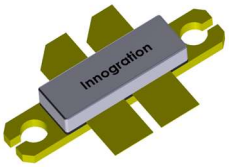
MX1536G LDMOS TRANSISTOR

Document Number: MX1536G
Product Datasheet V1.0

110W, 12.5V High Power RF LDMOS FETs

MX1536G



Description

The MX1536G is a 110-watt capable, highly rugged, unmatched,push pull LDMOS FET, designed for wide-band commercial and industrial applications with frequencies HF to 600MHz.

- Typical Performance (On Innogration fixture with device soldered):

Vgs=2.44V Vds=12.5V Idq=140mA CW								
Freq (MHz)	**Psat (dBm)**	**Psat (W)**	**Ids (A)**	**Pin (dBm)**	**Gain (dB)**	**Eff (%)**	**2nd （dBc）**	**3rd （dBc）**
136	50.51	112.46	13.09	31.5	19.01	68.73	-22.4	-11.4
145	50.86	121.90	14.07	31.58	19.28	69.31	-24.5	-10.6
155	51.24	133.05	14.83	31.9	19.34	71.77	-27.0	-10.0
165	51.31	135.21	14.66	32.35	18.96	73.78	-28.0	-12.7
174	50.55	113.50	12.01	32.7	17.85	75.60	-30.0	-13.1

Features

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

Suitable Applications

- 2-30MHz (HF or Short wave communication)
- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 118 -140MHz (Avionics)
- 136-174MHz (Commercial ground communication)
- 160-230MHz (TV VHF III)
- 30-512MHz (Jammer, Ground/Air communication)

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+28	Vdc
Storage Temperature Range	Tstg	-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°C, Pout=110W,CW Test	$R_{\theta JC}$	0.24	°C/W

Table 3. ESD Protection Characteristics

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

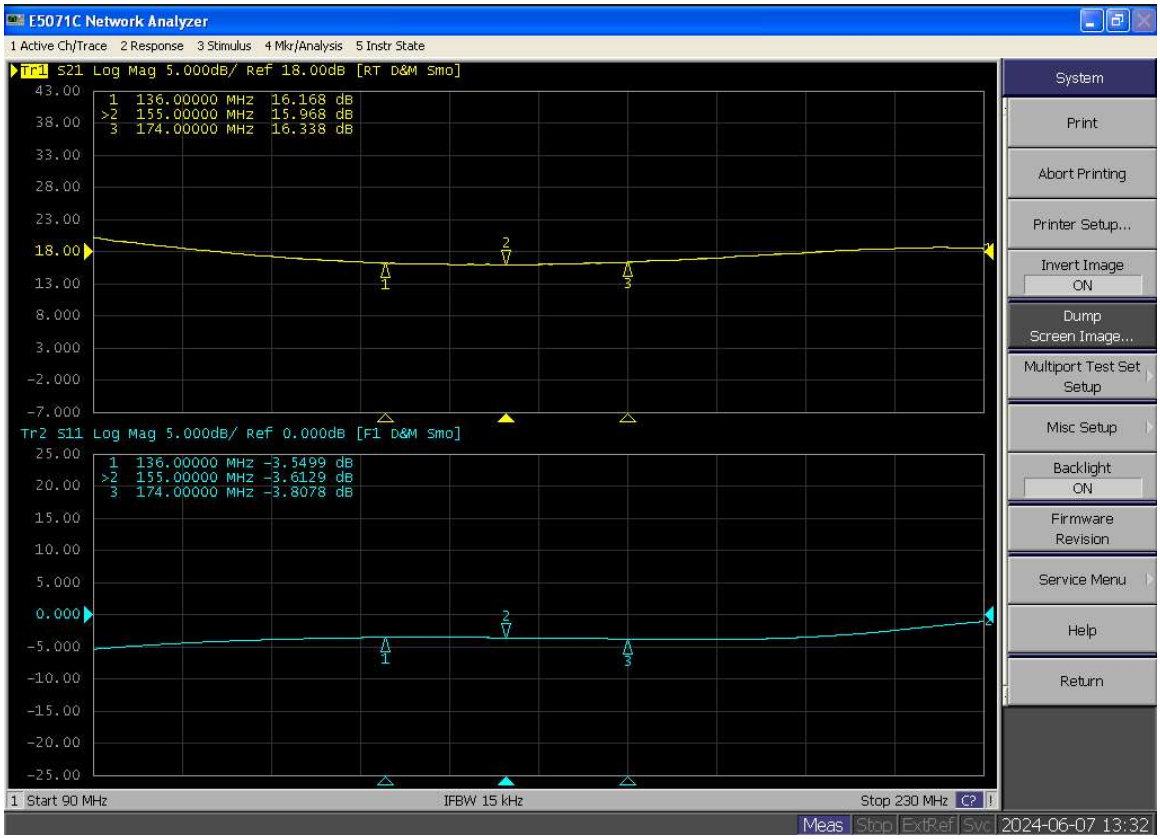
Table 4. Electrical Characteristics (T_A = 25 ℃ unless otherwise noted)

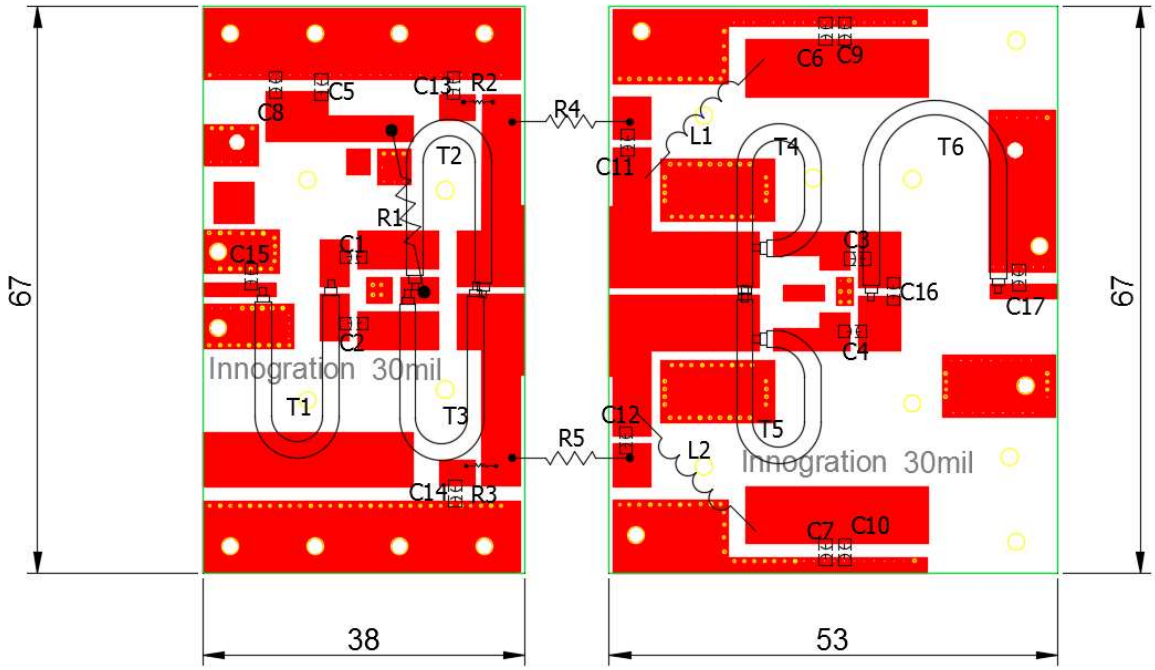
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics (per half section)					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$	65			V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 75V, V_{GS} = 0 V)	I_{DSS}	———	———	1	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28 V, V_{GS} = 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} = 12.5V, I_D = 400 μA)	$V_{GS(th)}$	———	2	———	V
Gate Quiescent Voltage (V_{DD} = 12.5 V, I_D = 250 mA, Measured in Functional Test)	$V_{GS(Q)}$	———	2.5	———	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 12.5 Vdc, I_{DQ} = 200 mA, f = 174 MHz

Load open and short, at 110W CW	No Device Degradation

Figure 1： Network analyzer Output S11/S21

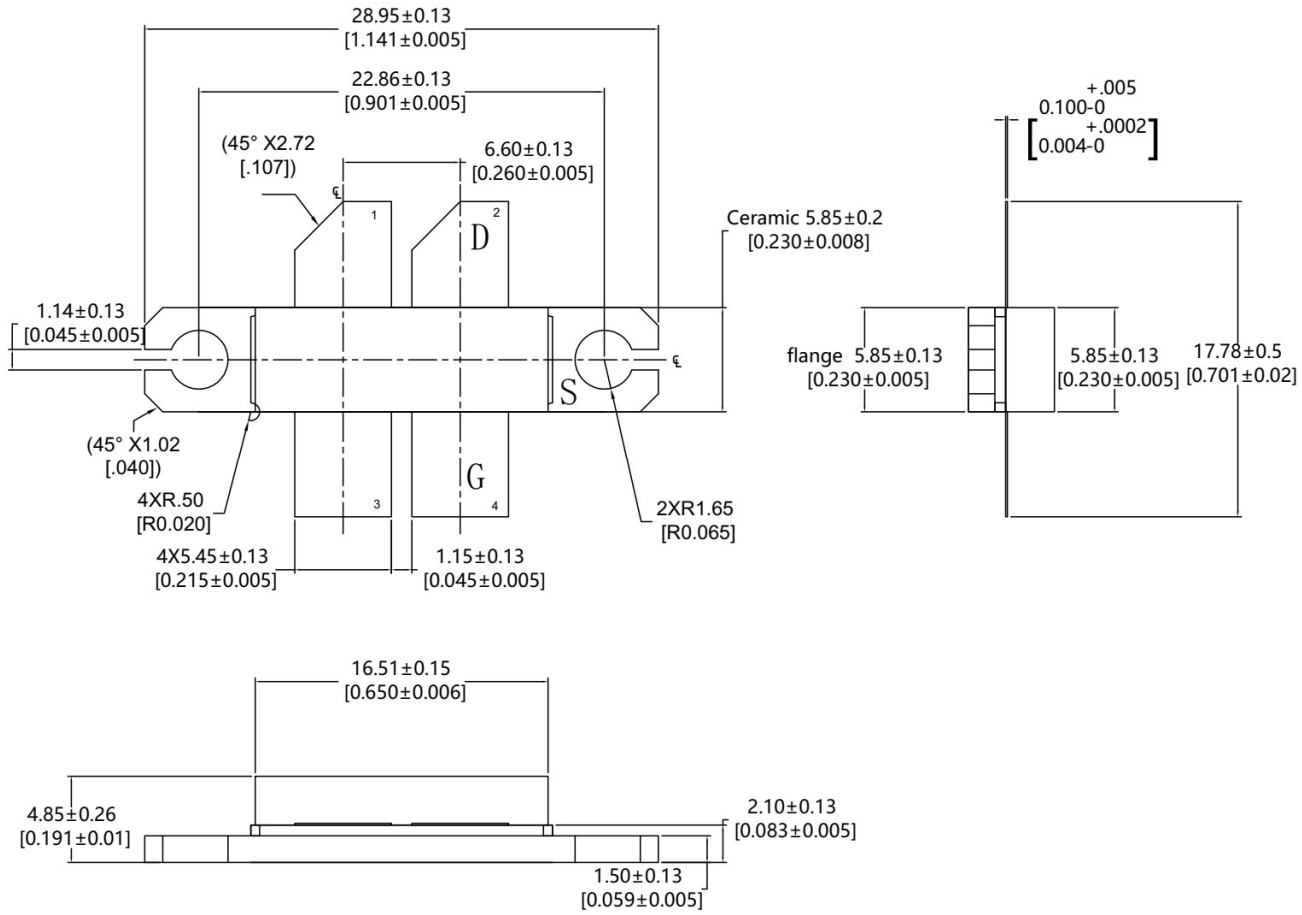




Component	Description	Suggestion
C1~C4	470pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C5~C7	560pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C8~C14	10uF/100V	Ceramic Multilayer Capacitor
C15	15pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C16,C17	10pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
R1	330Ω	plug-in resistor
R2,R3	18Ω 1206	Chip Resistor
R4,R5	470Ω	plug-in resistor
T1	50ohm 100mm	RFSFBU-086-50
T2,T3	16.7ohm 100mm	SFF-16.7-1.5
T4,T5	12.5ohm 100mm	SFF-25-1.5
T6	25ohm 100mm	RFSFBU-086-25
L1,L2	1.5mm enamelled wire, inner diameter 3mm, 6 turns	DIY
PCB	30Mil Rogers4350	

Package Outline

Flanged ceramic package; 2 mounting holes; 4 leads



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-LB/LBB					05/21/2021

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/6/7	Rev 1.0	Product Datasheet Creation

Application data based on HL-24-12

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