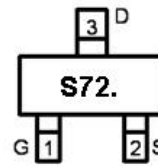
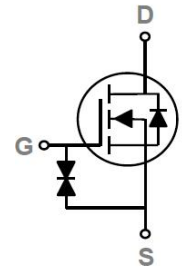


Main Product Characteristics:

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 \geq 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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	0.27	A
$I_D @ T_C = 70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$ ①	0.22	
I_{DM}	Pulsed Drain Current ②	1.1	
$P_D @ T_C = 25^\circ\text{C}$	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	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to + 150	$^\circ\text{C}$

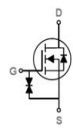
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	350	°C /W

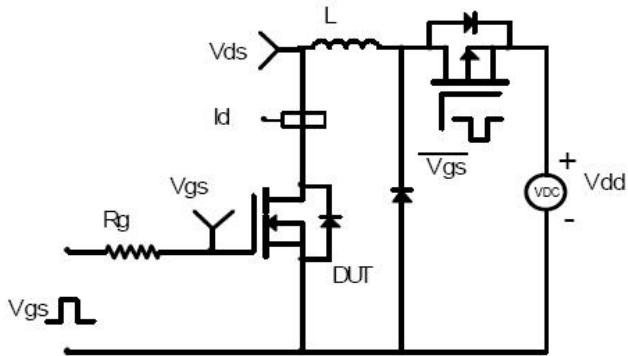
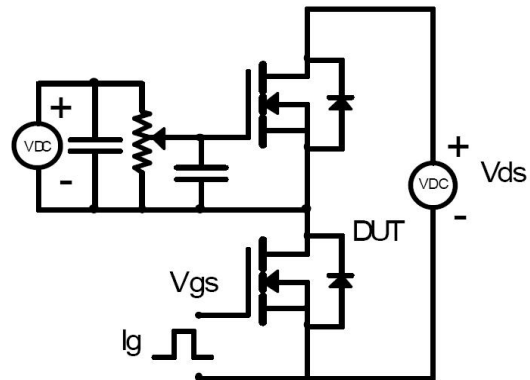
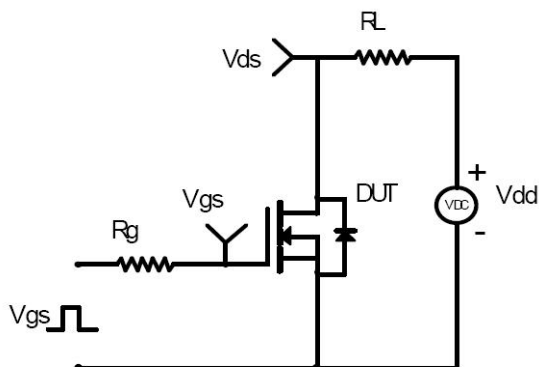
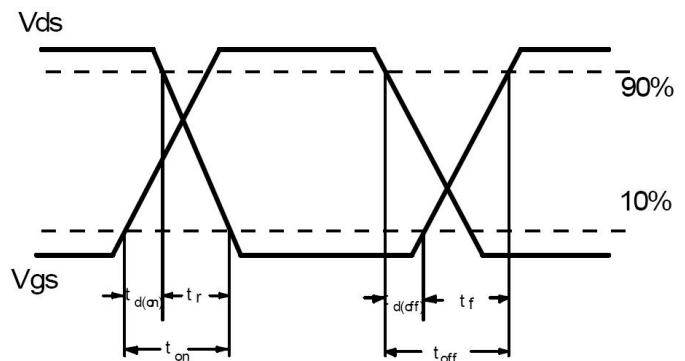
Electrical Characteristics @T_A=25°C unless otherwise specified

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,
Q _{gs}	Gate-to-Source charge	—	1.8	—		V _{DS} =30V,
Q _{gd}	Gate-to-Drain("Miller") charge	—	0.2	—		V _{GS} = 4.5V
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	—		
C _{iss}	Input capacitance	—	19.1	—	pF	V _{DS} =25V, V _{GS} =0V, f=1MHZ
C _{oss}	Output capacitance	—	12.8	—		
C _{rss}	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} =0V

Test Circuits and Wave forms

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 resistance.
- 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 $T_A = 25^\circ\text{C}$

Typical electrical and thermal characteristics

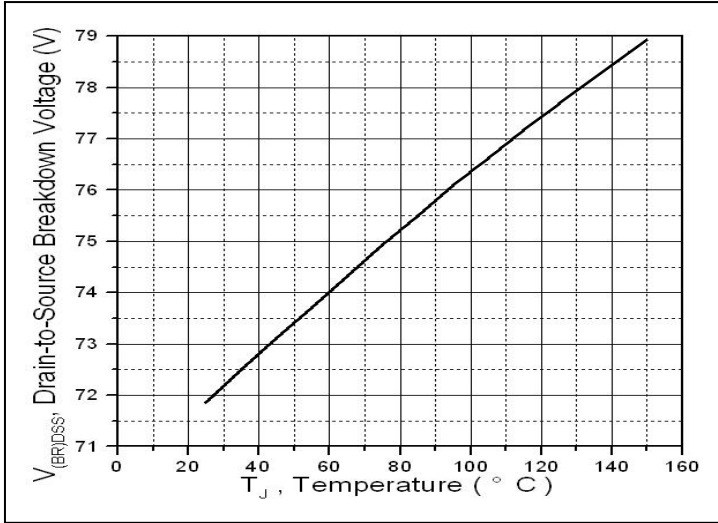


Figure 1. Drain-Source Breakdown Voltage

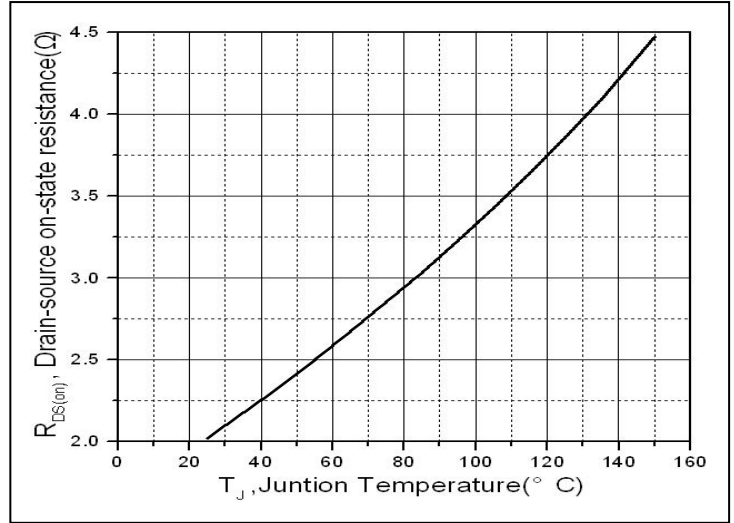


Figure 2. Normalized On-Resistance vs. Junction Temperature

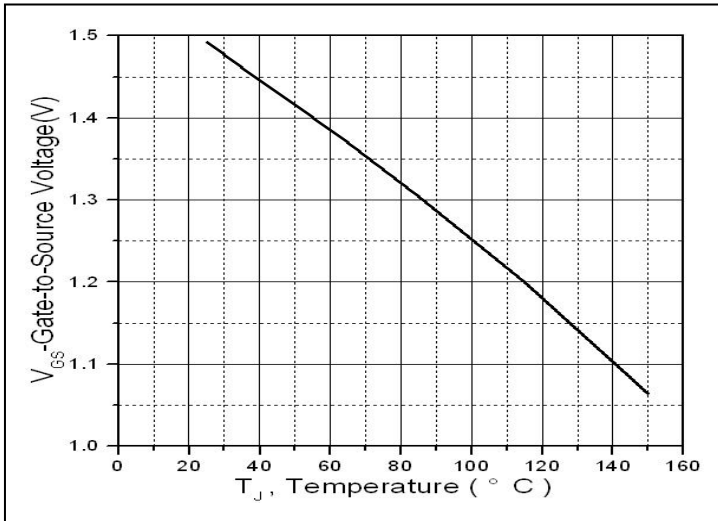


Figure 3. Gate to source cut-off voltage vs. Junction Temperature

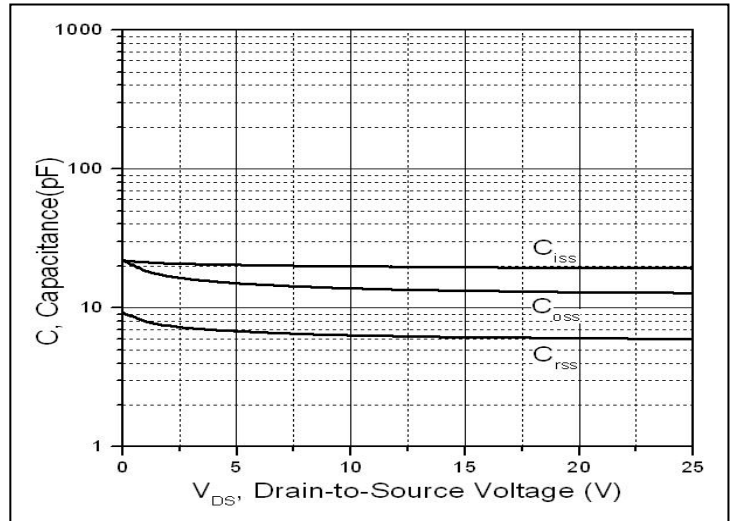


Figure 4. Typical Capacitance vs. Drain-to-Source Voltage

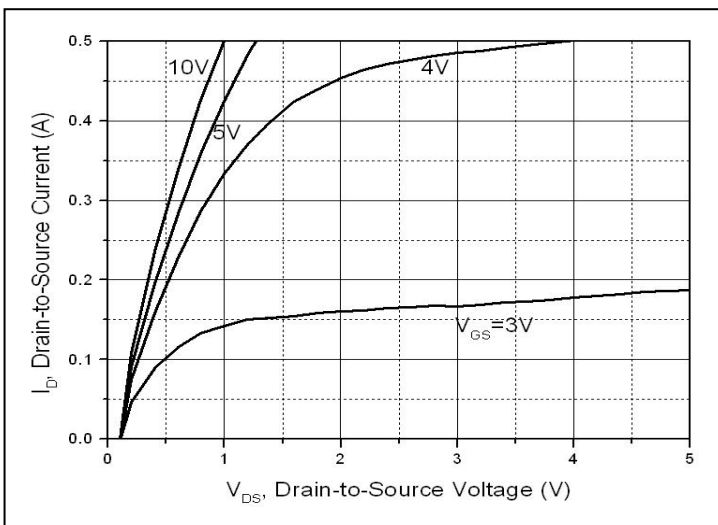
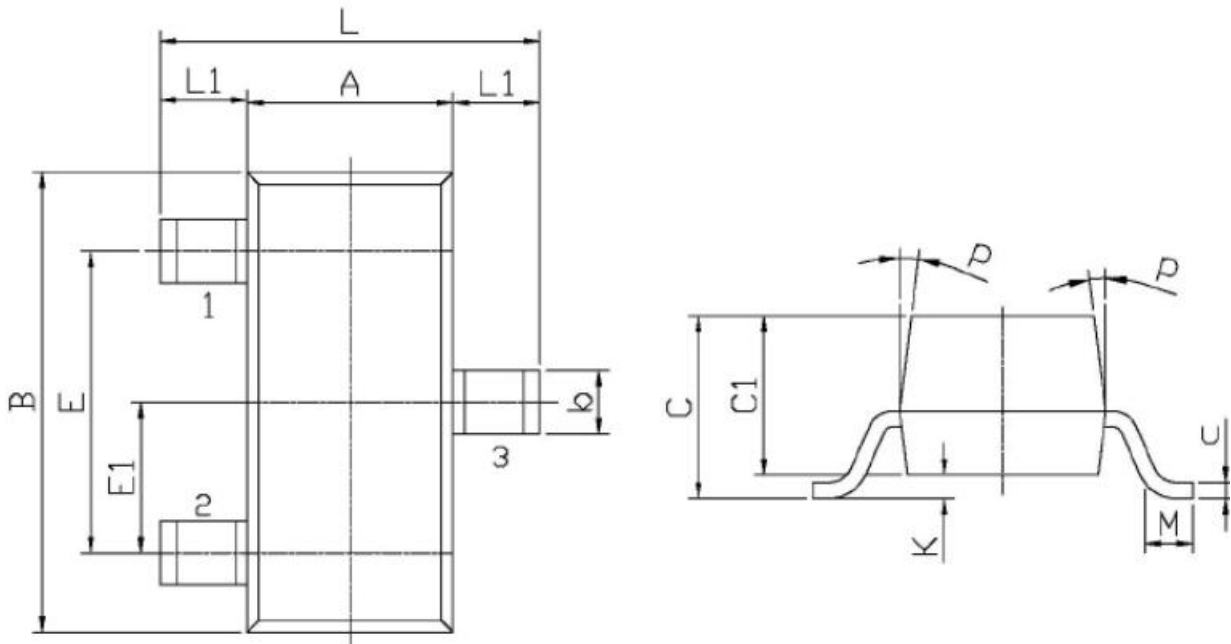


Figure 5. Typical Output Characteristics

Mechanical Data:

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	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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