Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (Note 5) V_{GS} = 10V	T_A = +25°C T_A = +70°C	I_D	2.3 1.8	A
	T_C = +25°C T_C = +70°C	I_D	6.2 4.9	A
Maximum Continuous Body Diode Forward Current (Note 5)		I_S	1.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I_{DM}	8	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	1.8	W
	T_A = +70°C		1.1	
Thermal Resistance, Junction to Ambient (Note 5)		$R_{\theta JA}$	69	°C/W
Total Power Dissipation (Note 5)	T_C = +25°C	P_D	14	W
Thermal Resistance, Junction to Case (Note 5)		$R_{\theta JC}$	8.7	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	µA	V_{DS} = 100V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±16V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	1	1.7	2.5	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	155	220	mΩ	V_{GS} = 10V, I_D = 1.6A
		—	190	250		V_{GS} = 4.5V, I_D = 1.3A
Diode Forward Voltage	V_{SD}	—	0.8	1.5	V	V_{GS} = 0V, I_S = 1.1A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	401	—	pF	V_{DS} = 25V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	22	—		
Reverse Transfer Capacitance	C_{rss}	—	17	—		
Gate Resistance	R_g	—	2.1	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	4.1	—	nC	V_{DS} = 50V, I_D = 1.6A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	8.3	—		
Gate-Source Charge	Q_{gs}	—	1.5	—		
Gate-Drain Charge	Q_{gd}	—	2	—		
Turn-On Delay Time	$t_{D(ON)}$	—	6.8	—	ns	V_{DS} = 50V, V_{GS} = 4.5V, R_G = 6.8Ω, I_D = 1.0A
Turn-On Rise Time	t_R	—	8.2	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	7.9	—		
Turn-Off Fall Time	t_F	—	3.6	—		
Reverse Recovery Time	t_{RR}	—	17	—	ns	I_S = 1.1A, di/dt =100A/µs
Reverse Recovery Charge	Q_{RR}	—	9.8	—	nC	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1-inch square copper plate.
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

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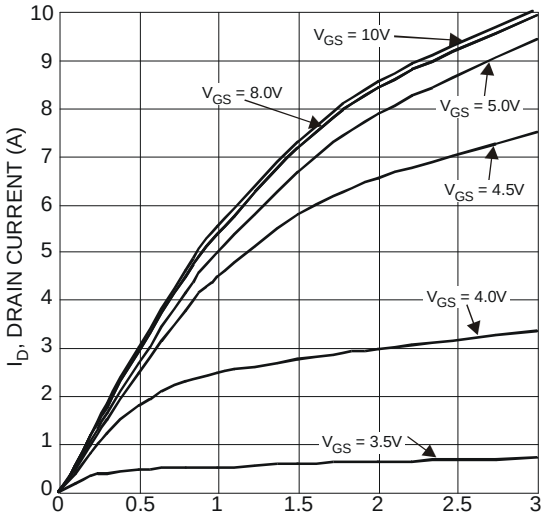

Figure 1 Typical Output Characteristic

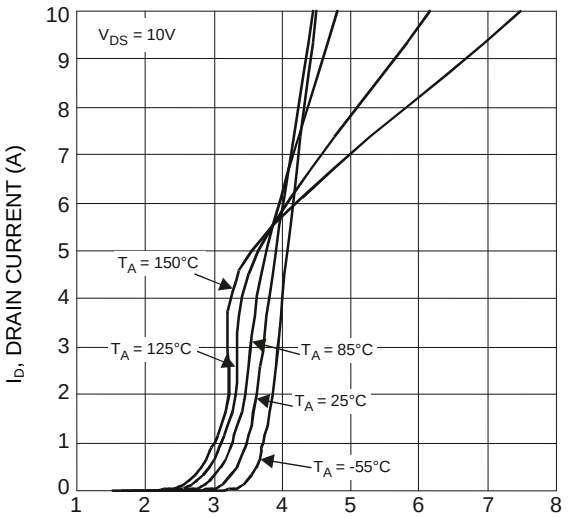

Figure 2 Typical Transfer Characteristics

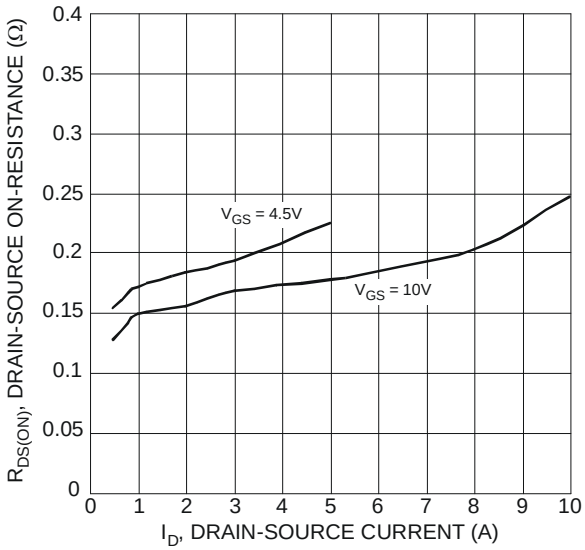

Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

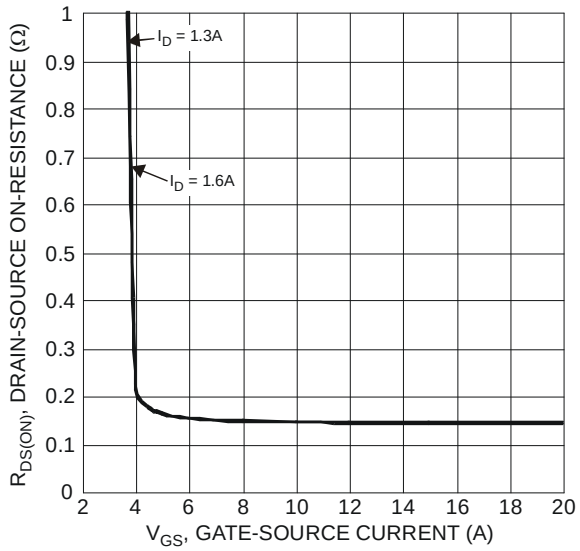

Figure 4 Typical Transfer Characteristic

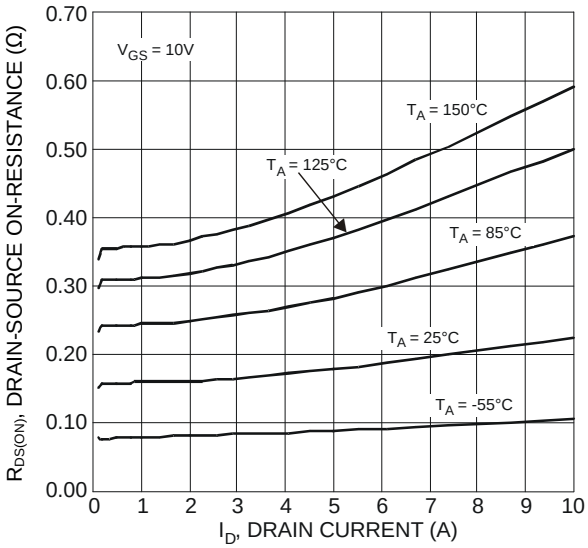

Figure 5 Typical On-Resistance vs. Drain Current and Temperature

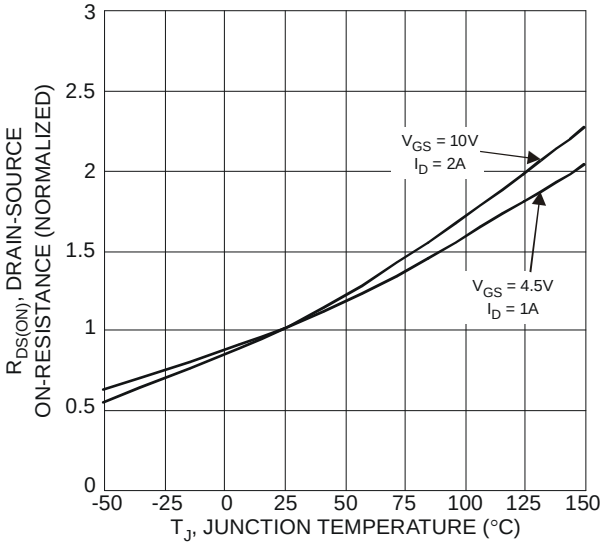

Figure 6 On-Resistance Variation with Temperature

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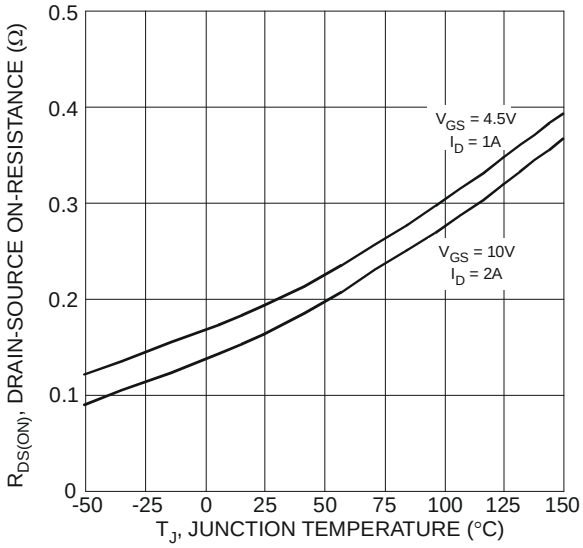

Figure 7 On-Resistance Variation with Temperature

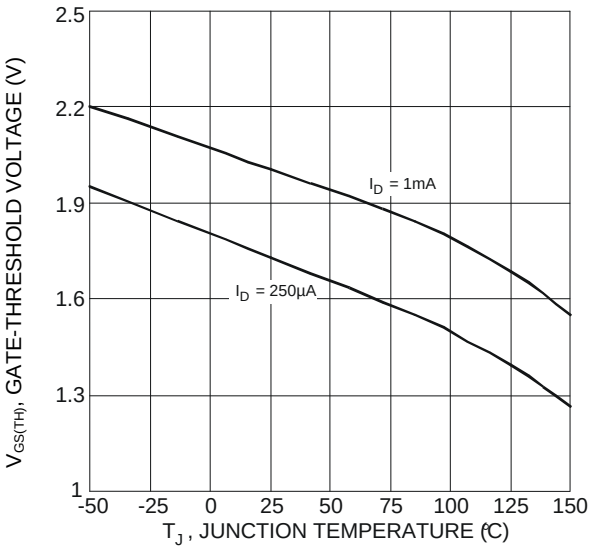

Figure 8 Gate Threshold Variation vs. Junction Temperature

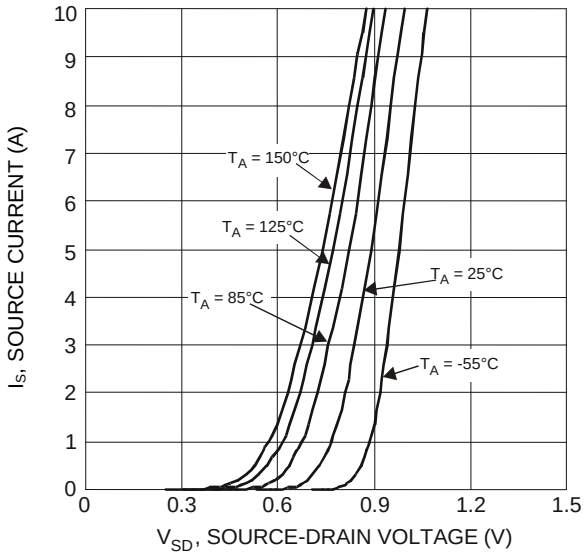

Figure 9 Diode Forward Voltage vs. Current

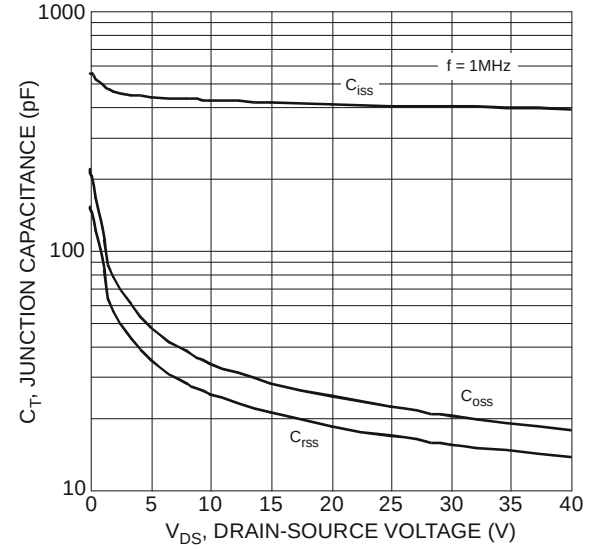

Figure 10 Typical Junction Capacitance

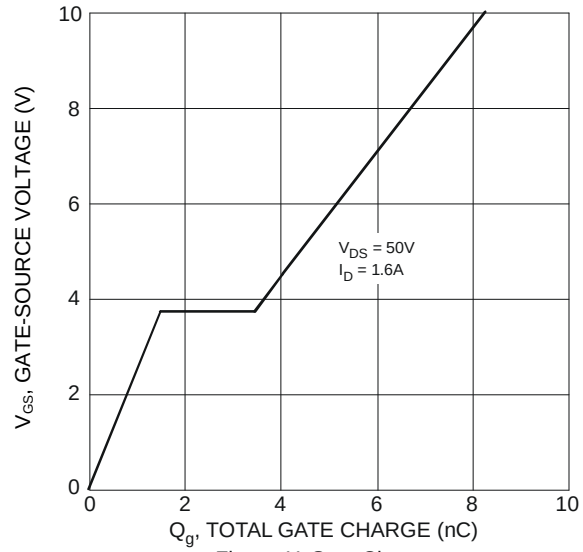

Figure 11 Gate Charge

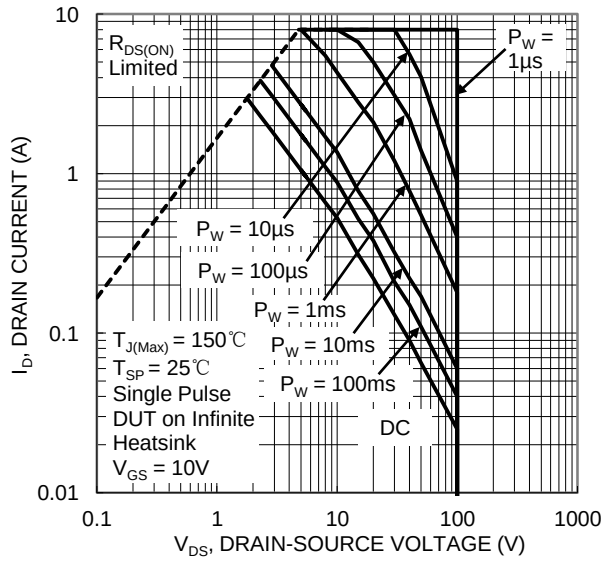

Figure 12 SOA, Safe Operation Area

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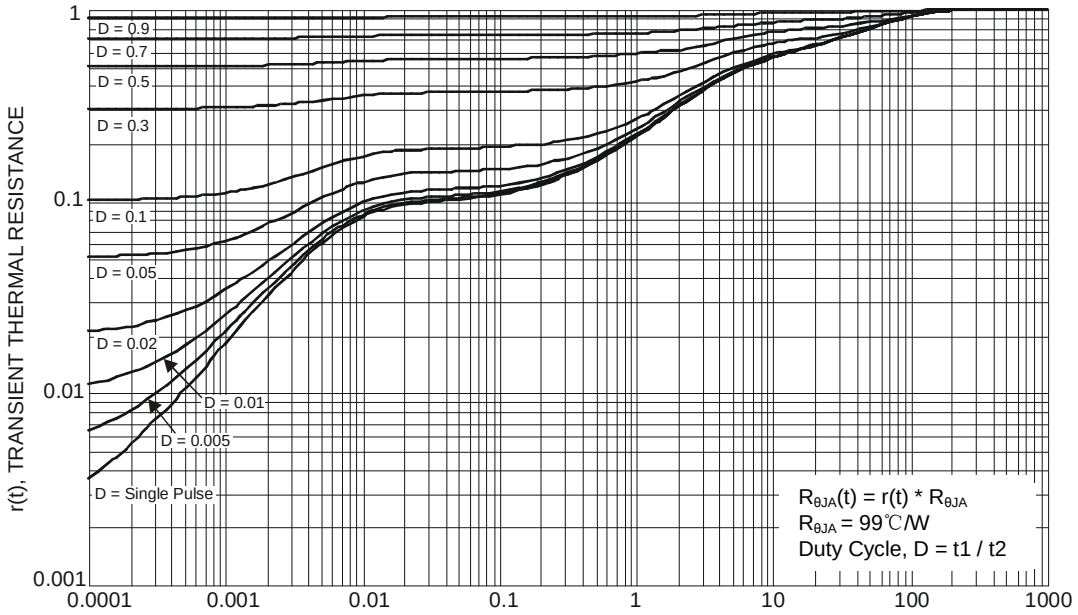

Figure 13 Transient Thermal Resistance

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Package Outline Dimensions

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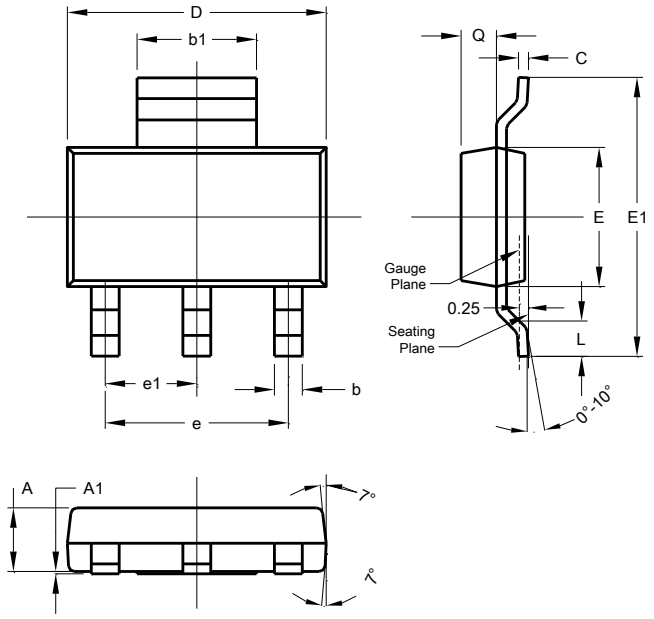
SOT223

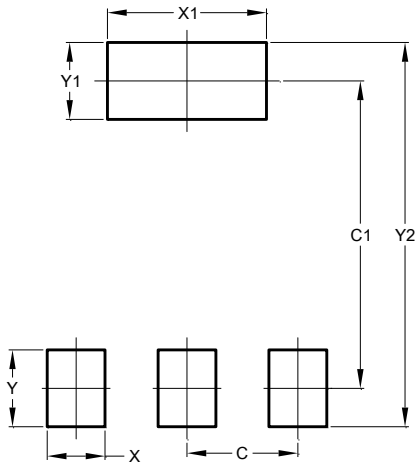


SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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