

M2Q1041RVP LDMOS TRANSISTOR

Document Number: M2Q1041RVP
Preliminary Datasheet V1.0

400W, HF-1GHz 50V High Power RF LDMOS FETs

Description

The M2Q1041RVP is a 400W capable, highly rugged, unmatched LDMOS FET, designed for commercial and industrial applications from HF up to 1GHz, supporting both pulse and CW applications.

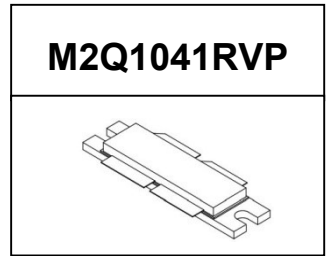
It is featured for industry leading high power and high ruggedness, suitable for Industrial, Scientific and Medical application, as well as VHF communication, UHF TV and Aerospace applications.

In its typical application within 400-700MHz, it can deliver >350W CW at 45V. It is also the thermally enhancement of MX1040VP for wideband CW operation

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

- Typical RF performance within 400-700MHz , with device soldered
(Vgs=3V, Vds=45V, Idq=100mA)

Voltage(V)	Signal	Pin(dBm)	Pout(W)	Gain(dB)	Eff(%)
50	Pulse	37	400-500	19-20	55-65
45	CW	38.5	370-450	17-18	55~67



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, 350W CW, 45Vdc, IdQ = 100 mA	R _{θJC}	0.3	°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
----------------	--------	-----	-----	-----	------

DC Characteristics

M2Q1041RVP LDMOS TRANSISTOR

Document Number: M2Q1041RVP
Preliminary Datasheet V1.0

Drain-Source Voltage $V_{GS}=0V, I_{DS}=1.0mA$	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 50V, V_{GS} = 0V$)	I_{DSS}	—	—	1	μA
Gate—Source Leakage Current ($V_{GS} = 10V, V_{DS} = 0V$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 50V, I_D = 600\mu A$)	$V_{GS(th)}$	—	2.54	—	V
Gate Quiescent Voltage ($V_{DD} = 50V, I_D = 100mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	3.05	—	V

TYPICAL CHARACTERISTICS (400-700MHz)

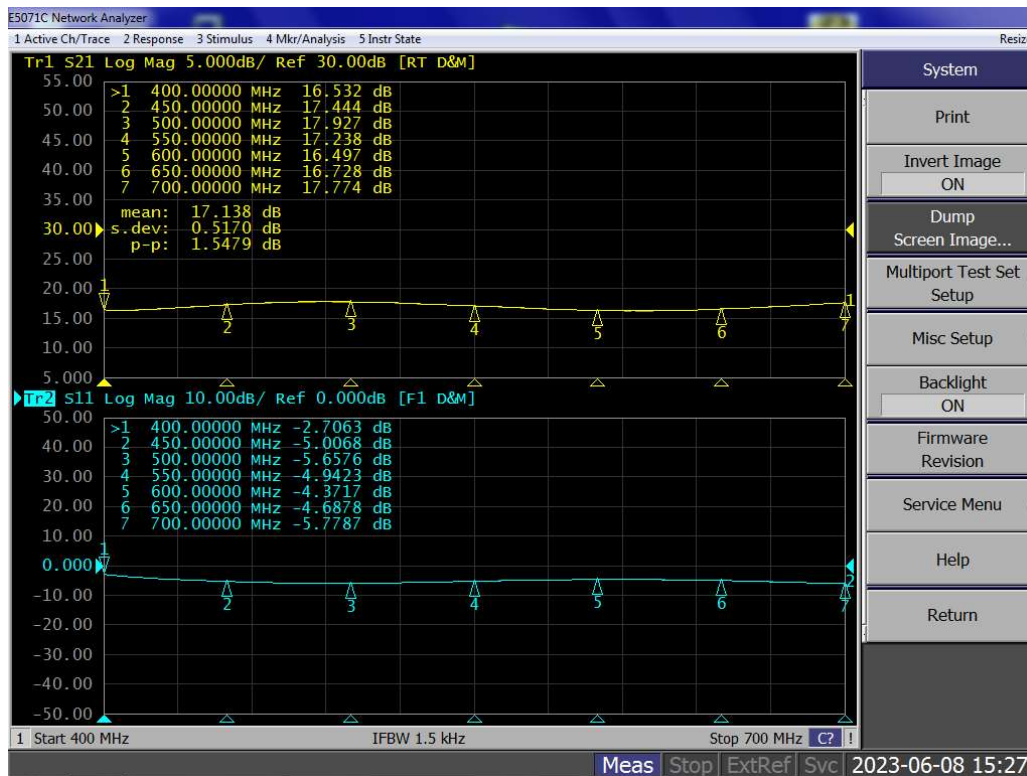
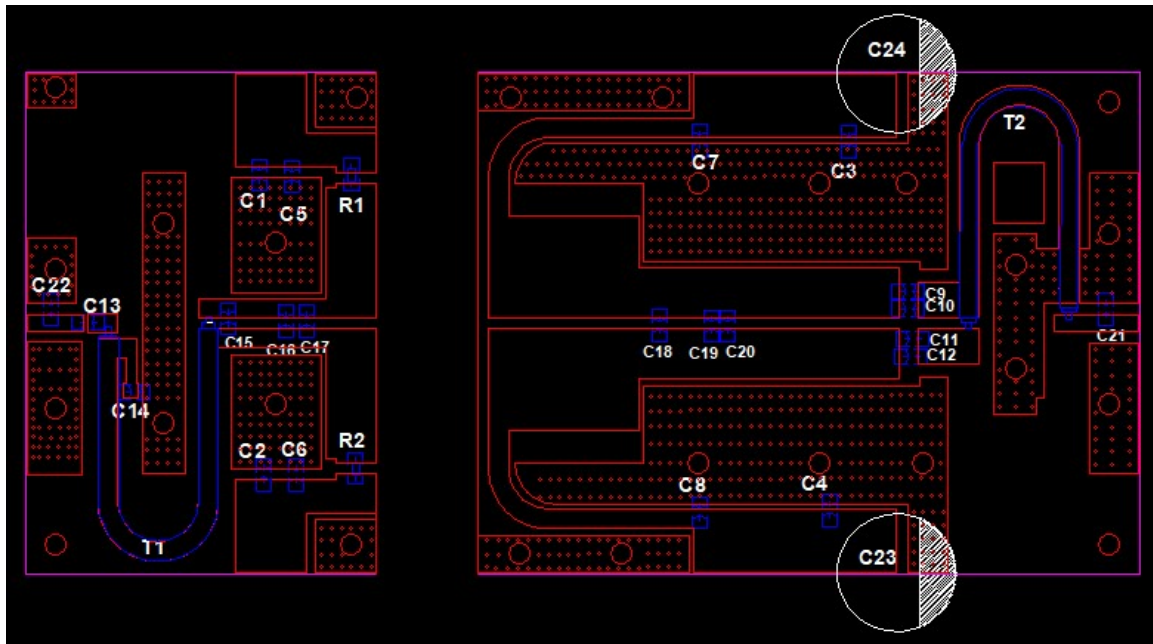


Figure 1: Network analyzer output, S11 ($V_{ds}=45V, I_{dq}=510mA$)

M2Q1041RVP LDMOS TRANSISTOR

Document Number: M2Q1041RVP
Preliminary Datasheet V1.0

Reference Circuit of Test Fixture (400-700MHz) (Layout file upon request) PCB: Roger 4350B, 30mils



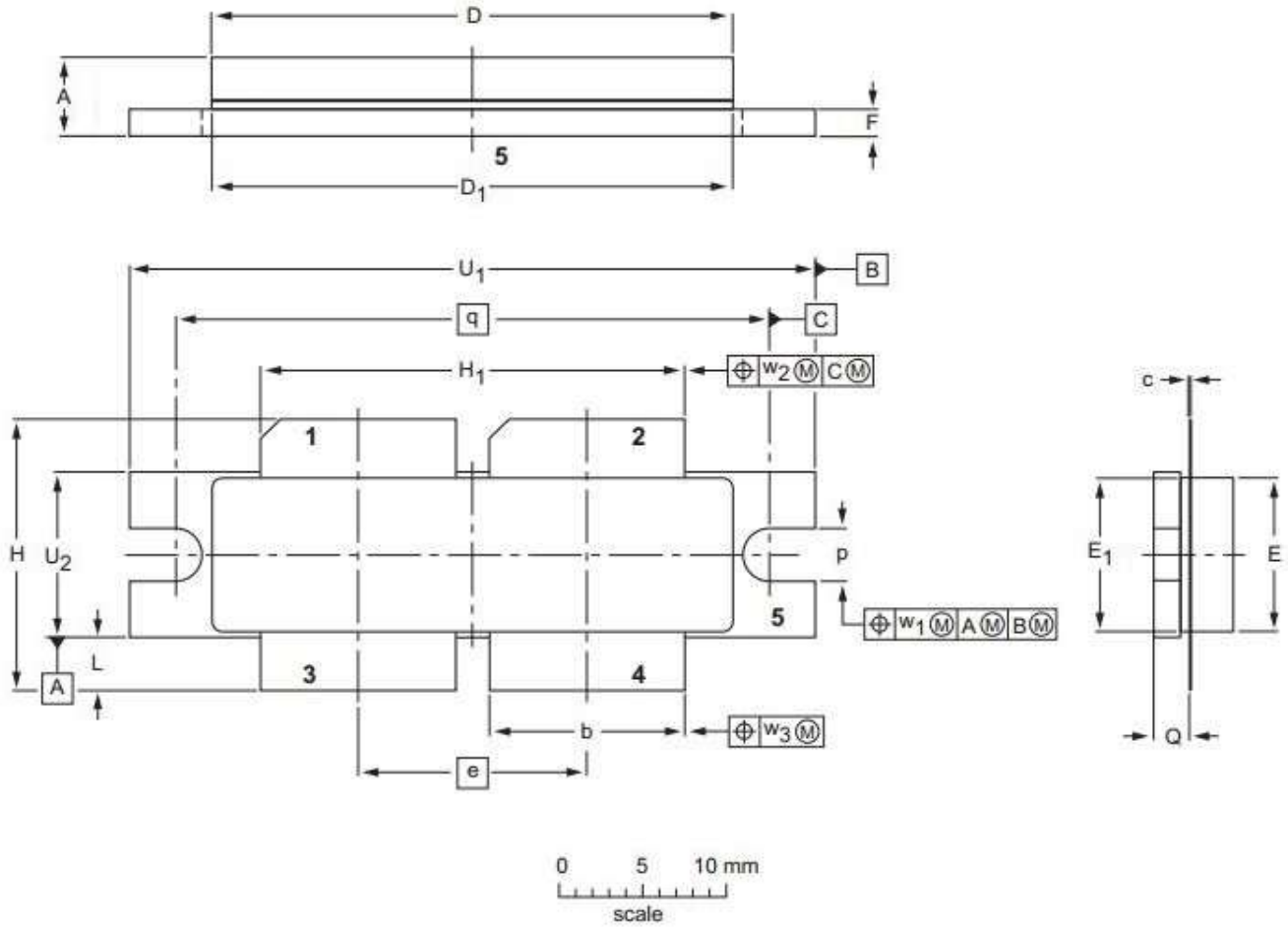
Component	Description	Suggestion
C1~C4	10uF	10uF/100V
C5~C8, C14	100pF	MQ101111
C9~12	24pF	MQ101111
C13	47pF	MQ101111
C15,C19	10pF	MQ101111
C16	4.3pF	MQ101111
C17	24pF	MQ101111
C18	3.6pF	MQ101111
C20,C21	3pF	MQ101111
C22	2pF	MQ101111
C23,C24	2200uF/63V	Electrolytic Capacitor
R1,R2	10 Ω	Chip Resistor
T1	25 ohm,55mm	RFSFBU-086-25
T2	35 ohm,55mm	SFF-35-3
PCB	30mil Rogers 4350B	

M2Q1041RVP LDMOS TRANSISTOR

Document Number: M2Q1041RVP
Preliminary Datasheet V1.0

Package Outline

Flanged ceramic package; 2 mounting holes; 4 leads (1, 2—DRAIN, 3, 4—GATE, 5—SOURCE)



UNIT	A	b	c	D	D ₁	e	E	E ₁	F	H	H ₁	L	p	Q	q	U ₁	U ₂	W ₁	W ₂	W ₃
mm	4.7	11.81	0.18	31.55	31.52	13.72	9.50	9.53	1.75	17.12	25.53	3.48	3.30	2.26	35.56	41.28	10.29	0.25	0.51	0.25
	4.2	11.56	0.10	30.94	30.96		9.30	9.27	1.50	16.10	25.27	2.97	3.05	2.01		41.02	10.03			
inches	0.185	0.465	0.007	1.242	1.241	0.540	0.374	0.375	0.069	0.674	1.005	0.137	0.130	0.089	1.400	1.625	0.405	0.01	0.02	0.01
	0.165	0.455	0.004	1.218	1.219		0.366	0.365	0.059	0.634	0.995	0.117	0.120	0.079		1.615	0.395			

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-D4E					03/12/2013

M2Q1041RVP LDMOS TRANSISTOR

Document Number: M2Q1041RVP
Preliminary Datasheet V1.0

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2023/6/9	Rev 1.0	Preliminary Datasheet

Application data based on TC-23-35

Disclaimers

Specifications are subject to change without notice. Innogration believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Innogration for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Innogration. Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. "Typical" parameters are the average values expected by Innogration in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer's technical experts for each application. Innogration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innogration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility. For any concerns or questions related to terms or conditions, pls check with Innogration and authorized distributors

Copyright © by Innogration (Suzhou) Co.,Ltd.