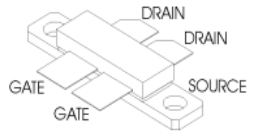
MX0525 LDMOS TRANSISTOR

Document Number: MX0525
Product Datasheet V1.0

250W, 28V High Power RF LDMOS FETs

MX0525



Description

The MX0525 is a 250-watt, highly rugged, unmatched LDMOS FET, designed for wide-band commercial and industrial applications with frequencies HF to 1 GHz.

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

V_{DD} = 28 Volts, I_{DQ} = 1200 mA, CW.

Frequency	Gp (dB)	P_{-1dB} (W)	η_D@P_{-1} (%)
1000 MHz	17	250	60

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

V_{DD} = 28 Volts, I_{DQ} = 1500 mA, CW.

Freq(MHz)	Gain (dB)	P-1(W)	Eff(%)
30	18.9	107	57.5
100	19.3	204	56.5
150	18.6	195	56.6
200	18.5	166	52.5
250	18.9	141	51.5
300	18.8	159	54.5
350	19.1	166	55.6
400	19.1	155	51.7
450	19.4	170	51.0
512	20.6	170	51.7

- Typical Performance (In Demo Fixture): P_{out}= 40 Watts @ 30 MHz-512 MHz,

V_{DD} = 28 Volts, I_{DQ} = 1.5 A, Two tone space 100KHz.

Freq(MHz)	30	100	200	300	400	512
IMD3(dBc)	-38	-37	-33	-37	-39	-36

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)
- 470-860MHz (TV UHF)
- 100kHz - 1000MHz (ISM, instrumentation)

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+95	Vdc

Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+40	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	RθJC	0.32	°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	$V_{(BR)DSS}$	90			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} = 28V, I_D = 650 μA)	V_{GS}(th)	——	2.15	——	V
Gate Quiescent Voltage (V_{DD} = 28 V, I_D = 700 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.0	——	V
Common Source Input Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{ISS}		128		pF
Common Source Output Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{OSS}		43		pF
Common Source Feedback Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{RSS}		2.4		pF

Functional Tests (In Demo Test Fixture, 50 ohm system) V_{DD} = 28 Vdc, I_{DQ} = 1200 mA, f = 1000 MHz, CW Signal Measurements.

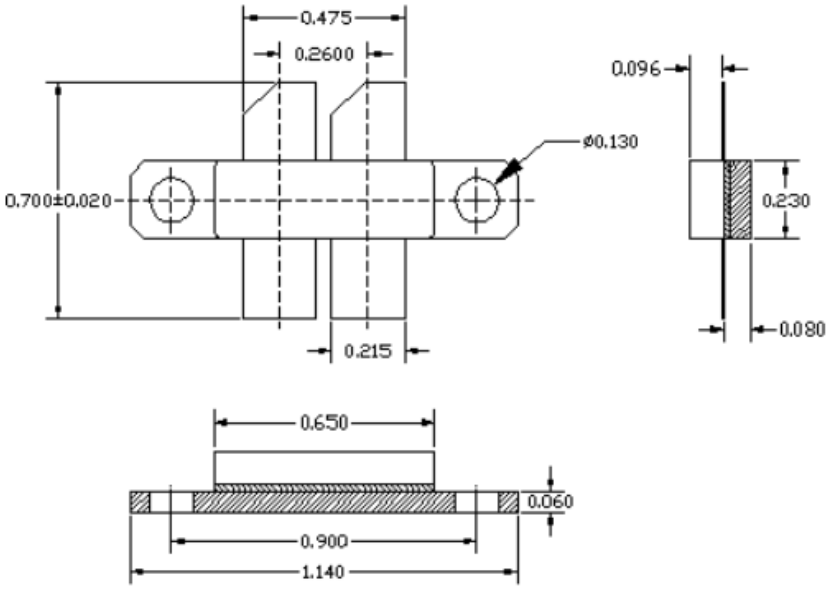
Power Gain	Gp	——	17	——	dB
Drain Efficiency@P1dB	η_D	——	60	——	%
1 dB Compression Point	P_{-1dB}	——	250	——	W
Input Return Loss	IRL	——	-7	——	dB

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28 Vdc, I_{DQ} = 1200 mA, f = 1000 MHz

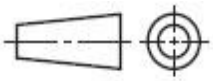
VSWR 20:1 at 250W pulse CW Output Power	No Device Degradation

Package Outline

Flanged ceramic package; 2 mounting holes; 4 leads



Tolerance .XX +/-0.01 .XXX +/-.005 inches

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

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2017/10/13	**Rev 1.0**	**Product Datasheet**

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