

MQ012K5EPXS LDMOS TRANSISTOR

Document Number: MQ012K5EPXS
Advanced Datasheet V1.1

2500W, 65V High Power RF LDMOS FETs

MQ012K5EPXS

Description

The MQ012K5EPXS is a 2500W capable, highly rugged, unmatched LDMOS FET, designed for commercial and industrial applications with frequencies HF to 250MHz.

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

By using Cu-Diamond flange D4VCT, with higher thermal conductivity, it can support CW as the thermal enhanced version of MQ012K5EPX which is using D4E CPC flange



$$V_{gs}=3.21V, V_{DS}= 65V, I_{dq} =450 \text{ m A}$$

Freq(MHz)	Voltage(V)	Signal type	Pin(dBm)	Pout(W)	Power Gain(dB)	Eff(%)	Remark
108	65	Pulsed CW	47.5	2500	17	83	Balun
108	65	CW	47.5	2420	16.5	83	Balun
88-108	65	CW	42.5	>2000	>20.5	77	Balun

Features

- High breakdown voltage 190V to enable possible class E operation at lower Vdd up to 50V
- Qualified up to a maximum of VDS = 65 V Class AB
- Characterized from 36 V to 65 V to support a wide range of applications
- High Efficiency and Linear Gain Operations
- On chip RC network enable high stability and ruggedness
- 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_{DS}	190	Vdc
Gate—Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+65	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 85°C, 2000W CW, 65 Vdc, IDQ = 240 mA	$R_{\theta JC}$	TBD	°C/W
Transient thermal impedance from junction to case $T_j = 150^\circ \text{C}; t_p = 100 \text{ us}; \text{Duty cycle} = 20 \%$	Z_{th}	TBD	°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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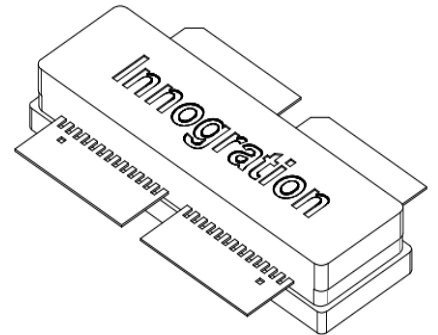
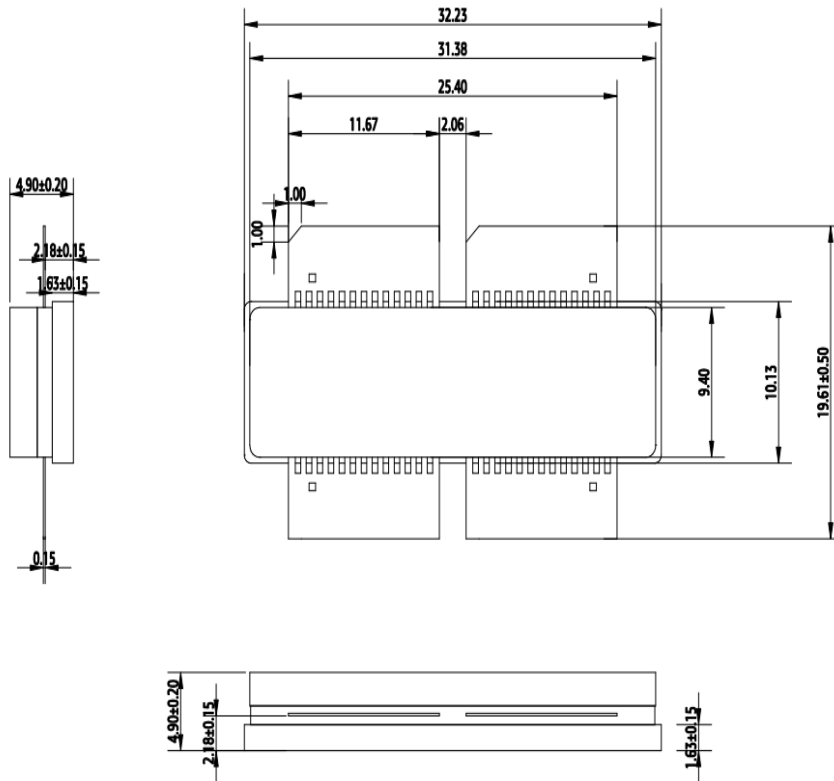
Table 4. Electrical Characteristics (TA = 25 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V _{GS} =0V, I _{DS} =20.0mA	V _{(BR)DSS}		190		V
Zero Gate Voltage Drain Leakage Current (V _{DS} = 55V, 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} = 55V, I _D = 600 μA)	V _{GS(th)}	—	2.6	—	V
Gate Quiescent Voltage (V _{DD} = 60 V, I _D = 240 mA, Measured in Functional Test)	V _{GS(Q)}	—	3	—	V
Drain source on state resistance (V _{DS} = 0.1V, V _{GS} = 10 V) Each section side of device measured	R _{ds(on)}		93		mΩ
Common Source Input Capacitance (V _{GS} = 0V, V _{DS} =65 V, f = 1 MHz) Each section side of device measured	C _{ISS}		1400		pF
Common Source Output Capacitance (V _{GS} = 0V, V _{DS} =65 V, f = 1 MHz) Each section side of device measured	C _{OSS}		210		pF
Common Source Feedback Capacitance (V _{GS} = 0V, V _{DS} =65 V, f = 1 MHz) Each section side of device measured	C _{RSS}		4.5		pF

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Package Outline---D4VCT



Unit:mm
Tolerance ± 0.10 mm, Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/2/4	Rev 1.0	Advanced Datasheet
2026/4/30	Rev 1.1	Add FM data

Application data based on SYX-26-07/HL-26-17

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