

M2Q1045VPS LDMOS TRANSISTOR

Document Number: M2Q1045VPS
Preliminary Datasheet V1.0

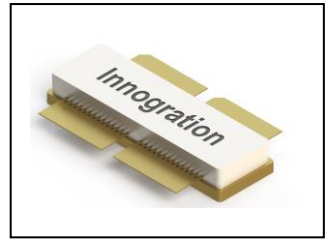
450W, UHF band 50V High Power RF LDMOS FETs

Description

The M2Q1045VPS is a 450W 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 400-700M full band tuning, it can reach >400W CW power with higher efficiency**

It can be taken as the bandwidth expansion of M2Q1041RVP

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



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

M2Q1045VPS ^{V0} VGS=3.07V VDS=50V IDQ=160mA CW								
Freq (MHz)	Psat (dBm)	Psat (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff(%)	2th (dBc)	3th (dBc)
400	56.67	464.5	12.44	38.23	18.44	74.68	-30.10	-21.70
450	56.60	457.1	12.91	38.60	18.00	70.81	-28.10	-20.00
500	56.73	471.0	14.90	39.70	17.03	63.22	-27.60	-21.60
550	56.90	489.8	15.56	39.85	17.05	62.95	-28.70	-26.10
600	56.68	465.6	14.62	39.25	17.43	63.69	-32.10	-26.30
650	56.75	473.2	14.81	39.63	17.12	63.90	-33.30	-20.30
700	56.39	435.5	13.58	38.33	18.06	64.14	-31.00	-34.10

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}	0.3	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
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Preliminary Datasheet V1.0

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

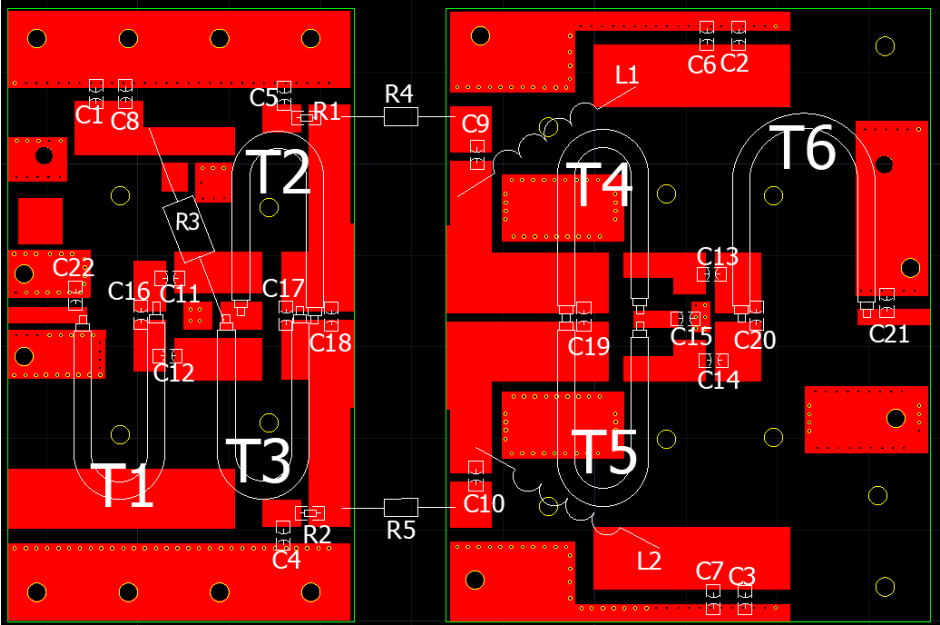
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V _{GS} =0V, I _{DS} =1.0mA	V _{(BR)DSS}		110		V
Zero Gate Voltage Drain Leakage Current (V _{DS} = 50V, V _{GS} = 0 V)	I _{DSS}	—	—	1	μA
Gate—Source Leakage Current (V _{GS} = 10 V, V _{DS} = 0 V)	I _{GSS}	—	—	1	μA
Gate 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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400-700MHz

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



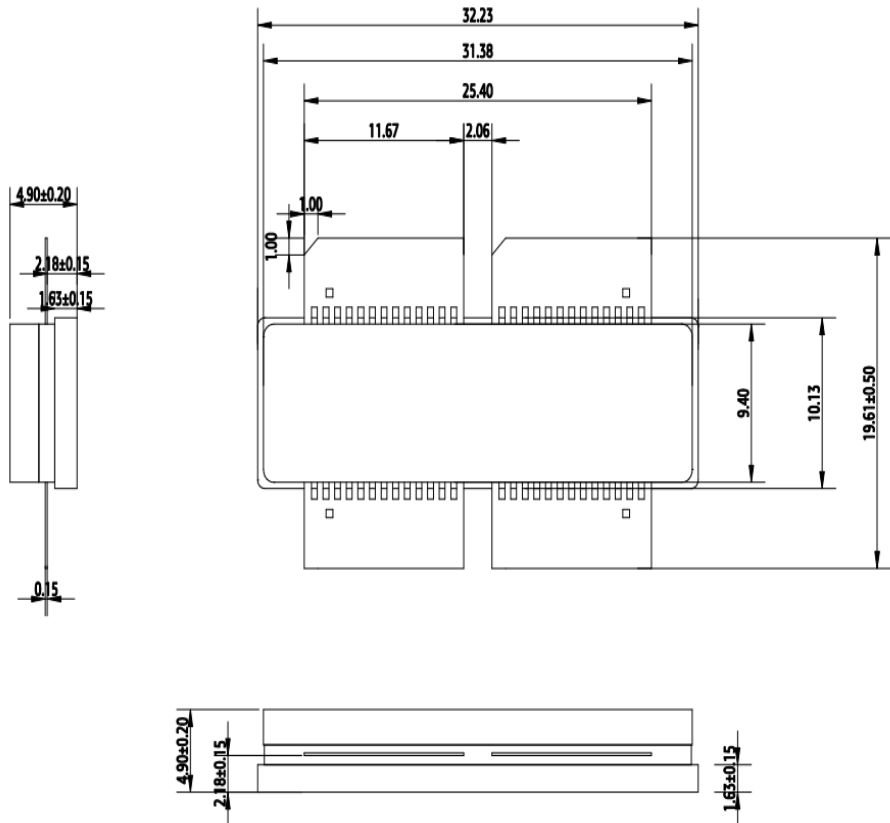
Component	Description	Suggested Manufacturer
C1~C5,C15	10uF/200V-1210	Ceramic multilayer capacitor
C6~C8	820pF	
C9,C10	1000pF	
C11,C12	36pF	
C13, C14	100pF	
C16	3pF	
C17	12pF	
C18	10pF	
C19	3.9pF	
C20	1pF	
C21	0.5pF	
C22	1.2pF	
R1,R2	10 Ω /1206	Chip Resistor
R3	300 Ω	color ring resistor
R4,R5	300 Ω	RFT-300
T1	50 ohm-40mm	RFSFBU-086-50
T2,T3	16.7 ohm-40mm	SFF-16.7-1.5
T4,T5	16.7 ohm-50mm	SFF-16.7-1.5
T6	50 ohm-50mm	RFSFBU-086-50
L1,L2	1.5mm wire	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
2026/6/26	Rev 1.0	Preliminary Datasheet

Application data based on TC-26-22

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