

SD2933LD LDMOS RF TRANSISTOR

Part Number: SD2933LD
Datasheet V3.0

300W, HF-0.5GHz 50V High Power RF LDMOS

Description

The SD2933LD is a 300W single ended 50V LDMOS, unmatched for any applications within HF-0.5GHz

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

It can be the drop-in replacement of its equivalent 300W single ended VDMOS like SD2933/VRF2933 with improved RF performance like higher efficiency

- Typical performance(on test board with device soldered)

Signal: CW , $V_{gs}=3.35v$, $V_{ds}=50v$, $I_{dq}=200mA$

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	I _{ds} (A)	Gain(dB)	Eff(%)	2 nd Harmonic(dB)	3 rd Harmonic(dB)
30	33.2	55.6	350	9.5	24	74	-27	-39



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_{DS}	+135	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 $T_c=85^{\circ}C$, $T_j=200^{\circ}C$, DC test	$R_{\theta JC}$	0.5	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics ($T_A = 25^{\circ}C$ unless otherwise noted)

SD2933LD LDMOS RF TRANSISTOR

Part Number: SD2933LD
Datasheet V3.0

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage $V_{GS}=0, I_{DS}=1.0mA$	$V_{(BR)DSS}$		135		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 75V, V_{GS} = 0V$)	I_{DSS}	—	—	1	μA
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 ($V_{DS} = 50V, I_D = 600\mu A$)	$V_{GS(th)}$	—	2.65	—	V
Gate Quiescent Voltage ($V_{DD} = 50V, I_D = 200mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	3.4	—	V
Drain source on state resistance ($V_{DS}=0.1V, V_{GS}=10V$)	$R_{ds(on)}$		180		m Ω
Common Source Input Capacitance ($V_{GS} = 0V, V_{DS} = 50V, f = 1MHz$)	C_{ISS}		220		pF
Common Source Output Capacitance ($V_{GS} = 0V, V_{DS} = 50V, f = 1MHz$)	C_{OSS}		65		pF
Common Source Feedback Capacitance ($V_{GS} = 0V, V_{DS} = 50V, f = 1MHz$)	C_{RSS}		1.5		pF
Load Mismatch (Test Fixture, 50 ohm system): $V_{DD} = 50V_{dc}$, $I_{DQ} = 200mA$, $f = 108MHz$, pulse width: 100us, duty cycle: 10%					
Load 20:1 All phase angles, at 350W Pulsed CW Output Power	No Device Degradation				

TYPICAL CHARACTERISTICS

Figure 1: CW Gain and Power Efficiency as a Function of Pout at 30MHz

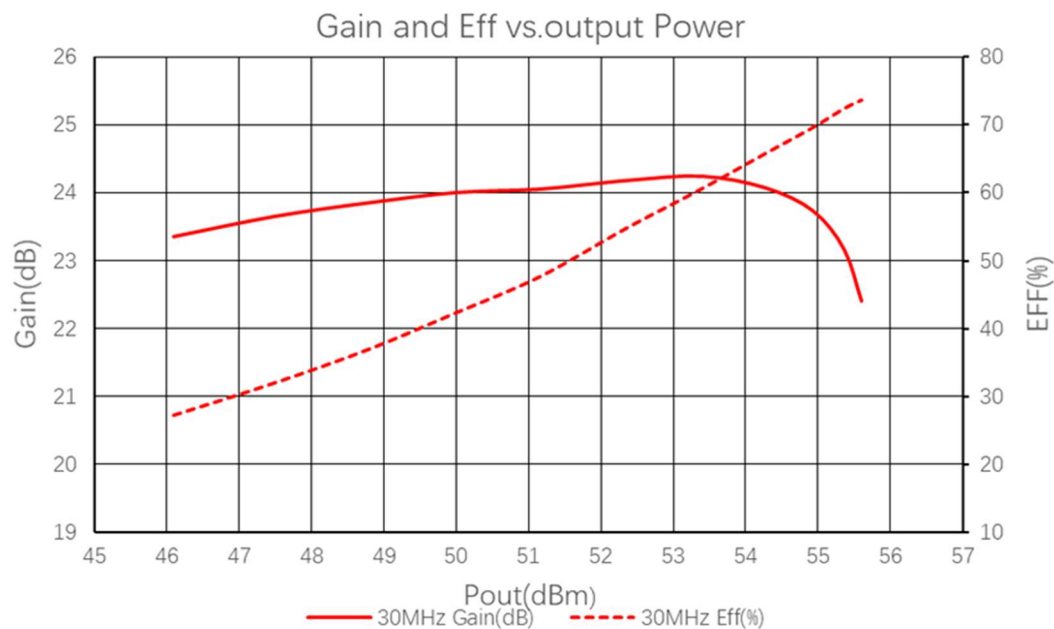
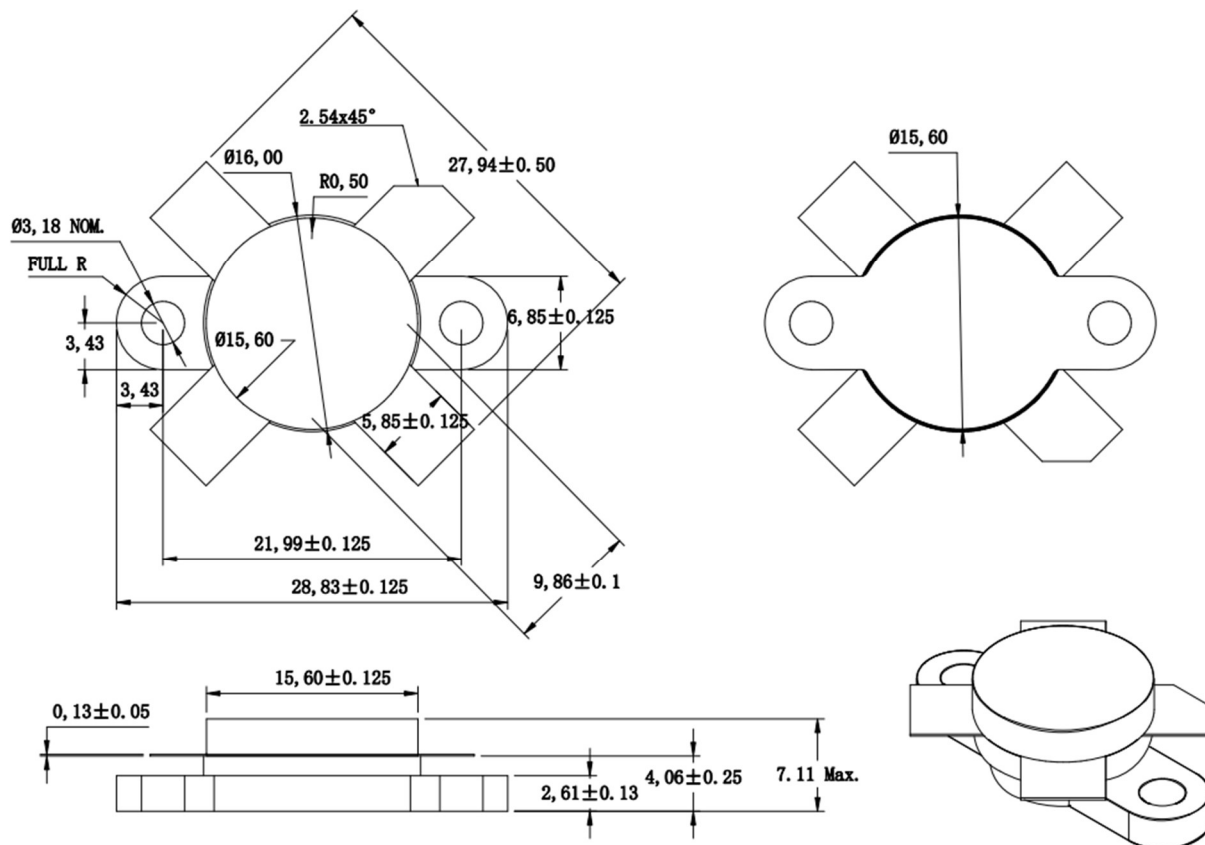


Figure 2: Class C, Low Bias, Low Power Input (0 dBm) S11 / S21



Package Outline

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



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
2023/12/4	Rev 3.0	Finalized by changing to V4E1 package

Disclaimers

Specifications are subject to change without notice. RF Components believes information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by RF Components 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. RF Components makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. "Typical" parameters are the average values expected 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. These 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 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 RF Components.