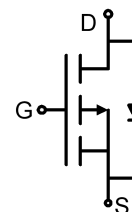


Main Product Characteristics:

V_{DSS}	-30V
$R_{DS(on)}$	48m Ω (typ.)
I_D	-4.2A ①


SOT-23

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
- Fast switching and reverse body recovery
- 150°C operating temperature


Description:

It utilizes the latest trench 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
$I_D @ TC = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$ ①	-4.2	A
I_{DM}	Pulsed Drain Current ②	-30	
$P_D @ TC = 25^\circ C$	Power Dissipation	1.2	W
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 12	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	$^\circ C$

Thermal Resistance

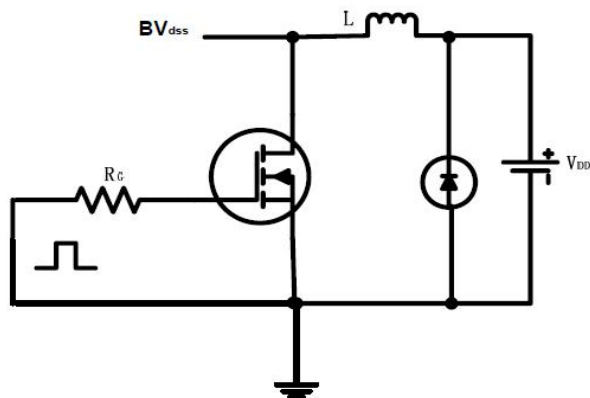
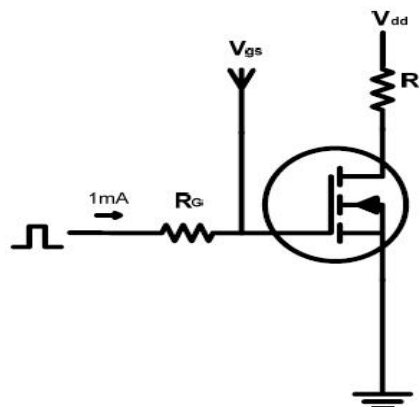
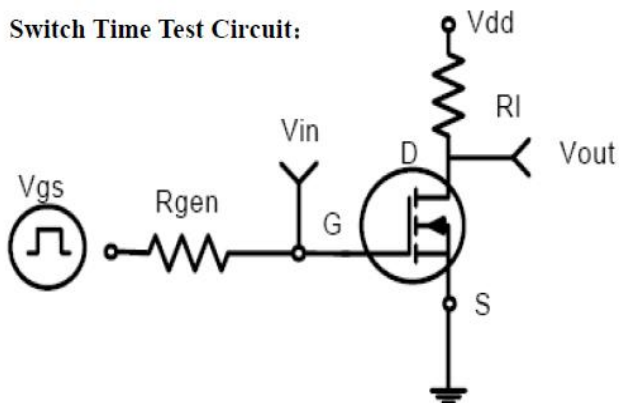
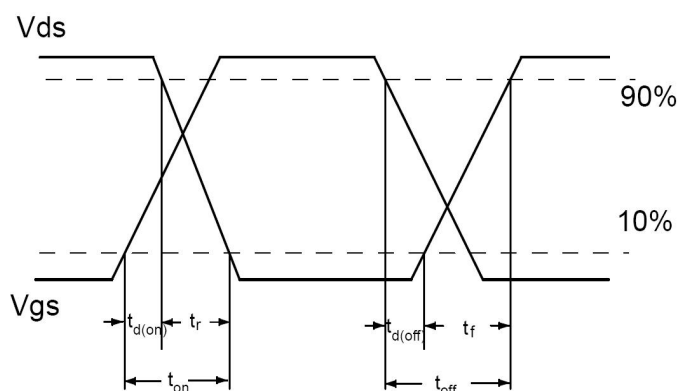
Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-ambient (t ≤ 10s) ③	—	104	°C/W

Electrical Characterizes @T_A=25°C unless otherwise specified

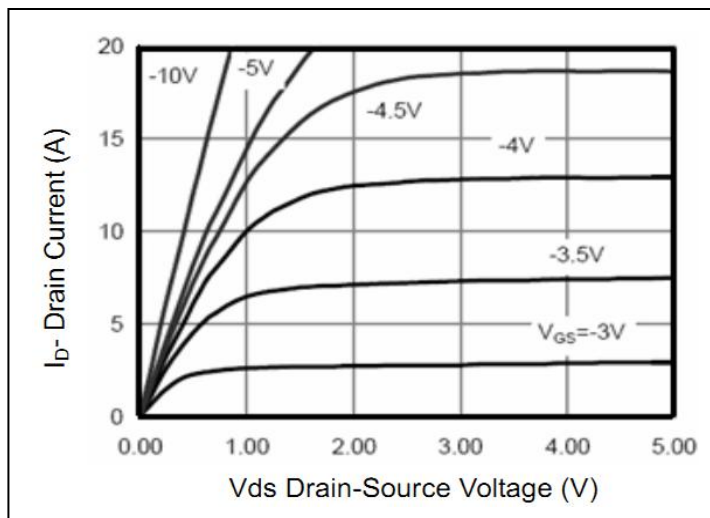
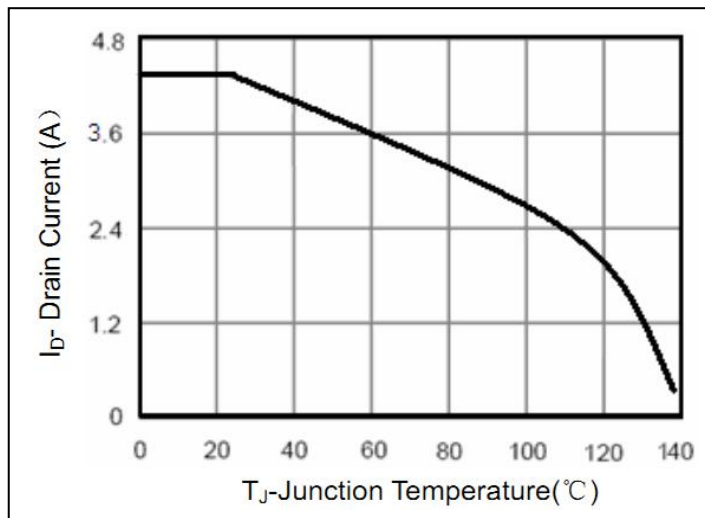
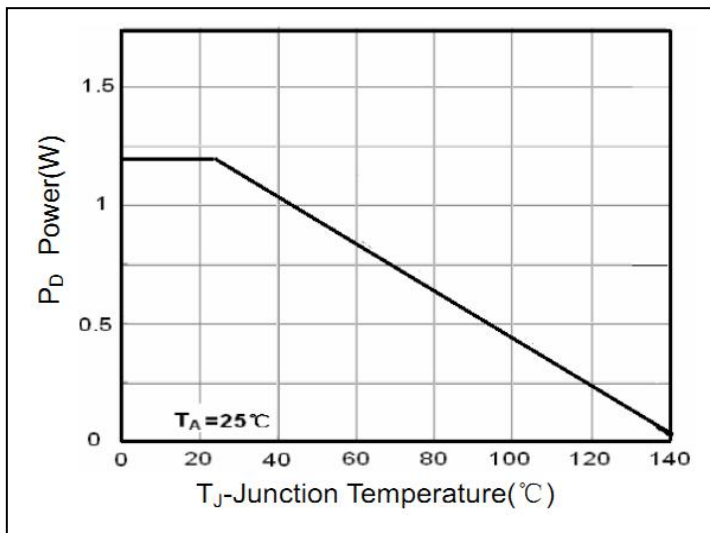
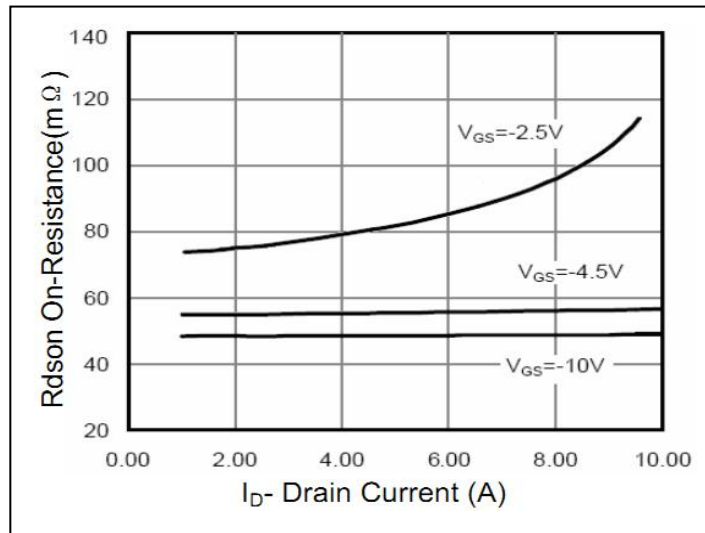
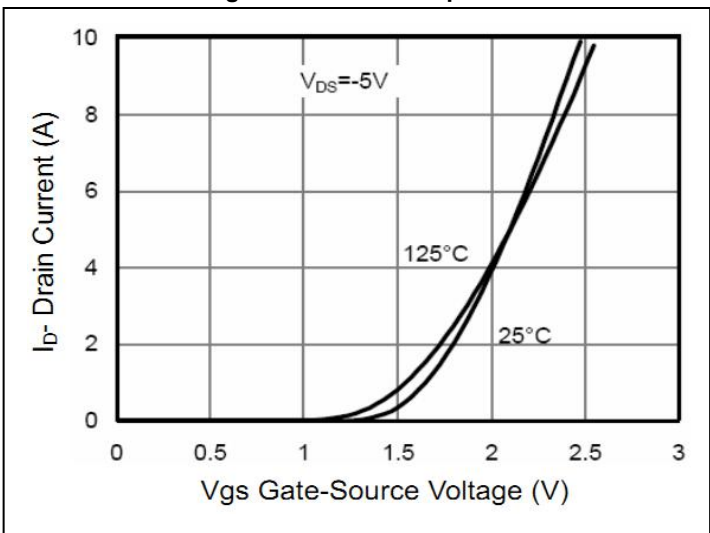
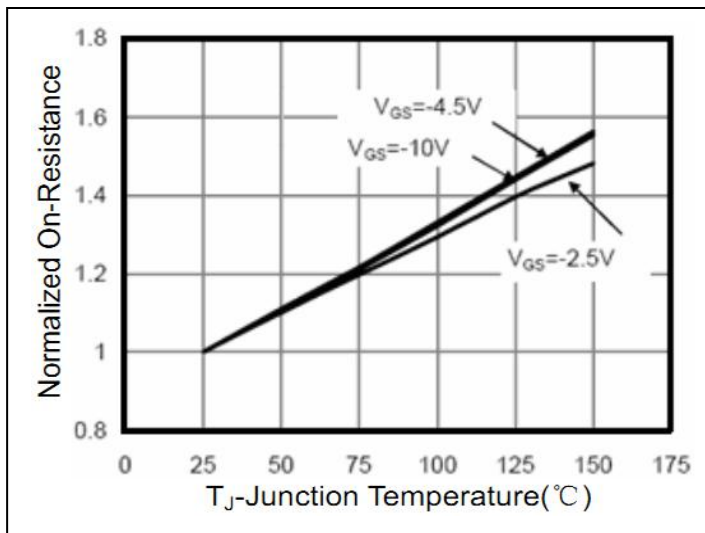
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	-30	—	—	V	V _{GS} = 0V, I _D = -250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	48	55	mΩ	V _{GS} = -10V, I _D = -4.2A
		—	56	75		V _{GS} = -4.5V, I _D = -4A
		—	72	90		V _{GS} = -2.5V, I _D = -1A
V _{GS(th)}	Gate threshold voltage	-0.7	—	-1.3	V	V _{DS} = V _{GS} , I _D = -250μA
I _{DSS}	Drain-to-Source leakage current	—	—	-1	μA	V _{DS} = -24V, V _{GS} = 0V
I _{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V _{GS} = 10V
		—	—	-100		V _{GS} = -10V
Q _g	Total gate charge	—	8.2	—	nC	I _D = -4.2A, V _{DS} = -15V, V _{GS} = -4.5V
Q _{gs}	Gate-to-Source charge	—	1.5	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	2.5	—		
t _{d(on)}	Turn-on delay time	—	7	—	ns	V _{GS} = -10V, V _{DS} = -15V, R _{GEN} = 6Ω, I _D = -4.2A
t _r	Rise time	—	3	—		
t _{d(off)}	Turn-Off delay time	—	30	—		
t _f	Fall time	—	12	—		
C _{iss}	Input capacitance	—	875	—	pF	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz
C _{oss}	Output capacitance	—	100	—		
C _{rss}	Reverse transfer capacitance	—	60	—		

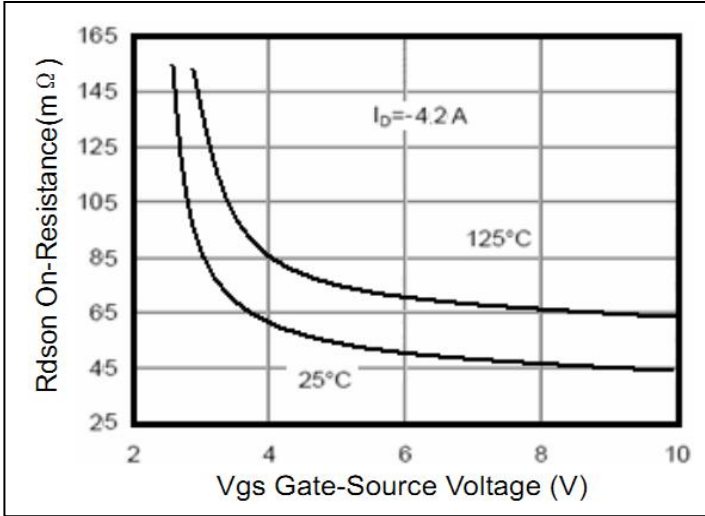
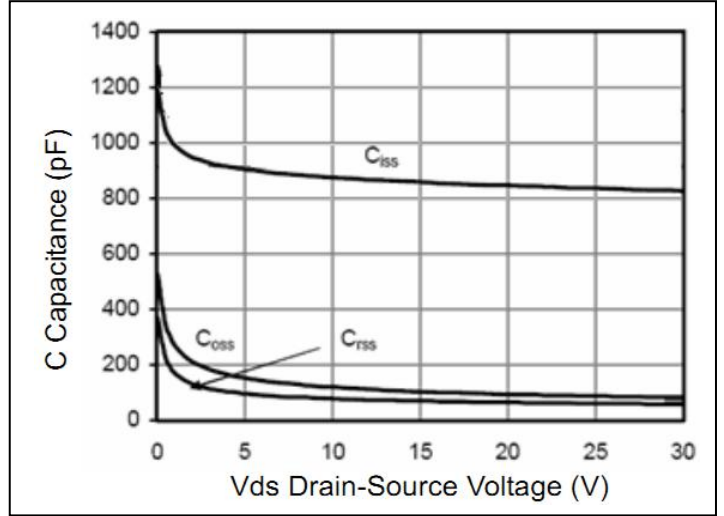
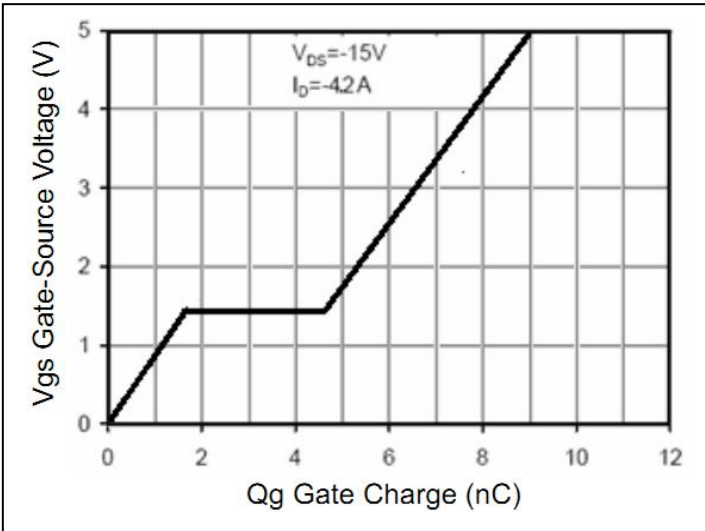
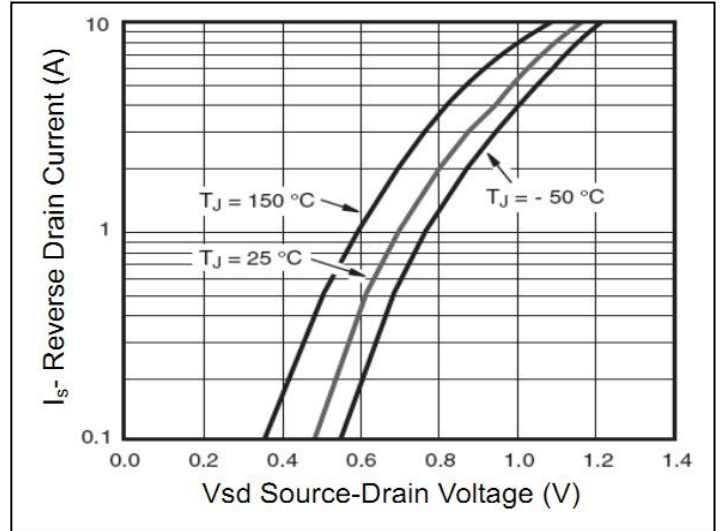
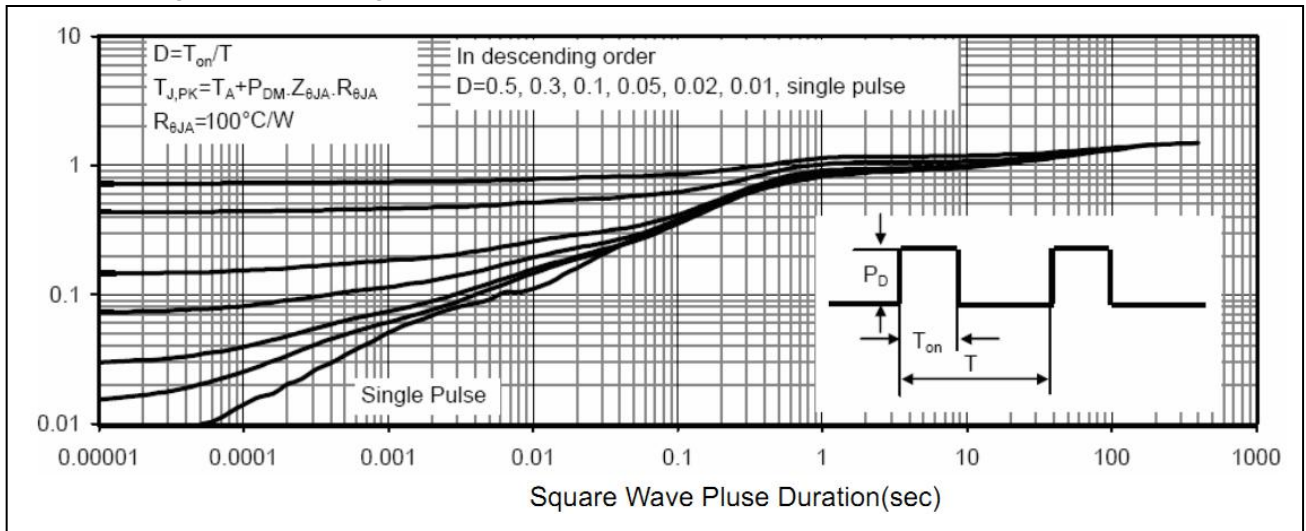
Source-Drain Ratings and Characteristics

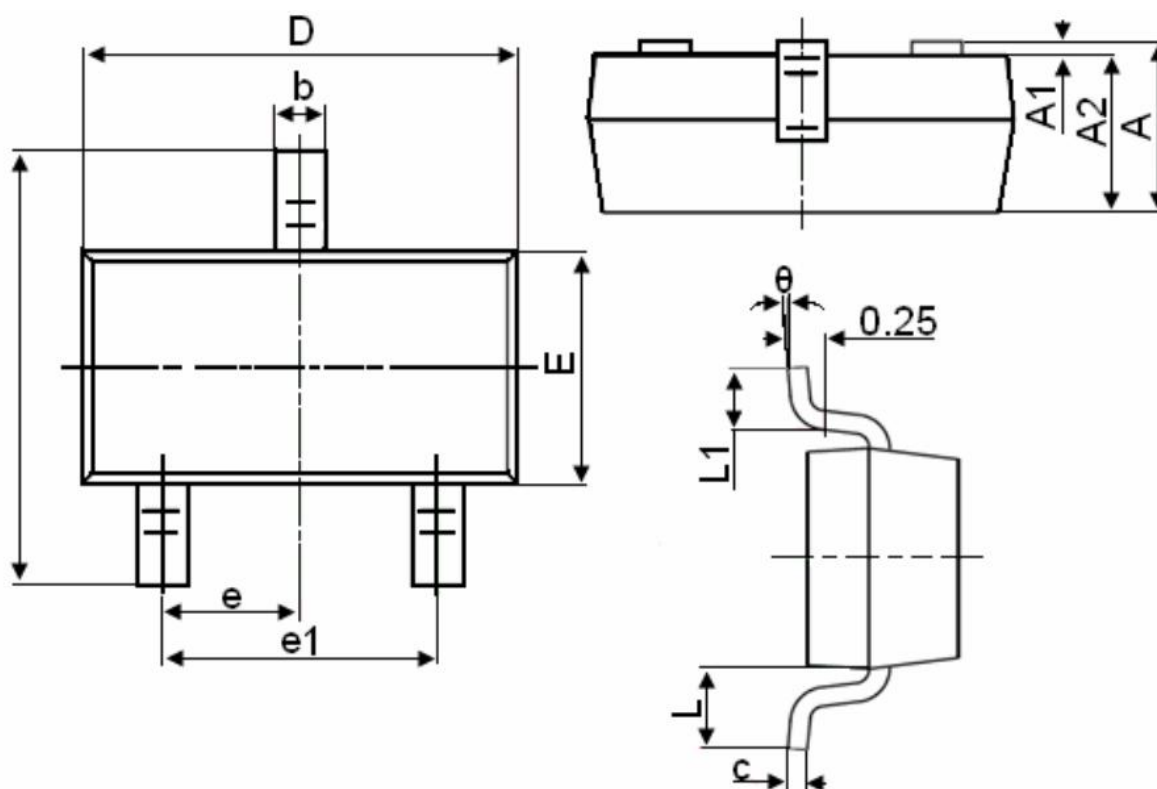
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{SD}	Diode Forward Voltage	—	—	-1.2	V	I _S = -4.2A, V _{GS} = 0V

Test circuits and Waveforms
EAS test circuits:

Gate charge test circuit:

Switch Time Test Circuit:

Switch Waveforms:

Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max junction temperature.
- ③ 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. Output Characteristics

Figure 2. Drain Current vs. Junction Temperature

Figure 3. Power Dissipation

Figure 4. Drain Current vs. On-Resistance

Figure 5. Transfer Characteristics

Figure 6. Normalized On-Resistance vs. Junction Temperature

Typical electrical and thermal characteristics

Figure 7. On-Resistance vs. Gate-Source Voltage

Figure 8. Capacitance

Figure 9. Gate Charge

Figure 10. Forward Characteristics Of Reverse

Figure 11. Maximum Effective Transient Thermal Impedance

Mechanical Data:


Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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