

MC0521RS LDMOS TRANSISTOR

Document Number: MC0521RS
Product Datasheet V1.0

210W, P band High Power RF LDMOS FETs

MC0521RS

Description

The MC0521RS is a 300-watt, unmatched, high ruggedness, single ended LDMOS FETs, designed for P band application up to 1GHz.

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

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

$V_{ds} = 28V, I_{dq} = 100mA, V_{gs} = 2.84V$

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
500	54.39	196.81	67.63	17.59	53.78	239.00	73.24



Features

- High Efficiency and Linear Gain Operations
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Integrated ESD Protection
- Excellent thermal stability, low HCI drift
- 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}	+95	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+36	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 $T_c = 85^\circ C, T_j = 200^\circ C, DC \text{ test}$	$R_{\theta JC}$	0.25	°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)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

DC Characteristics

Zero Gate Voltage Drain Leakage Current ($V_{DS} = 95V, V_{GS} = 0V$)	I_{DSS}			100	μA
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28V, V_{GS} = 0V$)	I_{DSS}			1	μA
Gate--Source Leakage Current ($V_{GS} = 10V, V_{DS} = 0V$)	I_{GSS}			1	μA

MC0521RS LDMOS TRANSISTOR

Document Number: MC0521RS
Product Datasheet V1.0

Gate Threshold Voltage ($V_{DS} = 28V, I_D = 450 \mu A$)	$V_{GS(th)}$	1.9	V
Gate Quiescent Voltage ($V_{DD} = 28V, I_D = 100 mA$, Measured in Functional Test)	$V_{GS(Q)}$	2.8	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): $V_{DD} = 28Vdc, I_{DQ} = 100 mA, f = 1000 MHz$

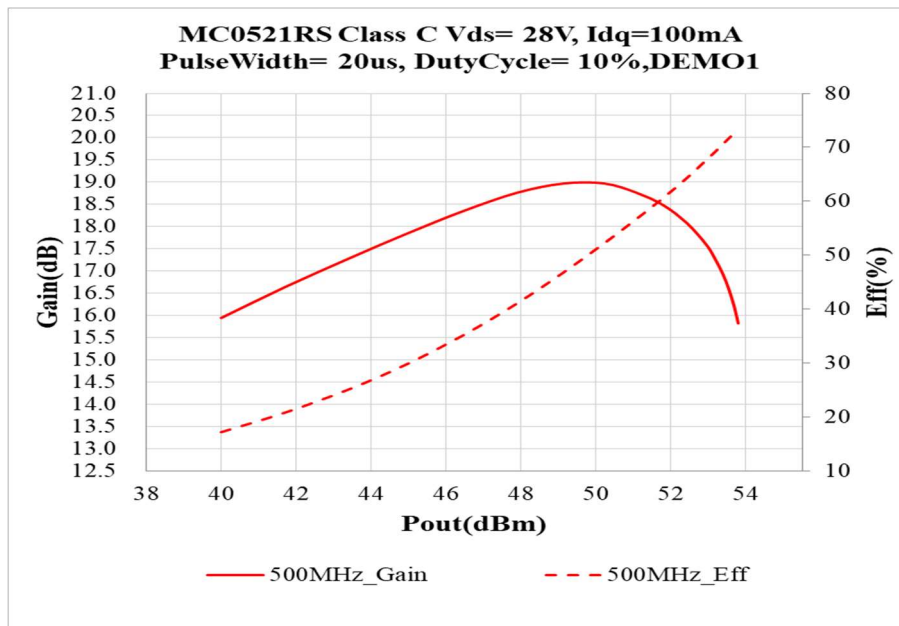
VSWR 10:1 at 210W pulse CW Output Power	No Device Degradation
---	-----------------------

TYPICAL CHARACTERISTICS

Figure 1. Network analyzer output S11/S21 ($V_{DS}=28V, I_{DQ}=1000mA$)



Figure 2. Gain, Efficiency as function of Pout



MC0521RS LDMOS TRANSISTOR

Document Number: MC0521RS
Product Datasheet V1.0

Figure 3. Test Circuit Component Layout

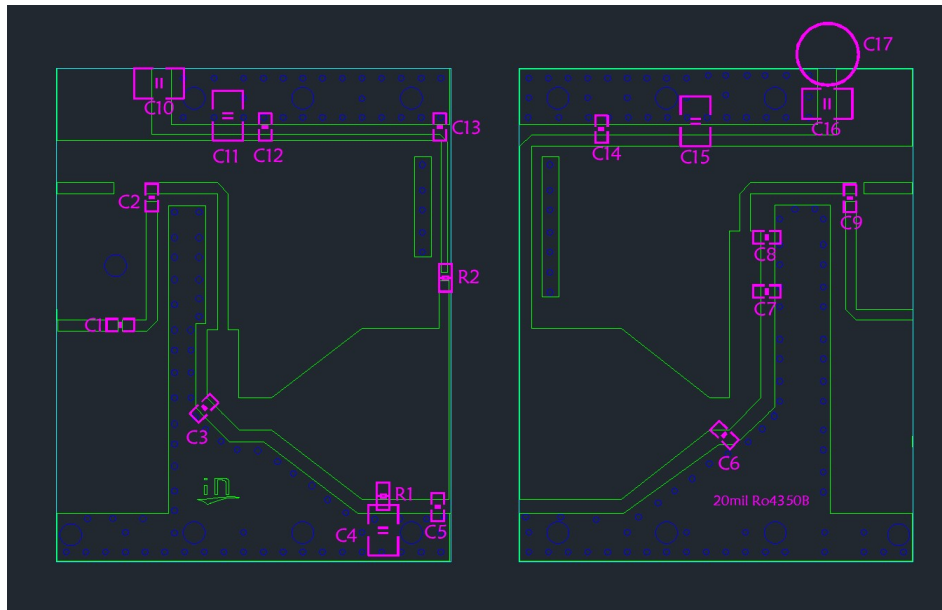


Table 5. Test Circuit Component Designations and Values

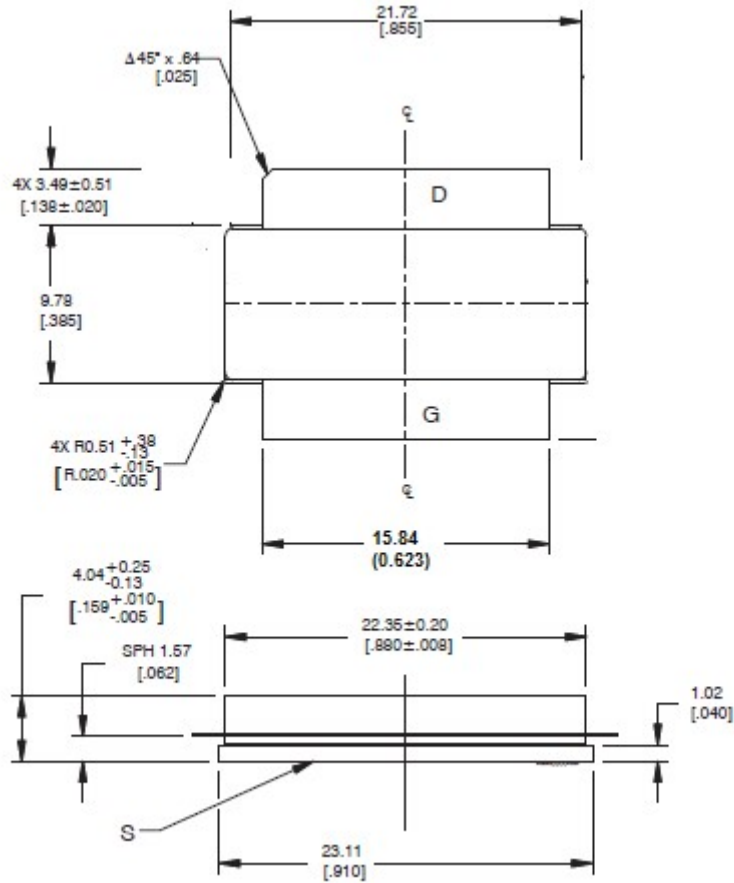
Component	Value	Quantity
U1	MC0521RS	1
C1	8.2pF	1
C2, C9, C13, C14	100pF	4
C3	43 pF	1
C4, C10, C11, C15, C16	10uF/63V	5
C5	18pF	1
C6, C7	27pF	2
C8	0.5pF	1
C12	10nF	1
R1, R2	10 Ω	2
C17	470uF/63V	1

MC0521RS LDMOS TRANSISTOR

Document Number: MC0521RS
Product Datasheet V1.0

Package Outline

Flangeless ceramic package;



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

MC0521RS LDMOS TRANSISTOR

Document Number: MC0521RS
Product Datasheet V1.0

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/3/14	Rev 1.0	Product Datasheet

Application data based on ZYX-24-03

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

Copyright © by Innogration (Suzhou) Co.,Ltd.