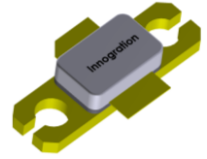


55W, 12.5V High Power RF LDMOS FETs

Description

The MU1518G is a 55-watt P1dB (70W P3dB) high performance, unmatched LDMOS FET, designed for wide-band commercial and industrial applications with frequencies HF to 0.5 GHz.

MU1518G



• Typical 520MHz Performance (On Innogrator fixture with device soldered):

$V_{ds}=12.5V, V_{gs}=2.5V, I_{dq}=200mA$					
Test signal	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3(W)	EFF (%)
CW	47.50	22.1	48.56	71.8	71.4

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)

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+28	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	$R_{\theta JC}$	0.45	°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
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MU1518G LDMOS TRANSISTOR

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DC Characteristics

Drain-Source Voltage $V_{GS}=0, I_{DS}=1.0\text{mA}$	$V_{(BR)DSS}$	65	70		V
Zero Gate Voltage Drain Leakage Current $(V_{DS} = 28\text{ V}, V_{GS} = 0\text{ V})$	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current $(V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V})$	I_{GSS}	—	—	1	μA
Gate Threshold Voltage $(V_{DS} = 28\text{V}, I_D = 600\text{ }\mu\text{A})$	$V_{GS(th)}$	—	1.98	—	V
Gate Quiescent Voltage $(V_{DD} = 28\text{ V}, I_D = 200\text{ mA}, \text{Measured in Functional Test})$	$V_{GS(Q)}$	—	2.5	—	V
Drain source on state resistance $(V_{DS} = 0.1\text{V}, V_{GS} = 10\text{ V})$	$R_{ds(on)}$		70		m Ω
Common Source Input Capacitance $(V_{GS} = 0\text{V}, V_{DS} = 28\text{ V}, f = 1\text{ MHz})$	C_{iss}		160		pF
Common Source Output Capacitance $(V_{GS} = 0\text{V}, V_{DS} = 28\text{ V}, f = 1\text{ MHz})$	C_{oss}		70		pF
Common Source Feedback Capacitance $(V_{GS} = 0\text{V}, V_{DS} = 28\text{ V}, f = 1\text{ MHz})$	C_{rss}		2.8		pF

Functional Tests (In Demo Test Fixture, 50 ohm system) $V_{DD} = 12.5\text{ Vdc}$, $I_{DQ} = 200\text{ mA}$, $f = 500\text{ MHz}$, Pulsed CW Signal Measurements.

Power Gain	G_p	—	20	—	dB
Drain Efficiency@P1dB	η_D	—	65	—	%
1 dB Compression Point	P_{-1dB}	—	55	—	W

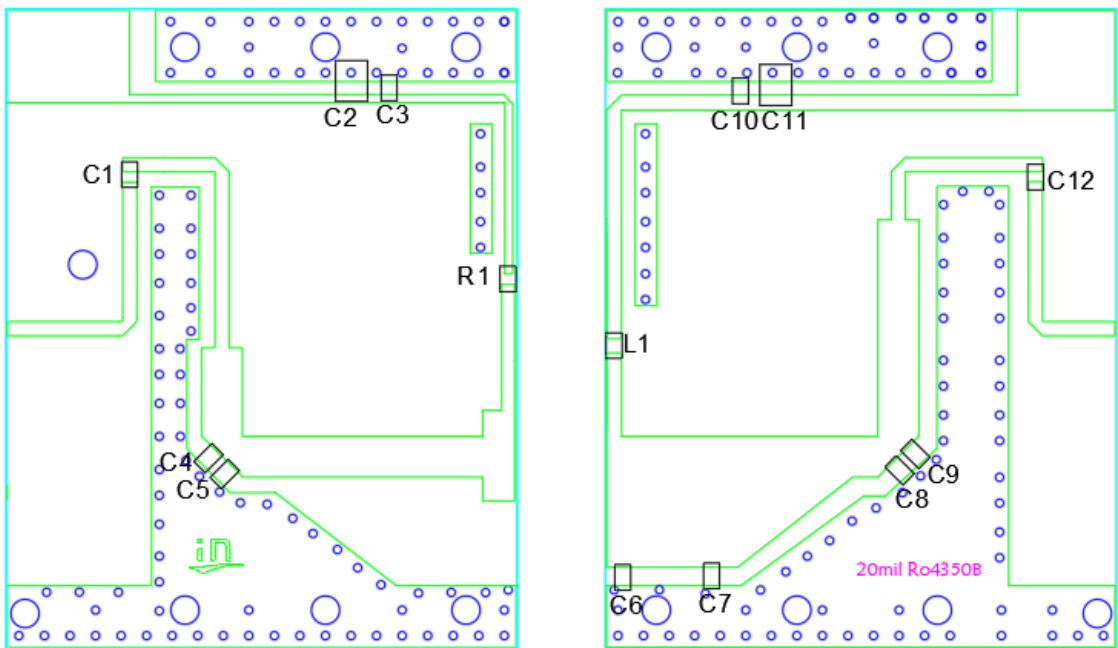
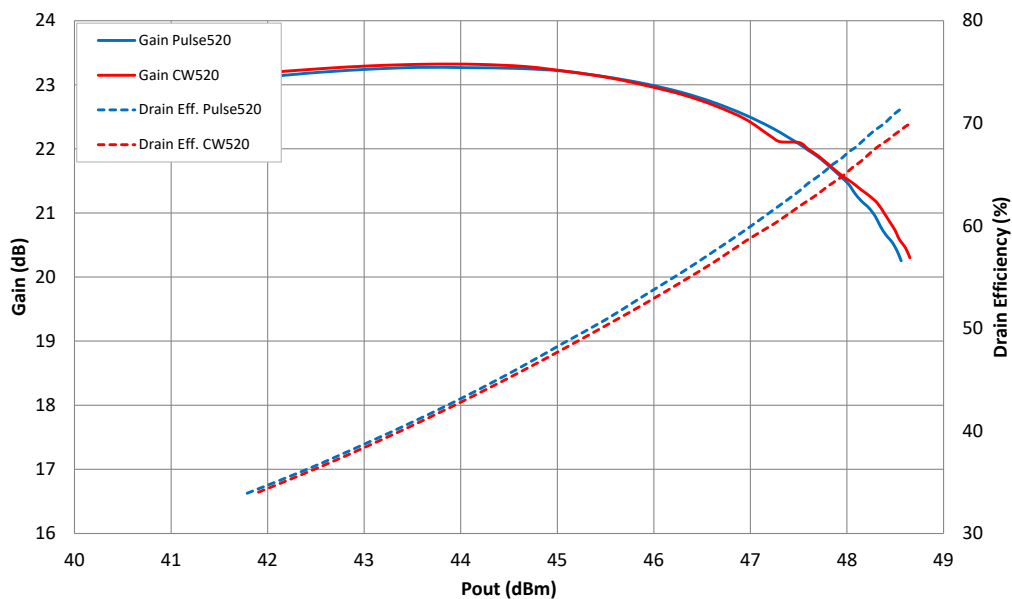
Load Mismatch (In Innogration Test Fixture, 50 ohm system): $V_{DD} = 12.5\text{ Vdc}$, $I_{DQ} = 200\text{ mA}$, $f = 500\text{ MHz}$

VSWR 10:1 at 55W Pulsed CW Output Power	No Device Degradation
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Figure 1: Network analyzer Output S11/S21



Figure 2: Power gain, Eff as function of Pout:



Component	Value	Description
C1,C3,C10,C11	220pF	MQ300805C
C2,C11	12pF	TDK1206
C4	20pF	ATC600S
C5	5.6pF	ATC600S
C6,C9	10pF	ATC600S
C7,C8	22pF	ATC600S
R1	10Ω	--
L1	32nH	--

Package Outline

Flanged ceramic package; 2 leads

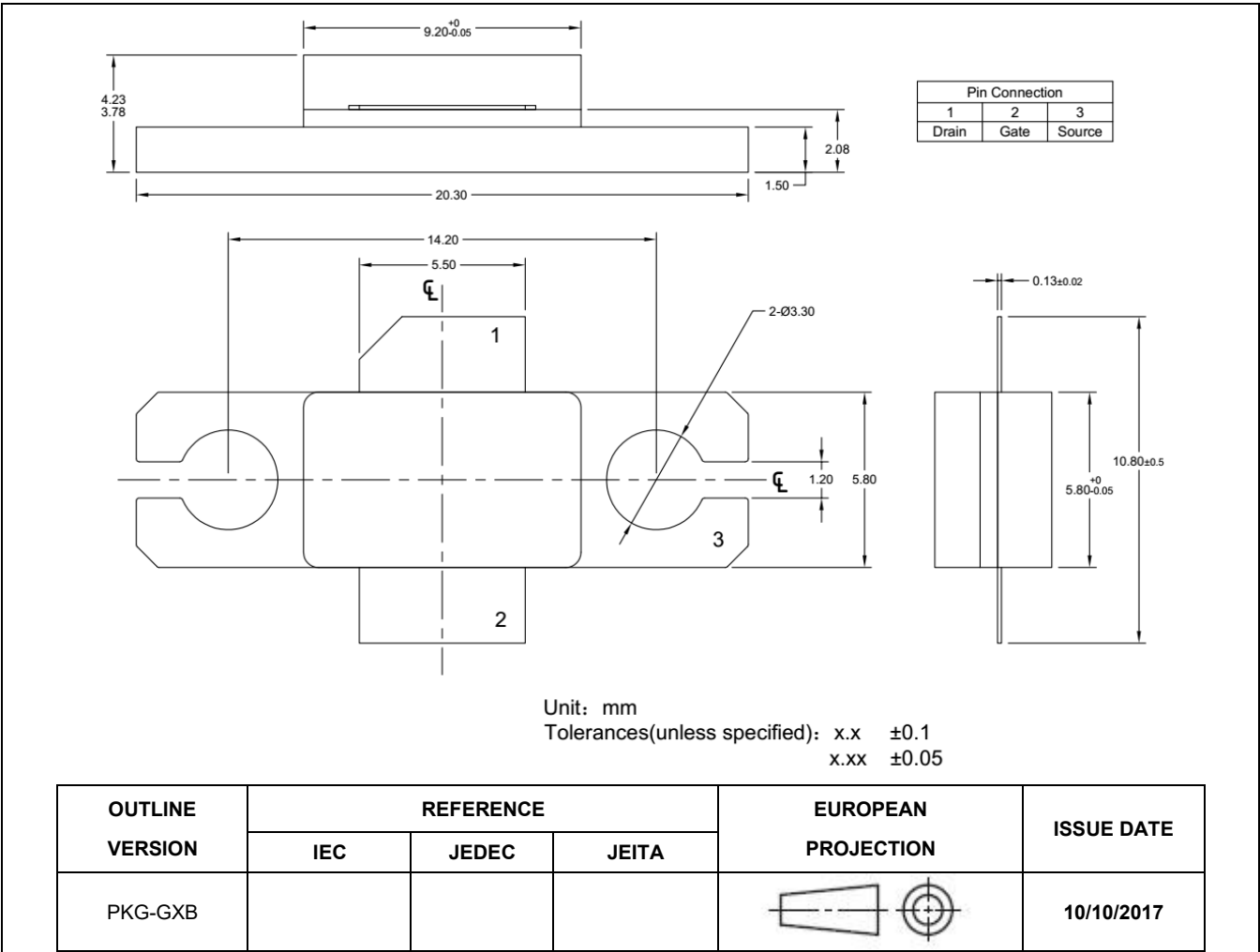


Figure 1. Package Outline PKG-G2E

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/6/5	Rev 1.0	Preliminary Datasheet Creation (HJ-24-08)
2025/6/13	Rev 1.1	Update the performance summary on 1 st page due to recalibration

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