

M2Q1031VPS LDMOS TRANSISTOR

Document Number: M2Q1031VPS
Preliminary Datasheet V2.0

300W, UHF band 50V High Power RF LDMOS FETs

Description

The M2Q1031VPS is a 300W 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 >300W pulsed CW and >250W CW power.**

It can be taken as bandwidth expansion of M2K1026VP

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



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

M2Q1031VPS ^{V0}			VGS=3.21V	VDS=50V	IDQ=200mA CW			
Freq (MHz)	Psat (dBm)	Psat (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff(%)	2 nd (dBc)	3 rd (dBc)
400	54.90	309.0	8.80	40.00	14.90	70.23	-13.70	-18.10
500	54.55	285.1	10.20	40.35	14.20	55.90	-17.50	-25.30
600	55.21	331.9	11.95	40.45	14.76	55.55	-24.50	-17.00
700	55.61	363.9	11.90	40.61	15.00	61.16	-33.10	-41.30
800	55.23	333.4	11.60	41.59	13.64	57.49	-38.60	-43.30
900	55.18	329.6	11.96	41.87	13.31	55.12	-32.40	-43.30
1000	54.90	309.0	10.07	41.61	13.29	61.38	-32.40	-30.90

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 _{DO}	+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}	0.31	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
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Human Body Model (per JESD22--A114)	Class 2
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Table 4. Electrical Characteristics (TA = 25 °C unless otherwise noted)

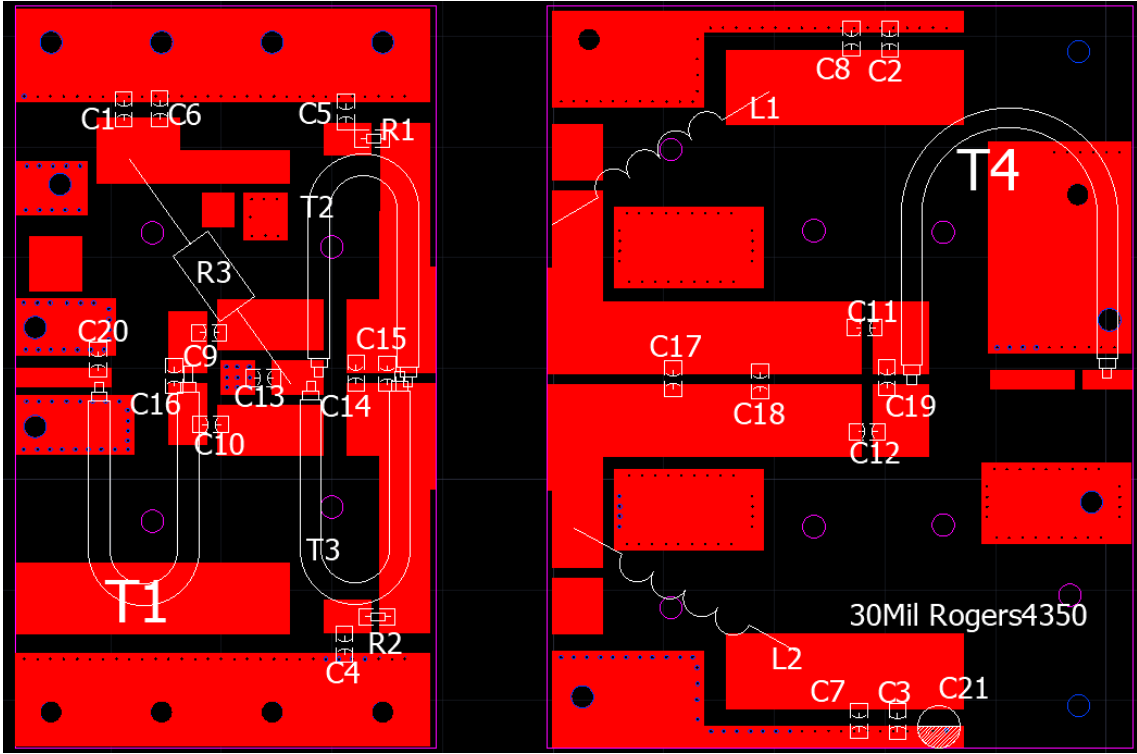
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V _{GS} =0V, I _{DS} =1.0mA	V _{(BR)DSS}		110		V
Zero Gate Voltage Drain Leakage Current (V _{DS} = 50V, V _{GS} = 0 V)	I _{DSS}	—	—	1	μA
Gate—Source Leakage Current (V _{GS} = 10 V, V _{DS} = 0 V)	I _{GSS}	—	—	1	μA
Gate Threshold Voltage (V _{DS} = 50V, I _D = 600 μA)	V _{GS(th)}	—	2.54	—	V
Gate Quiescent Voltage (V _{DD} = 50 V, I _D = 500 mA, Measured in Functional Test)	V _{GS(Q)}	—	3.4	—	V

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400-1000MHz

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



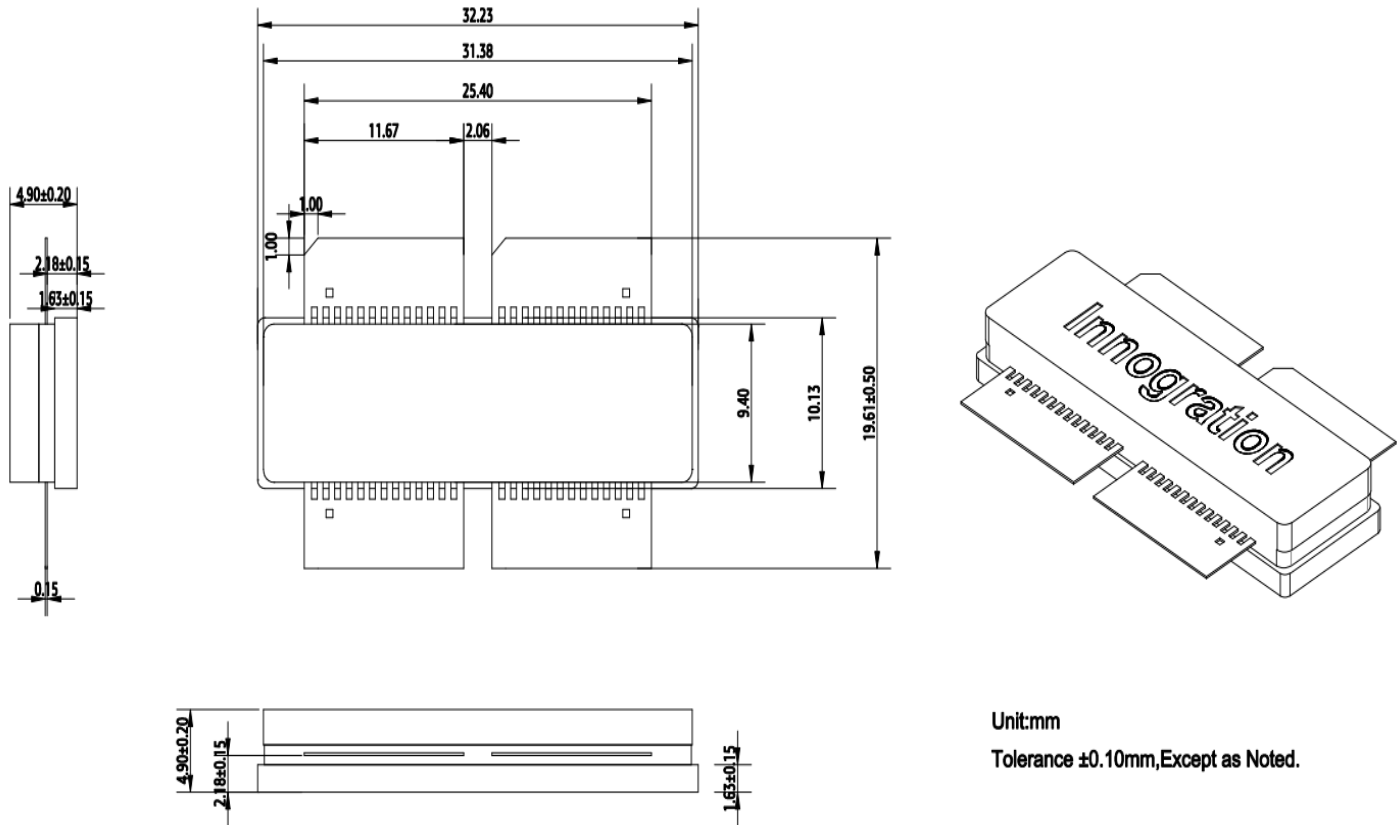
Component	Description	Suggestion
C1~C5,C13	10uF/200V-1210	Ceramic multilayer capacitor
C6~C8	470pF	
C9,C10	47pF	
C11,C12	75pF	
C19,C20	1pF	
C14	7.5pF	
C15	10pF	
C16	3.3pF	
C17	4.7pF	
C16	5.1pF	
C21	470uF-63V	electrolytic capacitor
R1,R2	10 Ω /1206	Chip Resistor
R3	300 Ω	Color Ring Resistor
T1	50 ohm-40mm	RFSFBU-086-50
T2,T3	16.7 ohm-40mm	SFF-16.7-1.5
T4	35 ohm-55mm	SFF-35-3
L1,L2	1.5mm wire	DIY

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Package Outline

Earless Flanged Plastic Air Cavity Package; 4 leads



Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/5/15	Rev 1.0	Preliminary Datasheet and package finalized as D4C V3
2026/8/12	Rev 2.0	Modify Rth according to retest

Application data based on TC-26-17

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