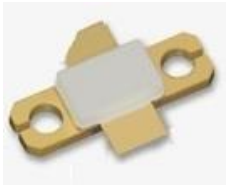
YC0530VX LDMOS TRANSISTOR

Document Number: YC0530VX
Preliminary Datasheet V1.1

250W, 50V High Power RF LDMOS FETs

YC0530VX



Description

The YC0530VX is a 250-watt capable, high performance, unmatched LDMOS FET, designed for wide-band commercial and industrial applications with frequencies HF to 230MHz.

It is featured for high power and high ruggedness, suitable for Industrial, Scientific and Medical application, as well as FM radio, VHF TV and Aerospace applications.

- Typical performance(on 175MHz test board with device soldered)
  Signal: CW, Vgs=3.24v,Vds=50v,Idq=100mA

Freq (MHz)	Pout (W)	Gain (dB)	Eff (%)
175	250	22	75
175	175	23	65
175	150	23	60

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

Table 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	RθJC	0.34	°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)

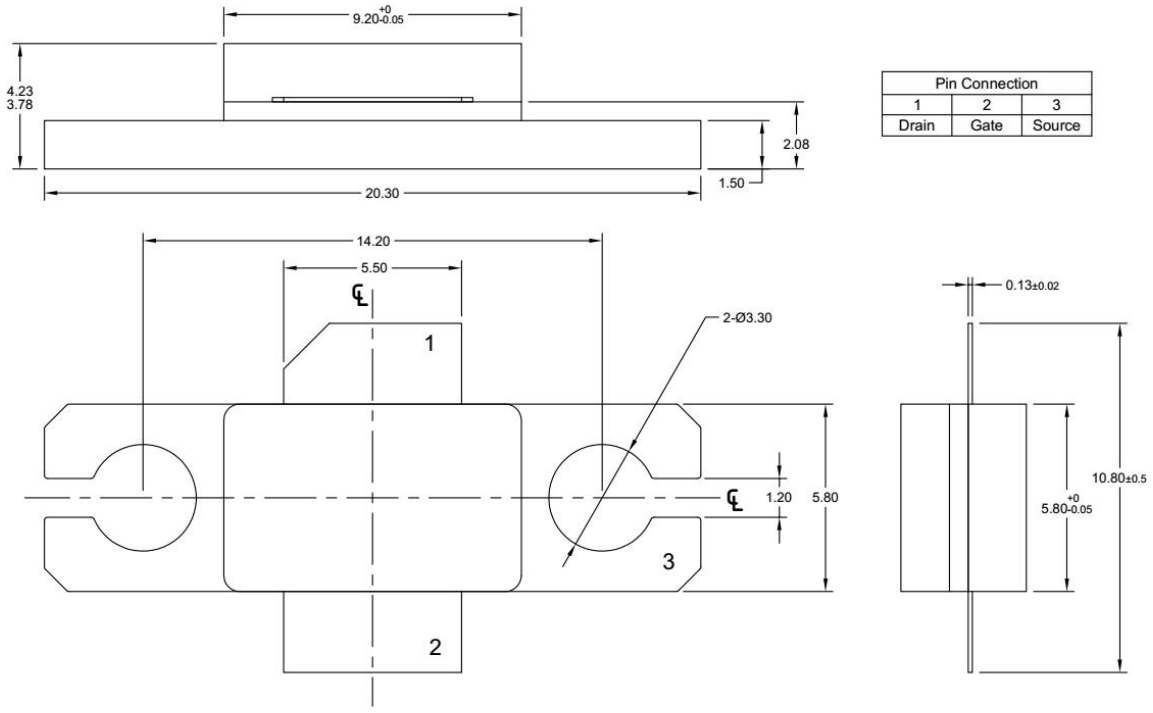
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics (per half section)					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$		125		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 75V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 50 V, V_{GS} = 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 = 600μA)	$V_{GS}(th)$	——	2.65	——	V
Gate Quiescent Voltage (V_{DD} = 50 V, I_D = 100 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.1	——	V
Drain source on state resistance (Vds=0.1V, Vgs=10V)	Rds(on)		217		mΩ
Common Source Input Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{ISS}		158		pF
Common Source Output Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{OSS}		46.8		pF
Common Source Feedback Capacitance (V_{GS} = 0V, V_{DS} =50 V, f = 1 MHz)	C_{RSS}		1.24		pF

Load Mismatch (In Yingtron Test Fixture, 50 ohm system): V_{DD} = 50 Vdc, I_{DQ} = 100 mA, f =175MHz, pulse width:100us, duty cycle:10%

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

Package Outline

Flanged ceramic package; 2 leads



OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-GXB					10/10/2017

Figure 1. Package Outline PKG-G2E

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2018/5/29	Rev 1.0	Preliminary Datasheet Creation
2018/9/27	Rev 1.1	Update on upper frequency limits,Rth

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