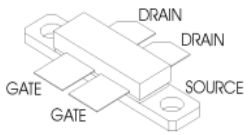
MX0520 LDMOS TRANSISTOR

Document Number: MX0520
Product Datasheet V1.0

200W, 28V High Power RF LDMOS FETs

MX0520



Description

The MK0520 is a 200-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} = 1000 mA, CW.

Frequency	Gp (dB)	P_{-1dB} (W)	η_D@P_{-1} (%)
1000 MHz	17	200	60

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

  V_{DD} = 28 Volts, I_{DQ} = 850 mA, CW.

Frequency	Gp (dB)	P_{-1dB} (W)	η_D@P_{-1} (%)
10 MHz	19.8	80	45.1
20 MHz	20.2	114	55.6
30 MHz	20.0	127	58.8
60 MHz	20.5	157	65.1
100 MHz	20.2	141	50.4
200 MHz	20.3	185	58.1
300 MHz	20.3	186	55.4
400 MHz	19.7	180	58.9
500 MHz	18.6	135	51.5
600 MHz	17.2	90	55.3

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	0.35	°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	$V_{(BR)DSS}$	95	98		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 = 600 μA)	V_{GS}(th)	——	2.19	——	V
Gate Quiescent Voltage (V_{DD} = 28 V, I_D = 500 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	2.9	——	V
Common Source Input Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{ISS}		106		pF
Common Source Output Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{OSS}		40		pF
Common Source Feedback Capacitance (V_{GS} = 0V, V_{DS} =28 V, f = 1 MHz)	C_{RSS}		1.6		pF

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

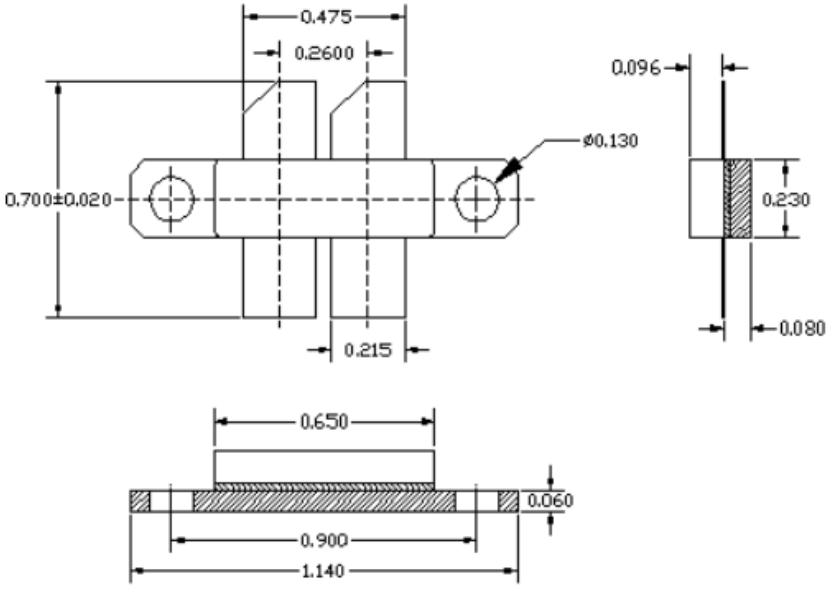
Power Gain	Gp	——	17	——	dB
Drain Efficiency@P1dB	η_D	——	60	——	%
1 dB Compression Point	P_{-1dB}	——	200	——	W
Input Return Loss	IRL	——	-7	——	dB

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

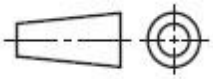
VSWR 20:1 at 200W pulse CW Output Power	No Device Degradation

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 Creation

Disclaimers

Specifications are subject to change without notice. Innogration believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Innogration for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Innogration . Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.“Typical” parameters are the average values expected by Innogration in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer’s technical experts for each application. Innogration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innogration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility. For any concerns or questions related to terms or conditions, pls check with Innogration and authorized distributors