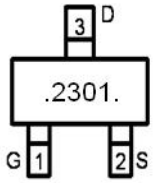
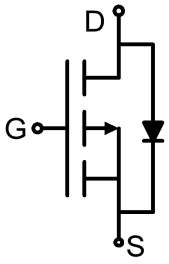
Main Product Characteristics:

V_{DSS}	-20V
R_{DS}(on)	126mΩ (typ.)
I_D	-2A

SOT-23



Marking and 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 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} @ 10V ①	-2	A
I_{DM}	Pulsed Drain Current ②	-6	
P_D @T_C = 25°C	Power Dissipation ③	1.25	W
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

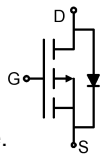
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-case ③	—	100	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

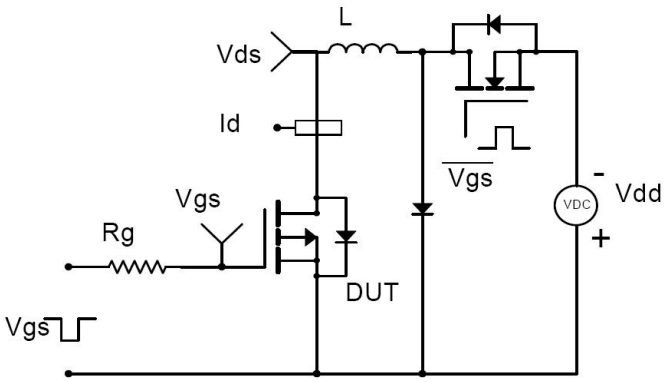
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-20	—	—	V	V_{GS} = 0V, I_D = -250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	126	155	mΩ	V_{GS}=-4.5V,I_D =-2A
		—	166	210	mΩ	V_{GS}=-2.5V,I_D =-1A
$V_{GS(th)}$	Gate threshold voltage	-0.4	—	-1	V	V_{DS} = V_{GS}, I_D =-250μA
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	V_{DS} =-20V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =12V
		—	—	-100		V_{GS} = -12V
Q_g	Total gate charge	—	9.4	—	nC	I_D = -3A,
Q_{gs}	Gate-to-Source charge	—	0.9	—		V_{DS}=-10V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.4	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	5	—	ns	V_{GS}=-4.5V, V_{DD}=-20V, R_{GEN}=3Ω R_L=10Ω
t_r	Rise time	—	13.6	—		
$t_{d(off)}$	Turn-Off delay time	—	11.6	—		
t_f	Fall time	—	2.9	—		
C_{iss}	Input capacitance	—	171	—	pF	V_{GS} = 0V V_{DS} = -20V f = 100KHz
C_{oss}	Output capacitance	—	25	—		
C_{rss}	Reverse transfer capacitance	—	19	—		

Source-Drain Ratings and Characteristics

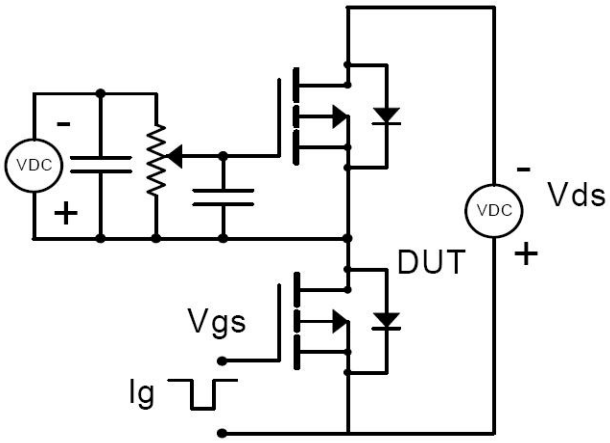
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-2	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-6	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	I_S=-1A, V_{GS}=0V

Test Circuits and Waveforms

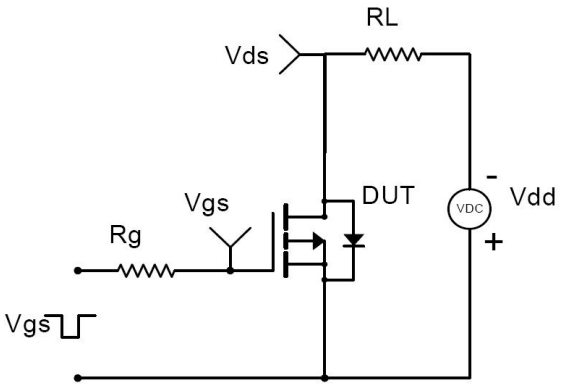
EAS Test Circuit:



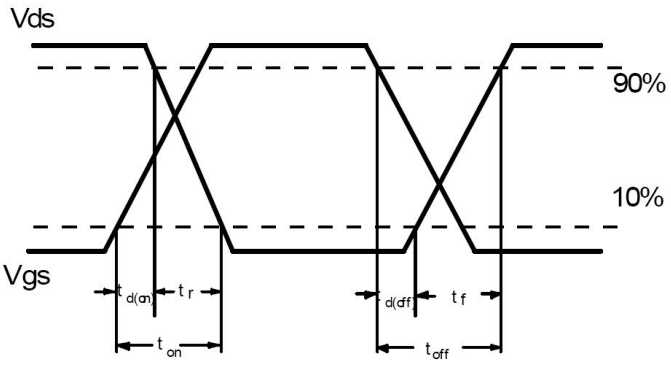
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

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

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

Typical Electrical and Thermal Characteristics

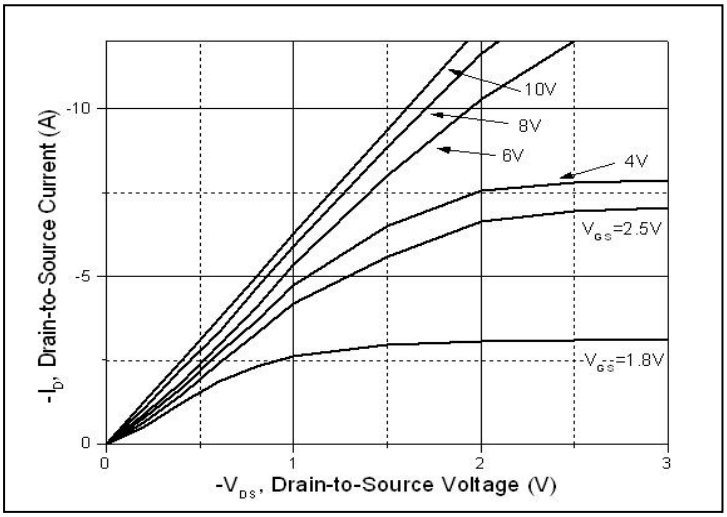


Figure1. Typical Output Characteristics

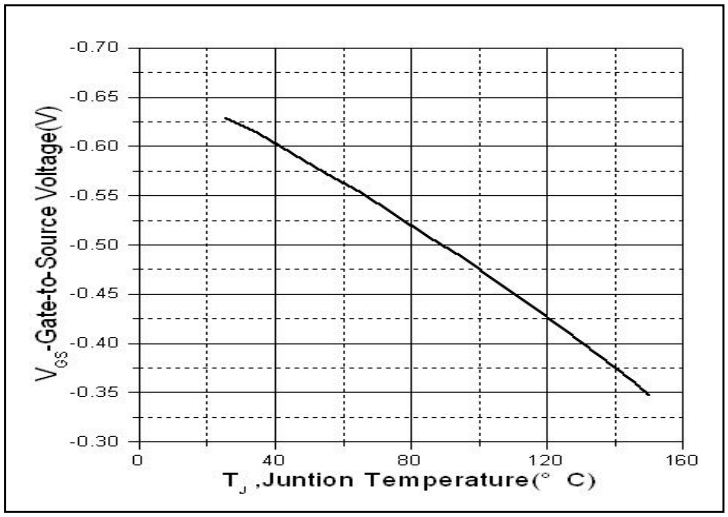


Figure2. Gate to Source Cut-off

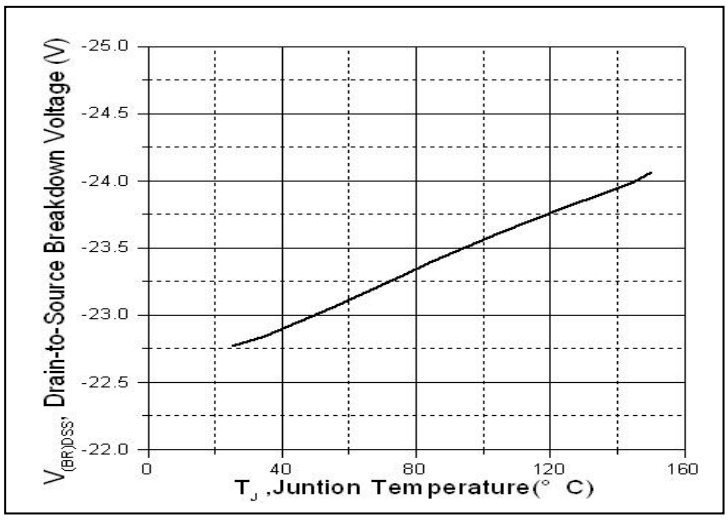


Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

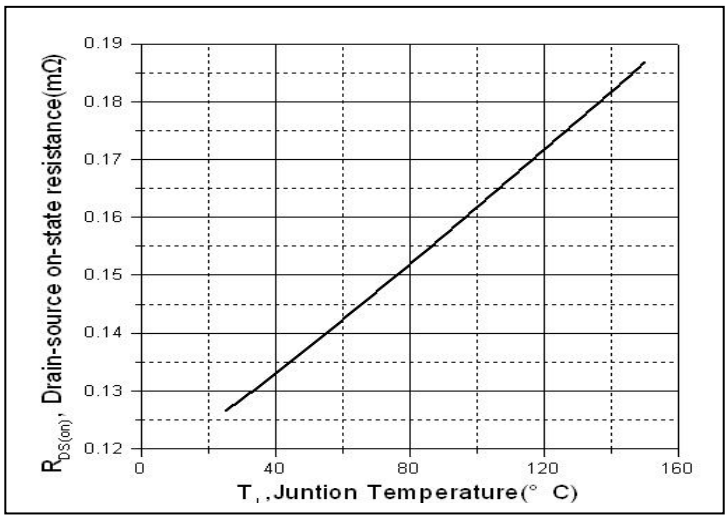


Figure 4. $R_{DS(on)}$ vs. Junction Temperature

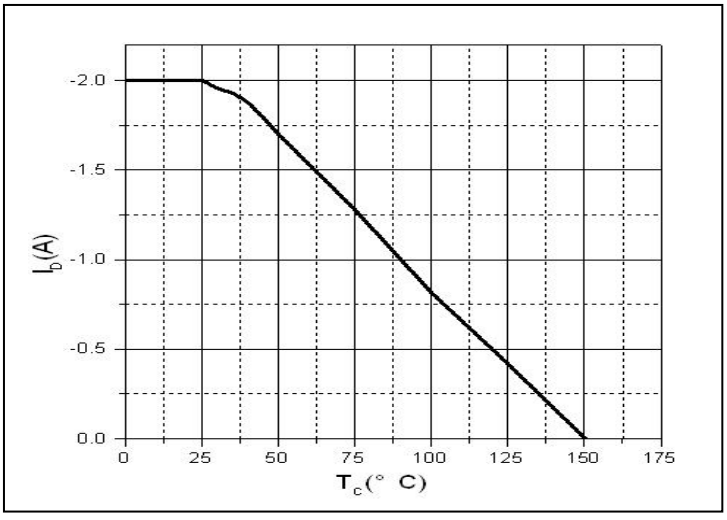


Figure5. Drain Current vs. Case Temperature

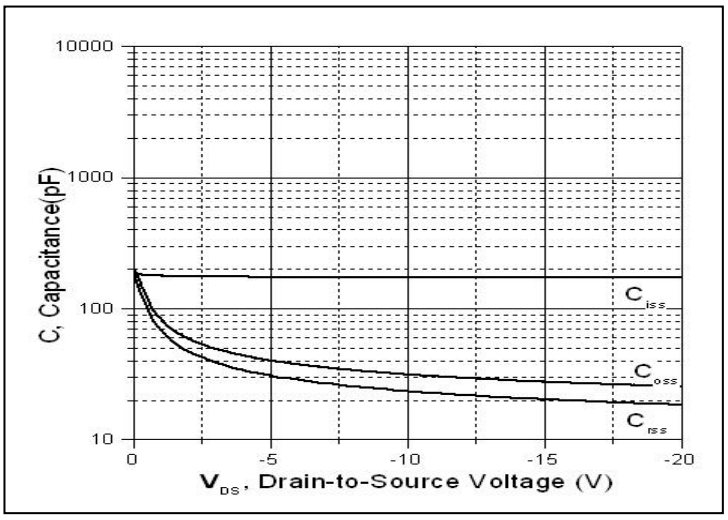
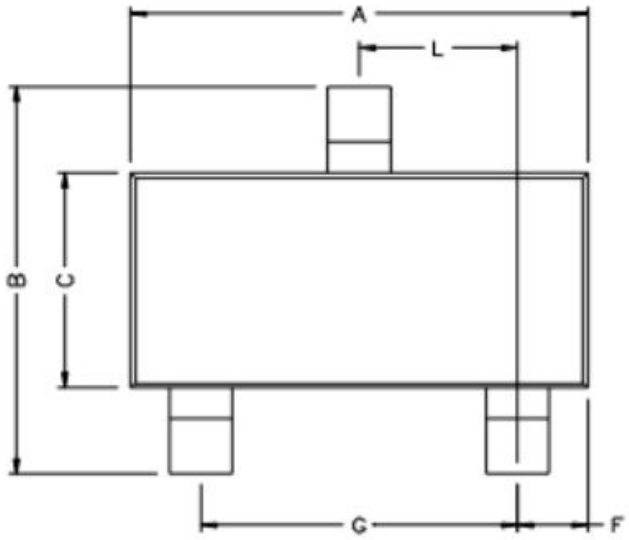
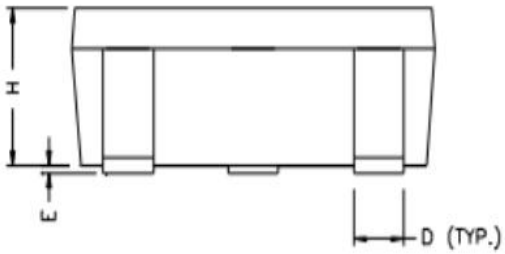


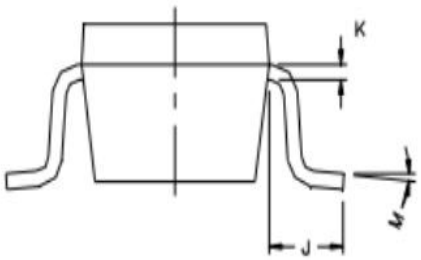
Figure6. Capacitance

Mechanical Data：

SOT-23 Package Outline (Unit:mm)







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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