MAFL-007575-CD0910	66
MAAPGM0062-DIE	20	MABA-007159-000000	57	MABAES0032	58	MAFL-007576-CD0910	66

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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MAFL-007898-CD0ACO	66	MAMXES0118	52	MAPR-001011-850S00	77	MASWML0005	71
MAFL-008070-CLOADO	66	MAMXES0120	52	MAPR-002729-170M00	78	MASWML0010	71
MAFL-008195-CD0ACO	66	MAMXSS0010	52	MAPRST0002	77	(N/R & Miniature)	71
MAFL-008290-CD0ACO	66	MAMXSS0011	51	MAPRST0912-350	77	MASWML0011	71
MAFL-008571-CD0AFO	66	MAMXSS0012	51	MAPRST0912-50	77	(MMIC & MMIC)	71
MAFL-008867-CB0B40	66	MAMXSS0013	52	MAPRST1030-1KS	77	MASWML0012	71
MAFL-008868-CB0B50	66	MAO3501D	55	MAPRST1214-150UF	77	(Miniature)	71
MAFL-008869-CB0B60	66	MAO3503D	55	MAPRST1214-30UF	77	MASWML0013	71
MAFL-008870-CB0B70	66	MAPD-000900-12920T	60	MAPRST1214-6UF	77	(Miniature)	71
MAFL-009010-CT0B90	66	MAPD-007246-ES4700	59	MAPRST2856-200	78	MASWML0017	71
MAFLCC0001	66	MAPD-007249-ESML21	59	MAPRST2933-100M	78	(Miniature)	71
MAFLCC0003	66	MAPD-007530-000/00	60	MAPS-008342-PKG003	67	MASWML0021	71
MAFLCT0006	66	MAPD-007778-C402EO	59	MAPS-008343-PKG003	67	(Miniature)	71
MAFLCT0010	66	MAPD-007874-C20960	60	MAPS-008345-PKG003	67	MASWML0024	71
MAFLCT0027	66	MAPD-008072-GSSM26	59	MASW-000822-12770T	74	(Miniature)	71
MAFLCT0027	66	MAPD-008108-C202CO	59	MASW-000823-12770T	74	MASWML0027	71
MAFLCT0031	66	MAPD-008109-C30040	59	MASW-001100-1190	72	(Miniature)	71
MAFLCT0034	66	MAPD-008185-C20720	60	MASW-002100-1191	72	MASWML0028	71
MAFLCT0068	66	MAPDCC0001	60	MASW-003100-1192	72	MASWSS0005	73
MAFLCT0081	66	MAPDCC0002	61	MASW-007070-000100	73	MASWSS0006	73
MAFLES0018	66	MAPDCC0003	60	MASW-007071-000100	74	MASWSS0024	74
MAFLES0102	66	MAPDCC0004	60	MASW-007073-000100	72	MASWSS0028	75
MAFLES0118	66	MAPDCC0005	60	MASW-007074-000100	72	MASWSS0029	73
MAFLES0122	66	MAPDCC0006	61	MASW-007075-000100	72	MASWSS0039	73
MAFRIN0166	61	MAPDCC0007	60	MASW-007076-000100	72	MASWSS0040	73
MAHYB390-1303T	61	MAPDCC0008	60	MASW-007077-000100	74	MASWSS0060	74
MAHYB900-1292T	60	MAPDCC0009	61	MASW-007107	74	MASWSS0065	74
MAHYCC0001	60	MAPDCC0010	60	MASW-007221	74	MASWSS0067	75
MALI-007212-0000000	47	MAPDCC0011	60	MASW-007587	73	MASWSS0068	75
MALI-007213-0000000	47	MAPDCC0014	60	MASW-007588	74	MASWSS0070	74
MALI-007214-0000000	47	MAPDCC0015	61	MASW-007813	75	MASWSS0091	72
MALI-008636-0000000	47	MAPDCC0016	60	MASW-007921	74	MASWSS0093	74
MALI-008799-0000000	47	MAPDCC0017	60	MASW-007935	74	MASWSS0094	73
MALIML0028	47	MAPDCC0018	60	MASW-008075	73	MASWSS0100	72
MALIML0035	47	MAPDCC0019	60	MASW-008153	75	MASWSS0103	75
MAMDCC0002	49	MAPDCC0020	61	MASW-008177	75	MASWSS0107	73
MAMDCC0005	49	MAPDCC0021	60	MASW-008206-000DIE	72	MASWSS0115	73
MAMF-000002-DIE000	55	MAPDCC0022	60	MASW-008330	75	MASWSS0117	74
MAMF-000003-DIE000	55	MAPDCT0002	59	MASW-008544	75	MASWSS0118	75
MAMF-000004-DIE000	55	MAPDCT0004	60	MASW-008566	75	MASWSS0121	74
MAMFGM0001-DIE	55	MAPDCT0005	59	MASW-008801	75	MASWSS0129	73
MAMO-000900-1291HT	49	MAPDCT0010	59	MASW-008853	74	MASWSS0130	73
MAMO-000900-1291HT	49	MAPDCT0012	59	MASW-008899	74	MASWSS0136	73
MAMO-000900-1291HT	49	MAPDCT0013	59	MASW-009101	75	MASWSS0143	74
MAMO-000900-1291LT	49	MAPDCT0024	59	MASW-009155	75	MASWSS0144	75
MAMO-000900-1291LT	49	MAPDCT0026	59	MASW2000	72	MASWSS0148	73
MAMO-000900-1291MT	49	MAPDCT0027	59	MASW2000	72	MASWSS0151	74
MAMO-000900-1291MT	49	MAPDCT0028	59	MASW2040	72	MASWSS0157	73
MAMO-007252-IN2960	49	MAPDCT0029	59	MASW4030G	72	MASWSS0161	73
MAMUCT0021 (3 splits)	17	MAPDCT0030	59	MASW40606	72	MASWSS0162	73
MAMUSM0008	71	MAPDCT0032	59	MASW6010G	72	MASWSS0166	74
MAMX-000240-1225MT	52	MAPDCT0033	59	MASW6020G	72	MASWSS0167	74
MAMX-000900-1061LT	51	MAPF250128-150000	80	MASW6030G	72	MASWSS0169	74
MAMX-008611	51	MAPL-000817-015CPC	79	MASWCC0006	75	MASWSS0175	73
MAMX-090240-1225MT	53	MAPLST0822-002PP	79	MASWCC0009	72	MASWSS0176	73
MAMXES0022	50	MAPLST1617-030CF	79	MASWCC0010	75	MASWSS0178	74
MAMXES0028	50	MAPM-020512-010C00	79	MASWCC0010	75	MASWSS0179	73
MAMXES0041	50	MAPM-020512-040C00	79	MASWGM0001-DIE	71	MASWSS0180	73
MAMXES0050	53	MAPPST2729-300M	79	MASWGM0003-DIE	71	MASWSS0181	73
MAMXES0072	50	MAPPST2933-190M	79	MASWGM0005-DIE	71	MASWSS0184	73
MAMXES0115	50	MAPPST3134-120L	79	MASWML0002	71	MASWSS0190	73
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Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

Blue listings indicate standard stock items widely available from our franchised distribution partners.

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MASWSS0192	73	MAVR-045445 Series	42	MRF148A	80	MZ5210, MZ5210C ♦	53
MASWSS0199	74	MAVR-045446 Series	42	MRF150	80	MZ7407, MZ7407C ♦	53
MASWSS0200	74	MC4110 ♦	52	MRF151	80	MZ7410, MZ7410C ♦	53
MASWSS0201	73	MC4520 ♦	53	MRF151A	80	MZ7420, MZ7420C ♦	53
MASWSS0204	74	MD-108 ♦	50	MRF151G	80	MZ8810, MZ8810C ♦	52
MASYVSO006-1810 ♦	69	MD-113 ♦	50	MRF154	80	MZ8813, MZ8813C ♦	52
MASYVSO061-1066 ♦	69	MD-124 ♦	50	MRF157	80	MZ9310, MZ9310C ♦	52
MAVCML0025 ♦	69	MD-148 ♦	51	MRF158	81	MZ9313, MZ9313C ♦	52
MAVCML0026 ♦	69	MD-149 ♦	51	MRF160	81	PA1132 ♦	20
MAVCML0027 ♦	69	MD-154 ♦	51	MRF16006	78	PA1132 ♦	25
MAVCML0028 ♦	69	MD-156 ♦	51	MRF16030	78	PA1162 ♦	18
MAVCML0029 ♦	69	MD-158 ♦	50	MRF166C	81	PA1162 ♦	20
MAVCML0030 ♦	69	MD-160 ♦	50	MRF166W	81	PA1162 ♦	23
MAVCML0031 ♦	69	MD-161 ♦	50	MRF171A	81	PA2001 ♦	25
MAVCML0032 ♦	69	MD-169 ♦	50	MRF173	80	PA2001 ♦	19
MAVCML0033 ♦	69	MD-179 ♦	50	MRF173CQ	80	PA2001 ♦	20
MAVCML0034 ♦	69	MD-189 ♦	50	MRF174	80	PA2003	25
MAVCML0035 ♦	69	MD20-0016-S	49	MRF175GU	81	PA2003 ♦	20
MAVCML0036 ♦	69	MD20-0017-S	49	MRF175GV	80	PA2010	20
MAVCML0039 ♦	69	MD20-0018-S	49	MRF175LU	81	PA2010	24
MAVCML0040 ♦	69	MD22-0002-MUC	51	MRF176GU	81	PA38	20
MAVCML0041 ♦	69	MD54-0003 ♦	52	MRF176GV	80	PA38	25
MAVCML0043 ♦	69	MD54-0004 ♦	51	MRF177	81	PA38-2	21
MAVCML0044 ♦	69	MD54-0005 ♦	51	MRF275G	81	PA38-2	25
MAVCML0058 ♦	69	MD54-0006 ♦	52	MRF275L	81	PA48	21
MAVCML0059 ♦	69	MD54-0007 ♦	53	MRF3104	78	PA48	25
MAVR-000079 Series	42	MD57-0001 ♦	51	MRF313	77	PA511	20
MAVR-000080 Series	42	MD57-0002 ♦	52	MRF314	77	PA511	23
MAVR-000081 Series	42	MD-614 ♦	51	MRF316	77	PA512	20
MAVR-000082Series	42	MDC-162 ♦	52	MRF317	77	PA512	23
MAVR-000083 Series	42	MDC-163 ♦	52	MRF321	77	PAW1027 ♦	17
MAVR-000230 Series	42	MDC-164 ♦	51	MRF323	77	PAW1027 ♦	20
MAVR-000240 Series	42	MDC-169 ♦	50	MRF327	77	PAW1027 ♦	22
MAVR-000250 Series	42	MDC-179 ♦	50	MRF392	77	PAW1027-1 ♦	17
MAVR-000320 Series	41	MDS-148 ♦	51	MRF393	77	PAW1027-1	20
MAVR-000330 Series	41	MDS-149 ♦	51	MRF421	77	PAW1027-1	23
MAVR-000340 Series	41	MDS-169v	50	MRF422	77	PD10-0040-S ♦	65
MAVR-000350 Series	41	MDS-189 ♦	50	MRF426	77	PD10-0041-S ♦	65
MAVR-000401 Series	42	MDS-222 ♦	50	MRF428	77	PD10-0042-S	60
MAVR-000402 Series	42	MDS-223 ♦	51	MRF429	77	PD10-0042-S ♦	65
MAVR-000403 Series	42	MLO80100-00940 ♦	69	MRF448	77	PD20-0010-S ♦	65
MAVR-000404 Series	42	MLO80100-01020 ♦	69	MRF454	77	PH0814-40	77
MAVR-000405 Series	42	MRF10005	77	MRF455	77	PH1090-15L	77
MAVR-000406 Series	42	MRF1000MB	77	MRF587	77	PH1090-175L	77
MAVR-000407 Series	42	MRF10031	77	MTH-50 ♦	59	PH1090-350L	77
MAVR-000407 Series	42	MRF1004MB	77	MTV-50 ♦	60	PH1090-550S	77
MAVR-000408 Series	42	MRF10120	77	MY50, MY50C ♦	53	PH1090-700B	77
MAVR-001320 Series	41	MRF10150	77	MY50A, MY50AC ♦	53	PH1090-75L	77
MAVR-001330 Series	41	MRF10350	77	MY51, MY51C ♦	53	PH1214-0.85L	77
MAVR-001340 Series	41	MRF10502	77	MY52, MY52C ♦	53	PH1214-100EL	77
MAVR-001350 Series	41	MRF1090MA	77	MY63H, MY63HC ♦	53	PH1214-110M	78
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MAVR-002300 Series	42	MRF1150MA	77	MY76H, MY76HC ♦	53	PH1214-20EL	78
MAVR-002400 Series	42	MRF1150MB	77	MY77, MY77C ♦	53	PH1214-220M	78
MAVR-002500 Series	42	MRF134	81	MY82, MY82C ♦	52	PH1214-25L	78
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MAVR-045436 Series	42	MRF136Y	81	MY85, MY85C ♦	52	PH1214-25S	78
MAVR-045438 Series	42	MRF137	81	MY88, MY88C ♦	52	PH1214-2M	78
MAVR-045439 Series	42	MRF140	80	MY89, MY89C ♦	52	PHI214-300M	78
MAVR-045440 Series	42	MRF141	80	MY93, MY93C ♦	52	PH1214-30EL	78

Note: Part numbers are RoHS compliant. ♦ indicates non-RoHS compliant.

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