

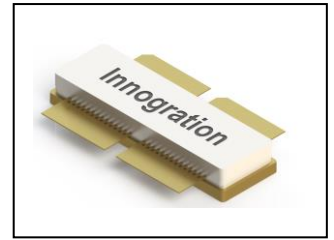
MQ1051VPS LDMOS TRANSISTOR

Document Number: MQ1051VPS
Preliminary Datasheet V1.0

500W, UHF band 50V High Power RF LDMOS FETs

Description

The MQ1051VPS is a 500W capable, Input/Output matched LDMOS FET, designed for commercial and industrial applications within UHF band up to 1GHz, supporting both pulse and CW applications upon bandwidth trade off. **In typical 400-1000M full band tuning, it can reach >400W pulsed CW power**



There isn't guarantee when this device is used outside of the band stated above.

- Typical RF performance within 400-1000MHz with device soldered

MQ1051VPS ^{V3} VGS=3.45V VDS=50V IDQ=200mA pulse 100us 10%						
Freq (MHz)	Psat (dBm)	Psat (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff(%)
400	56.57	453.9	1.44	40.99	15.58	73
500	57.51	563.6	2.18	45.19	12.32	57
600	57.62	578.1	2.16	45.03	12.59	59
700	58.25	668.3	2.38	45.27	12.98	61
800	58.34	682.3	2.44	45.79	12.55	61
900	58.29	674.5	2.33	45.47	12.82	63
1000	56.90	489.8	1.95	44.81	12.09	56

2 variants package available, CPC V3(released version)/Cu-Diamond V2 (upon request)

Features

- High breakdown voltage enable high ruggedness
- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Excellent thermal stability, low HCI drift
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	110	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 ,Case Temperature 25°C, 50Vdc, DC test	R _{θJC}	0.2	°C/W

Table 3. ESD Protection Characteristics

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

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

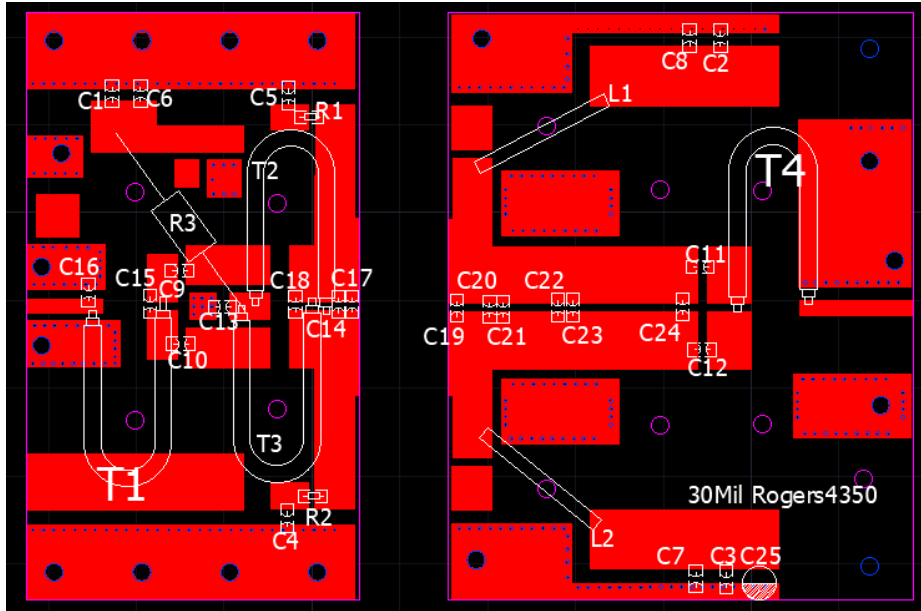
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V _{GS} =0V, I _{DS} =1.0mA	V _{(BR)DSS}		110		V
Zero Gate Voltage Drain Leakage Current (V _{DS} = 50V, V _{GS} = 0 V)	I _{DSS}	—	—	1	μA
Gate—Source Leakage Current (V _{GS} = 10 V, V _{DS} = 0 V)	I _{GSS}	—	—	1	μA
Gate Threshold Voltage (V _{DS} = 50V, I _D = 600 μA)	V _{GS(th)}	—	2.54	—	V
Gate Quiescent Voltage (V _{DD} = 50 V, I _D = 1000 mA, Measured in Functional Test)	V _{GS(Q)}	—	3.8	—	V

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400-1000MHz

Reference Circuit of Test Fixture
(Layout file upon request) PCB: Roger 4350B, 30mils



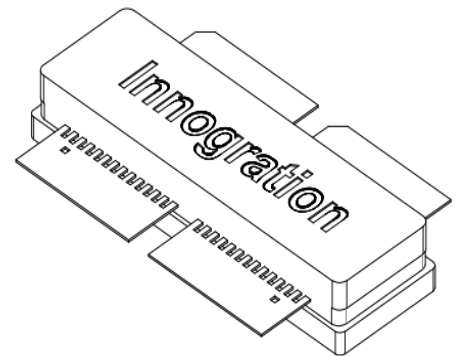
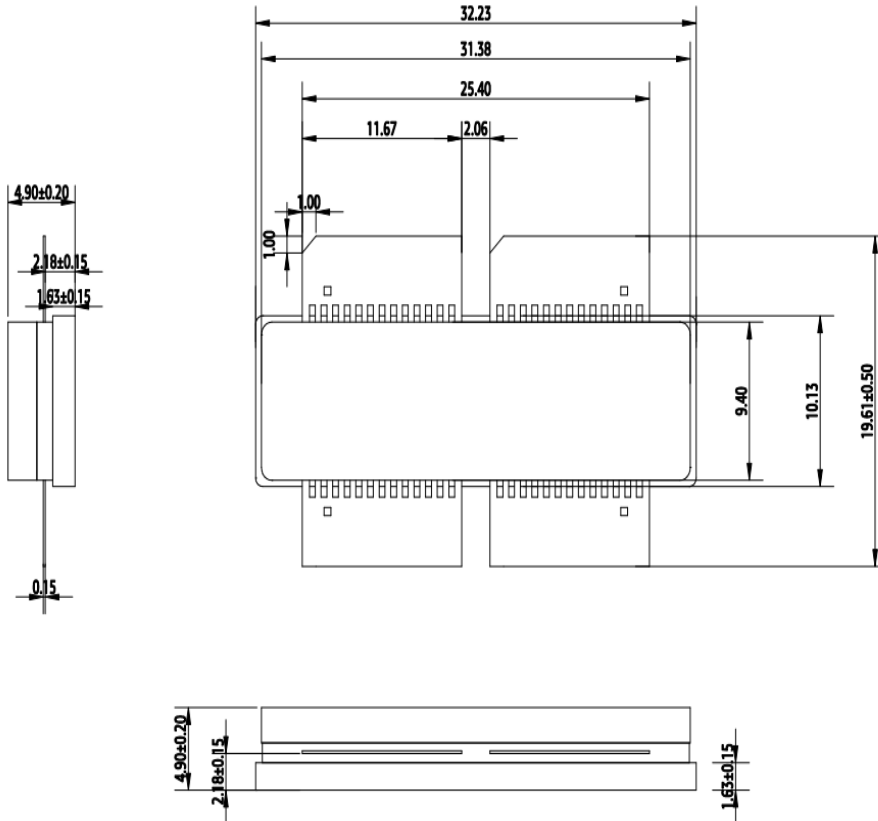
Component	Description	Suggested Manufacturer
C1~C5,C13	10uF/200V-1210	Ceramic multilayer capacitor
C6~C8	820pF	
C9~C12	75pF	
C14,C23	3pF	
C15	3.3pF	
C16	1pF	
C17	15pF	
C18	3.6pF	
C19	10pF	
C20	2pF	
C21	2.7pF	
C22	1.5pF	
C24	4.7pF	
R1,R2	10 Ω /2512	Chip Resistor
R3	300 Ω	color ring resistor
T1	50ohm-40mm	RFSFBU-086-50
T2,T3	16.7ohm-40mm	SFF-16.7-1.5
T4	35ohm-55mm	SFF-35-3
L1,L2	2mm copper line	DIY

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Package Outline

Earless Flanged Plastic Air Cavity Package; 4 leads



Unit:mm
Tolerance $\pm 0.10\text{mm}$, Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/4/20	Rev 1.0	Preliminary Datasheet and package finalized as D4C V3

Application data based on TC-26-13

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