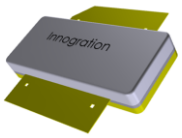
MC1545GRS LDMOS TRANSISTOR

Document Number: MC1545GRS
Product Datasheet V1.0

450W, P band High Power RF LDMOS FETs

MC1545GRS



Description

The MC1545GRS is a 450-watt, unmatched, high ruggedness，single ended LDMOS FETs, designed for P band application up to 0.7GHz.

It can be used in Class AB/B and Class C for any pulse and CW signal.

- Typical 500M narrow band RF Performance (On Innogration fixture with device soldered):

Vds = 28V, Idq = 10mA,Vgs=2.66V

Signal	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
Pulse	55.54	358	69.37	21.31	56.51	450	73

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

- P band pulse or CW amplifier
- ISM applications

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}	+30	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, T_J=200°C, DC test	$R_{\theta JC}$	0.17	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Zero Gate Voltage Drain Leakage Current (V_{DS} = 65V, V_{GS} = 0 V)	I_{DSS}			100	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28 V, V_{GS} = 0 V)	I_{DSS}			1	μA
Gate--Source Leakage Current	I_{GSS}			1	μA

(V_{GS} = 10 V, V_{DS} = 0 V)					
Gate Threshold Voltage (V_{DS} = 28V, I_D = 450 μA)	$V_{GS(th)}$		1.9		V
Gate Quiescent Voltage (V_{DD} = 28 V, I_D = 1A, Measured in Functional Test)	$V_{GS(Q)}$		2.66		V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28 Vdc, I_{DQ} = 10 mA, f = 700 MHz

VSWR 10:1 at 450W pulse CW Output Power	No Device Degradation

TYPICAL CHARACTERISTICS

Figure 1. Network analyzer output S11/S21 (VDS=28V IDQ=1000mA)

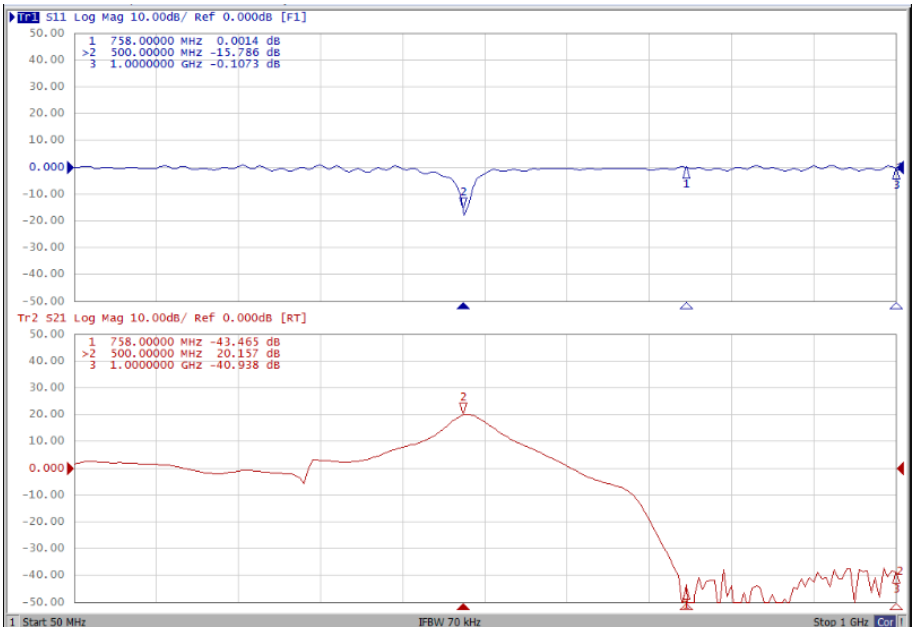


Figure 2. Gain，Efficiency as function of Pout

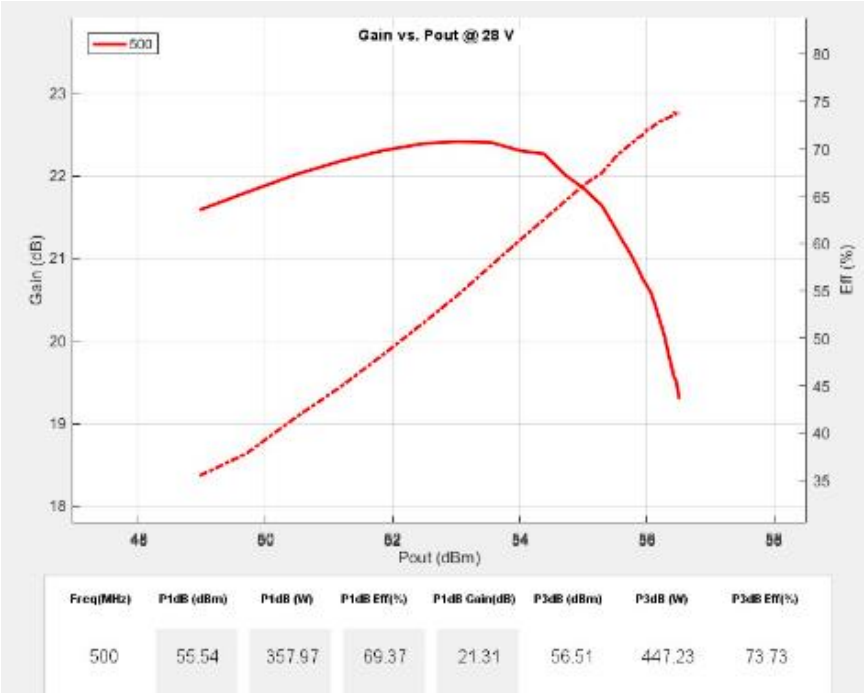


Figure 3. Test Circuit Component Layout

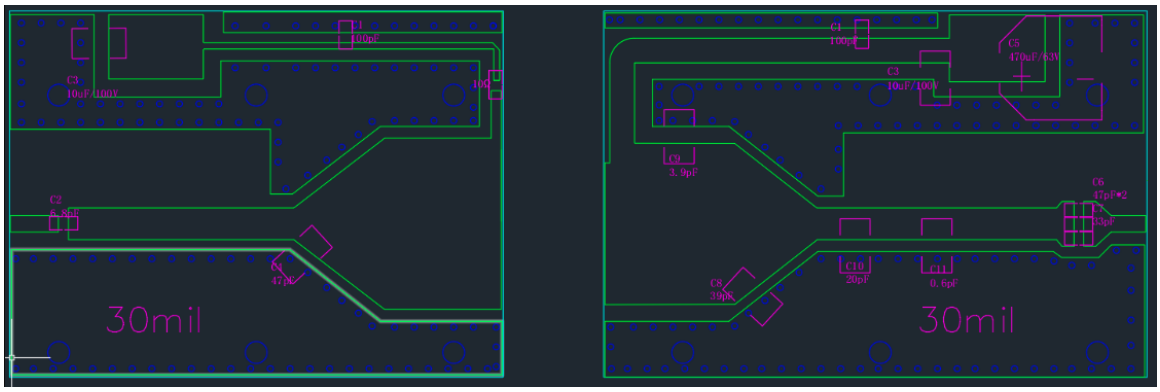
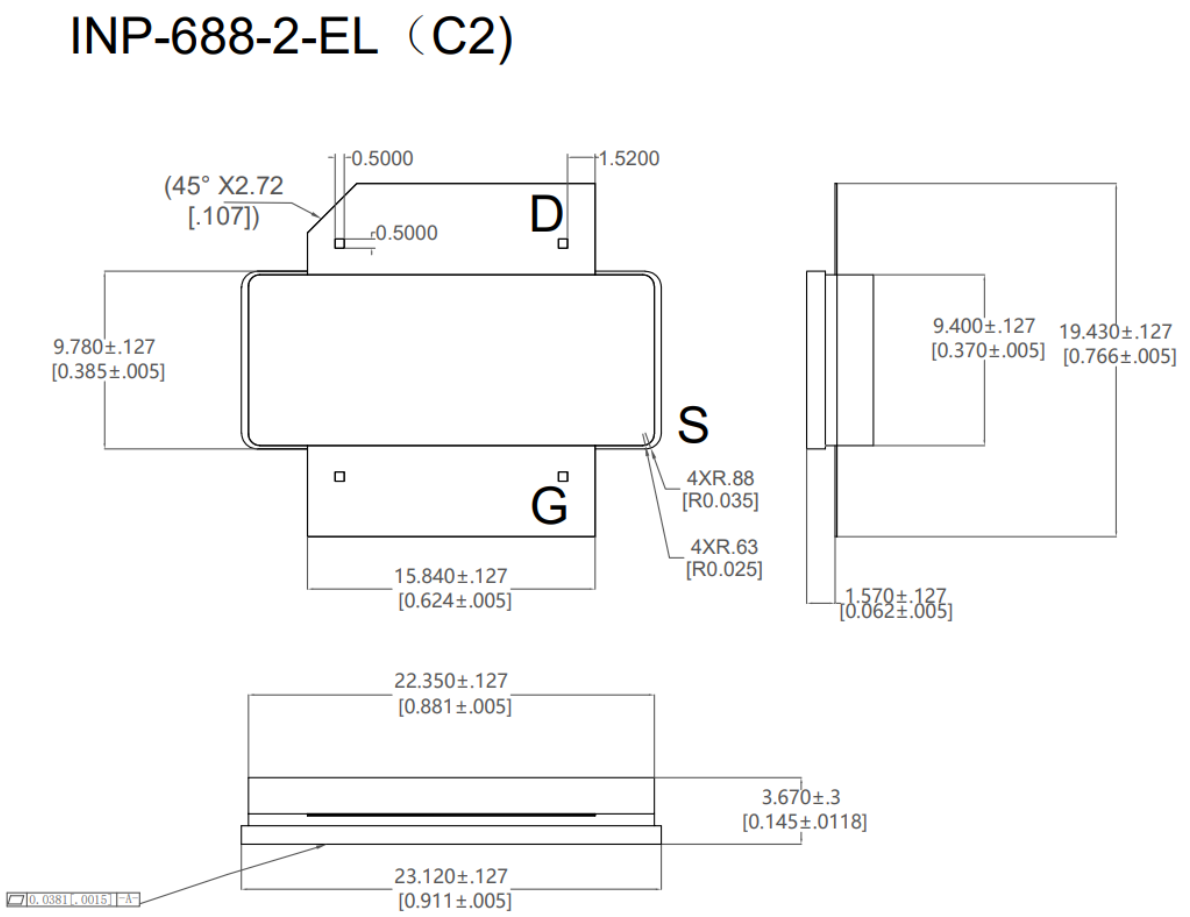


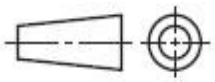
Table 5. Test Circuit Component Designations and Values

Component	Value	Quantity
C1	100pF	2
C3	10uF	2
R1	10 ohm	1
C2	6.8pF	1
C5	470uF	1
C4	47pF	1
C6	47pF	2
C7	33pF	1
C8	39 pF	1
C9	3.9 pF	1
C10	20 pF	1
C11	0.6 pF	1
C16、C17	1nF	2
R1	50Ω	1
R2、R3、R4	10Ω	3
C21	470uF/63V	1

Package Outline

Flangeless ceramic package;



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-C2					09/27/2018

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/5/31	Rev 1.0	Product Datasheet

Application data based on ZXY-24-15

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