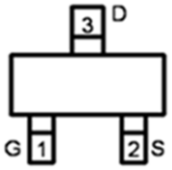
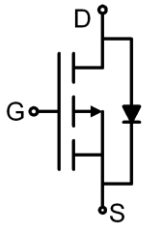
Main Product Characteristics:

V_{DSS}	-20V
R_{DS}(on)	33mΩ(typ.)
I_D	-3.5A

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°C 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} @ 10V①	-3.5	A
I_{DM}	Pulsed Drain Current②	-14	
P_D @T_C = 25°C	Power Dissipation③	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

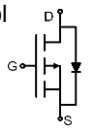
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-Ambient④	—	100	°C/W

Electrical Characterizes @T_A=25°C unless otherwise specified

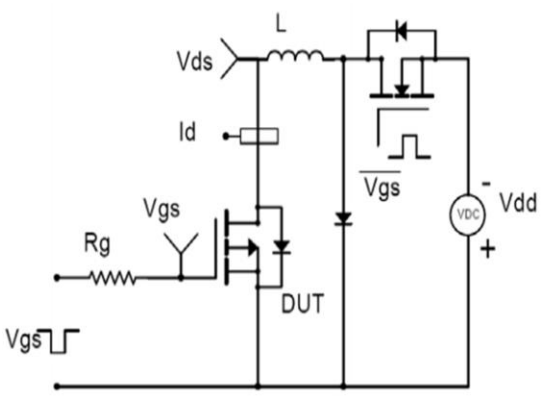
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-20	—	—	V	V_{GS} = 0V, I_D =-250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	33	40	mΩ	V_{GS}=-4.5V,I_D =-5.0A
		—	45	53	mΩ	V_{GS}=-2.5V,I_D =-3.0A
$V_{GS(th)}$	Gate threshold voltage	-0.5	—	-1.0	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	—	12	—	nC	I_D =-3.5A,
Q_{gs}	Gate-to-Source charge	—	1.3	—		V_{DS}=-8V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.5	—		V_{GS} = -4.5V
$t_{d(on)}$	Turn-on delay time	—	8.5	—	ns	V_{GS}=-10V, V_{DD}=-10V,
t_r	Rise time	—	10	—		R_{GEN}=3Ω
$t_{d(off)}$	Turn-Off delay time	—	39	—		I_D = -0.5A
t_f	Fall time	—	14	—		
C_{iss}	Input capacitance	—	889	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	102	—		V_{DS} = -15V
C_{rss}	Reverse transfer capacitance	—	94	—		f = 1MHz

Source-Drain Ratings and Characteristics

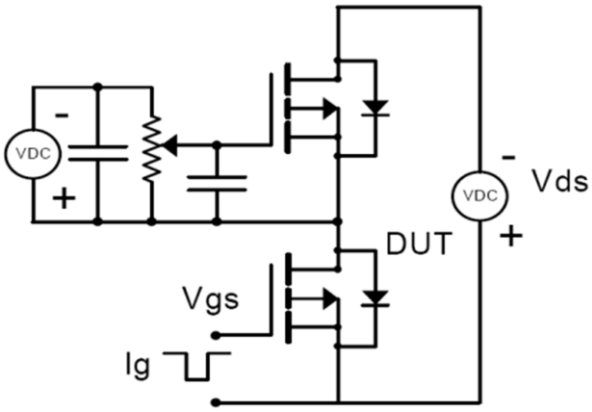
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-3.5	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	-14	A	
V_{sd}	Diode Forward Voltage	—	-0.8	-1.3	V	I_S=-1.3A, V_{GS}=0V

Test Circuits and Waveforms

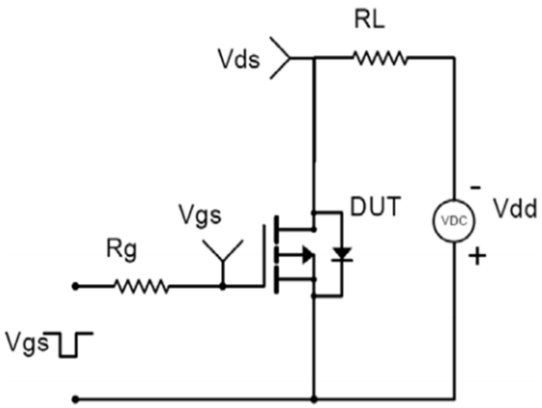
EAS Test Circuit:



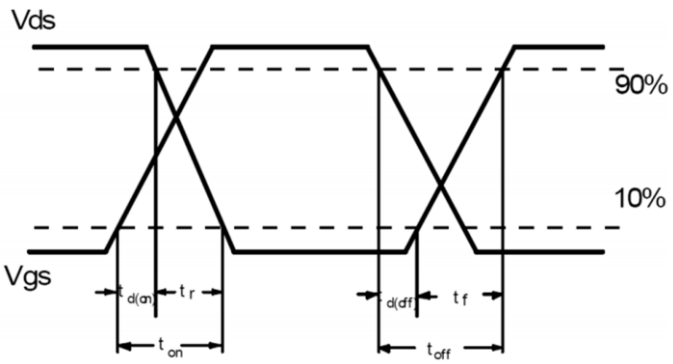
Gate Charge Test Circuit:



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 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

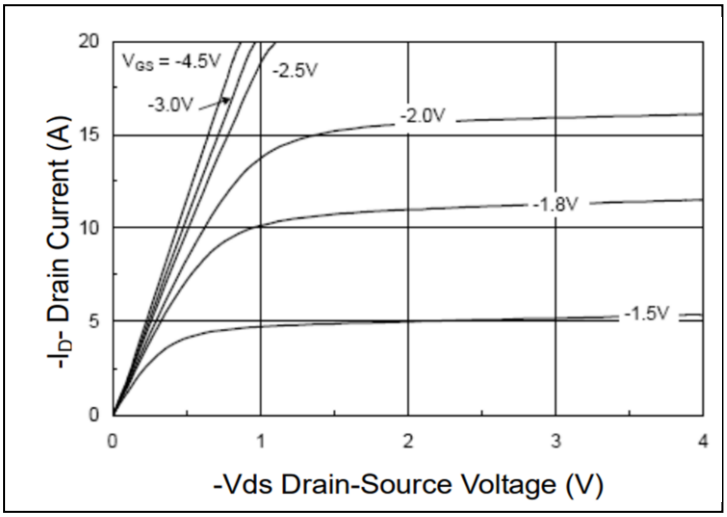


Figure1.Typical Output Characteristics

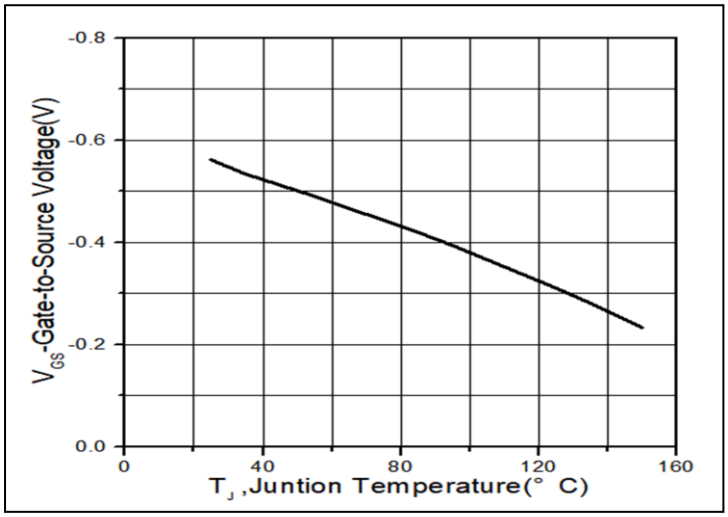


Figure2. Vth vs Junction Temperature

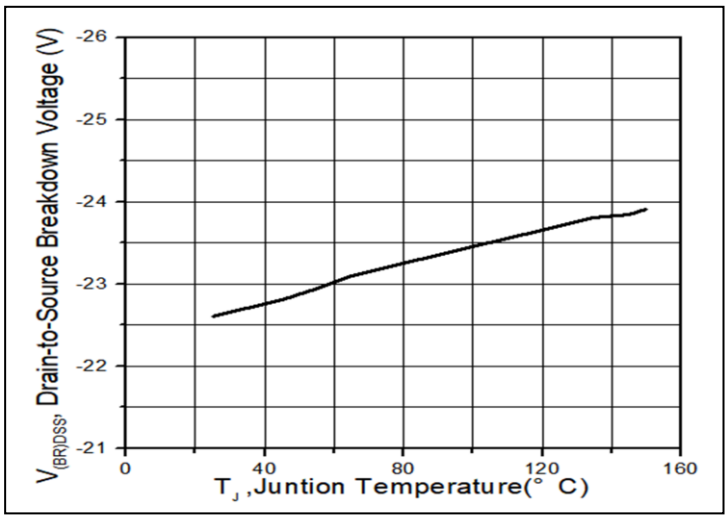


Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

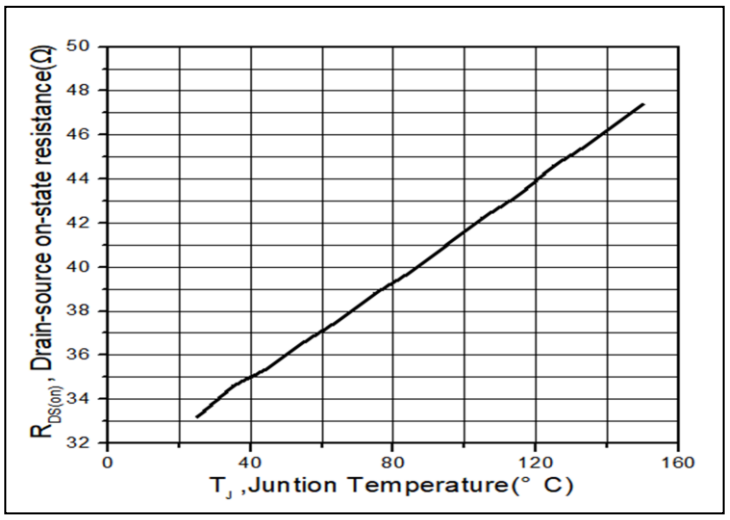


Figure4. $R_{DS(on)}$ vs. Junction Temperature

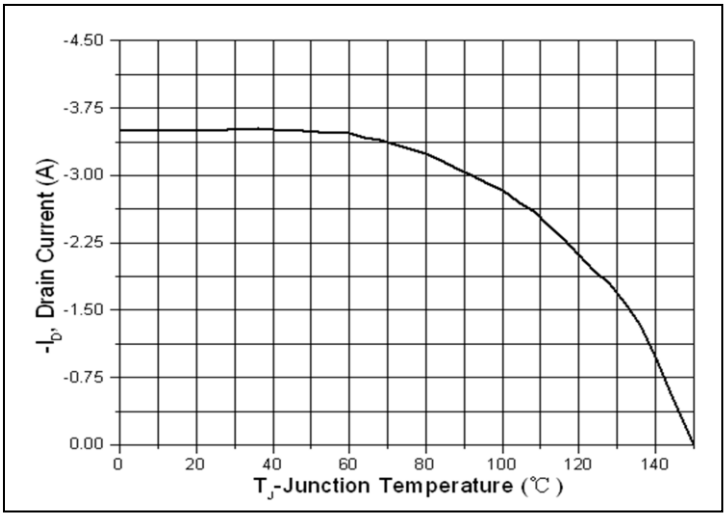


Figure5. Drain Current vs. Junction Temperature

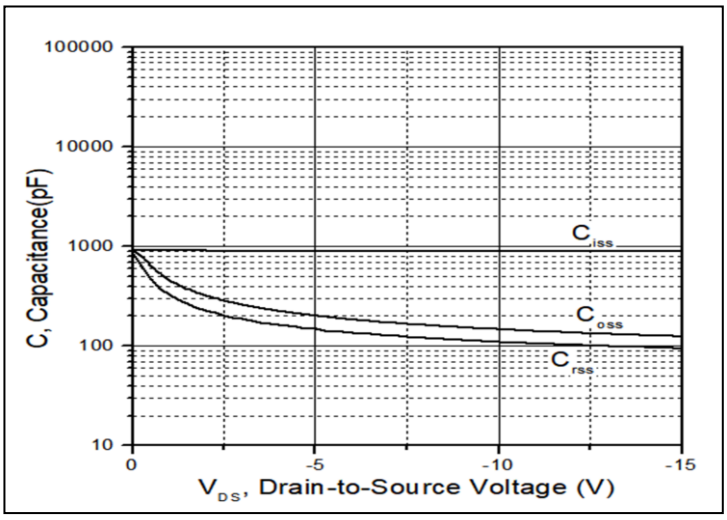


Figure6. Capacitance

Typical Electrical and Thermal Characteristics

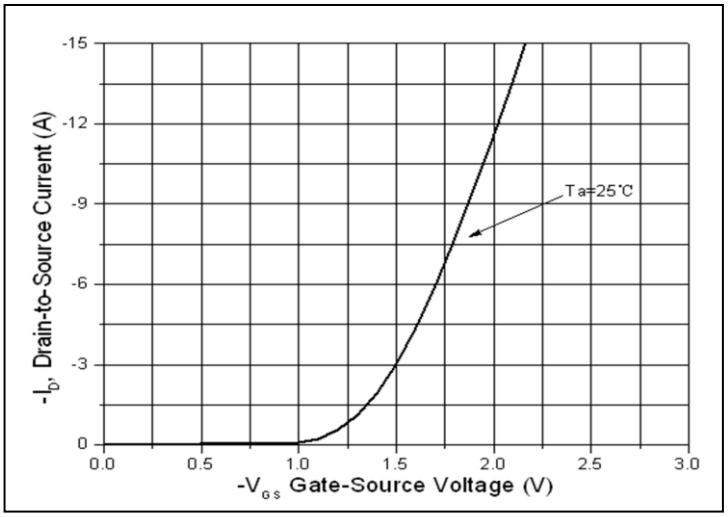


Figure7. Transfer Characteristics

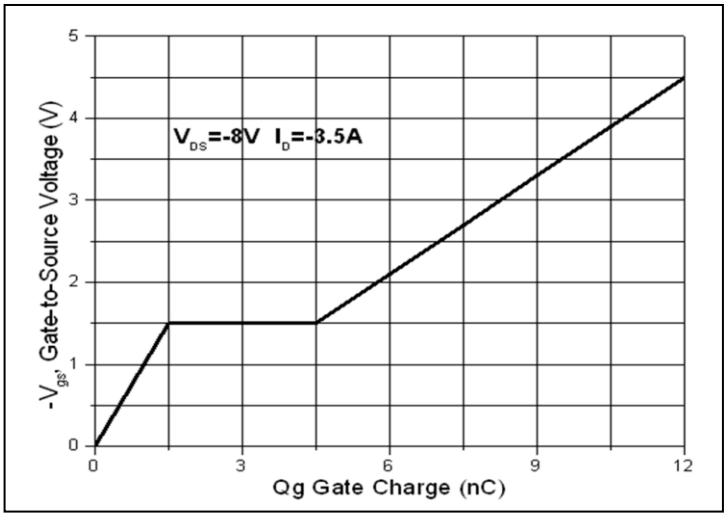


Figure8. Gate source voltage vs. Gate Charge

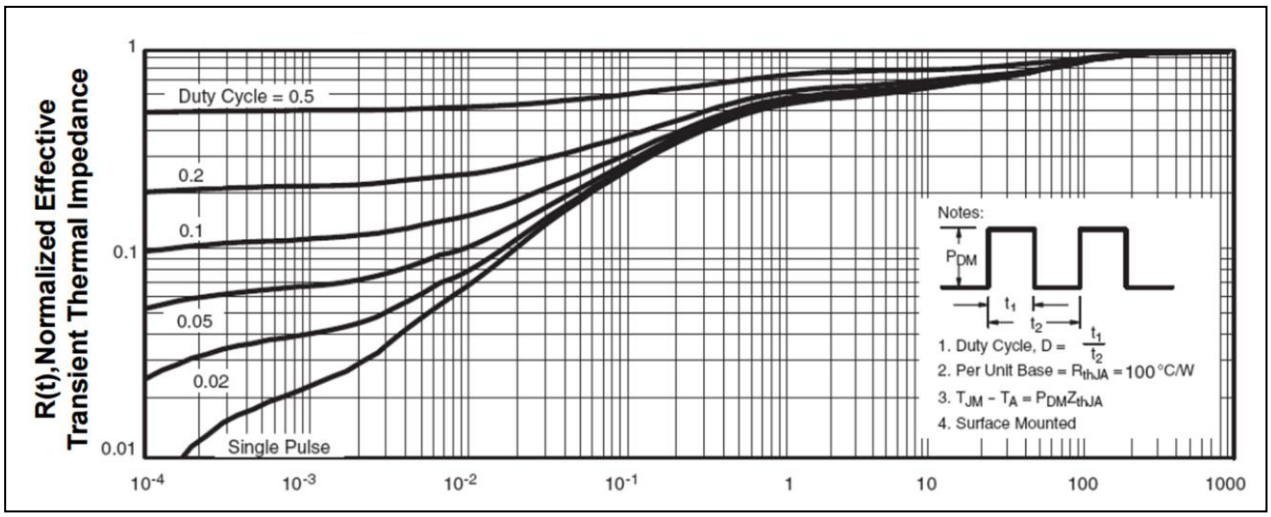
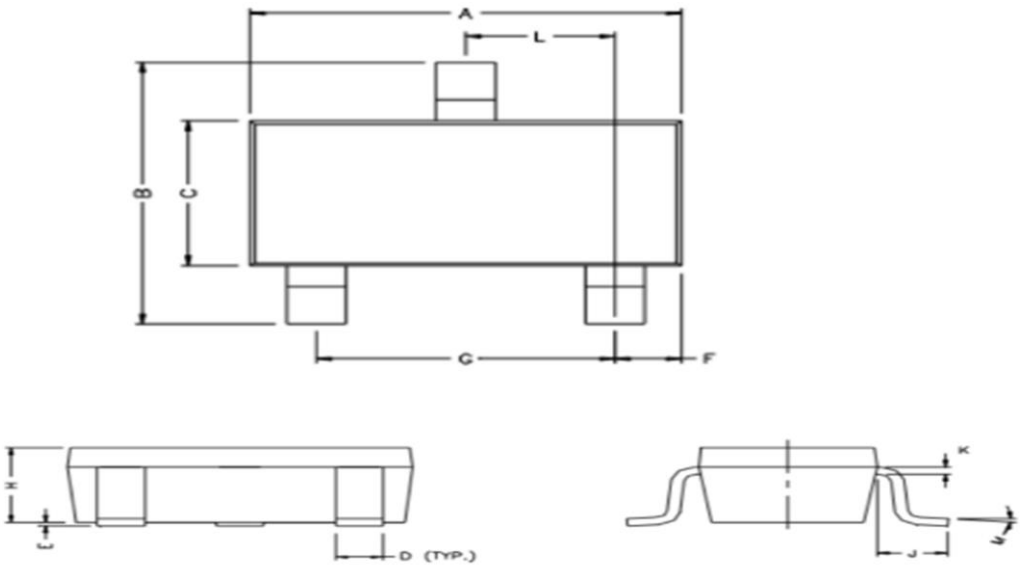


Figure9. Normalized Maximum Transient Thermal Impedance

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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