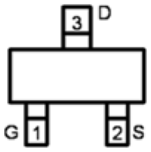
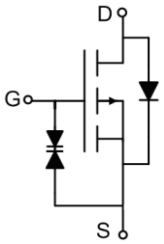
Main Product Characteristics:

V_{DSS}	-50V
R_{DS}(on)	2.1Ω(typ.)
I_D	-130mA

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
- AEC-Q101 qualified

Description:

It utilizes the latest 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 @ T_C = 25°C	Continuous Drain Current, V_{GS} @ - 10V①	-130	mA
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ -10V①	-100	
I_{DM}	Pulsed Drain Current②	-520	
P_D @T_C = 25°C	Power Dissipation③	230	mW
V_{DS}	Drain-Source Voltage	-50	V
V_{GS}	Gate-to-Source Voltage	± 20	V
ESD	ESD Rating (HBM module)	1	KV
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

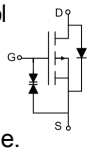
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	556	℃/W
	Junction-to-Ambient (PCB mounted, steady-state) ④	—	540	℃/W

Electrical Characterizes @T_A=25℃unless otherwise specified

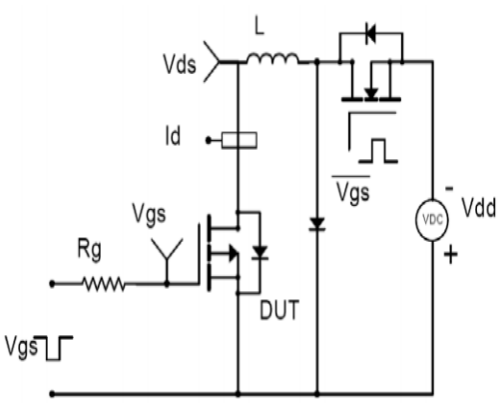
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-50	—	—	V	V_{GS} = 0V, I_D = -10μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	2.1	7	Ω	V_{GS}=-10V,I_D = -130mA
$V_{GS(th)}$	Gate threshold voltage	-0.8	—	-2	V	V_{DS} = V_{GS}, I_D = -1mA
I_{DSS}	Drain-to-Source leakage current	—	—	-0.1	μA	V_{DS} =-40V,V_{GS} = 0V
		—	—	-1		V_{DS} =-50V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	10	μA	V_{GS} =20V
		—	—	-10		V_{GS} = -20V
gfs	Forward Transconductance	50	—	—	mS	V_{DS} =-25 V I_D =-130mA
$t_{d(on)}$	Turn-on delay time	—	3.1	—	ns	V_{DD} = –15V; I_D = –2.5 A; R_L = 50Ω
t_r	Rise time	—	1.3	—		
$t_{d(off)}$	Turn-Off delay time	—	18	—		
t_f	Fall time	—	7.5	—		
C_{iss}	Input capacitance	—	45	—	pF	V_{GS} = 0; V_{DS} = -5 V; f = 1 MHz
C_{oss}	Output capacitance	—	18	—		
C_{rss}	Reverse transfer capacitance	—	11	—		

Source-Drain Ratings and Characteristics

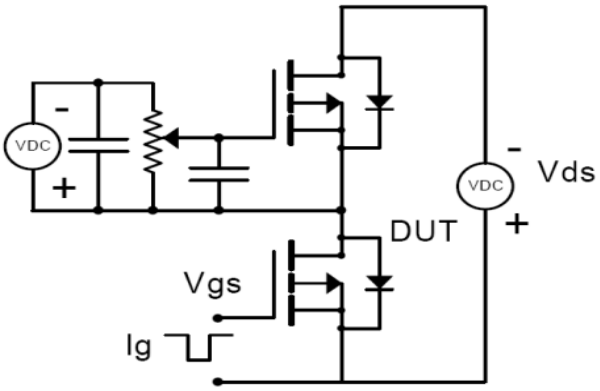
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	130	mA	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	520	mA	
V_{SD}	Diode Forward Voltage	—	—	-1.3	V	I_S=1A, V_{GS}=0V

Test Circuits and Waveforms

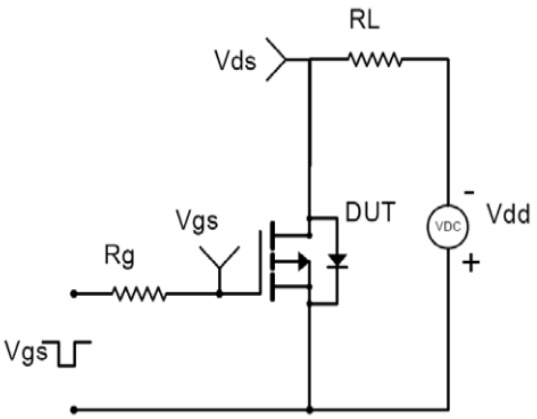
EAS Test Circuit:



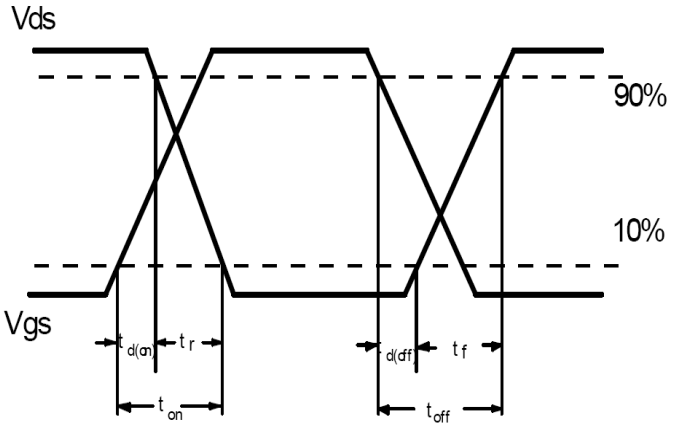
Gate Charge Test Circuit:



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 PD 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 TA =25°C

Typical Electrical and Thermal Characteristics

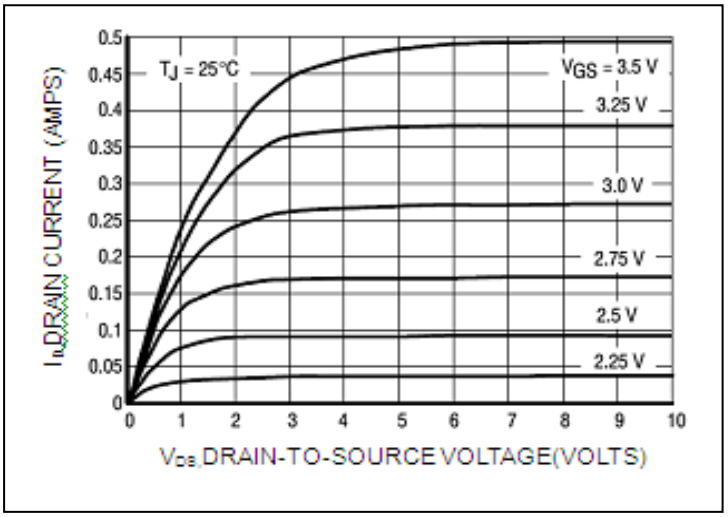


Figure1.Typical Output Characteristics

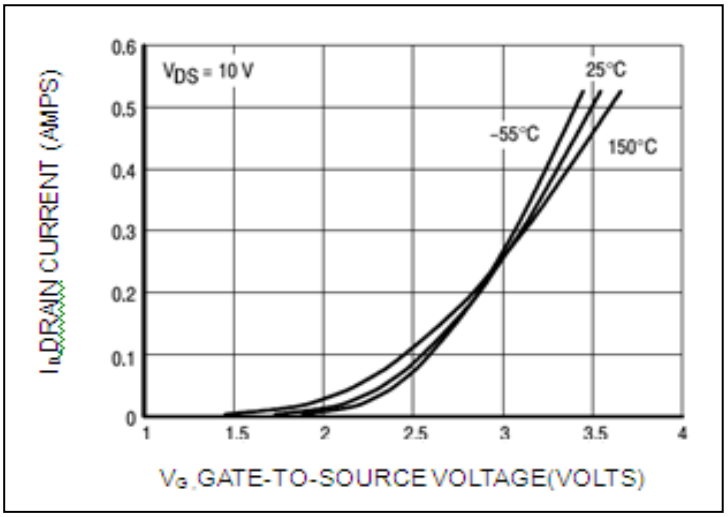


Figure2. Transfer Characteristics

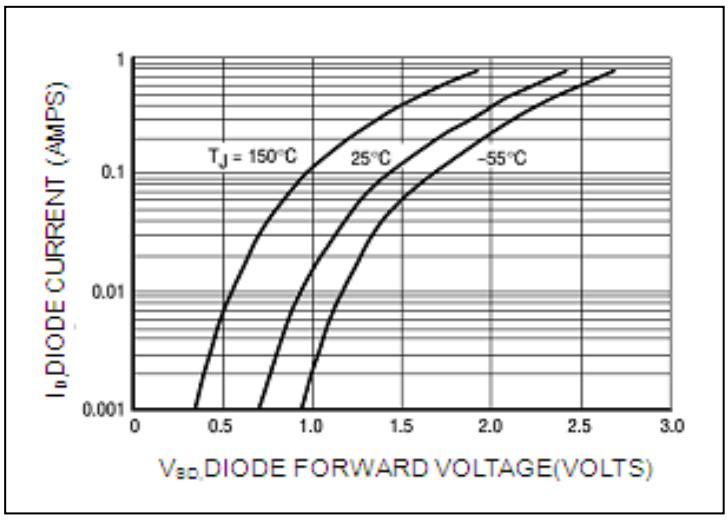
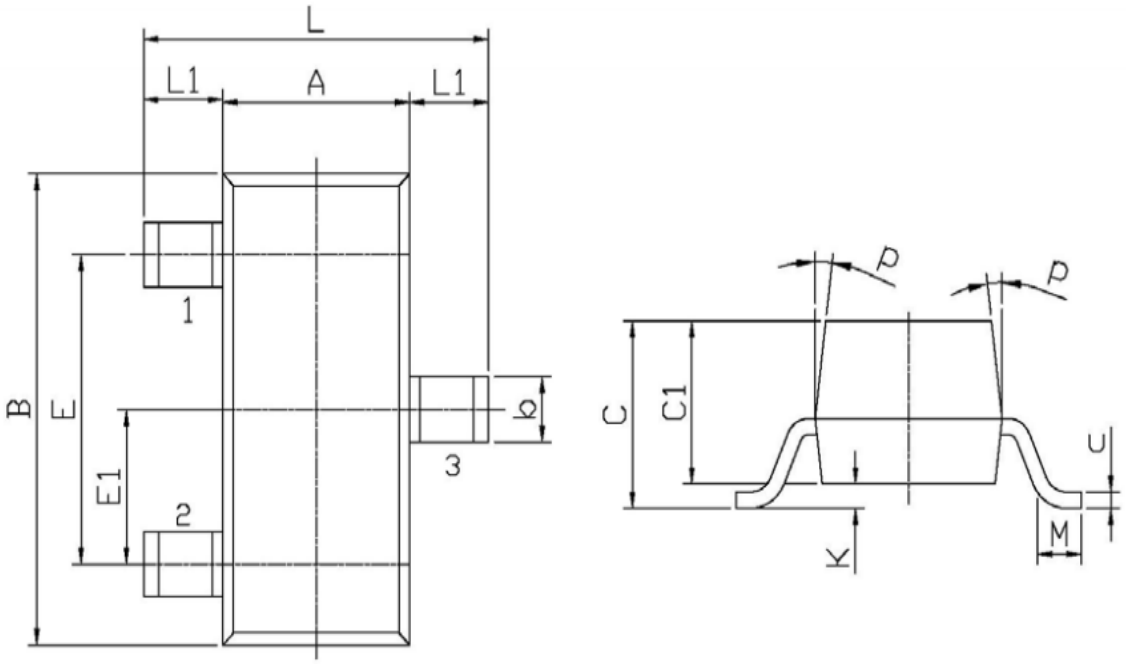


Figure3. Body Diode Forward Curve

Mechanical Data：

SOT-23 Package Outline(Unit:mm)



Symbol	Dimensions in Millimeter		Symbol	Dimensions in Millimeter	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30 Max	
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	0.20 Min	
E1	0.85	1.05	P	7°	
b	0.35	0.55			

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