

MQ1548GR LDMOS TRANSISTOR

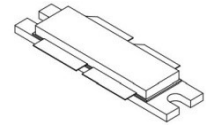
Document Number: MQ1548GR
Preliminary Datasheet V1.0

480W, 28V High Power RF LDMOS FETs

Description

The MQ1548GR is a 480-watt capable, high performance, unmatched push pull LDMOS FET, for wide-band commercial and industrial applications with frequencies 200 to 600MHz. It can be used for both CW and pulse application or any other modulation signal. It is featured for high power and high ruggedness, low thermal resistor, suitable for Industrial, Scientific and Medical application, as well as FM radio, VHF TV and mobile radio applications.

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- Typical Performance at 28V (On Innogration 440-MHz wideband fixture with device soldered):

MQ1548GR $V_{gs}=2.36V$ $V_{ds}=28V$ $I_{dq}=180mA$ CW								
Freq(MHz)	Psat(dBm)	Psat(W)	IDS(A)	Pin(dBm)	Gain(dB)	Eff(%)	2nd(dBc)	3rd(dBc)
440	56.9	489.78	27.8	41.33	15.57	62.92	-29.7	-22.9
450	56.84	483.06	27.1	41.4	15.44	63.66	-29.7	-25.9
460	56.88	487.53	27	41.52	15.36	64.49	-29.5	-28.9

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Excellent thermal stability, low HCI dri
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

Suitable Applications

- 225-512MHz (ultra shortwave communication)
- VHF/UHF Power amplifier

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	32	Vdc
Storage Temperature Range	T_{stg}	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature	T_J	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case $T_C=85^{\circ}C$, $T_J=200^{\circ}C$, DC test	$R_{\theta JC}$	0.12	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics ($T_A = 25^{\circ}C$ unless otherwise noted)

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Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics (per half section)					
Drain-Source Voltage $V_{GS}=0, I_{DS}=1.0mA$	$V_{(BR)DSS}$	65			V
Zero Gate Voltage Drain Leakage Current $(V_{DS} = 65V, V_{GS} = 0 V)$	I_{DSS}	—	—	1	μA
Zero Gate Voltage Drain Leakage Current $(V_{DS} = 28 V, V_{GS} = 0 V)$	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current $(V_{GS} = 10 V, V_{DS} = 0 V)$	I_{GSS}	—	—	1	μA
Gate Threshold Voltage $(V_{DS} = 28V, I_D = 800 \mu A)$	$V_{GS(th)}$	—	2.2	—	V
Gate Quiescent Voltage $(V_{DD} = 28 V, I_D = 180 mA, \text{Measured in Functional Test})$	$V_{GS(Q)}$	—	2.36	—	V

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Reference Circuit of Test Fixture Assembly Diagram
(Layout file upon request, 30mil RO4350)

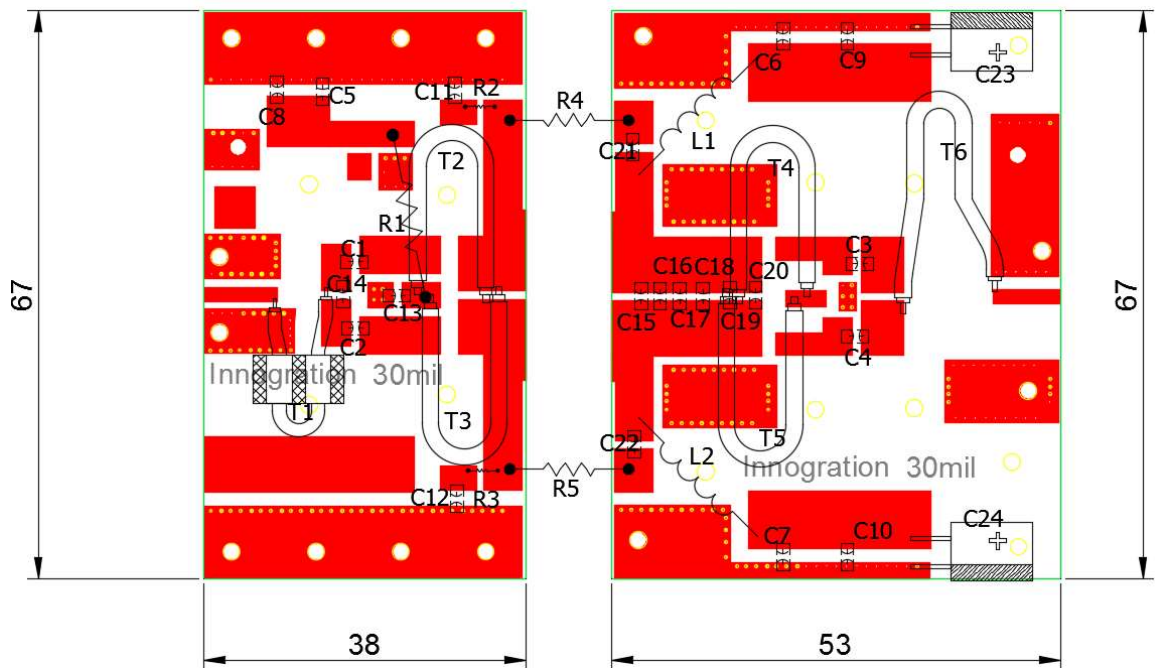


Table 5. Test Circuit Component Designations and Values

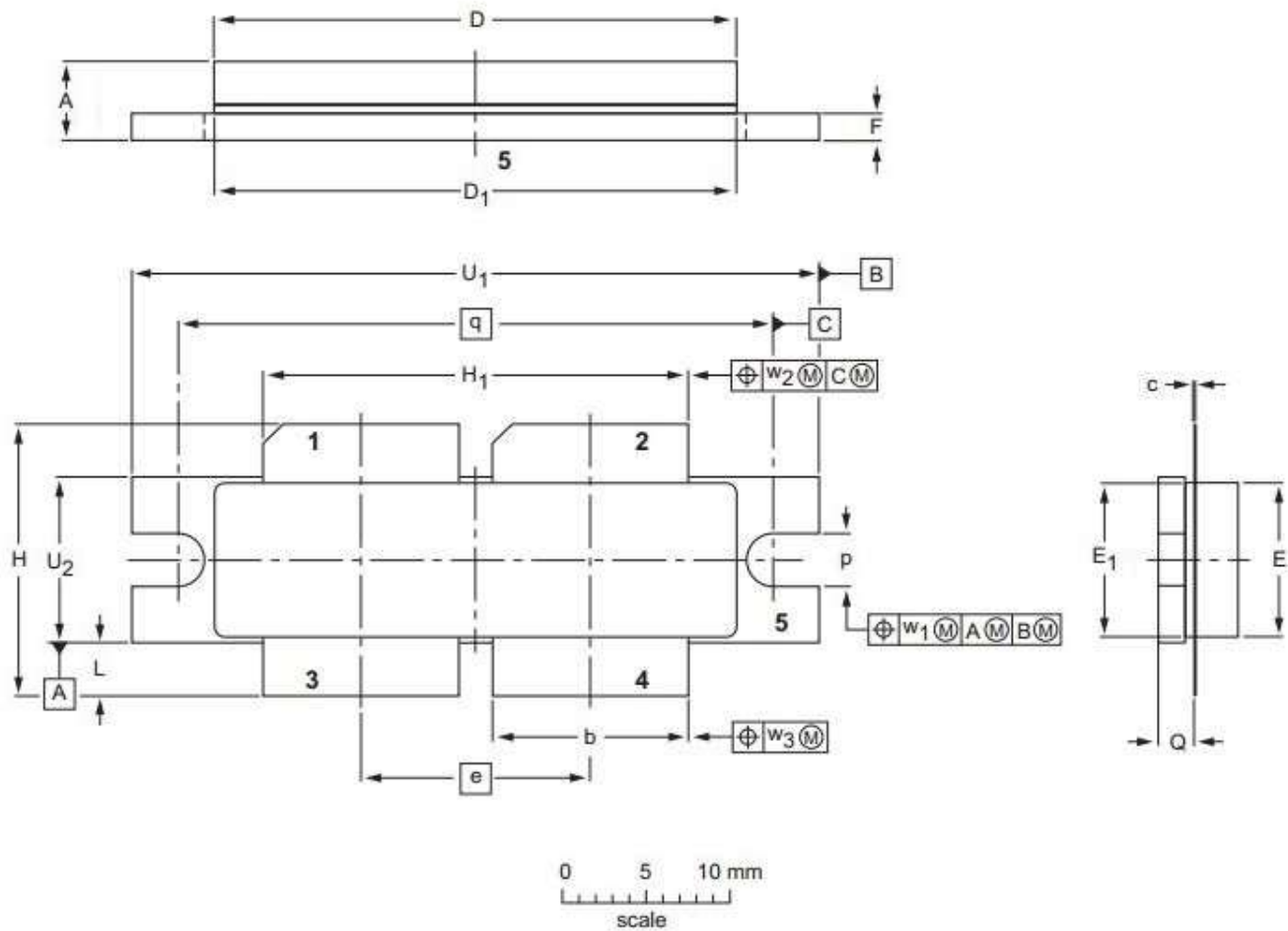
Component	Description	Suggestion
C1~C7	47pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
C8~C13,C21,C22	10uF/100V	Ceramic Multilayer Capacitor
C14	8.2pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
C15~C20	8.2pF	DLC70B
C23,C24	4700uF/63V	Electrolytic Capacitor
R1	330 Ω	plug-in resistor
R2,R3	10 Ω 1206	Chip Resistor
R5,R4	300 Ω	plug-in resistor
T1	50ohm 60mm	RFSFBU-086-50 BN-61-1502
T2,T3,T4,T5	25ohm 60mm 4:1	RFSFBU-086-25
T6	50ohm 60mm	RFSFBU-086-50
L1,L2	2mm enamelled wire, inner diameter 6mm, 2 turns	DIY
PCB	30Mil Rogers4350B	

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Package Outline

Flanged ceramic package; 2 mounting holes; 4 leads (1、2—DRAIN、3、4—GATE、5—SOURCE)



UNIT	A	b	c	D	D ₁	e	E	E ₁	F	H	H ₁	L	p	Q	q	U ₁	U ₂	W ₁	W ₂	W ₂
mm	4.7	11.81	0.18	31.55	31.52	13.72	9.50	9.53	1.75	17.12	25.53	3.48	3.30	2.26	35.56	41.28	10.29	0.25	0.51	0.25
	4.2	11.56	0.10	30.94	30.96		9.30	9.27	1.50	16.10	25.27	2.97	3.05	2.01		41.02	10.03			
inches	0.185	0.465	0.007	1.242	1.241	0.540	0.374	0.375	0.069	0.674	1.005	0.137	0.130	0.089	1.400	1.625	0.405	0.01	0.02	0.01
	0.165	0.455	0.004	1.218	1.219		0.366	0.365	0.059	0.634	0.995	0.117	0.120	0.079		1.615	0.395			

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-D4E					03/12/2013

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Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/7/26	Rev 1.0	Preliminary Datasheet

Application data based on HL-24-31

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