Xinger II Selection Matrix

3 dB Hybrid Couplers								
Model Number	Package Size [Inch]	Freq. Band [MHz]	Ins. loss [dB max]	Isolation [dB min]	VSWR [max:1]	± Amp. Bal. [dB max]	90 ± Ph. Bal [deg. max]	Avg. Power [W max]
XC0450A-03	0.56 x 0.35	410 - 480	0.36	23.0	1.22	± 0.15	90 ± 3.5	45
XC0450L-03	0.65 x 0.48	410 - 480	0.20	23.0	1.15	± 0.15	90 ± 2.0	200
XC0450E-03	0.56 x 0.20	460 - 470	0.35	20.0	1.22	± 0.35	90 ± 3.0	100
1F1304-3	0.65 x 0.48	670-860	0.40	21.0	1.25	± 0.50	90 ± 3.0	100
XC0900P-03	0.25 x 0.20	800 - 1000	0.40	20.0	1.22	± 0.30	90 ± 4.0	25
		824 - 849	0.35	20.0	1.22	± 0.30	90 ± 4.0	28
		869 - 894	0.35	24.0	1.15	± 0.20	90 ± 4.0	28
		925 - 960	0.37	25.0	1.17	± 0.20	90 ± 3.0	27
XC0900E-03	0.56 x 0.20	800 - 1000	0.22	21.0	1.19	± 0.20	90 ± 3.0	70
		869 - 894	0.20	23.0	1.17	± 0.15	90 ± 2.0	80
		925 - 960	0.21	23.0	1.17	± 0.15	90 ± 2.5	75
XC0900A-03	0.56 x 0.35	811 - 1000	0.15	23.0	1.15	± 0.20	90 ± 2.0	175
		869 - 894	0.12	25.0	1.12	± 0.14	90 ± 2.0	225
		925 - 960	0.12	25.0	1.12	± 0.14	90 ± 2.0	225
XC0900L-03	0.65 x 0.48	800 -1000	0.12	25.0	1.12	± 0.13	90 ± 2.0	225
S03B888N3	1.00 x 0.50	815 - 960	0.15	20.0	1.25	± 0.30	90 ± 1.5	300
11305-3	0.56 x 0.35	1000-2000	0.45	20.0	1.30	± 0.55	90 ± 3.0	60
XC1400P-03	0.25 x 0.20	1200 - 1600	0.32	23.0	1.20	± 0.30	90 ± 4.0	30
		1215 - 1240	0.23	23.0	1.17	± 0.30	90 ± 3.0	40
		1563 - 1588	0.32	23.0	1.20	± 0.30	90 ± 4.0	30
1P503	0.25 x 0.20	1700 - 2000	0.25	18.0	1.28	± 0.30	90 ± 3.0	30
XC1900E-03	0.56 x 0.20	1700 - 2000	0.12	23.0	1.17	± 0.13	90 ± 2.0	120
		1805 - 1880	0.12	25.0	1.12	± 0.10	90 ± 2.0	120
		1930 - 1990	0.12	25.0	1.12	± 0.10	90 ± 2.0	120
XC1900A-03	0.56 x 0.35	1700 - 2000	0.15	25.0	1.15	± 0.13	90 ± 2.0	150
		1805 - 1880	0.12	27.0	1.12	± 0.10	90 ± 2.0	150
		1930 - 1990	0.12	27.0	1.12	± 0.10	90 ± 2.0	150
S03B1960N3	1.00 x 0.50	1930 - 1990	0.15	20.0	1.25	± 0.25	90 ± 1.5	300
XC2100E-03	0.56 x 0.20	2000 - 2300	0.12	23.0	1.17	± 0.15	90 ± 2.0	95
		2110 - 2170	0.12	25.0	1.12	± 0.10	90 ± 2.0	100
XC2100A-03	0.56 x 0.35	2000 - 2300	0.15	23.0	1.15	± 0.15	90 ± 2.0	105
		2110 - 2170	0.12	25.0	1.12	± 0.10	90 ± 2.0	145
S03B2150N3	1.00 x 0.50	2000 - 2300	0.15	20.0	1.25	± 0.25	90 ± 2.0	300
XC2650P-03	0.25 x 0.20	2650 - 2800	0.25	20.0	1.20	± 0.15	90 ± 3.0	50
XC2500E-03	0.56 x 0.20	2300 - 2700	0.15	22.0	1.17	± 0.15	90 ± 3.0	80
XC2500A-03	0.56 x 0.35	2300 - 2700	0.13	25.0	1.14	± 0.15	90 ± 4.0	150
		2300 - 2400	0.10	25.0	1.14	± 0.15	90 ± 4.0	200
JP503	0.25 x 0.20	2000 - 2300	0.30	20.0	1.20	± 0.25	90 ± 3.0	25
11306-3	0.56 x 0.35	2000 - 4000	0.35	20.0	1.30	± 0.55	90 ± 5.0	60
1P603	0.25 x 0.20	2300 - 2700	0.30	20.0	1.20	± 0.25	90 ± 3.0	25
1M803	0.40 x 0.20	4800 - 6000	0.25	20.0	1.21	± 0.30	90 ± 3.5	20
XC3500P-03	0.25 x 0.20	3300 - 3800	0.25	21.0	1.20	± 0.25	90 ± 3.0	55
XC3500M-03	0.40 x 0.20	3300 - 3800	0.25	21.0	1.20	± 0.25	90 ± 3.0	70

Nomenclature Chart

XX XXXX X - XX X X

Function	Frequency (MHz)	Size (Inches)	Coupling Value	Plating Finish	Packaging
XC = Coupler	0450 = 410 - 480	A = 0.56 x 0.35	03 = 3 dB	P = Tin Lead	T = Tube
	0900 = 800 - 1000	B = 1.00 x 0.50	05 = 5 dB	S = Tin Immersion	R = Reel
	1500 = 1000 - 2000	E = 0.56 x 0.20	10 = 10 dB		
	1900 = 1700 - 2000	L = 0.65 x 0.48	20 = 20 dB		
	2100 = 2000 - 2300	M = 0.40 x 0.20	30 = 30 dB		
	2500 = 2300 - 2700	P = 0.25 x 0.20			
	2650 = 2650 - 2800				
	3500 = 3300 - 3700				

Note: These tables are for reference only. Please review complete data sheet for actual specification data.

Xinger II Selection Matrix

Nomenclature Chart

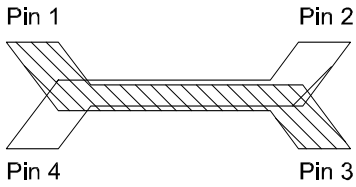
X X X XX X X

Function	Size (Inches)	Frequency (MHz)	Coupling Value	Plating Finish	Packaging
1 = Coupler	A = 0.56 x 0.35	4 = 670 - 860	03 = 3 dB	P = Tin Lead	T = Tube
J = Coupler	B = 1.00 x 0.50	5 = 1700 - 2300	05 = 5 dB	S = Tin Immersion	R = Reel
S03 = 3 dB Coupler	E = 0.56 x 0.20	6 = 2000 - 2700	06 = 6 dB		
	F = 0.65 x 0.48	7 = 3300 - 3700	10 = 10 dB		
	L = 0.65 x 0.48	8 = 5000 - 6000	20 = 20 dB		
	M = 0.40 x 0.20		30 = 30 dB		
	P = 0.25 x 0.20				

Note: These tables are for reference only. Please review complete data sheet for actual specification data

Hybrid Coupler Pin Configuration

The component has an orientation marker to denote Pin 1. Once port 1 has been identified, the other ports are known automatically. Please see the chart below for clarification:



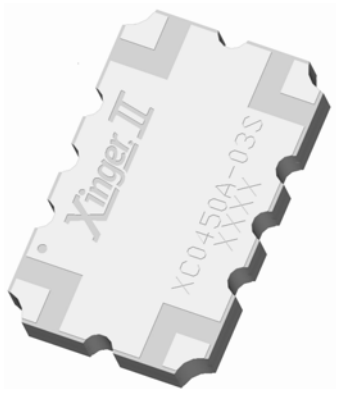
Configuration	Pin 1	Pin 2	Pin 3	Pin 4
Splitter	Input	Isolated	-3dB $\angle\theta - 90$	-3dB $\angle\theta$
Splitter	Isolated	Input	-3dB $\angle\theta$	-3dB $\angle\theta - 90$
Splitter	-3dB $\angle\theta - 90$	-3dB $\angle\theta$	Input	Isolated
Splitter	-3dB $\angle\theta$	-3dB $\angle\theta - 90$	Isolated	Input
*Combiner	A $\angle\theta - 90$	A $\angle\theta$	Isolated	Output
*Combiner	A $\angle\theta$	A $\angle\theta - 90$	Output	Isolated
*Combiner	Isolated	Output	A $\angle\theta - 90$	A $\angle\theta$
*Combiner	Output	Isolated	A $\angle\theta$	A $\angle\theta - 90$

*Note: "A" is the amplitude of the applied signals. When two quadrature signals with equal amplitudes are applied to the coupler as described in the table, they will combine at the output port. If the amplitudes are not equal, some of the applied energy will be directed to the isolated port.

Model XC0450A-03

Rev B

Hybrid Coupler
3 dB, 90°



Description

The XC0450A-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for NMT band applications. The XC0450A-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 45 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350, and polyimide. Available in both 5 of 6 tin lead (XC0450A-03P) and 6 of 6 RoHS compliant tin immersion (XC0450A-03S).

Features:

- **410 – 480 MHz**
- **NMT**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT= 0.53**

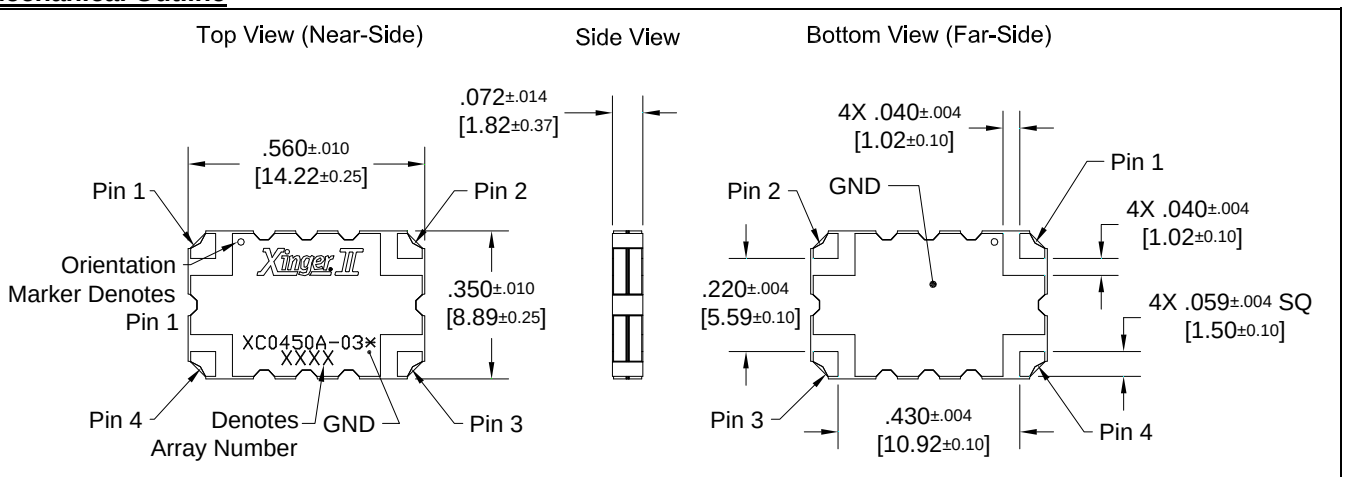
Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
410-480	23	0.36	1.22	± 0.15

Phase Balance	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 3.5	45	27	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58481-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC0450A-03* Mechanical Outline

* For RoHS compliant versions order with S suffix
Tolerances are non-cumulative

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Xinger II

Hybrid Coupler
3 dB, 90°

Description

The XC0450L-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for NMT band applications. The XC0450L-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 200 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, and RO4350. Available in both 5 of 6 tin lead (XC0450L-03P) and 6 of 6 tin immersion (XC0450L-03S) RoHS compliant finishes.

Features:

- **410 – 480 MHz**
- **NMT**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT= 0.53**

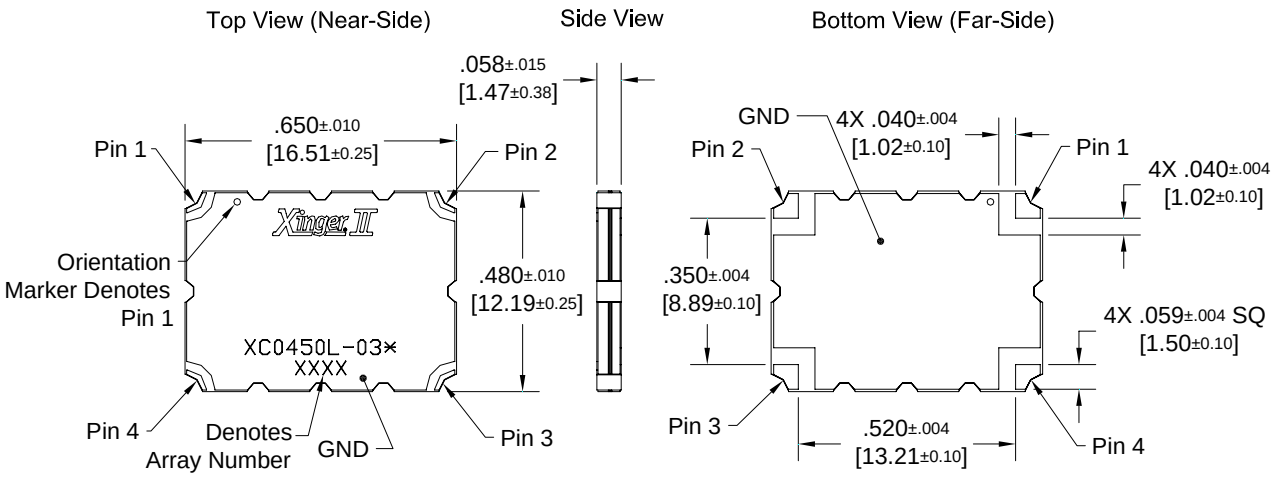
Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max:1*	*dB Max*
410 – 480	23	0.20	1.15	± 0.15

Phase Balance	Power	ΘJC	Operating Temp.
Degrees	*Ave. CW Watts*	*ºC/ Watt*	*ºC*
90 ± 2	200	11.0	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 57904-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC0450L-03* Mechanical Outline

* For RoHS Compliant Versions order with S suffix
Tolerances are non-cumulative

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Xinger II®

Hybrid Coupler
3 dB, 90°

Features:

- **460-470 MHz**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**

Description

The XC0450E-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. The XC0450E-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 100 watts.

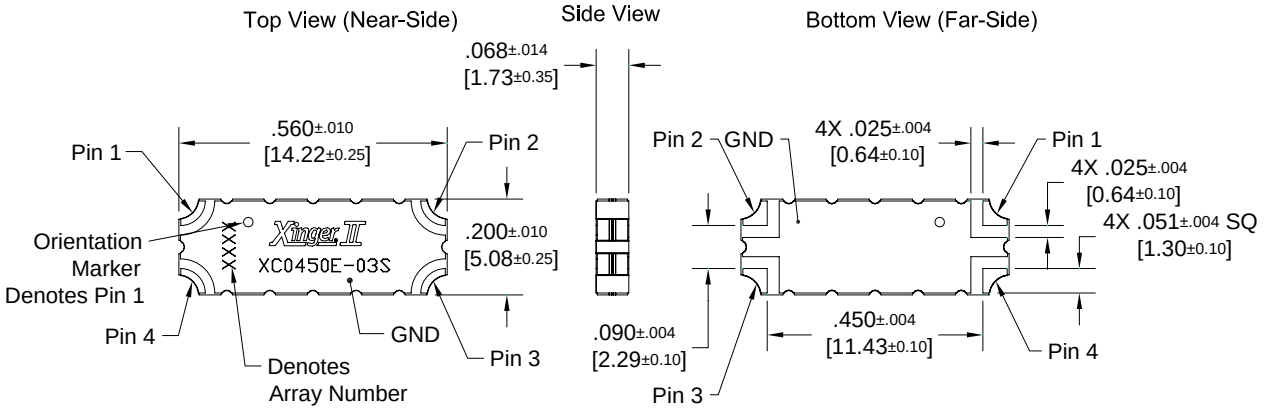
Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Produced with 6 of 6 RoHS compliant Tin Immersion finish.

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
460 – 470	20	0.35	1.22	± 0.35
Phase	**Power**	**ΘJC**	**Operating Temp.**	
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*	
90 ± 3.0	100	19.4	-55 to +85	

**Specification based on performance of unit properly installed on Anaren Test Board 58492-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC0450E-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

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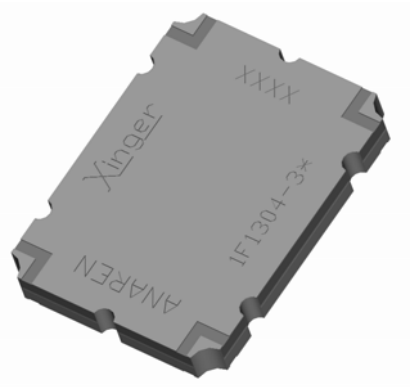
Xinger®

Hybrid Couplers
3 dB, 90°



Description

The 1F1304-3S is a low profile 3dB hybrid coupler in an easy to use surface mount package covering 470 to 860 MHz. The 1F1304-3S is ideal for balanced amplifiers and signal distribution and can be used in most high power designs. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates such as FR4, G-10 and polyimide. Available in both 5 of 6 tin lead (1F1304-3) and 6 of 6 tin immersion (1F1304-3S) RoHS compliant finishes.

Features:

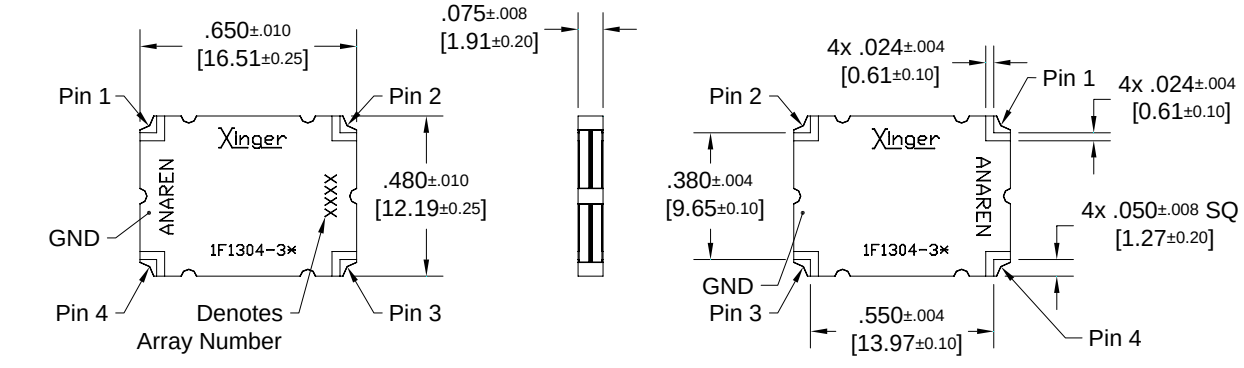
- **470 - 860 MHz**
- **Low loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Convenient Package**
- **100% Tested**
- **Lead Free Available**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
MHz	*dB Min*	*dB Max*	*Max:1*	
470 - 860	21	0.40	1.25	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/ Watt*	*ºC*
± 0.50	± 3	100	8.6	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Outline Drawing



Dimensions are in Inches [Millimeters]
1F1304-3* Mechanical Outline

* For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel For Pick and Place Manufacturing.

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Model XC0900P-03S

Rev D

Hybrid Coupler
3 dB, 90°

Description

The XC0900P-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for AMPS band applications. The XC0900P-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 28 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, and RO4350. Produced with 6 of 6 RoHS compliant tin immersion.

Features:

- **800 – 1000 MHz**
- **AMPS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**
- **Reliable, FIT=0.49**

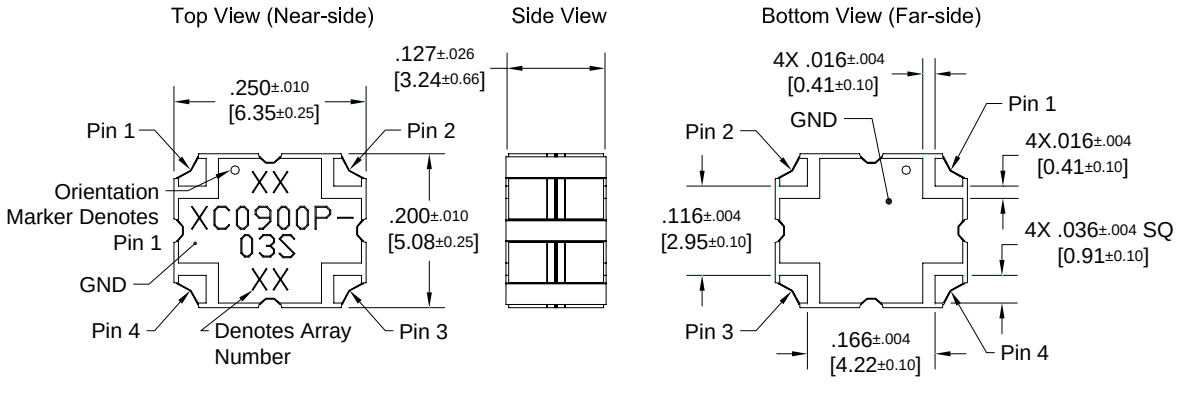
Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
800 - 1000	20	0.40	1.22	+/-0.30
824 - 849	20	0.35	1.22	+/-0.30
869 - 894	24	0.35	1.15	+/-0.20
925 - 960	25	0.37	1.17	+/-0.20

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 5.0	25	45	-55 to +85
90 ± 4.0	28	45	-55 to +85
90 ± 4.0	28	45	-55 to +85
90 ± 4.0	27	45	-55 to +85

**Specification based on performance of unit properly installed on Anaren Test Board 54147-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC0900P-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

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Xinger II®

Hybrid Coupler
3 dB, 90°

Description

The XC0900E-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for AMPS band applications. The XC0900E-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 80 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC0900E-03P) and 6 of 6 tin immersion (XC0900E-03S) RoHS compliant finishes.

Features:

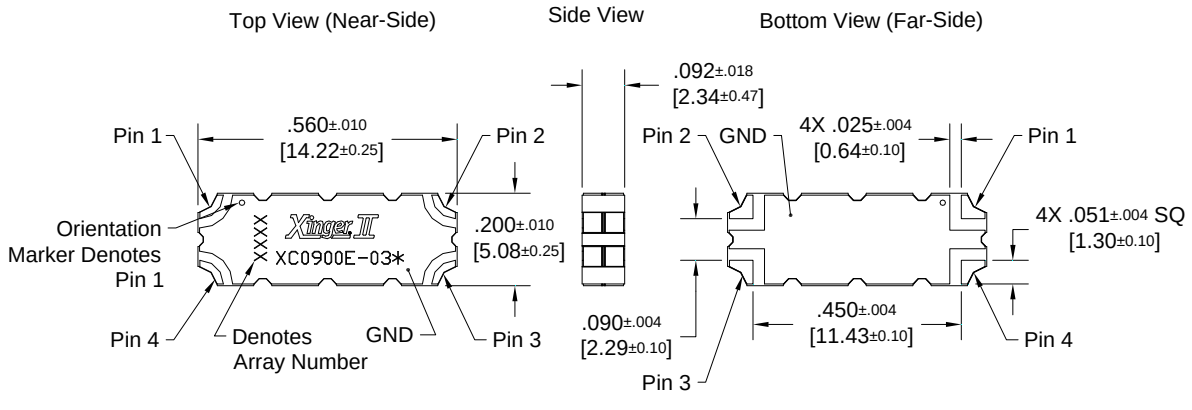
- **800-1000 MHz**
- **AMPS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
800-1000	21	0.22	1.19	± 0.20
869-894	23	0.20	1.17	± 0.15
925-960	23	0.21	1.17	± 0.15

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 3.0	70	31	-55 to +95
90 ± 2.0	80	31	-55 to +95
90 ± 2.5	75	31	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58492-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC0900E-03* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

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Xinger II

Hybrid Coupler
3 dB, 90°

Description

The XC0900A-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for AMPS band applications. The XC0900A-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 225 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC0900A-03P) and 6 of 6 tin immersion (XC0900A-03S) RoHS compliant finishes.

Features:

- **811 – 1000 MHz**
- **AMPS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

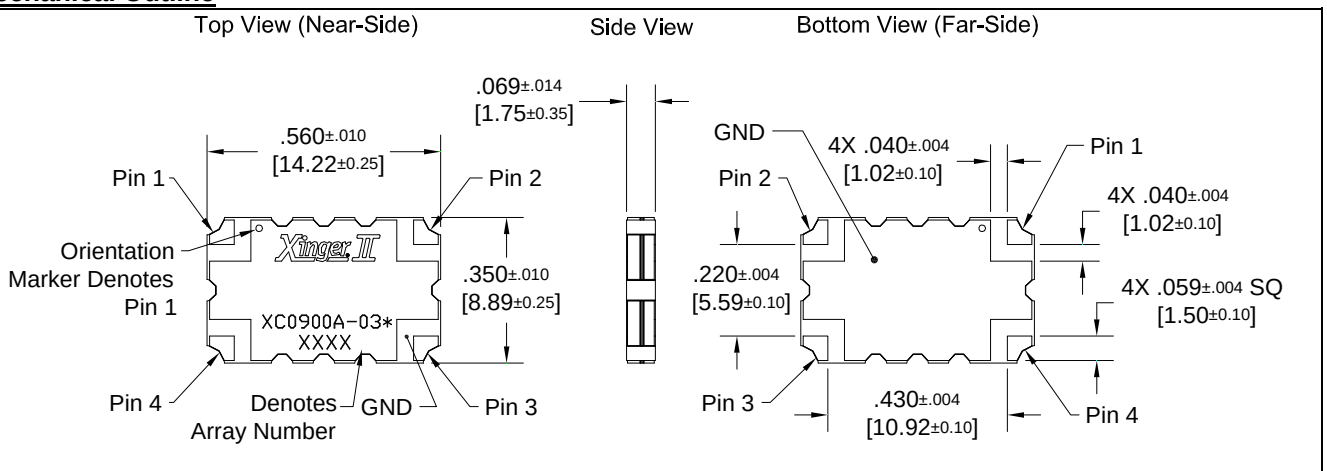
Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
811 - 1000	23	0.15	1.15	± 0.20
869 - 894	25	0.12	1.12	± 0.14
925 - 960	25	0.12	1.12	± 0.14

Phase Balance	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	175	18	-55 to +95
90 ± 2.0	225	18	-55 to +95
90 ± 2.0	225	18	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58481-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC0900A-03* Mechanical Outline

* For RoHS Compliant Versions order with S suffix
Tolerances are non-cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

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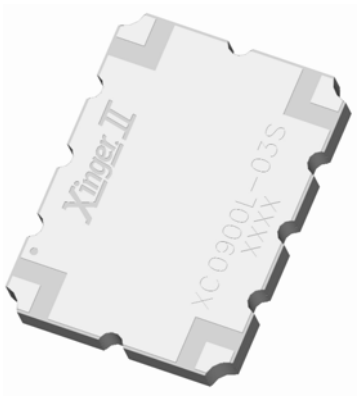
Xinger II

Hybrid Coupler
3 dB, 90°



Description

The XC0900L-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for AMPS band applications. The XC0900L-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 225 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, and RO4350. Available in both 5 of 6 tin lead (XC0900L-03P) and 6 of 6 tin immersion (XC0900L-03S) RoHS compliant finishes.

Features:

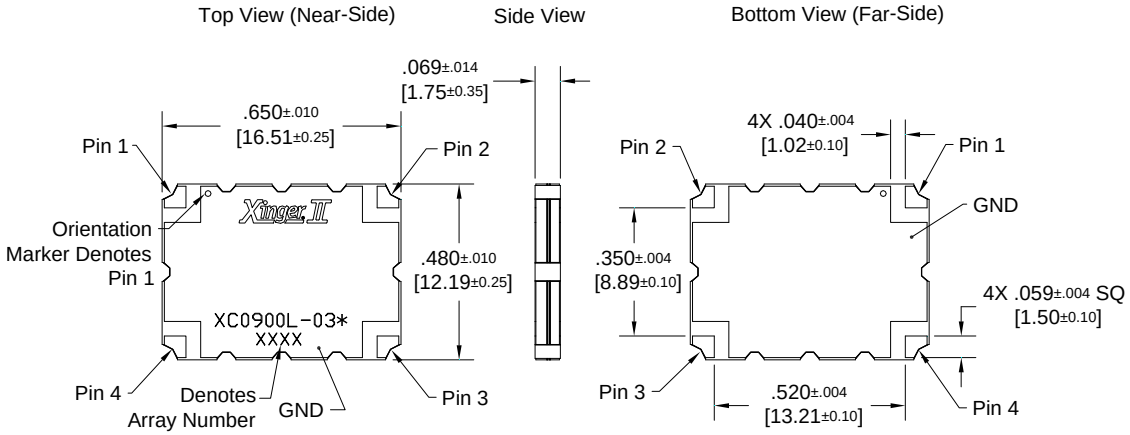
- **800 – 1000 MHz**
- **AMPS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
800 - 1000	23	0.16	1.15	± 0.17
869 - 894	25	0.12	1.12	± 0.13
925 - 960	25	0.12	1.12	± 0.13

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	175	15	-55 to +95
90 ± 2.0	225	15	-55 to +95
90 ± 2.0	225	15	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 57904-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC0900L-03* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Anaren

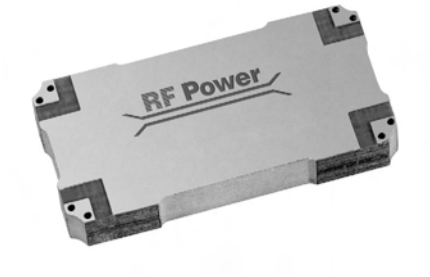
RF Power

Model S03B888N3

Hybrid Couplers

3 dB, 90°

Surface Mount Components



Description

The S03B888N3 is a low profile 3 dB hybrid coupler in an easy to use surface mount package for AMPS, GSM and EDGE applications. The S03B888N3 is ideal for balanced amplifiers and signal distribution and can be used in very high power designs. Parts have been run through rigorous qualifications and units are 100% tested. They are manufactured using materials with X and Y thermal expansion coefficients compatible with common substrates.

Features

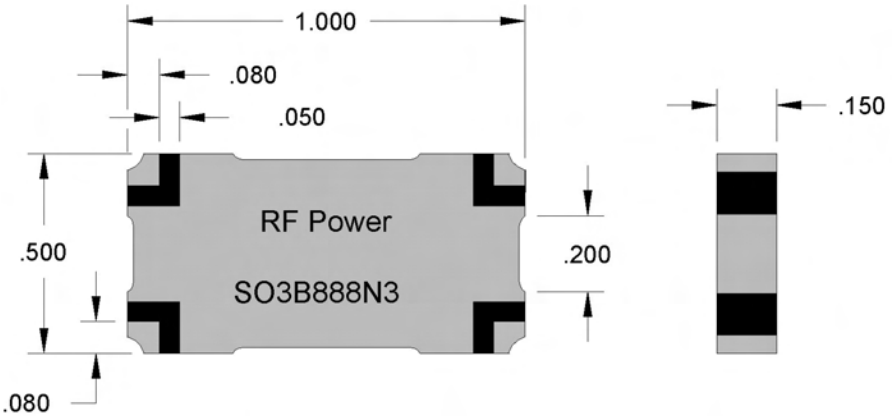
- 815 - 960 MHz
- 300 Watts
- Low Loss
- High Isolation
- 90° Quadrature
- Surface Mountable
- Tape and Reel
- Convenient Package
- 100% Tested

Electrical Specifications

Frequency *MHz*	Isolation *dB Min*	Insert. Loss *dB Max*	VSWR *Max: 1*
815 - 960	20	0.15	1.25
Amp. Bal. *dB Max*	**Phase Bal. *Degrees Max***	**Temp. *°C***	**Power *Avg. CW Watts***
±0.30	±1.5	-55 to +85	300

Specifications subject to change without notice.

Outline Drawing



VER. 3/13/02

Available on Tape and Reel for Pick and Place Manufacturing.

Sales Desk USA: Voice: **(800) 544-2414** Fax: **(315) 432-9121**
Sales Desk Europe: Voice: **(+44) 23 92 232392** Fax: **(+44) 23 92 251369**

Anaren
What'll we think of next?™

Hybrid Couplers
3 dB, 90°

Description

The 11305-3 is a low profile 3dB hybrid coupler in an easy to use surface mount package covering 1.0 to 2.0 GHz. The 11305-3 is ideal for balanced amplifiers and signal distribution and can be used in most high power designs. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates such as FR4, G-10 and polyamide.

Features:

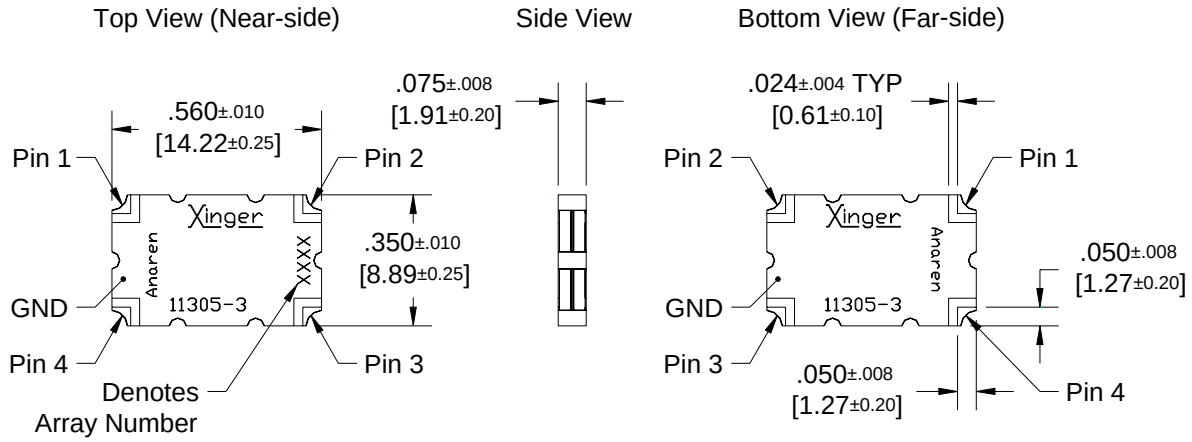
- **1.0 – 2.0 GHz**
- **Low Loss**
- **High Isolation**
- **90° Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Convenient Package**
- **100% Tested**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
1.0 – 2.0	20	0.45	1.30	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/Watt*	*ºC*
± 0.55	± 3	60	18.6	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Outline Drawing



Dimensions are in Inches [Millimeters]
11305-3 Rev A Mechanical Outline

Part Is Symmetric About All Axis

Available on Tape and Reel For Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Model XC1400P-03S

Rev B

Xinger II

Hybrid Coupler
3 dB, 90°

Description

The XC1400P-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for GPS band applications. The XC1400P-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 40 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, and RO4350. Produced with 6 of 6 RoHS compliant tin immersion.

Features:

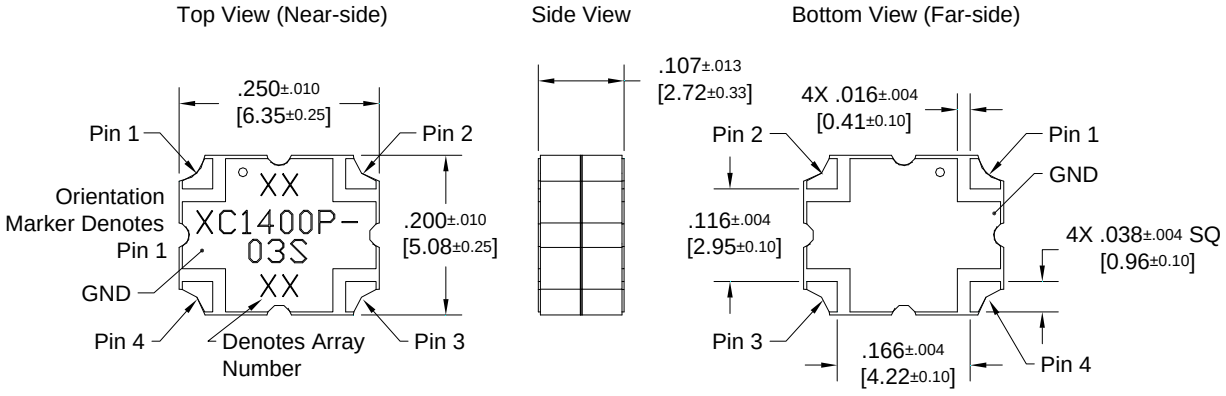
- **1200 – 1600 MHz**
- **GPS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**
- **Reliable, FIT=0.49**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
1200-1600	23	0.32	1.20	+/-0.30
1215-1240	23	0.23	1.17	+/-0.30
1563-1588	23	0.32	1.20	+/-0.30

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 4.0	30	57	-55 to +85
90 ± 3.0	40	57	-55 to +85
90 ± 4.0	30	57	-55 to +85

**Specification based on performance of unit properly installed on Anaren Test Board 54147-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC1400P-03S Mechanical Outline Rev B

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Hybrid Couplers
3 dB, 90°

Description

The 1P503 Pico Xinger is a low profile, miniature 3dB hybrid coupler in an easy to use surface mount package designed for DCS and PCS applications. The 1P503 is designed for balanced amplifiers, variable phase shifters and attenuators, LNAs, signal distribution and is an ideal solution for the ever-increasing demands of the wireless industry for smaller printed circuit boards and high performance. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates.

Features:

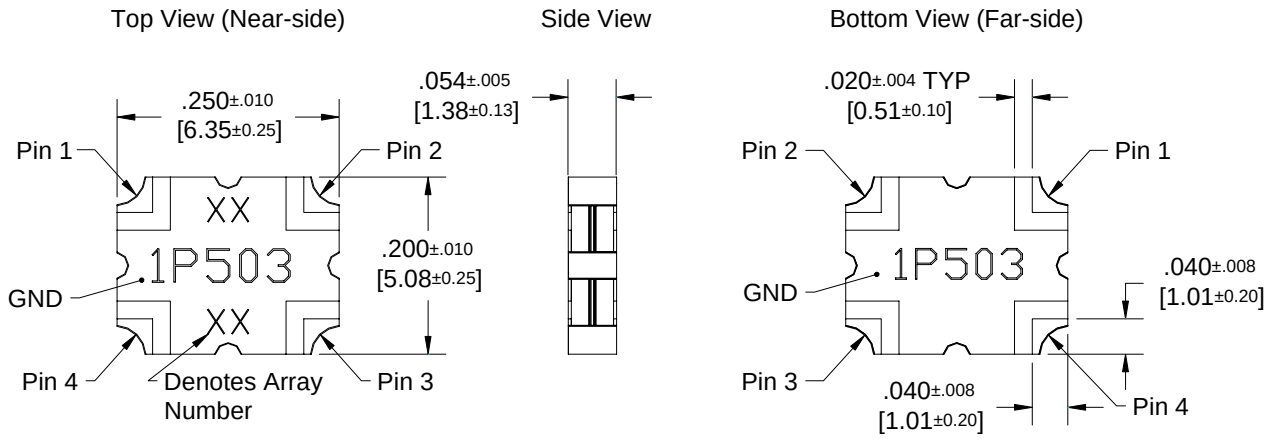
- **1.7 – 2.0 GHz.**
- **DCS and PCS**
- **Low Loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **New Pico-Package**
- **100% Tested**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation*	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
1.7 – 1.8	18	0.25	1.28	
1.8 – 2.0	18	0.25	1.28	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/Watt*	*ºC*
± 0.45	± 3	30	27.5	-55 to +85
± 0.30	± 3	30	27.5	-55 to +85

Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. * **See Anaren Application Note #AAN-231 for information on how to improve RF performance on your printed circuit board Specifications subject to change without notice.

Outline Drawing



Dimensions are in Inches [Millimeters]
1P503 Rev A Mechanical Outline

Part Is Symmetric About All Axis

Available on Tape and Reel For Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Xinger II®

Hybrid Coupler
3 dB, 90°

Description

The XC1900E-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for DCS and PCS band applications. The XC1900E-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 120 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC1900E-03P) and 6 of 6 tin immersion (XC1900E-03S) RoHS compliant finishes.

Features:

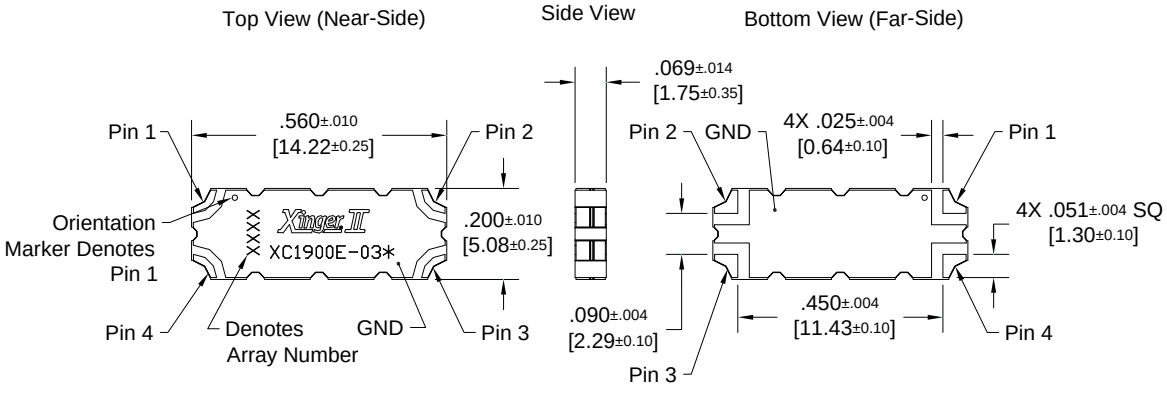
- **1700-2000 MHz**
- **DCS and PCS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
1700-2000	23	0.12	1.17	± 0.13
1805-1880	25	0.12	1.12	± 0.10
1930-1990	25	0.12	1.12	± 0.10

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	120	36	-55 to +95
90 ± 2.0	120	36	-55 to +95
90 ± 2.0	120	36	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58492-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC1900E-03* Mechanical Outline

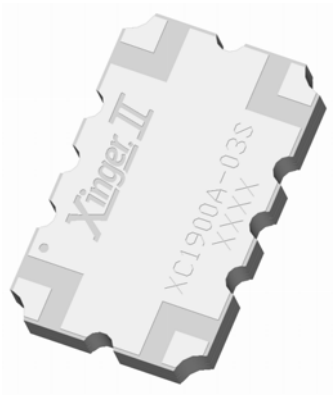
*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Xinger II®

Hybrid Coupler
3 dB, 90°



Description

The XC1900A-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for DCS and PCS band applications. The XC1900A-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 150 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC1900A-03P) and 6 of 6 tin immersion (XC1900A-03S) RoHS compliant finishes.

Features:

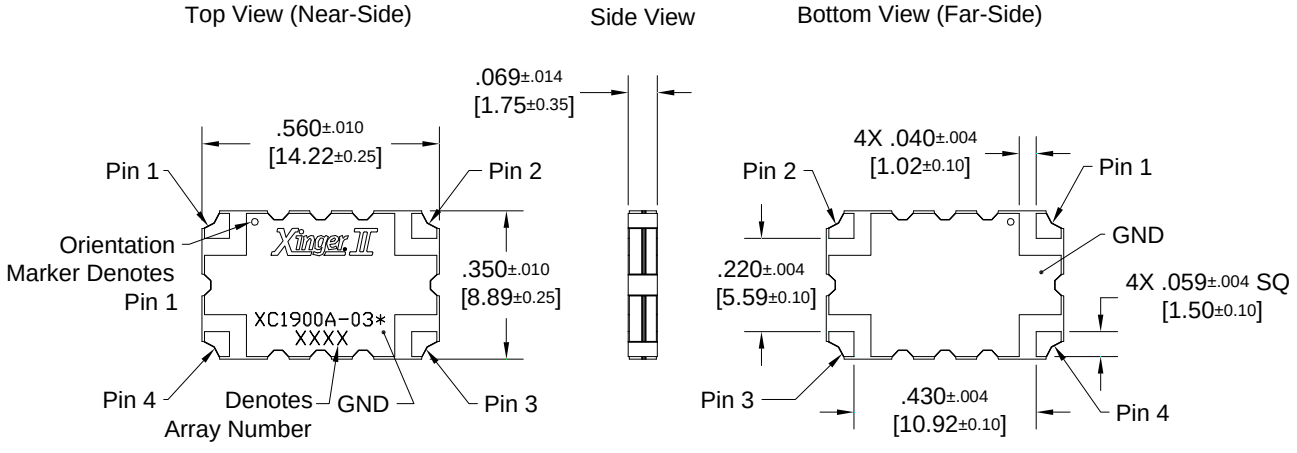
- **1700-2000 MHz**
- **DCS and PCS**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
1700-2000	25	0.15	1.15	± 0.13
1805-1880	27	0.12	1.12	± 0.10
1930-1990	27	0.12	1.12	± 0.10

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	150	28	-55 to +95
90 ± 2.0	150	28	-55 to +95
90 ± 2.0	150	28	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58481-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC1900A-03* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Anaren

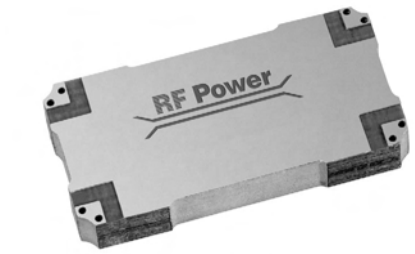
RF Power

Model S03B1960N3

Hybrid Couplers

3 dB, 90°

Surface Mount Components



Description

The S03B1960N3 is a low profile 3 dB hybrid coupler in an easy to use surface mount package specially designed for PCS applications. The S03B1960N3 is ideal for balanced amplifiers and signal distribution and can be used in very high power designs. Parts have been run through rigorous qualifications and units are 100% tested. They are manufactured using materials with X and Y thermal expansion coefficients compatible with common substrates.

Features

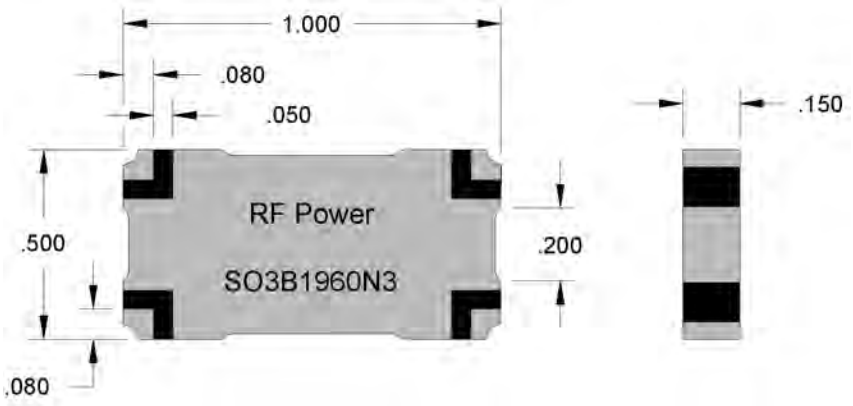
- 1.93 - 1.99 GHz
- 300 Watts
- Low Loss
- High Isolation
- 90° Quadrature
- Surface Mountable
- Tape and Reel
- Convenient Package
- 100% Tested

Electrical Specifications

Frequency *GHz*	Isolation *dB Min*	Insert. Loss *dB Max*	VSWR *Max: 1*
1.93 - 1.99	20	0.15	1.25
Amp. Bal. *dB Max*	**Phase Bal. *Degrees Max***	**Temp. *°C***	**Power *Avg. CW Watts***
±0.25	±1.5	-55 to +85	300

Specifications subject to change without notice.

Outline Drawing



VER. 3/13/02

Available on Tape and Reel for Pick and Place Manufacturing.

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Anaren
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Xinger II®

Hybrid Coupler
3 dB, 90°

Description

The XC2100E-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for UMTS and other 3G applications. The XC2100E-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 100 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC2100E-03P) and 6 of 6 tin immersion (XC2100E-03S) RoHS compliant finishes.

Features:

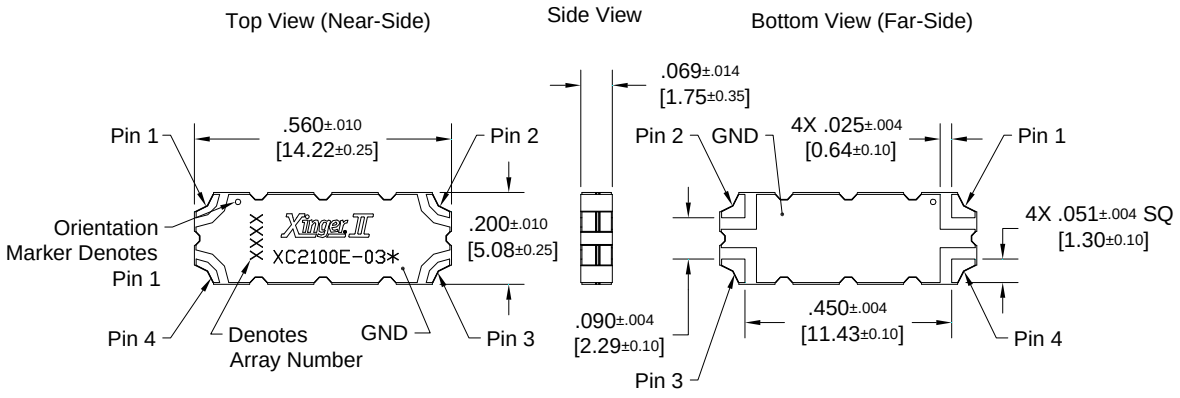
- **2000-2300 MHz**
- **UMTS and other 3G**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
2000-2300	23	0.12	1.17	± 0.15
2110-2170	25	0.12	1.12	± 0.10

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	95	39	-55 to +95
90 ± 2.0	100	39	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58492-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC2100E-03* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

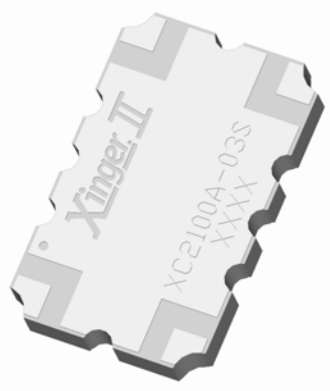
Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Model XC2100A-03

Rev C

Hybrid Coupler
3 dB, 90°



Description

The XC2100A-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for UMTS and other 3G applications. The XC2100A-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 145 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide. Available in both 5 of 6 tin lead (XC2100A-03P) and 6 of 6 tin immersion (XC2100A-03S) RoHS compliant finishes.

Features:

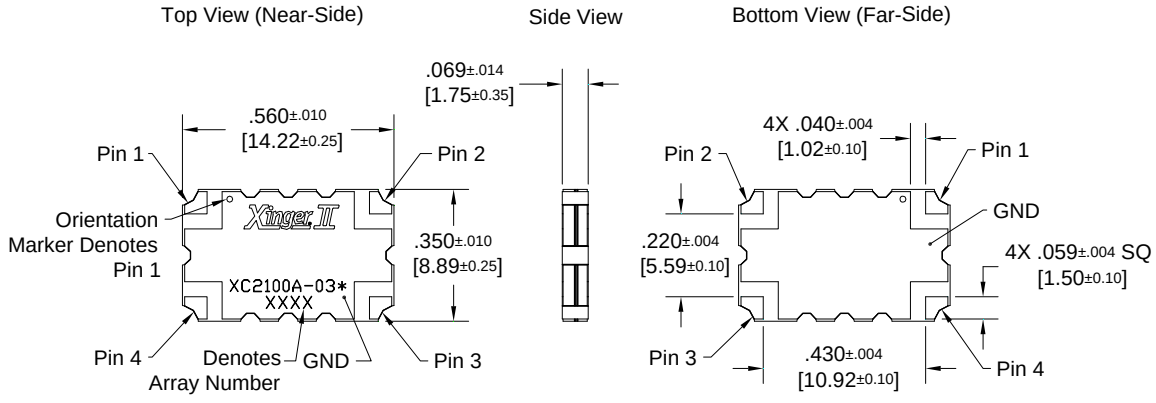
- **2000-2300 MHz**
- **UMTS and other 3G**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
2000-2300	23	0.15	1.15	± 0.15
2110-2170	25	0.12	1.12	± 0.10

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 2.0	105	31	-55 to +95
90 ± 2.0	145	31	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58481-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC2100A-03* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

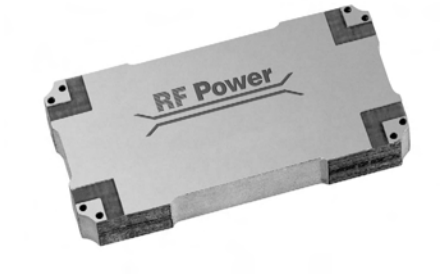
USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Model S03B2150N3

Hybrid Couplers

3 dB, 90°

RF Power



Description

The S03B2150N3 is a low profile 3 dB hybrid coupler in an easy to use surface mount package for UMTS and other 3G applications. The S03B2150N3 is ideal for balanced amplifiers and signal distribution and can be used in very high power designs. Parts have been run through rigorous qualifications and units are 100% tested. They are manufactured using materials with X and Y thermal expansion coefficients compatible with common substrates.

Features

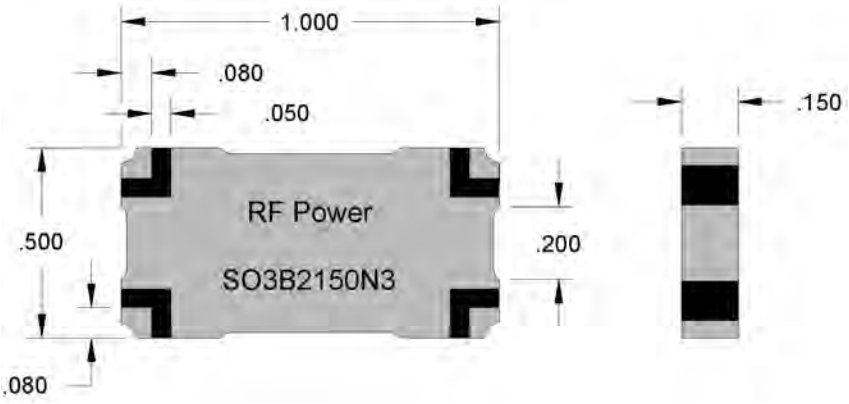
- 2.0 - 2.3 GHz
- 300 Watts
- Low Loss
- High Isolation
- 90° Quadrature
- Surface Mountable
- Tape and Reel
- Convenient Package
- 100% Tested

Electrical Specifications

Frequency *GHz*	Isolation *dB Min*	Insert. Loss *dB Max*	VSWR *Max: 1*
2.0 - 2.3	20	0.15	1.25
Amp. Bal. *dB Max*	**Phase Bal. *Degrees Max***	**Temp. *°C***	**Power *Avg. CW Watts***
±0.25	±2.0	-55 to +85	300

Specifications subject to change without notice.

Outline Drawing



VER. 3/13/02

Available on Tape and Reel for Pick and Place Manufacturing.

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Sales Desk Europe: Voice: **(+44) 23 92 232392** Fax: **(+44) 23 92 251369**

Anaren
What'll we think of next?™

Xinger II

Hybrid Coupler
3 dB, 90°

Description

The XC2650P-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for WiMAX applications. The XC2650P-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 50 Watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, and RO4003. Produced with 6 of 6 RoHS compliant tin immersion finish.

Features:

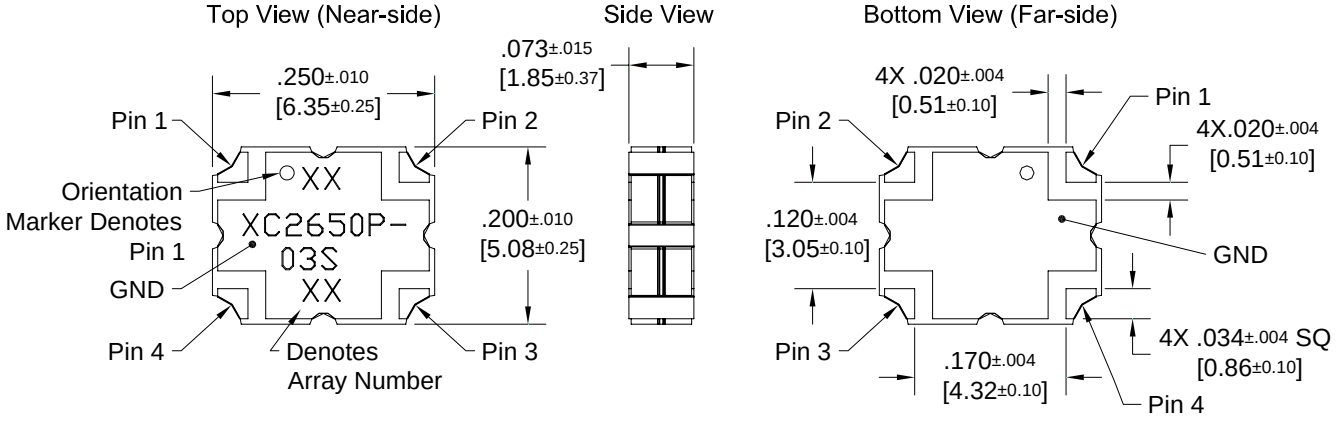
- **2650-2800 MHz**
- **WiMAX**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	
MHz	*dB Min*	*dB Max*	*Max:1*	
2650-2800	20	0.25	1.20	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/ Watt*	*ºC*
±0.15	90±3.0	50	60.5	-55 to +85

**Specification based on performance of unit properly installed on Anaren Test Board 54147-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC2650P-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Xinger II®

Hybrid Coupler
3 dB, 90°

Description

The XC2500E-03 is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for ISM and Wireless LAN applications. The XC2500E-03 is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 80 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350 and polyimide.

Features:

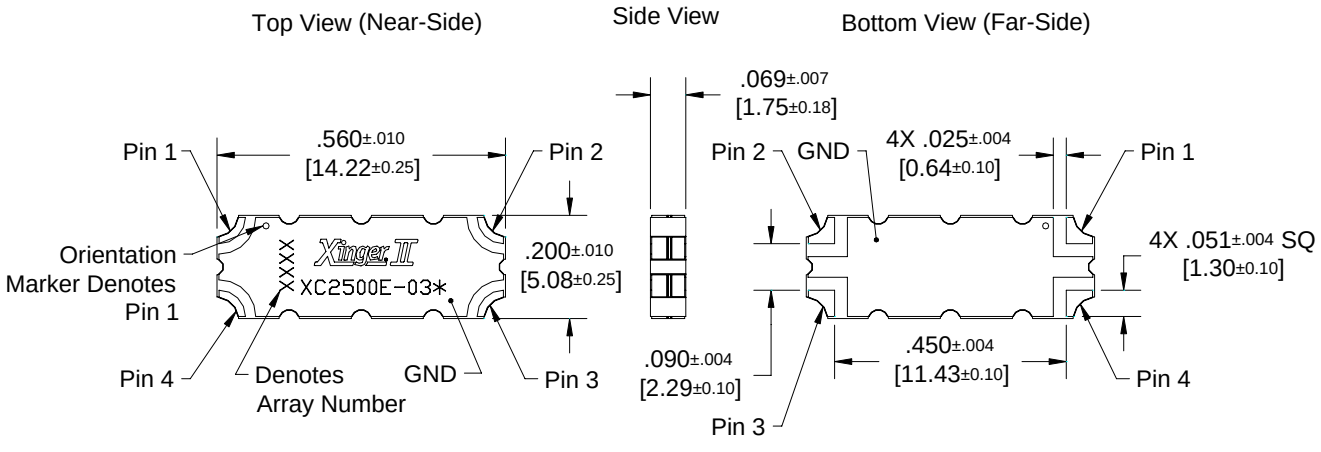
- **2300-2700 MHz**
- **ISM and Wireless LAN**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**
- **Reliable, FIT=0.53**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
2300-2700	22	0.15	1.17	± 0.15

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 3.0	80	43.0	-55 to +95

**Specification based on performance of unit properly installed on Anaren Test Board 58492-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC2500E-03* Mechanical Outline

Tolerances are Non-Cumulative
* = Plating Finish

Available on Tape and Reel for Pick and Place Manufacturing.

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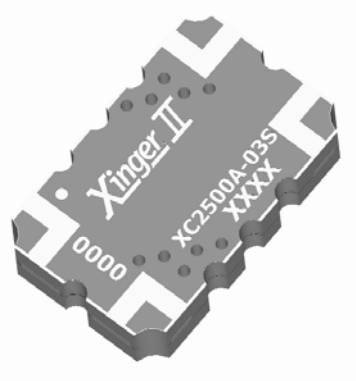
Xinger II®

Hybrid Coupler
3 dB, 90°



Description

The XC2500A-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. It is designed for WiBro and DMB applications. The XC2500A-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 200 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4350, and polyimide. Produced with 6 of 6 RoHS compliant tin immersion.

Features:

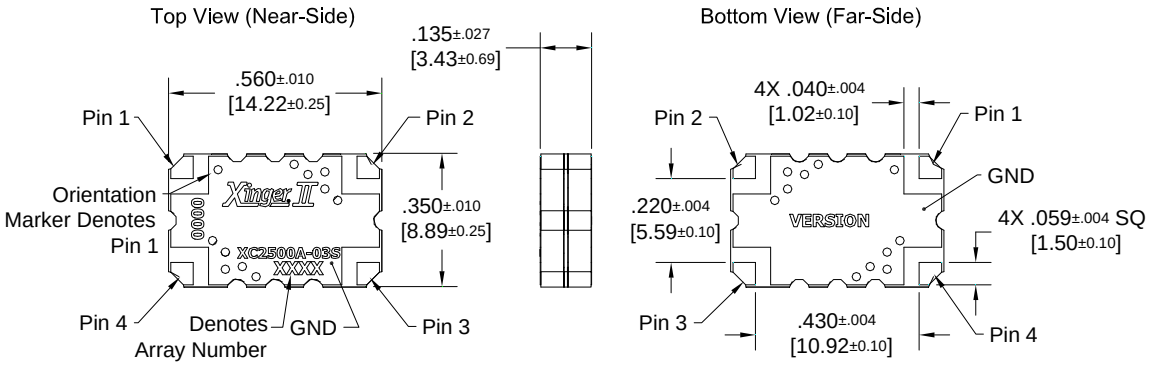
- **2300-2700 MHz**
- **WiBro and DMB**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**
- **Reliable, FIT= 1.016**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
2300-2700	25	0.13	1.14	± 0.15
2300-2400	25	0.10	1.14	± 0.15
2630-2655	25	0.13	1.14	± 0.15

Phase	Power	ΘJC	Operating Temp.
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*
90 ± 4.0	150	24.6	-55 to +85
90 ± 4.0	200	24.6	-55 to +85
90 ± 4.0	150	24.6	-55 to +85

**Specification based on performance of unit properly installed on Anaren Test Board 58481-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.



Dimensions are in Inches [Millimeters]
XC2500A-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
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Hybrid Couplers
3 dB, 90°

Description

The JP503 Pico Xinger is a low profile, miniature 3dB hybrid coupler in an easy to use surface mount package designed for W-CDMA and other 3G applications. The JP503 is designed for balanced amplifiers, variable phase shifters and attenuators, LNAs, signal distribution and is an ideal solution for the ever-increasing demands of the wireless industry for smaller printed circuit boards and high performance. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates. Available in both 5 of 6 tin lead (JP503) and 6 of 6 RoHS compliant tin immersion (JP503S).

Features:

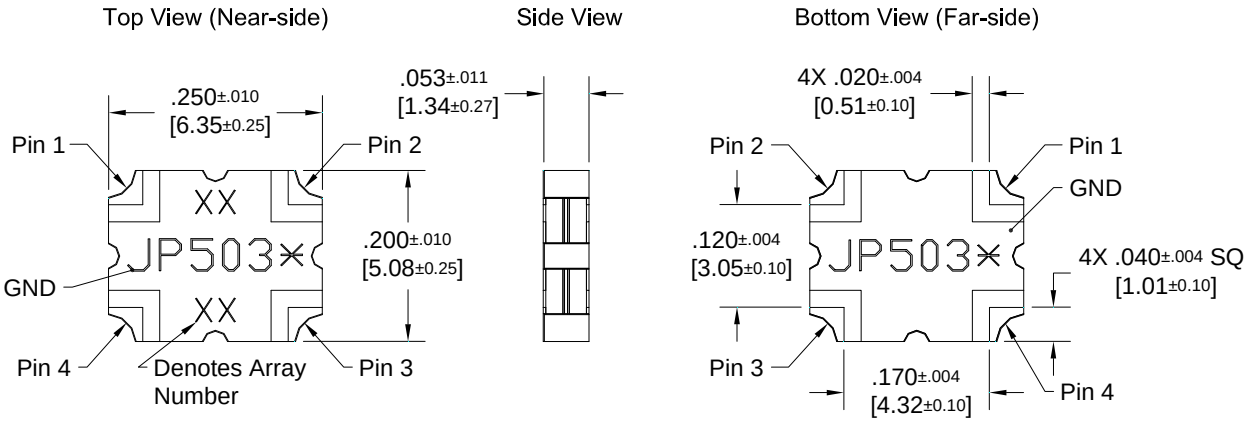
- **2.0 – 2.3 GHz.**
- **3G Frequencies**
- **Low Loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
2.0 – 2.3	20	0.30	1.20	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/Watt*	*ºC*
± 0.25	± 3	25	27.5	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Mechanical Outline



Dimensions are in Inches [Millimeters]
JP503* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel For Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Hybrid Couplers
3 dB, 90°

Description

The 11306-3 is a low profile 3dB hybrid coupler in an easy to use surface mount package covering 2.0 to 4.0 GHz. The 11306-3 is ideal for balanced amplifiers and signal distribution and can be used in most high power designs. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates such as FR4, G-10 and polyamide.

Features:

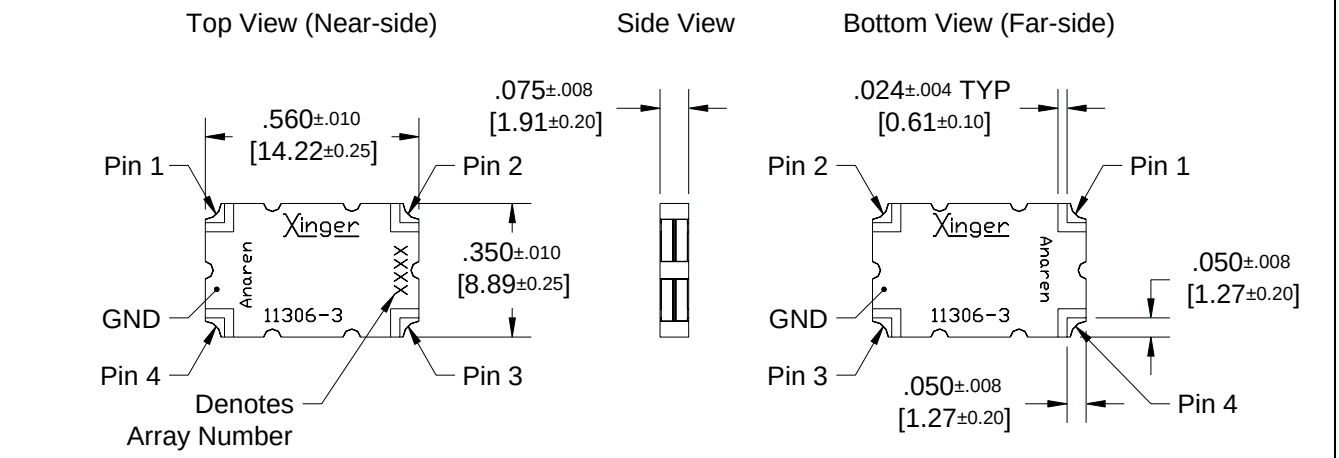
- **2.0 – 4.0 GHz**
- **Low loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Convenient Package**
- **100% Tested**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
2.0 – 4.0	20	0.35	1.30	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/ Watt*	*ºC*
± 0.55	± 5	60	24.6	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Outline Drawing



Dimensions are in Inches [Millimeters]
11306-3 Rev A Mechanical Outline

Part Is Symmetric About All Axis

Available on Tape and Reel For Pick and Place Manufacturing.

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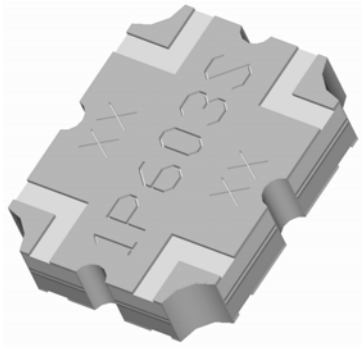
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Xinger®

Hybrid Couplers
3 dB, 90°



Description

The 1P603 Pico Xinger is a low profile, miniature 3dB hybrid coupler in an easy to use surface mount package designed for W-LAN and MMDS applications. The 1P603 is designed for balanced amplifiers, variable phase shifters and attenuators, LNAs, signal distribution and is an ideal solution for the ever-increasing demands of the wireless industry for smaller printed circuit boards and high performance. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates. Available in both 5 of 6 tin lead (1P603) and 6 of 6 RoHS compliant tin immersion (1P603S).

Features:

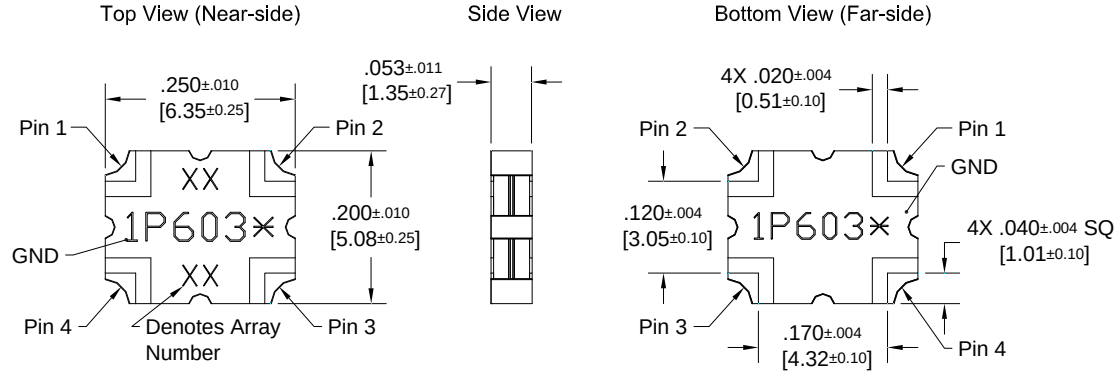
- **2.3 – 2.7 GHz.**
- **W-LAN and MMDS**
- **Low Loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
2.3 – 2.7	20	0.30	1.20	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/Watt*	*ºC*
± 0.25	± 3	25	30.6	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Outline Drawing



Dimensions are in Inches [Millimeters]
1P603* Mechanical Outline

*For RoHS Compliant versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel For Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Micro Xinger
3dB Hybrid Coupler

Description

The 1M803 Micro Xinger® is a low profile, miniature 3dB hybrid coupler in an easy to use surface mount package designed for U-NII, ISM and hyperLAN applications. The 1M803 is designed for balanced amplifiers and signal distribution and is an ideal solution for the ever increasing demands of the wireless industry for smaller printed circuit boards and high performance. Parts have been subjected to rigorous qualification testing and units are 100% tested. They are manufactured using materials with x and y thermal expansion coefficients compatible with common substrates such as FR4 and G-10. Available in both 5 of 6 tin lead (1M803) and 6 of 6 RoHS compliant tin immersion (1M803S).

Features:

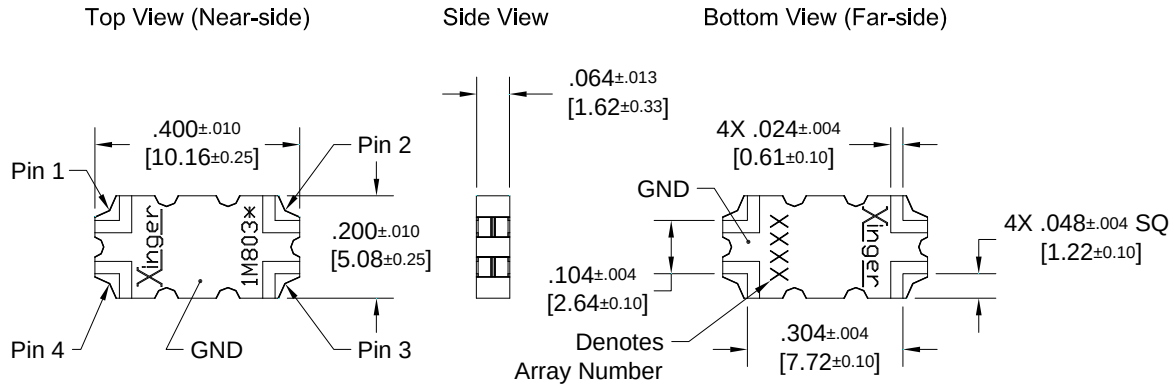
- **5.0 – 6.0 GHz**
- **Very Low Loss**
- **High Isolation**
- **90^{O} Quadrature**
- **Surface Mountable**
- **Tape And Reel**
- **Available in Lead-Free (as illustrated) or Tin-Lead**

ELECTRICAL SPECIFICATIONS**

Frequency	Isolation	Insertion Loss	VSWR	
GHz	*dB Min*	*dB Max*	*Max:1*	
5.0 – 6.0	20	0.25	1.21	
Amplitude Balance	**Phase Balance**	**Power**	**ΘJC**	**Operating Temp.**
dB Max	*Degrees*	*Ave. CW Watts*	*ºC/Watt*	*ºC*
± 0.30	± 3	20	78.1	-55 to +85

**Specification based on performance of unit properly installed on microstrip printed circuit boards with 50 Ω nominal impedance. Specifications subject to change without notice.

Mechanical Outline



Dimensions are in Inches [Millimeters]
1M803* Mechanical Outline

*For RoHS Compliant Versions order with S suffix
Tolerances are Non-Cumulative

Available on Tape and Reel For Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 544-2414
Europe: +44 2392-232392

Xinger II

Hybrid Coupler
3 dB, 90°

Features:

- **3300 – 3800 MHz**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**

Description

The XC3500P-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package. The XC3500P-03S is designed particularly for balanced power and low noise amplifiers, plus signal distribution and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 55 watts.

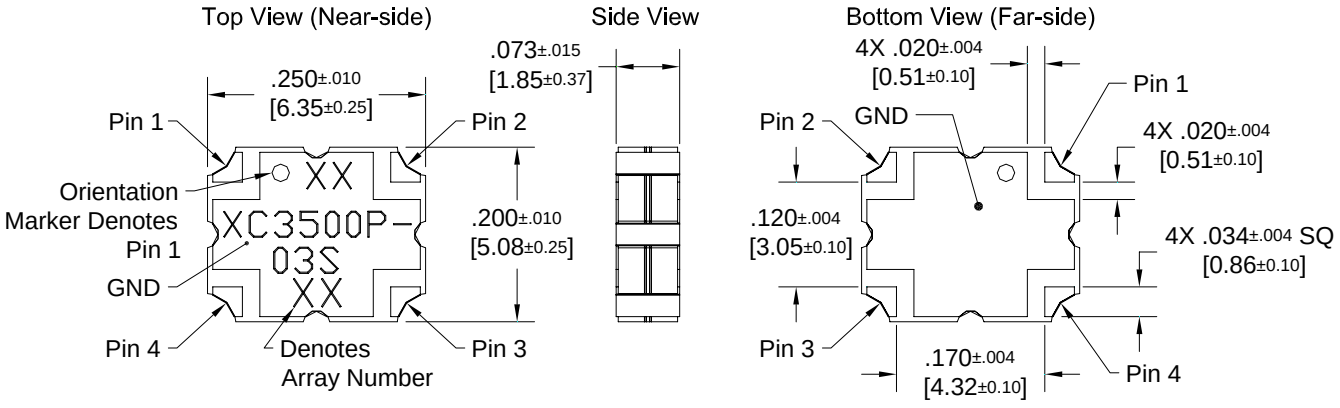
Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4003 and polyimide. Produced with 6 of 6 RoHS compliant tin immersion.

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max : 1*	*dB Max*
3300-3800	21	0.25	1.20	± 0.25
Phase	**Power**	**ΘJC**	**Operating Temp.**	
Degrees	*Avg. CW Watts*	*ºC/Watt*	*ºC*	
90 ± 3.0	55	61.6	-55 to +85	

**Specification based on performance of unit properly installed on Anaren Test Board 54147-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC3500P-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

USA/Canada: (315) 432-8909
Toll Free: (800) 411-6596
Europe: +44 2392-232392

Xinger II®

Hybrid Coupler
3 dB, 90°

Description

The XC3500M-03S is a low profile, high performance 3dB hybrid coupler in a new easy to use, manufacturing friendly surface mount package for WiMAX applications. The XC3500M-03S is designed particularly for balanced power and low noise amplifiers and other applications where low insertion loss and tight amplitude and phase balance is required. It can be used in high power applications up to 70 watts.

Parts have been subjected to rigorous qualification testing and they are manufactured using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, RO4003 and polyimide. Produced with 6 of 6 RoHS compliant tin immersion.

Features:

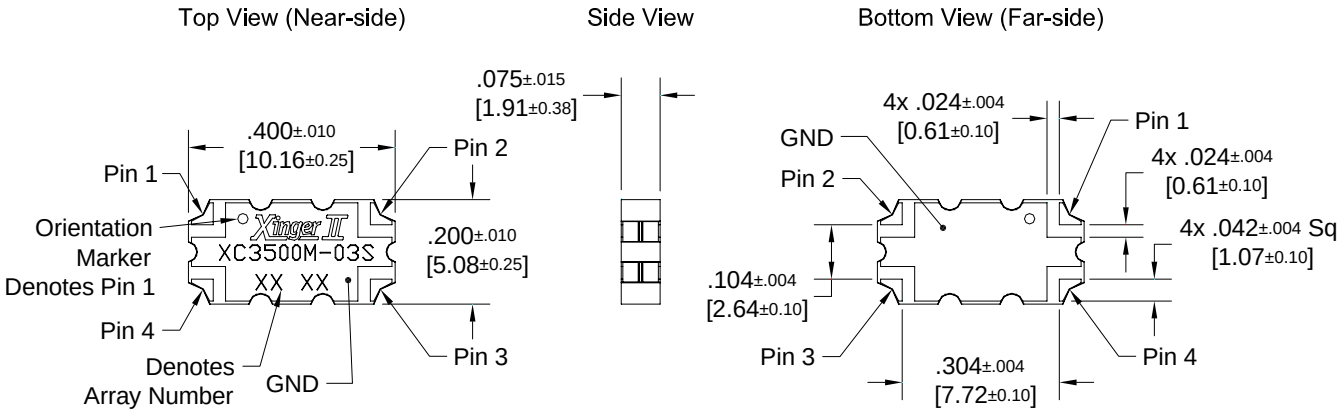
- **3300 - 3800 MHz**
- **WiMAX**
- **High Power**
- **Very Low Loss**
- **Tight Amplitude Balance**
- **High Isolation**
- **Production Friendly**
- **Tape and Reel**
- **Lead-Free**

Electrical Specifications **

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	*dB Min*	*dB Max*	*Max:1*	*dB Max*
3300-3800	21	0.25	1.20	±0.25
Phase Balance	**Power**	**ΘJC**	**Operating Temp.**	
Degrees	*Ave. CW Watts*	*ºC/ Watt*	*ºC*	
90±3.0	70	56.5	-55 to +85	

**Specification based on performance of unit properly installed on Anaren Test Board 54147-0001 with small signal applied. Specifications subject to change without notice. Refer to parameter definitions for details.

Mechanical Outline



Dimensions are in Inches [Millimeters]
XC3500M-03S Mechanical Outline

Tolerances are Non-Cumulative

Available on Tape and Reel for Pick and Place Manufacturing.

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