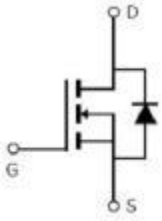
Main Product Characteristics:

V_{DSS}	30V
R_{DS}(on)	25.8mΩ (typ.)
I_D	5.8A

SOT-23



Schematic Diagram

Features and Benefits:

- Advanced trench 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} @ 10V ①	5.8	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 10V ①	4.2	
I_{DM}	Pulsed Drain Current ②	30	
P_D @TC = 25°C	Power Dissipation	1.4	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

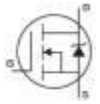
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ③	—	145	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

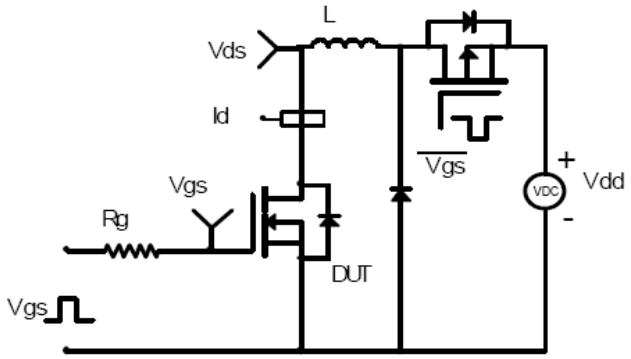
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	30	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	25.8	30	mΩ	V_{GS}=10V,I_D = 5.8A
		—	28.7	33		V_{GS}=4.5V,I_D=5A
		—	36.6	52		V_{GS}=2.5V,I_D =4A
$V_{GS(th)}$	Gate threshold voltage	0.7	—	1.4	V	V_{DS} = V_{GS} , I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 24V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =12V
		—	—	- 100		V_{GS} = - 12V
Q_g	Total gate charge	—	11	—	nC	I_D = 5.8A,
Q_{gs}	Gate-to-Source charge	—	2	—		V_{DS}=15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	3	—		V_{GS} = 4.5V
$t_{d(on)}$	Turn-on delay time	—	7	—	ns	V_{GS}=10V, V_{DS} =15V, R_{GEN}=3Ω
t_r	Rise time	—	15	—		
$t_{d(off)}$	Turn-Off delay time	—	38	—		
t_f	Fall time	—	3	—		
C_{iss}	Input capacitance	—	495	—	pF	V_{GS} = 0V,
C_{oss}	Output capacitance	—	48	—		V_{DS} =15V,
C_{rss}	Reverse transfer capacitance	—	43	—		f = 1MHz

Source- Drain Ratings and Characteristics

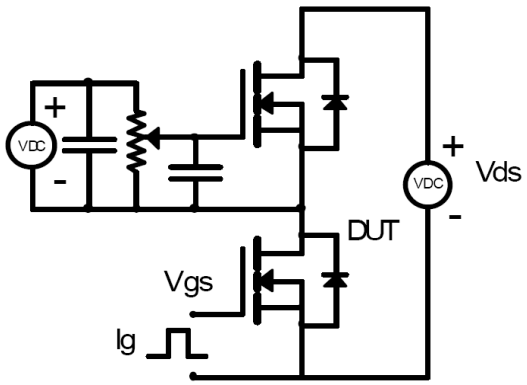
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	1.6	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{sd}	Diode Forward Voltage	—	0.78	1.2	V	I_S=1A, V_{GS}=0V

Test Circuits and Waveforms

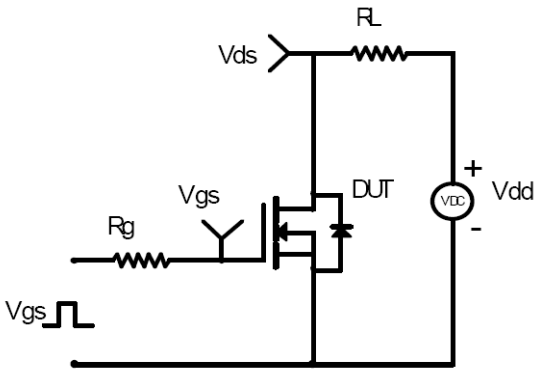
EAS Test Circuit:



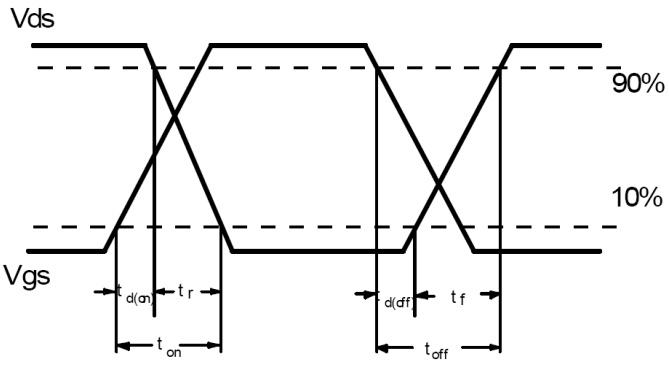
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

① Calculated continuous current based on maximum allowable junction temperature.

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

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

④ The 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

Typical Electrical and Thermal Characteristics

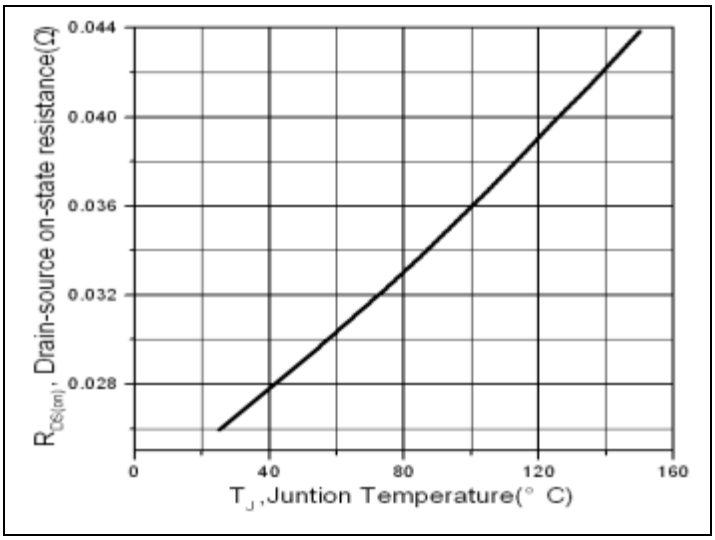


Figure1. Normalized On-Resistance vs. Case Temperature

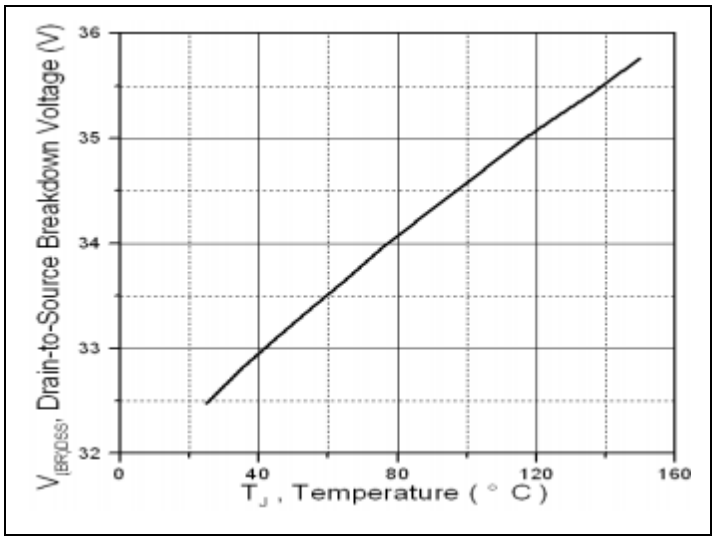


Figure2. Drain-to-Source Breakdown Voltage vs. Temperature

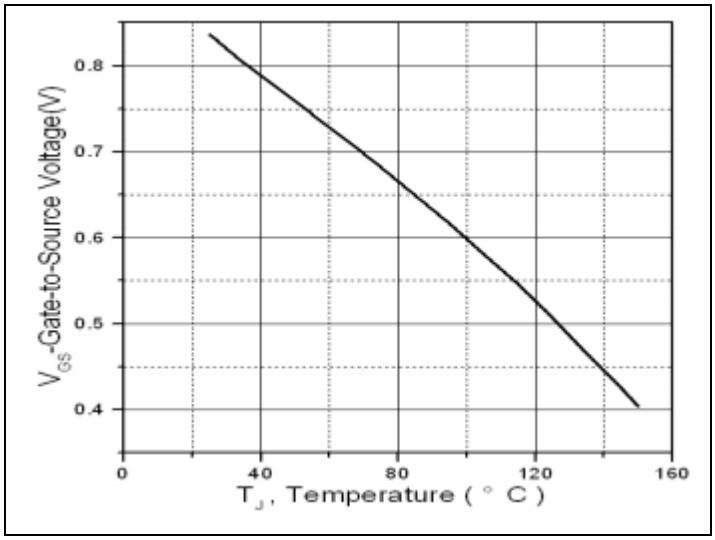


Figure3. Gate to Source Cut-off Voltage

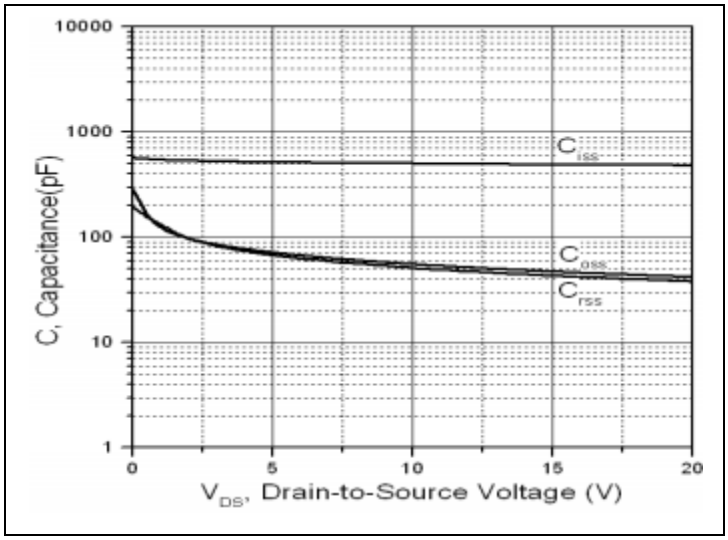
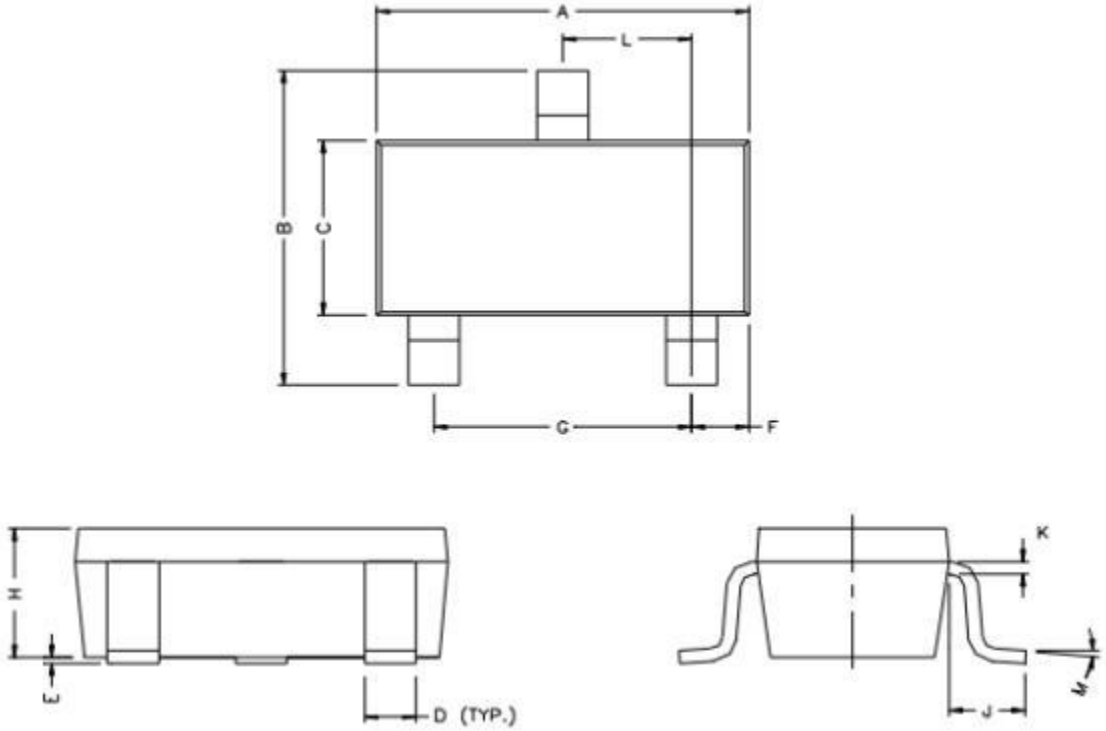


Figure 4. Typical Capacitance vs. Drain-to-Source Voltage

Mechanical Data：



REF.	Millimeter		REF.	Millimete	
	Min.	Max.		Min.	Max.
A	2.80	3.00	G	1.80	2.00
B	2.30	2.50	H	0.90	1.1
C	1.20	1.40	K	0.10	0.20
D	0.30	0.50	J	0.35	0.70
E	0	0.10	L	0.92	0.98
F	0.45	0.55	M	0°	10°

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