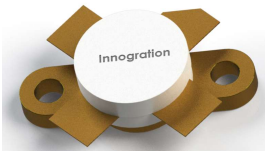
MV0517VX LDMOS TRANSISTOR

Document Number: MV0517VX
Preliminary Datasheet V2.0

170W, HF-0.5GHz 50V High Power RF LDMOS

MV0517VX



Description

The MV0517VX is a 170W single ended 50V LDMOS, unmatched for any applications within HF-0.5GHz

At 28V, it also works as 80W single ended LDMOS as the drop-in replacement of legacy VDMOS like MRF173 in the same mechanical outlines while with improved performance and ruggedness

It supports CW, and pulsed and any modulated signal at either saturated or linear application.

- Typical performance(on Innogration test board with device soldered)

  Signal: CW , Vgs=3.4v,Vds=50v,Idq=180mA

Freq (MHz)	Pin (dBm)	Psat (dBm)	Psat (W)	IDS (A)	Gain (dB)	Eff (%)	2nd harmonic (dBc)	3rd harmonic (dBc)
123	27.8	52.15	164.1	4.22	24.35	78	-26	-35
128	27.7	51.99	158.1	3.98	24.29	79	-26	-36
133	28.6	51.47	140.3	3.53	22.87	79	-26	-37

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

- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 160-230MHz (TV VHF III)
- 136-174MHz (Commercial ground communication)
- Laser Exciter
- Synchrotron
- MRI
- Plasma generator
- Weather Radar

TTable 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+125	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+55	Vdc
Storage Temperature Range	Tstg	-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°C, T_J=200°C, DC test	$R_{\theta JC}$	0.8	°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 ℃ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$		125		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 75V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 50 V, 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)	$V_{GS(th)}$	——	2.65	——	V
Gate Quiescent Voltage (V_{DD} = 50 V, I_D = 180 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.4	——	V
Drain source on state resistance (Vds=0.1V, Vgs=10V)	Rds(on)				mΩ
Common Source Input Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{ISS}				pF
Common Source Output Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{OSS}				pF
Common Source Feedback Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{RSS}				pF

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 50 Vdc, I_{DQ} = 100 mA, f =160MHz, pulse width:100us, duty cycle:10%

Load 20:1 All phase angles, at 250W Pulsed CW Output Power	No Device Degradation

TYPICAL CHARACTERISTICS

Figure 1: Pulsed CW Gain and Power Efficiency as a Function of Pout at 128MHz

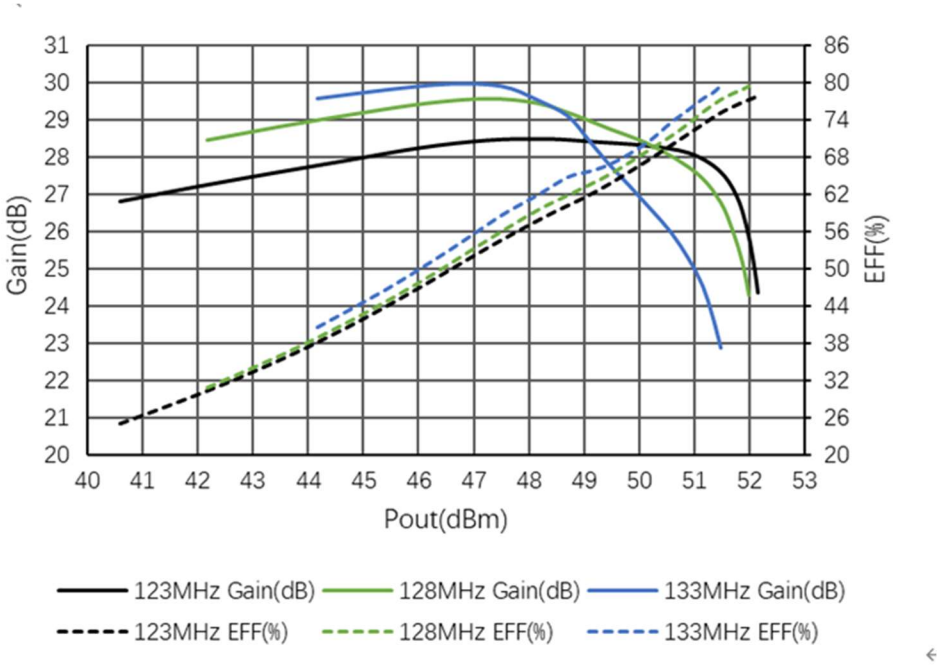
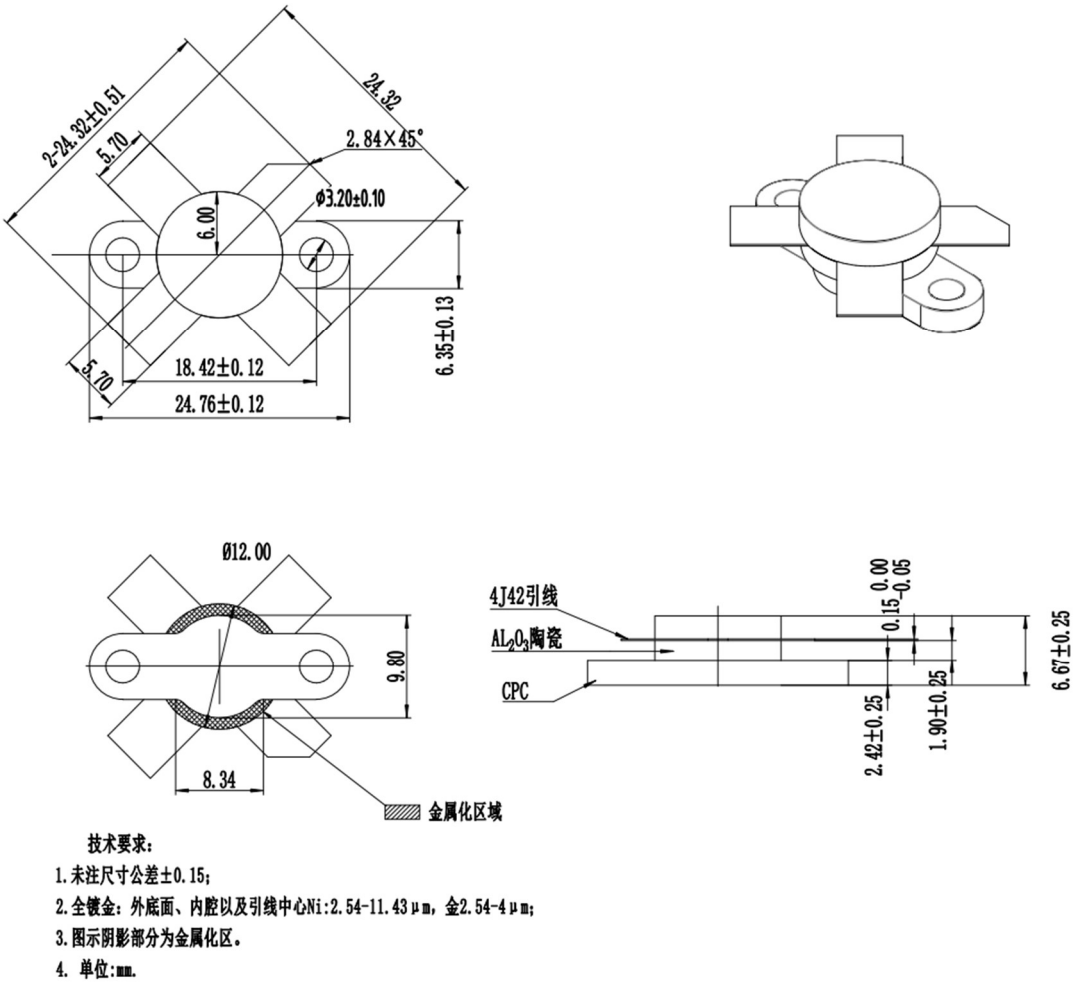


Figure 1: Network analyzer output S11/221

Package Outline

Flanged ceramic package; 2 mounting holes; 2 leads（1—Gate、2—Drain、3—Source）



技术要求：

1. 未注尺寸公差±0.15；
2. 全镀金：外底面、内腔以及引线中心Ni:2.54-11.43μm，金2.54-4μm；
3. 图示阴影部分为金属化区。
4. 单位:mm.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2021/6/22	Rev 1.0	Preliminary datasheet
2022/5/24	Rev 1.1	Modification of V4E package picture and drawing
2023/11/21	Rev 2.0	Modify drawing of extended leads length

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