LDU671C

Product Name

GR03761

Manufacturer's Part Number

Technical Specification Summary

Frequency Range	470-862MHz	Typ. Gain	20 dB	
P1dB	650 W	Typ. Efficiency	40%	At 1dBcp
Analogue TV	450 Wps	Temperature Range	-10 to + 55 ºC	
DVB	140 Wrms	Max VSWR	3:1	
DTV	210 W	Working Class	AB	
Two tone	650 Wpep	Supply Voltage	50 V	

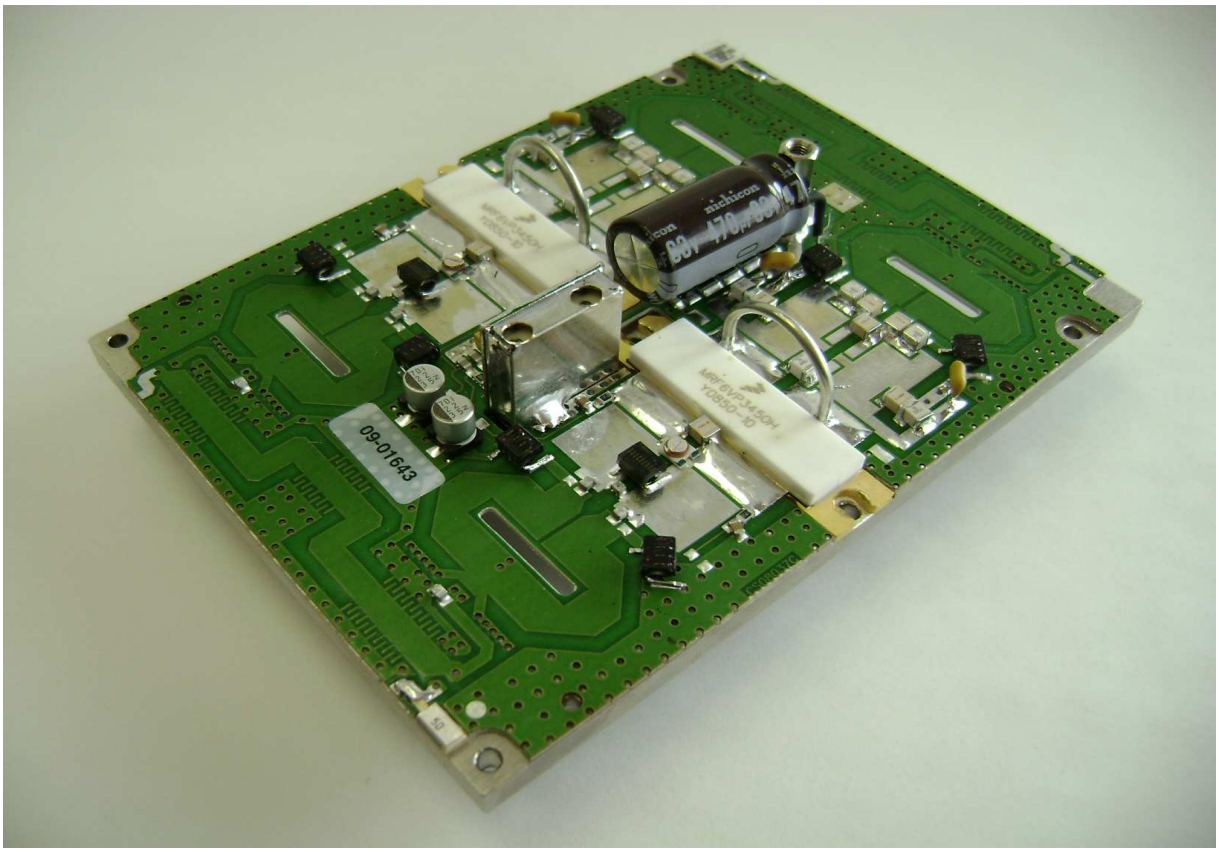
Key Features and Functions

> Temperature compensated bias
> SmartBias® Infrared operated bias circuit (Option)
> High temperature protections

General Description

This ultra linear power amplifier pallet has been designed to cover the entire UHF TV band from 470 to 862MHz, offering OEMs a single, unsurpassed solution for their high power amplifier designs. Designed for analog and digital applications, the LDU671C incorporates microstrip technology and the latest generation of LDMOS power devices for increased ruggedness and reliability. Patented bias control (IR SmartBias®, optional). The Matching circuit offers the smallest footprint available today vs. power output.

Actual Power Amplifier Picture



Electrical Specifications

Parameter	Min.	Typ.	Max	Units	Notes
Frequency	470		862	MHz	Full coverage without tuning
P1dB		650		W	
Power		600		Wpep	2 tones, 100kHz spacing (-27dBc)
IMD3		-42		dBc	2 tones, 100kHz spacing (500Wpep)
Power Input			6,5	W	Max value in CW mode
Gain	18	20		dB	At 450Wps
V Supply		50	51	Vdc	
Drain Current			15	Adc	For 450Wps @ black level
Drain Current			14,5	Adc	For 140 Watt rms with DVB-T signal
Input return loss			-14	dB	
Phase Variation		± 7,5		º	Unit to unit
Gain Variation			± 0,75	dB	Unit to unit
F2 Second Harmonic		-35	-25	dBc	
F3 Third Harmonic		-45	-30	dBc	
Baseplate Temp.	-10		+ 75	ºC	

Video Parameter	Min.	Typ.	Max	Units	Notes
Analog Power			550	Wps	Common amplification
IMD		-56	-54	dBc	At 500Wps
Differential Gain		4	8	%	Error at 450Wps
Differential Phase		4	8	%	Error at 450Wps
Digital Power (DTV)		210		Wrms	
Digital Power (DVB-T)		140	150	Wrms	
M.E.R. (DVB-T)		30		dB	
Shoulders (DVB-T)	-28	-32		dBc	At +/-4,2MHz

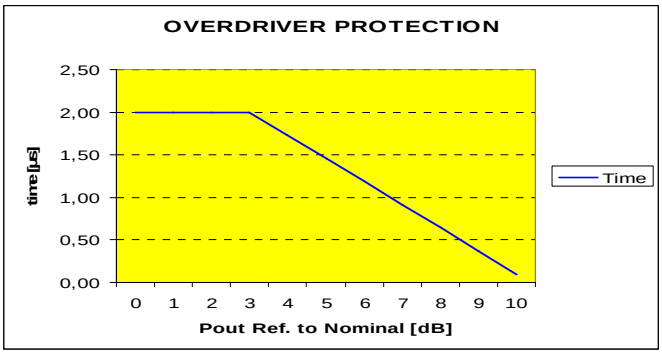
Physical Dimensions	87mm x 115mm x 25.4mm / 3,42" x 4,53" x 1,00"
Weight	150 g. / 0,33 Pounds

All Specifications are valid for load impedance 50 Ohm, Vdrain=50Vdc, Idrain=15A max

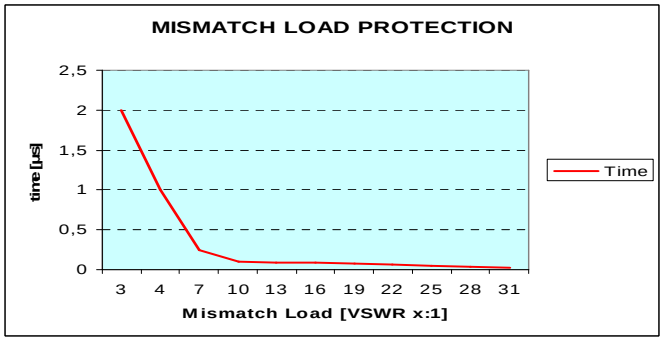
ABSOLUTE Maximum Ratings

Parameter	Value	Units	Notes
Output Power	500	W	in CW mode (Applicable for 2 sec. max)
Input Power	6,5	W	in CW mode (Applicable for 2 sec. max)
Operating Voltage	63	Vdc	
Stable operations	50	Vdc	
Bias Current	2,0	A	Quiescent current for each device
Drain Current	24	A	with Tj @ 175 ºC (see the Device data)
VSWR	3:1		All phase angle
Storage Temp.	-20 + 80	ºC	
Base Plate temp.	75	ºC	

Graphs and Charts

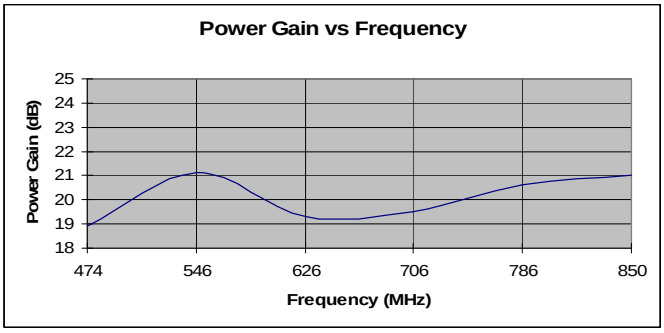


The Overdrive protection must be activated within 2 µ seconds max, up to +3dB referred to the nominal input level.

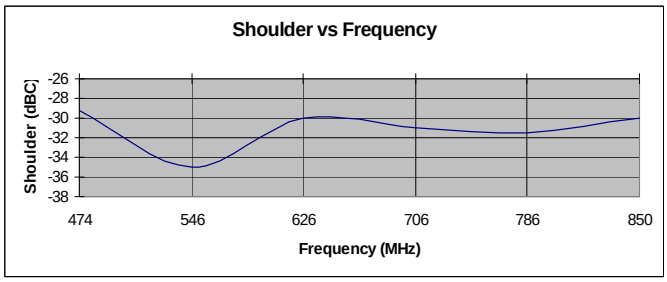


The high mismatch protection must be activated within 2 µ seconds max, for VSWR 3:1 max. (worst condition)

Typical VSWR value is set @ 2:1

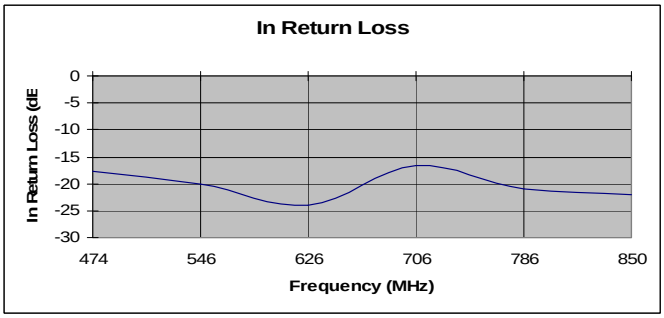


Test condition
Vd 50V, idq1.5 +1.5A, Pout 150W DVB-T

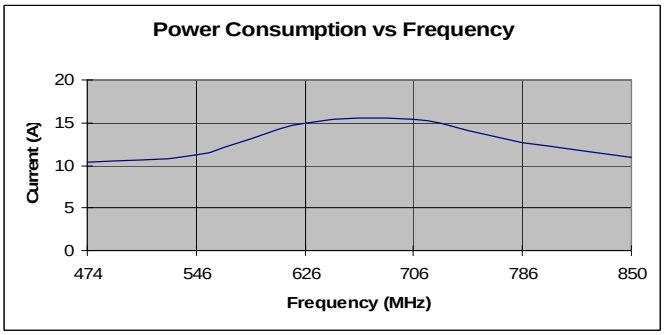


Test condition
Vd 50V, idq1.5 +1.5A, Pout 150W DVB-T

Exciter used:
ProTV PT5780 with -45dB Output Shoulder



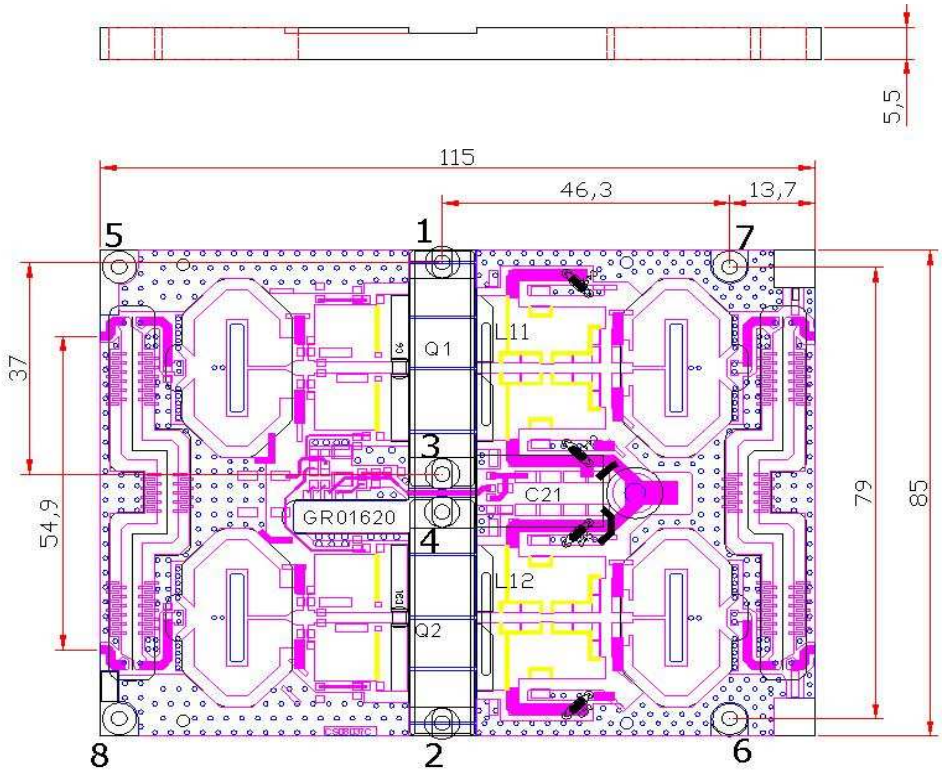
Test condition
Vd 50V, idq1.5 +1.5A, Pout 150W DVB-T



Test condition
Vd 50V, idq1.5 +1.5A, Pout 150W DVB-T

Mechanical specifications

LDU671C Layout Dimensions and screw tightning order:



TYPE OF SCREWS

8 x M2.5 - Socket head cap screws.
8 Split lock washers WZ Ø3 + 8 Flat washers ZU Ø3.

RECOMMENDED TORQUE:

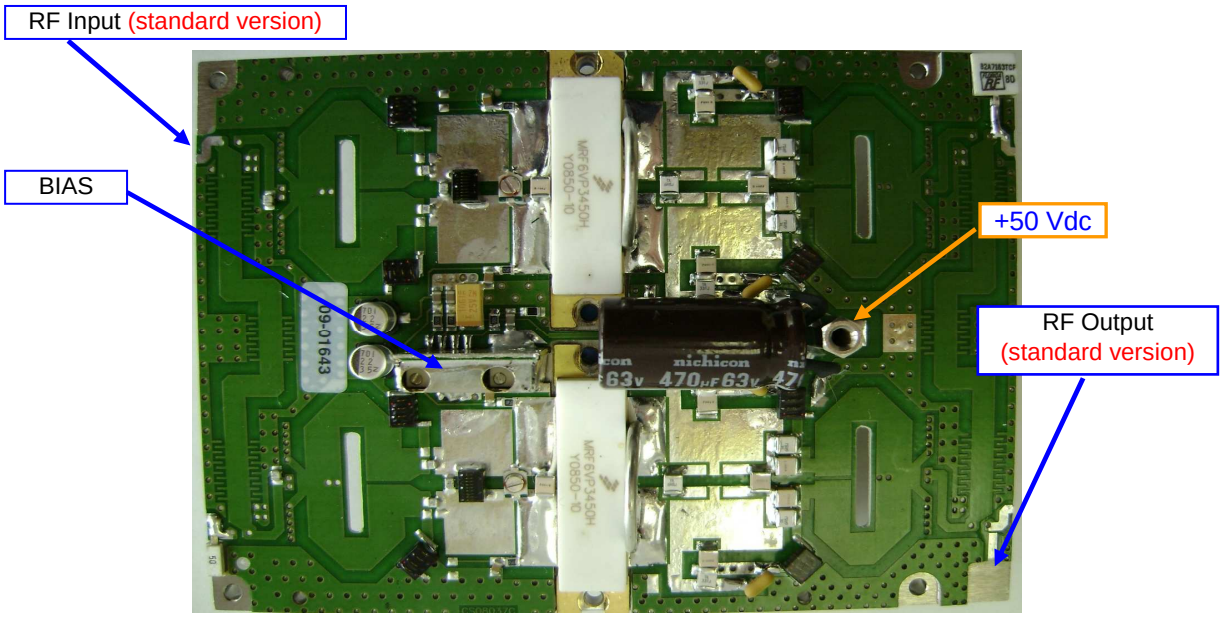
The recommended Torque is: 0.9 N/m for Devices Fixing (4 places) and 1 N/m for other screws.

THERMAL COMPOUND:

Paste with silicones
Thickness: optimum between 0.06 mm and 0.15 mm, on the whole back surface of the amplifier

HEATSINK TOOLING

Planarity: typical value 0.8
Roughness: better than 0.03 mm



Integration and important Operating instructions

The LDU671C is designed for operation of up to 150Wrms (DVB signal). The high power density of the amplifier will not safely allow prolonged operation above this average power level. The built-in security features of the SMARTBIAS ®, when present, should disable the amplifier before damage occurs in case of over-temperature.

SMARTBIAS (Optional) is a digital polarizer of LdMOS, This device allows the compensation of nonlinear VGS compared to the change of temperature and gate voltage. Moreover it allows you to independently adjust the gate voltage VGS1 VGS2 by means of an infrared tool (available upon request) to measure the temperature at the center of pallet.

The LDMOS devices used in this design are of the 6th generation family, capable of very high peak power as long as the average power does not exceed specified ratings. The devices are protected by an external circuit provided by the OEM, as specified in this datasheet (Overdrive and Mismatch load protection: See Graphs and Charts section).

The LDU671C amplifier requires an excellent heatsink for reliable operation. This heatsink must be capable of dissipating the maximum heat generated. In the case of 150Wrms (DVB) operation, this is approximately 600W of heat in the worst condition. Use of the correct amount of a quality thermal compound is also critically important to long term operation and high reliability. It's suggested to keep 3.8mm (0.15") minimum spacing in the short dimension between pallet.

Use stainless hardware and applying appropriate torque at all fixing points, as indicated in this datasheet. Direct some airflow over the top of the amplifier. Minimal airflow is recommended, strong airflow is not required.

Use appropriate size Teflon insulated wire for positive voltage. Please refer to the specific drawing in this datasheet for contact locations. Apply supply voltage with the RF drive OFF. Due to its high gain, the amplifier is sensitive to overdrive and can be damaged if overdriven.

Monitor pallet carrier temperature. In the event of cyclic shutdown, cooling must be improved.

IMPORTANT: This amplifier is sensitive to overdrive and may be damaged by careless application of input power. Please always refer to the safety area in the **Overdrive Diagram** shown in this datasheet. It is the customer's responsibility to ensure input and output power does not exceed ratings. Warranty will be voided in cases of overdrive.

The system must allow the nominal voltage before applying RF driver signal or damage can result to the amplifier. For this reason the voltage must be applied before the RF driver signal. Additionally, the input signal, must be removed before powering down to prevent damage to the amplifier. You can accomplish this by removing the RF driver signal and powering down the power amplifier.

The pallet is delivered within its sealed ESD packaging. Use all professional caution during unpacking, handling and mounting.

Please consult RES-INGENIUM factory with any integration questions.

Ordering informations

Product Name	Manufacturer's Part n.	Feature Description
LDU671C	GR03761	Standard version with Manual Bias
LDU671C	GR03762	Standard version with SmartBias®

Notices and Warnings

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