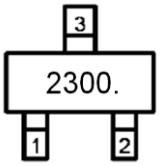
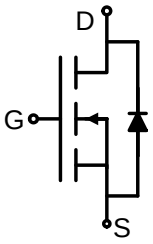
Main Product Characteristics:

V_{DSS}	20V
R_{DS}(on)	22mΩ(typ.)
I_D	3.3A

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
- 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	3.3	A
I_{DM}	Pulsed Drain Current②	11.4	
P_D @T_C = 25°C	Power Dissipation③	1.1	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

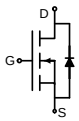
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient④	—	140	℃/W

Electrical Characterizes @T_A=25℃unless otherwise specified

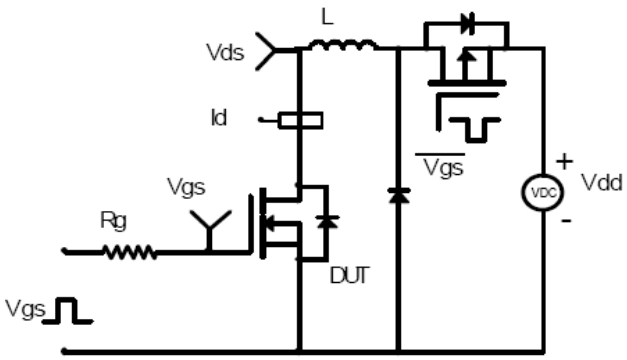
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	22	30	mΩ	V_{GS}=4.5V,I_D =2A
		—	27	40	mΩ	V_{GS}=2.5V,I_D =1A
$V_{GS(th)}$	Gate threshold voltage	0.4	—	1	V	V_{DS} = V_{GS}, 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,V_{DS}=0V
Q_g	Total gate charge	—	4.0	—	nC	I_D = 3.6A, V_{DS}=10V, V_{GS} = 4.5V
Q_{gs}	Gate-to-Source charge	—	0.65	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	1.5	—		
$t_{d(on)}$	Turn-on delay time	—	7	—	ns	V_{GS}=4.5V, V_{DD}=20V, R_{GEN}=3Ω R_L=10Ω
t_r	Rise time	—	10.4	—		
$t_{d(off)}$	Turn-Off delay time	—	12.9	—		
t_f	Fall time	—	3.2	—		
C_{iss}	Input capacitance	—	304	—	pF	V_{GS} = 0V V_{DS} = 20V f = 1MHz
C_{oss}	Output capacitance	—	46	—		
C_{rss}	Reverse transfer capacitance	—	38	—		

Source-Drain Ratings and Characteristics

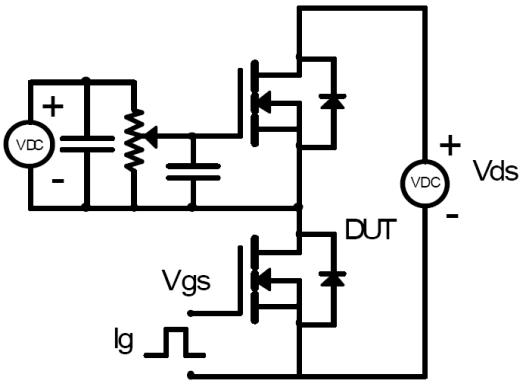
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	3.3	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	11.4	A	
V_{sd}	Diode Forward Voltage	—	0.7	1.2	V	I_S=1A, V_{GS}=0V

Test Circuits and Waveforms

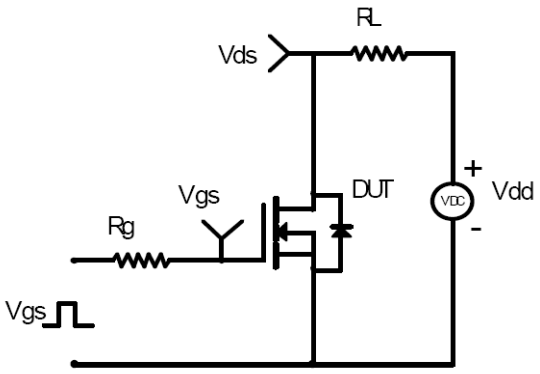
EAS Test Circuit:



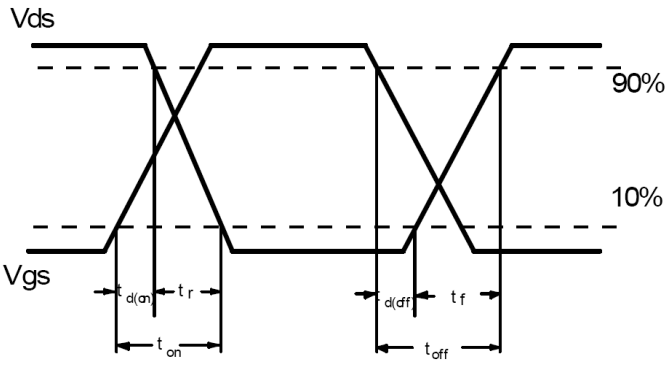
Gate Charge Test Circuit:



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.

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 ℃.

Typical Electrical and Thermal Characteristics

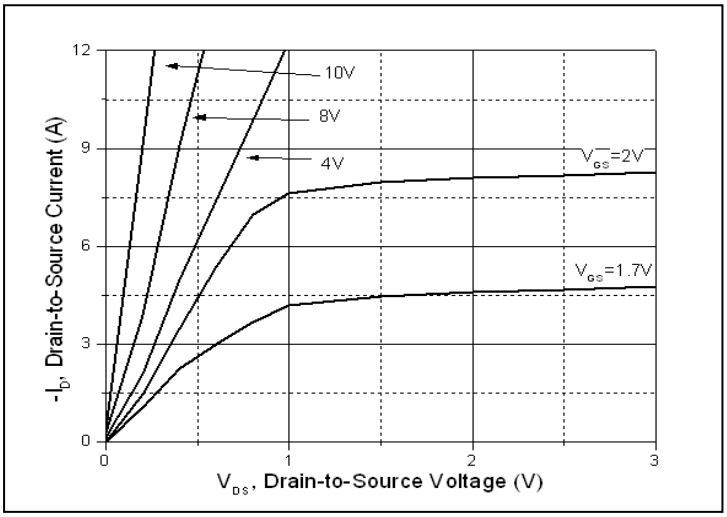


Figure1.Typical Output Characteristics

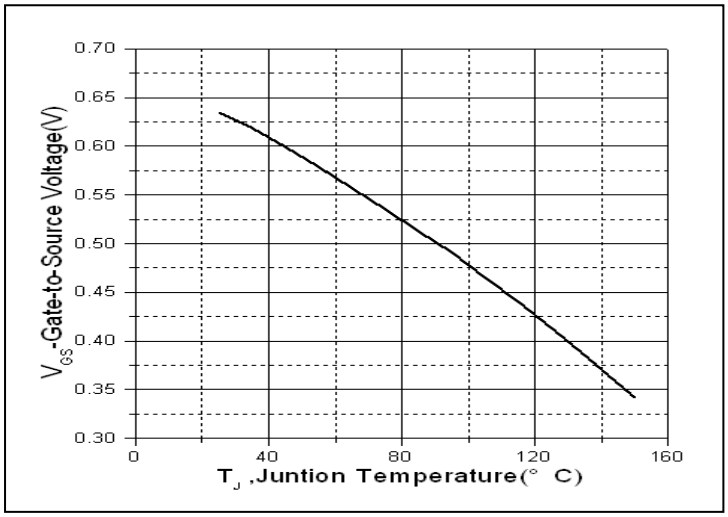


Figure2. Normalized V_{GS}(th) vs. Junction Temperature

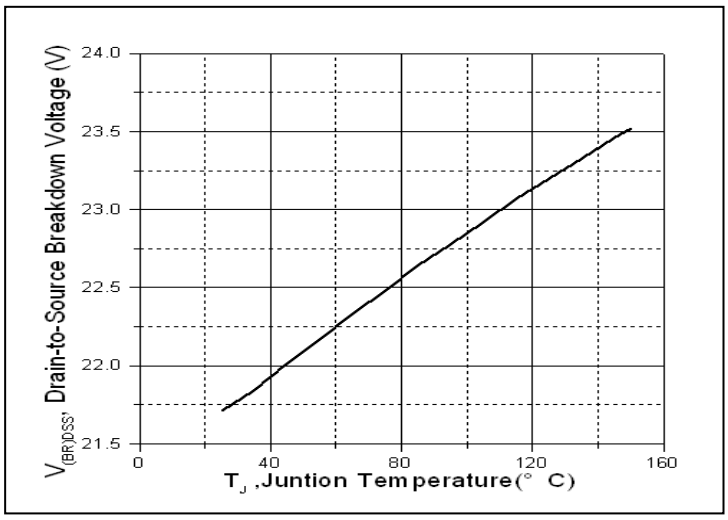


Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

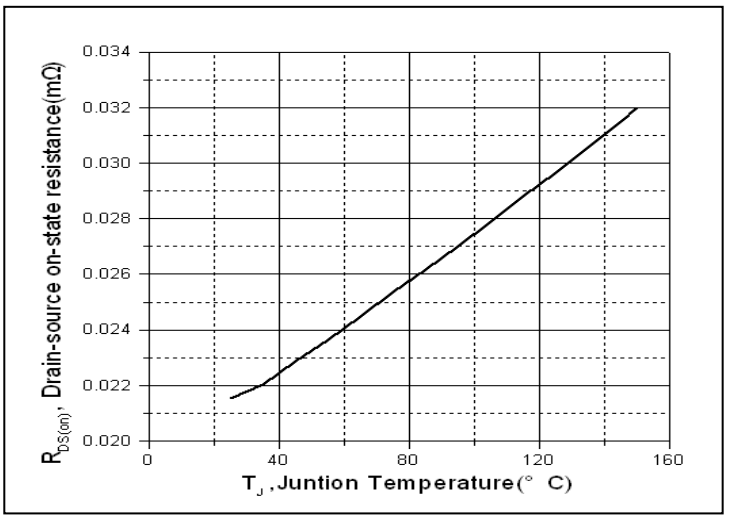


Figure4. Normalized On-Resistance vs. Junction Temperature

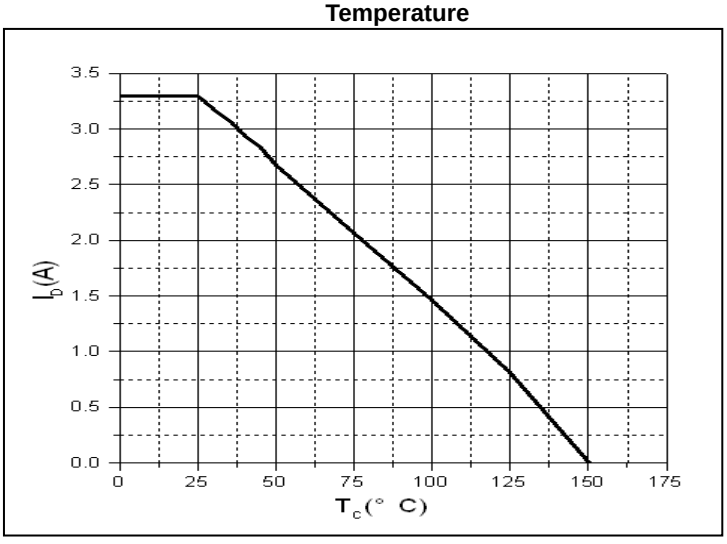


Figure5. Drain Current vs. Case Temperature

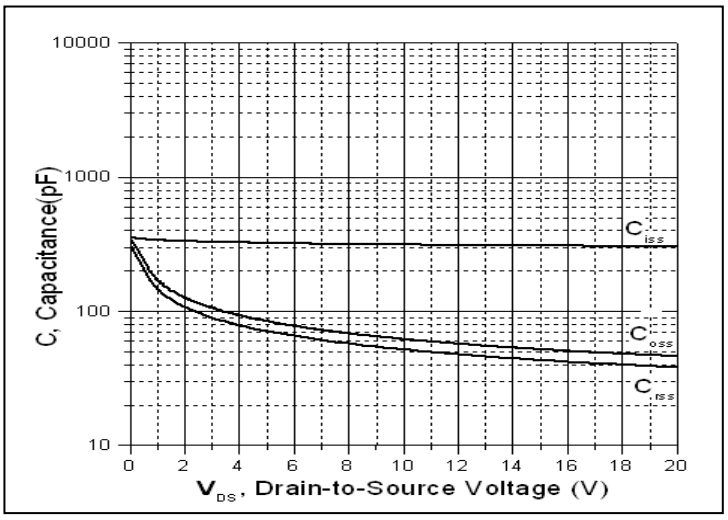
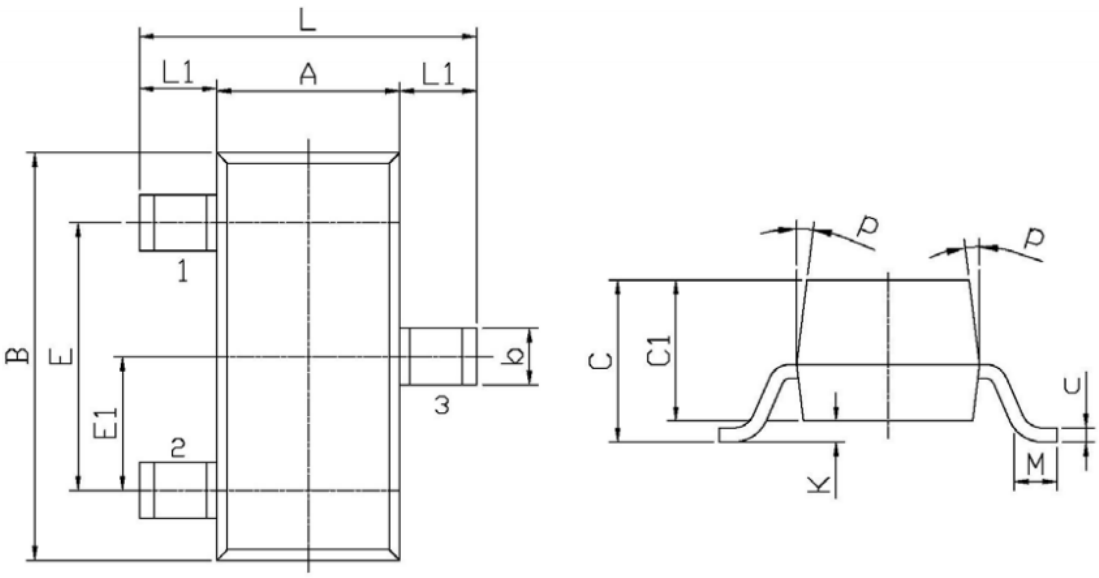


Figure6. Capacitance

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	7º	
b	0.35	0.55			

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