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SD2933

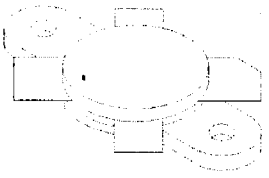
HF/VHF/UHF RF power N-channel MOSFETs

Features

- Gold metallization
- Excellent thermal stability
- Common source configuration
- P_{OUT} = 300 W min. with 20 dB gain @ 30 MHz
- Thermally enhanced packaging for lower junction temperatures

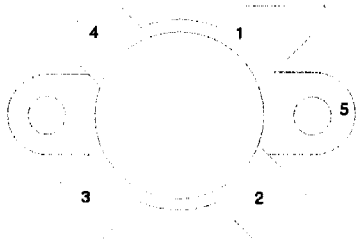
Description

The SD2933 is a gold metalized N-channel MOS field-effect RF power transistor, intended for use in 50 V dc large signal applications up to 150 MHz. Its special low thermal resistance package makes it ideal for ISM applications, where reliability and ruggedness are critical factors.



M177 Epoxy sealed

Figure 1. Pin connection



1. Drain
2. Source
3. Gate
4, 5. Source

1 Electrical data

1.1 Maximum rating

T_{CASE} = 25° C

Table 2. Absolute maximum rating

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain source voltage	125	V
V_{DGR}	Drain-gate voltage (R_{GS} = 1MΩ)	125	V
V_{GS}	Gate-source voltage	±20	V
I_D	Drain current	40	A
P_{DISS}	Power dissipation	648	W
E_{AS}	Avalanche energy, single pulse (I_D = 53 A, 800 µH coil)	1100	mJ
T_J	Max. operating junction temperature	200	°C
T_{STG}	Storage temperature	-65 to +150	°C

1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{thJ\text{-}C}$	Junction to case thermal resistance	0.27	°C/W

Electrical characteristics

T_{CASE} = 25°C

Table 4. Static

Symbol	Test conditions			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0 V	I_{DS} = 200 mA		125			V
I_{DSS}	V_{GS} = 0 V	V_{DS} = 50 V				100	µA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V				500	nA
$V_{GS(Q)}$(1)	V_{DS} = 10 V	I_D = 250 mA		1.5		4	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 20 A				3.0	V
G_{FS}(1)	V_{DS} = 10 V	I_D = 10 A		see *Table 5: G_{FS} sort*			mho
C_{ISS}	V_{GS} = 0 V	V_{DS} = 50 V	f = 1 MHz		1000		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 50 V	f = 1 MHz		372		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 50 V	f = 1 MHz		29		pF

1. $V_{GS(Q)}$ and G_{FS} sorted with alpha/numeric code marked on unit.

Table 5. G_{FS} sort

G_{FS} sort	Value
A	10 - 10.99
B	11 - 11.99
C	12 - 12.99
D	13 - 13.99
E	14 - 14.99
F	15 - 15.99
G	16 - 16.99
H	17 - 18

Table 6. Dynamic

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 50 V I_{DQ} = 250 mA f = 30 MHz	300	400		W
G_{PS}	V_{DD} = 50 V I_{DQ} = 250 mA P_{OUT} = 300 W f = 30 MHz	20	23.5		dB
η_D	V_{DD} = 50 V I_{DQ} = 250 mA P_{OUT} = 150 W f = 30 MHz	50	65		%
Load Mismatch	V_{DD} = 50 V I_{DQ} = 250 mA P_{OUT} = 300 W f = 30 MHz all phase angles	3:1			VSWR