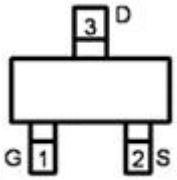
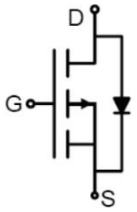
Main Product Characteristics:

V_{DSS}	-30V
R_{DS}(on)	52mΩ(typ)
I_D	-4A

SOT-23



Pin Assignments



Schematic Diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

Absolute Max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V①	-4	A
I_{DM}	Pulsed Drain Current ②	-16	
P_D @TC = 25°C	Power Dissipation ③	1.2	W
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

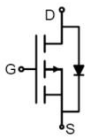
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient (t ≤ 10s) ④	—	108	℃/W

Electrical Characteristics @T_A=25℃ unless otherwise specified

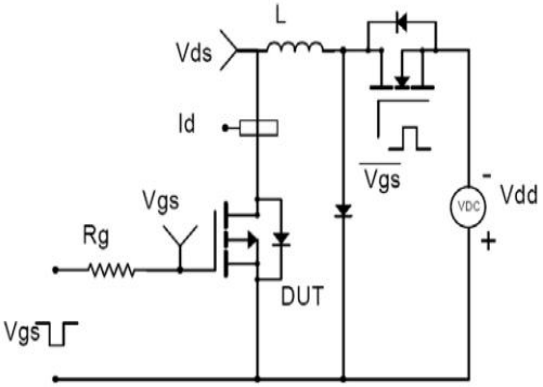
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-30	—	—	V	V_{GS} = 0V, I_D = -250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	52	68	mΩ	V_{GS}=-10V,I_D = -3.8A
		—	62	80	mΩ	V_{GS}=-4.5V,I_D = -3A
$V_{GS(th)}$	Gate threshold voltage	-0.6	—	-1.3	V	V_{DS} = V_{GS}, I_D = -250μA
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	V_{DS} =-30V, V_{GS} =0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =12V
	Gate-to-Source reverse leakage	—	—	-100		V_{GS} = -12V
Q_g	Total gate charge	—	6.7	—	nC	I_D = -3A
Q_{gs}	Gate-to-Source charge	—	1.5	—		V_{DD}=-15V
Q_{gd}	Gate-to-Drain("Miller") charge	—	1.8	—		V_{GS} = -10V
$t_{d(on)}$	Turn-on delay time	—	11	—	ns	V_{GS}=-4.5V,
t_r	Rise time	—	84	—		V_{DS} =-15V,
$t_{d(off)}$	Turn-Off delay time	—	152	—		R_{GEN}=3Ω
t_f	Fall time	—	360	—		I_D =-3A
C_{iss}	Input capacitance	—	365	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	40	—		V_{DS} = -15V
C_{rss}	Reverse transfer capacitance	—	34	—		f =1MHz

Source-Drain Ratings and Characteristics

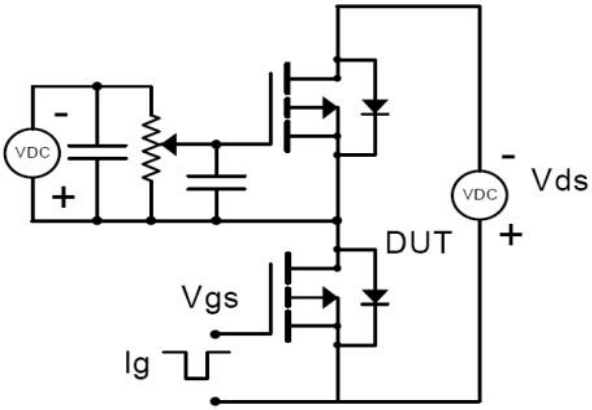
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-4	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-16	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	I_S=-4A, V_{GS}=0V,T_J= 25°C
trr	Reverse Recovery Time	—	36	—	ns	T_J = 25°C, I_F =-3A,
Qrr	Reverse Recovery Charge	—	5	—	nC	di/dt = 100A/μs

Test Circuits and Waveforms:

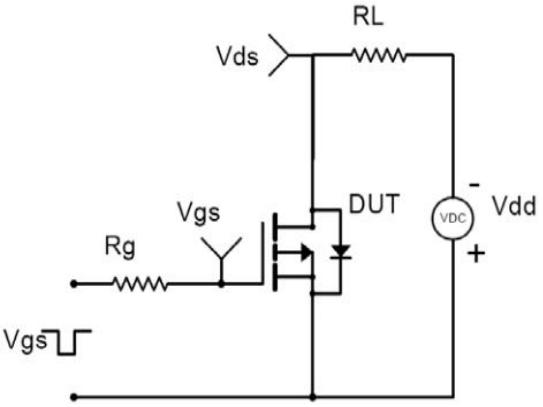
EAS Test Circuit:



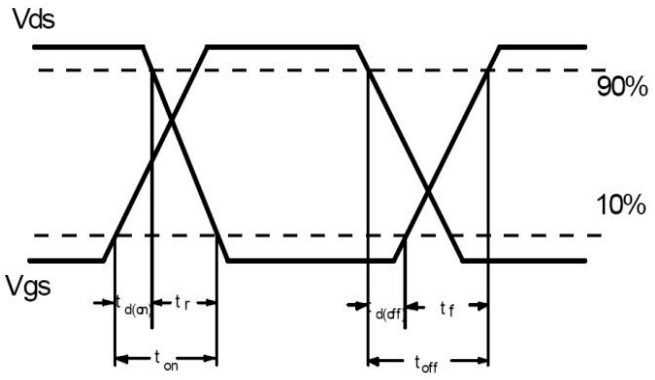
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

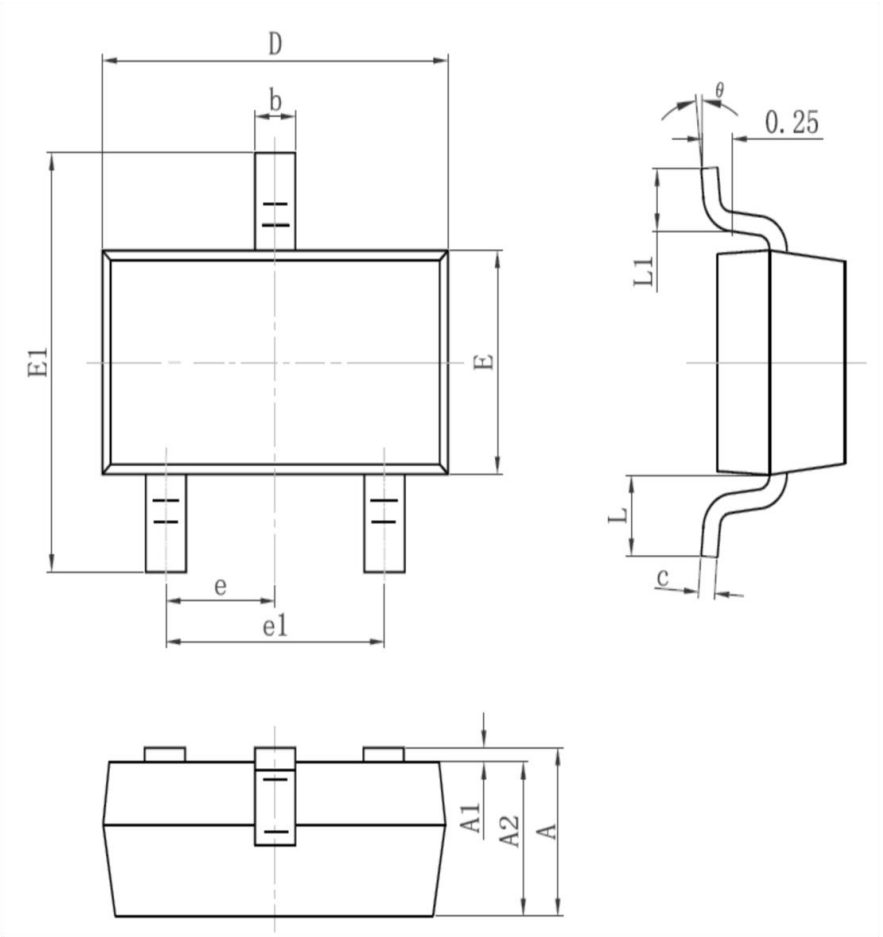
②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C

Mechanical Data：

SOT-23 PACKAGE OUTLINE DIMENSION



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.95TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.55REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0^0	8^0	0^0	8^0

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