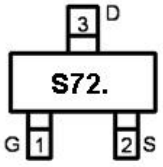
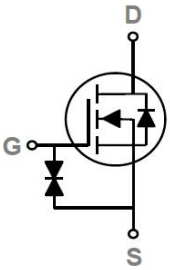
Main Product Characteristics:

V_{DSS}	60V
R_{DS}(on)	2Ω (typ.)
I_D	0.27A

SOT-23



Marking and pin Assignments



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
- High Power and current handing capability
- Fully Avalanche Rated
- ESD Protection HBM ⩾ 2KV

Description:

It utilizes the advanced trench processing techniques to achieve extremely low on resistance and low gate charge. These features combine to make this design an extremely efficient and reliable device for use in PWM, load switching and a wide variety of other applications.

Absolute Max Rating:

Symbol	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	0.27	A
I_D @ T_C = 70°C	Continuous Drain Current, V_{GS} @ 10V ①	0.22	
I_{DM}	Pulsed Drain Current ②	1.1	
P_D @T_C = 25°C	Power Dissipation ③	0.4	W
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J	Operating Junction	-55 to + 150	°C
T_{STG}	Storage Temperature Range	-55 to + 150	°C

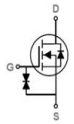
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	350	°C /W

Electrical Characteristics @T_A=25°C unless otherwise specified

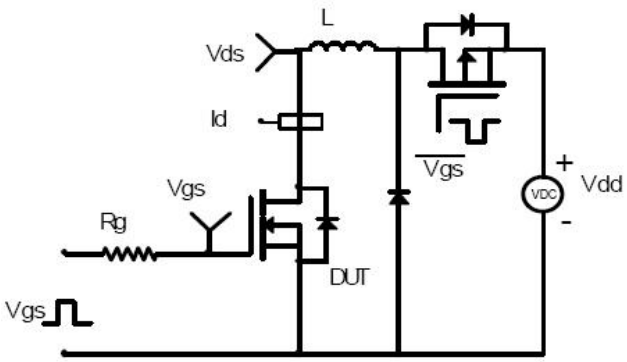
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	60	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	2	3	Ω	V_{GS}=10V,I_D =500mA
		—	2.3	4		V_{GS}=4.5V,I_D = 200mA
		—	3.5	4.5		V_{GS}=3V,I_D =10mA
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =60V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	10	uA	V_{GS} =20V
	Gate-to-Source reverse leakage	—	—	-10		V_{GS} = -20V
Q_g	Total gate charge	—	1.2	—	nC	I_D = 200mA, V_{DS}=30V, V_{GS} = 4.5V
Q_{gs}	Gate-to-Source charge	—	1.8	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	0.2	—		
$t_{d(on)}$	Turn-on delay time	—	3.5	—	ns	V_{GS}=10V, V_{DS}=30V, R_{GEN}=10Ω, I_D =200mA
t_r	Rise time	—	21.5	—		
$t_{d(off)}$	Turn-Off delay time	—	5.8	—		
t_f	Fall time	—	21.2	—		
Ciss	Input capacitance	—	19.1	—	pF	V_{DS}=25V, V_{GS}=0V, f=1MHZ
Coss	Output capacitance	—	12.8	—		
Crss	Reverse transfer capacitance	—	6	—		

Source-Drain Ratings and Characteristics

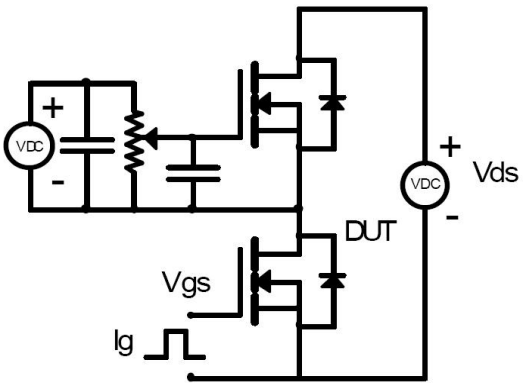
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Maximum Body-Diode Continuous Current	—	0.27	—	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Maximum Body-Diode Pulse Current	—	1.1	—	A	
V_{SD}	Diode Forward Voltage	—	0.86	1.3	V	T_J=25°C,I_S=200mA,V_{GS}=0 V

Test Circuits and Wave forms

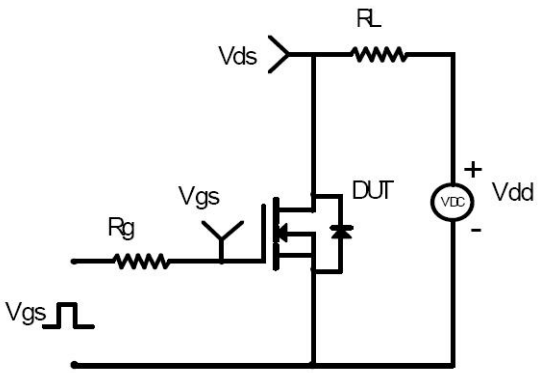
EAS Test Circuit:



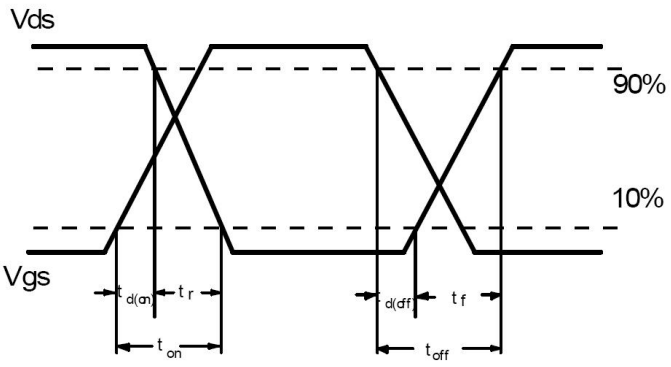
Gate Charge Test Circuit:



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

Typical electrical and thermal characteristics

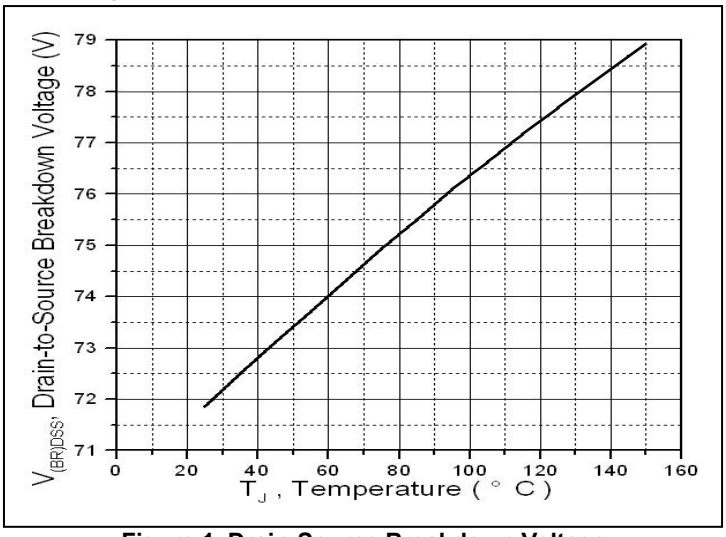


Figure 1. Drain-Source Breakdown Voltage

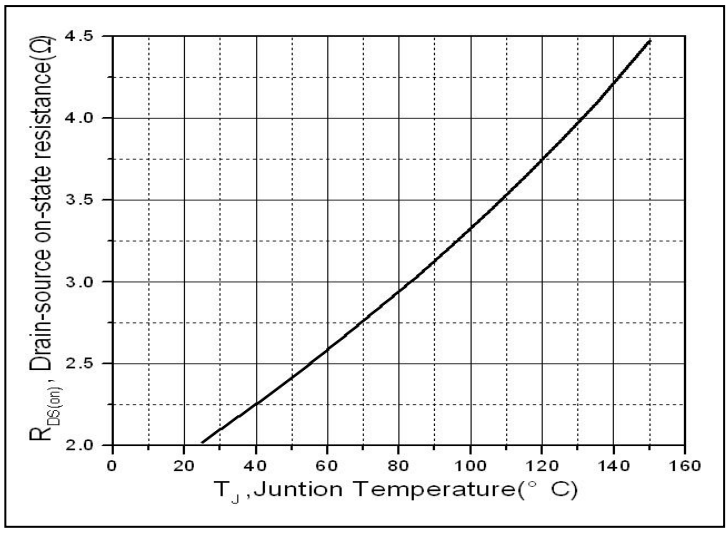


Figure 2. Normalized On-Resistance vs. Junction Temperature

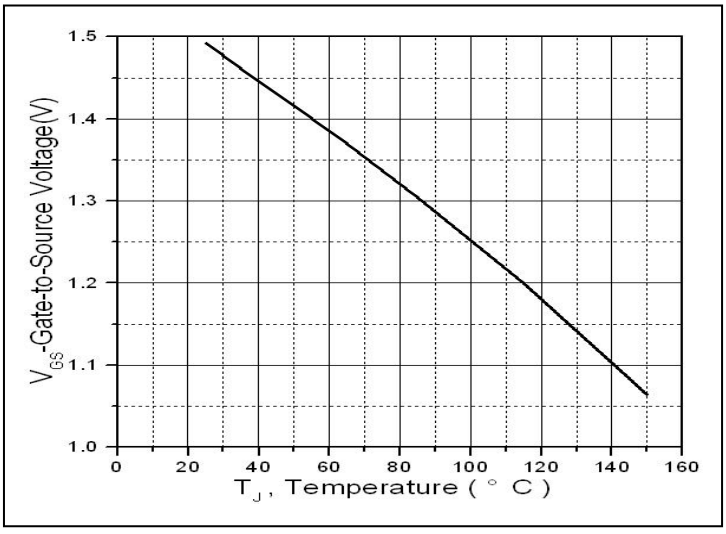


Figure 3. Gate to source cut-off voltage vs. Junction Temperature

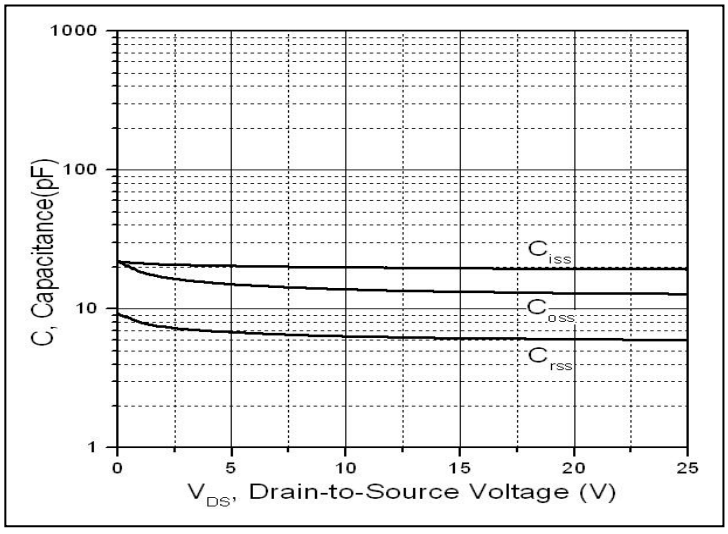


Figure 4. Typical Capacitance vs. Drain-to-Source Voltage

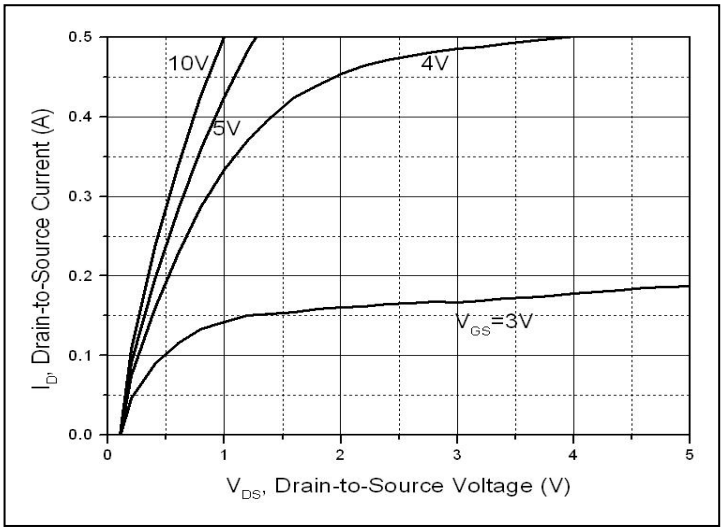
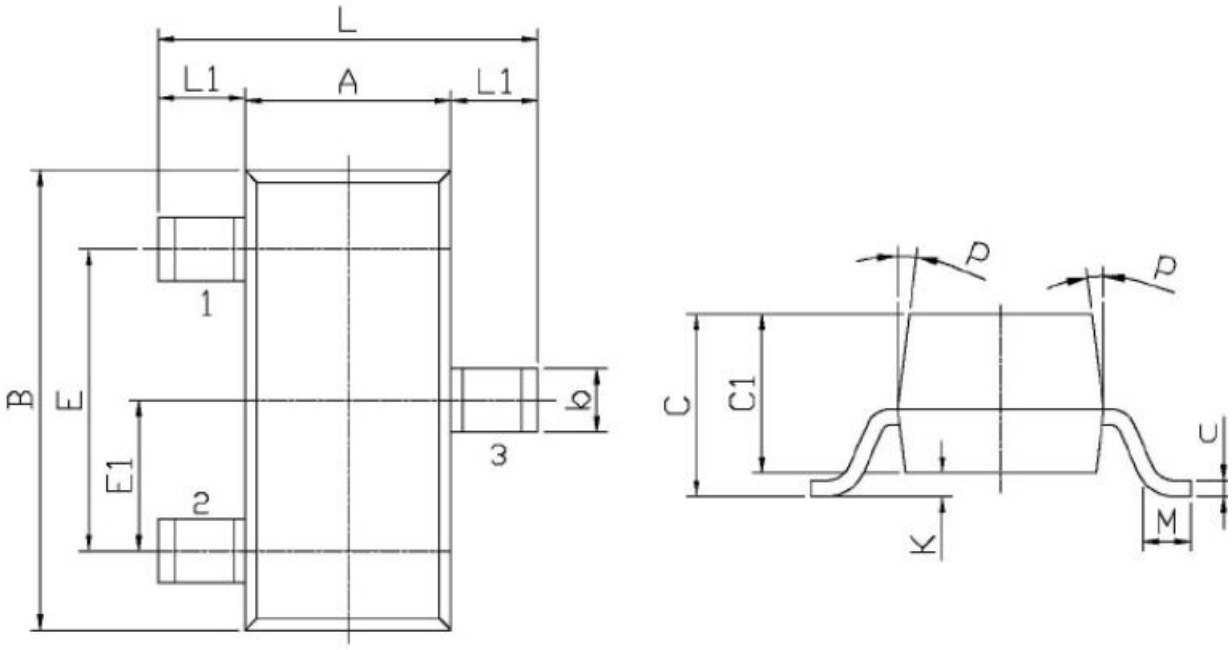


Figure 5. Typical Output Characteristics

Mechanical Data：

单位：mm



Symbol	Dimensions In Millmeters		Symbol	Dimensions In Millmeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

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