

MQ0550X LDMOS TRANSISTOR

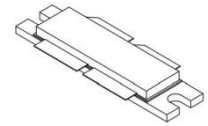
Document Number: MQ0550X
Preliminary Datasheet V1.0

500W, 28V High Power RF LDMOS FETs

Description

The MQ0550X is a 500-watt capable, high ruggedness, high performance, unmatched push pull LDMOS FET, for commercial and industrial applications with frequencies HF to 300MHz. It can be used for both CW and pulse application or any other modulation signal. It is featured for high power low thermal resistor, suitable for ISM applications, as well as FM radio, HF communication and mobile radio applications.

MQ0550X



- Typical Performance at 28V (On Innogration 10-54MHz wideband fixture with device soldered):

MQ0550XS VGS=3.31V VDS=28V IDQ=2.5A CW								
Freq (MHz)	Psat (dBm)	Psat (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff (%)	2nd (dBc)	3rd (dBc)
10	56.21	417.83	19.97	36.43	19.78	74.72	-27.3	-12.5
15	56.61	458.14	22.78	36.34	20.27	71.83	-27.4	-11.3
20	57.13	516.42	26.00	36.98	20.15	70.94	-26.1	-8.7
25	57.25	530.88	29.03	37.13	20.12	65.31	-27.2	-11.2
30	57.32	539.51	31.26	38.36	18.96	61.64	-26.6	-14.5
35	57.50	562.34	32.47	37.36	20.14	61.85	-27.1	-15.8
40	57.03	504.66	30.30	37.27	19.76	59.48	-29.7	-12.7
45	57.19	523.60	29.20	38.09	19.1	64.04	-35.6	-15.9
50	57.25	530.88	27.34	38.00	19.25	69.35	-40.6	-26.5
54	57.02	503.50	24.80	38.80	18.22	72.51	-37.1	-31.5

Note: At Pout=100W when 28V, it can meet ~30dBc IM3 with 600Hz 2 tone spacing/

When used at 13.6V, it can deliver >100W CW across the 10-54MHz

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Excellent thermal stability, low HCI dri
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

Suitable Applications

- 2-30MHz (HF or Short wave communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- RF generator at 2/13.56/27.12/40MHz etc

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+95	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+32	Vdc

MQ0550X LDMOS TRANSISTOR

Document Number: MQ0550X
Preliminary Datasheet V1.0

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 T _c = 85°C, T _j = 200°C, DC test	R _{θJC}	0.17	°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 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

DC Characteristics (per half section)

Drain-Source Voltage V _{GS} = 0, I _{DS} = 1.0mA	V _{(BR)DSS}	95			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} = 28 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} = 28V, I _D = 800 μA)	V _{GS(th)}	—	2.2	—	V
Gate Quiescent Voltage (V _{DD} = 28 V, I _D = 5500 mA, Measured in Functional Test)	V _{GS(Q)}	—	3.5	—	V
Common Source Input Capacitance (V _{GS} = 0V, V _{DS} = 28 V, f = 1 MHz)	C _{ISS}		256		pF
Common Source Output Capacitance (V _{GS} = 0V, V _{DS} = 28 V, f = 1 MHz)	C _{OSS}		86		pF
Common Source Feedback Capacitance (V _{GS} = 0V, V _{DS} = 28 V, f = 1 MHz)	C _{RSS}		4.8		pF

MQ0550X LDMOS TRANSISTOR

Document Number: MQ0550X
Preliminary Datasheet V1.0

10-54MHz

Reference Circuit of Test Fixture Assembly Diagram

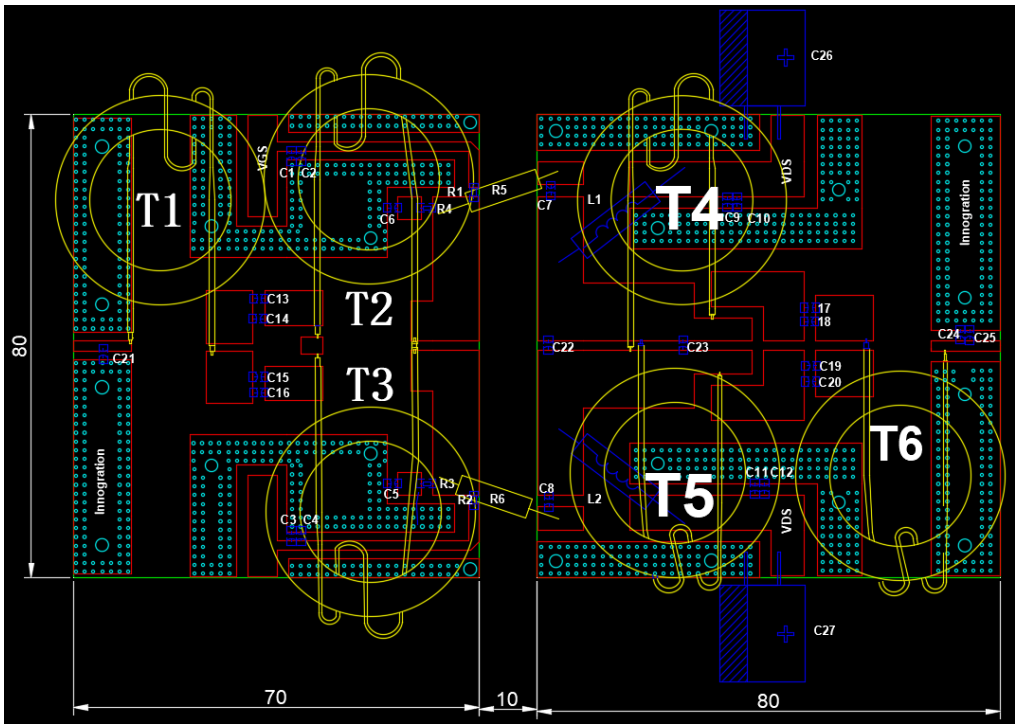


Table 5. Test Circuit Component Designations and Values

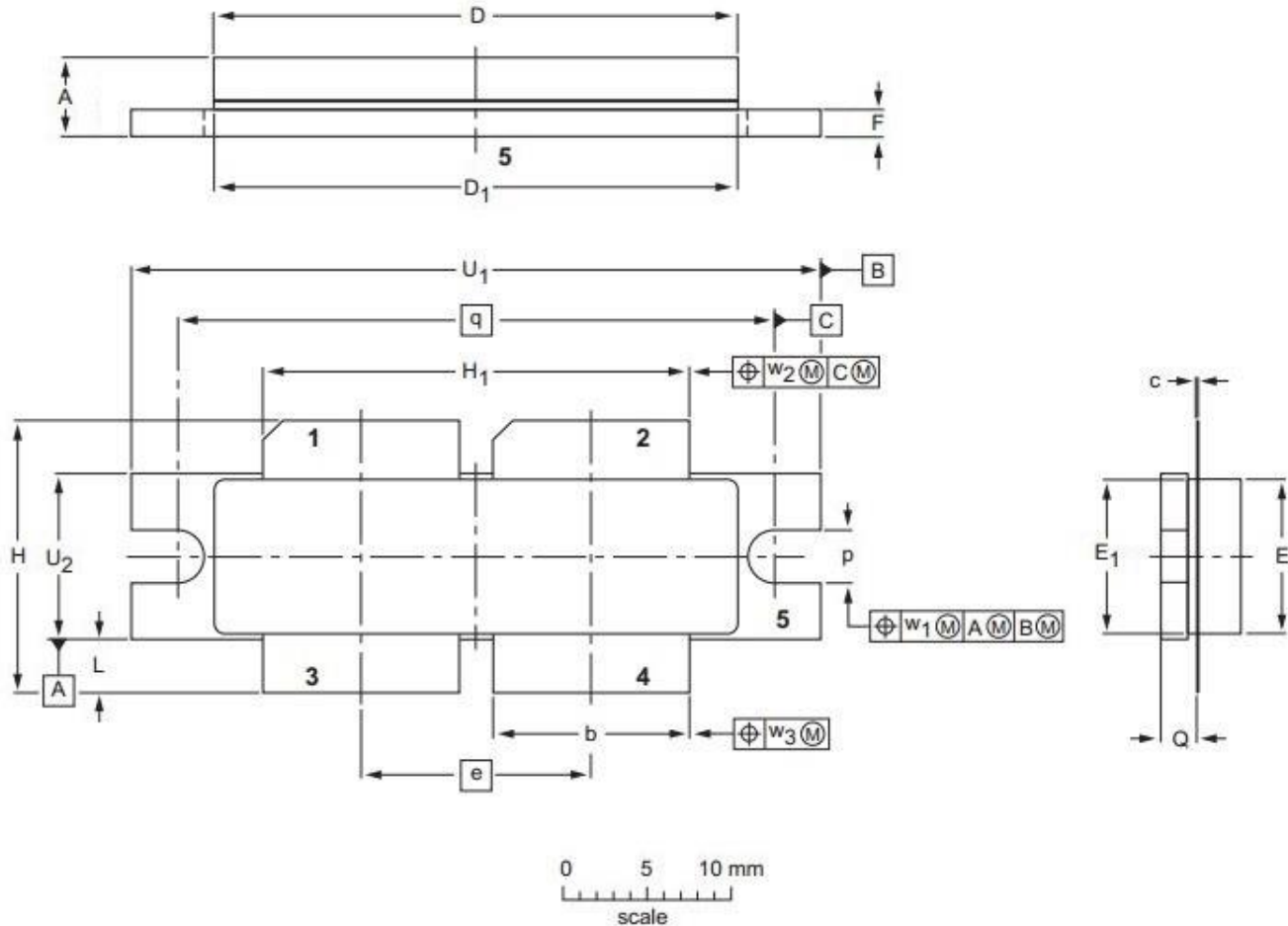
Component	Description	Suggested Manufacturer
C11~C12	10uF 1210	TDK
C13~C20	10nF 1812	TDK
C21	27pF MQ301111	
C22,C23	200pF MQ101111	
C24	20pF MQ301111	
C25	36pF MQ301111	
C26,C27	4700uF Electrolytic Capacitor	/
R1,R2	10 Ω Chip resistor 1206	/
R3,R4	51 Ω Chip resistor 2512	/
R5,R6	180 Ω Color band resistor	/
L1,L2	1.5mm enameled wire, inner diameter 5mm, 15turns	DIY
T1	50ohm 800mm RFSFBU-086-50, FT-140-43	/
T2,T3	12.5ohm 460mm SFF-12.5-1.5 FT-140-43	/
T4,T5	12.5ohm 480mm SFF-12.5-1.5 FT-140-43	/
T6	50ohm 400mm RFSFBU-086-50 FT-140-43	/
PCB	30mil Rogers 4350B	

MQ0550X LDMOS TRANSISTOR

Document Number: MQ0550X
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 ₂
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

MQ0550X LDMOS TRANSISTOR

Document Number: MQ0550X
Preliminary Datasheet V1.0

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2025/9/24	Rev 1.0	Preliminary Datasheet

Application data based on HL-25-31

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.