

# M2U0508RV LDMOS TRANSISTOR

Document Number: M2U0508RV  
Preliminary Datasheet V1.0

## 700MHz, 80W, 50V High Power RF LDMOS FETs

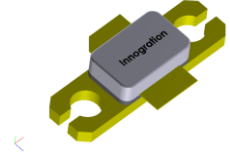
### Description

The M2U0508RV is a 80-watt P1dB, highly rugged, input matched LDMOS FET, designed for wide-band commercial and industrial applications at frequencies HF to 700MHz.

**It is the ruggedness and stability enhancement of M2U1508V at lower band**

It can support pulsed, CW or any modulated signal in form of linear or saturated operations.

### M2U0508RV



•Typical Performance (On Innegration broadband band fixtures with device soldered):

$V_{ds}=50V, V_{gs}=3.55V, I_{dq}=200mA$						
Freq(MHz)	Test signal	Pin(dBm)	Power Gain(dB)	Pout(dBm)	Pout(W)	Eff(%)
108	CW	23.5	26	49.5	90	71

### 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	$V_{DS}$	125	Vdc
Gate--Source Voltage	$V_{GS}$	-10 to +10	Vdc
Operating Voltage	$V_{DD}$	+55	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 $T_c=85^{\circ}C, T_j=200^{\circ}C, DC$ test	$R_{\theta JC}$	1.5	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
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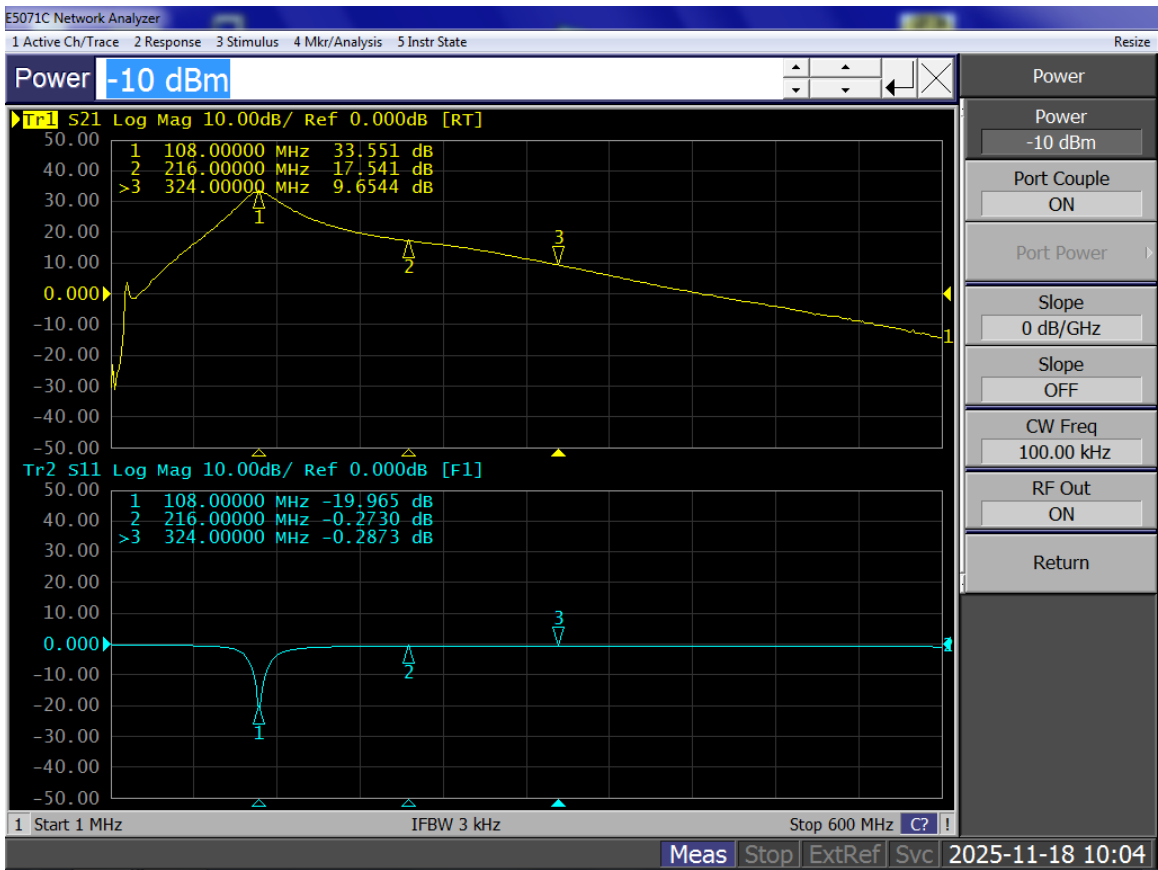
## DC Characteristics

Drain-Source Voltage $V_{GS}=0, I_{DS}=1.0\text{mA}$	$V_{(BR)DSS}$		125		V
Zero Gate Voltage Drain Leakage Current ( $V_{DS} = 50\text{V}, V_{GS} = 0\text{V}$ )	$I_{DSS}$	—	—	1	$\mu\text{A}$
Gate--Source Leakage Current ( $V_{GS} = 10\text{V}, V_{DS} = 0\text{V}$ )	$I_{GSS}$	—	—	1	$\mu\text{A}$
Gate Threshold Voltage ( $V_{DS} = 50\text{V}, I_D = 600\mu\text{A}$ )	$V_{GS(th)}$	—	2.73	—	V
Gate Quiescent Voltage ( $V_{DD} = 50\text{V}, I_D = 350\text{-mA}$ , Measured in Functional Test)	$V_{GS(Q)}$	—	3.55	—	V
Common Source Input Capacitance ( $V_{GS} = 0\text{V}, V_{DS} = 50\text{V}, f = 1\text{MHz}$ )	$C_{ISS}$		57		pF
Common Source Output Capacitance ( $V_{GS} = 0\text{V}, V_{DS} = 50\text{V}, f = 1\text{MHz}$ )	$C_{OSS}$		24		pF
Common Source Feedback Capacitance ( $V_{GS} = 0\text{V}, V_{DS} = 50\text{V}, f = 1\text{MHz}$ )	$C_{RSS}$		0.75		pF

108MHz

## TYPICAL CHARACTERISTICS

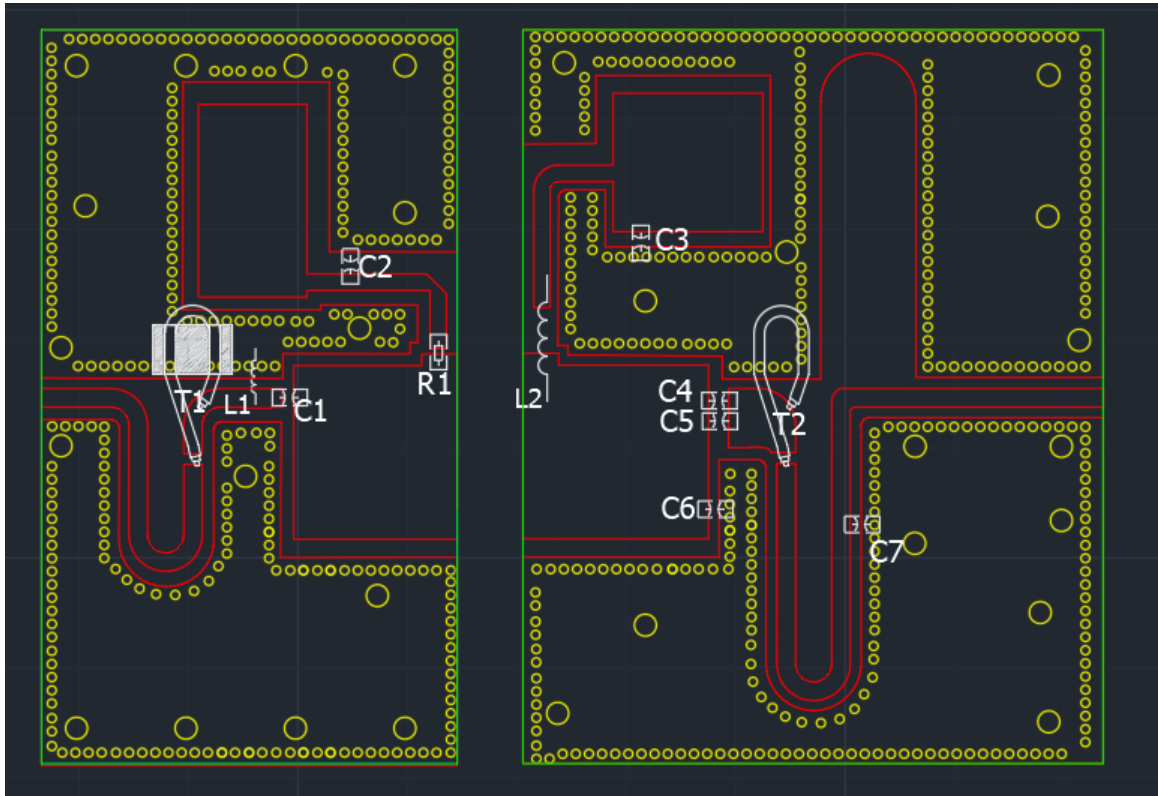
Figure 2: Network analyzer output S11/S21



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Figure 3. Test Circuit Component Layout (PCB Roger 4350B 30Mil, PCB file upon request)



Component	Description	Suggestion
C1	220pF/MQ301111	
C2,C3	10uF/1210	/
C4,C5	560pF/MQ101111	/
C6	39PF/MQ101111	
C7	2.2pF/MQ101111	
R1	360 $\Omega$	1206
T1	25 Ohm,50mm	SFF-25-1.5/BN-61-202
T2	50 Ohm,100mm	RFSFBU-86-50
L1	0.8mm wire,4turns, $\phi$ =3mm	DIY
L2	0.8mm wire,9turns, $\phi$ =3mm	DIY
D2	25 Ohm,25mm/FB-61-2501	SFF-25-1.5
T1	25 Ohm,31mm	SFF-25-1.5
T2	25 Ohm,24mm	SFF-25-1.5
L1	0.8mm wire,13turns, $\phi$ =3mm	DIY

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## Package Outline

Flanged ceramic package; 2 leads

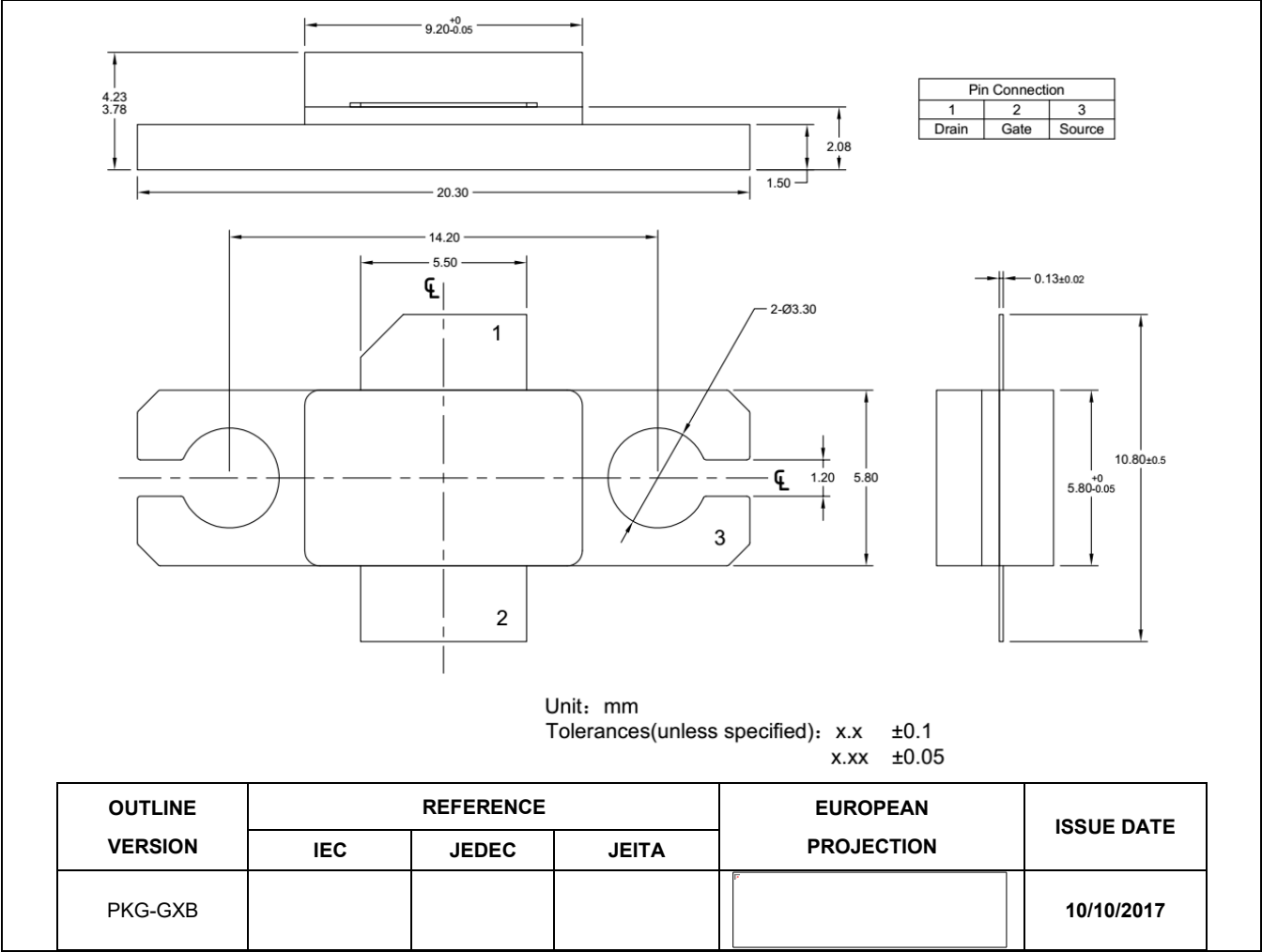


Figure 1. Package Outline PKG-G2E

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## Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2025/11/22	V1.0	Preliminary Datasheet Creation

Application data based on SYX-25-53

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