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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	83	°C/W
	t < 10s		50	
Thermal Resistance, Junction to Case		$R_{\theta JC}$	14.5	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	T_A = +25°C T_A = +70°C	I_D	6.0 4.8	A
	t < 10s	T_A = +25°C T_A = +70°C	I_D	7.8 6.1	A
Continuous Drain Current (Note 5) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	4.6 3.6	A
	t < 10s	T_A = +25°C T_A = +70°C	I_D	6.1 4.8	A
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	2.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	60	A

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 5) V_{GS} = -10V	Steady State	T_A = +25°C T_A = +70°C	I_D	-4.2 -3.3	A
	t < 10s	T_A = +25°C T_A = +70°C	I_D	-5.4 -4.3	A
Continuous Drain Current (Note 5) V_{GS} = -4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	-3.2 -2.5	A
	t < 10s	T_A = +25°C T_A = +70°C	I_D	-4.3 -3.3	A
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	-2.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	-30	A

Note: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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Electrical Characteristics N-CHANNEL (@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}	30	—	—	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	0.5	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±1	μA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	1	—	2	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	19	25	mΩ	V_{GS} = 10V, I_D = 5A
		—	26	40		V_{GS} = 4.5V, I_D = 4A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	4	—	S	V_{DS} = 5V, I_D = 5A
Diode Forward Voltage	V_{SD}	—	0.70	1.2	V	V_{GS} = 0V, I_S = 1.7A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	590	—	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	122	—		
Reverse Transfer Capacitance	C_{rss}	—	58	—		
Gate Resistance	R_g	—	1.5	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	5.4	—	nC	V_{DS} = 15V, I_D = 7.8A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	11.7	—		
Gate-Source Charge	Q_{gs}	—	1.8	—		
Gate-Drain Charge	Q_{gd}	—	2.1	—		
Turn-On Delay Time	$t_{D(ON)}$	—	11.2	—	ns	V_{DD} = 15V, V_{GS} = 4.5V, R_L = 2.4Ω, R_G = 1Ω
Turn-On Rise Time	t_R	—	15	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	17.5	—		
Turn-Off Fall Time	t_F	—	8.7	—		
Reverse Recovery Time	t_{RR}	—	18.3	—	ns	I_F = 12A, di/dt = 500A/μs
Reverse Recovery Charge	Q_{RR}	—	12	—	nC	

Electrical Characteristics P-CHANNEL (@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}	-30	—	—	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-0.5	μA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±1	μA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(TH)}$	-1	—	-2	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	43	50	mΩ	V_{GS} = -10V, I_D = -5A
		—	68	80		V_{GS} = -4.5V, I_D = -4A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	3.5	—	S	V_{DS} = -5V, I_D = -5A
Diode Forward Voltage	V_{SD}	—	-0.7	-1.2	V	V_{GS} = 0V, I_S = -1.7A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	631	—	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	—	137	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	70	—	pF	
Gate Resistance	R_g	—	10.8	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	—	5.5	—	nC	V_{DS} = -15V, I_D = -6A
Total Gate Charge (V_{GS} = -10V)	Q_g	—	11.4	—	nC	
Gate-Source Charge	Q_{gs}	—	1.8	—	nC	
Gate-Drain Charge	Q_{gd}	—	2.4	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	7.5	—	ns	V_{DD} = -15V, V_{GS} = -10V, R_G = 6Ω, I_D = -1A
Turn-On Rise Time	t_R	—	4.9	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	28.2	—	ns	
Turn-Off Fall Time	t_F	—	13.5	—	ns	
Reverse Recovery Time	t_{RR}	—	15.1	—	ns	I_F = -12A, di/dt = 500A/μs
Reverse Recovery Charge	Q_{RR}	—	15.3	—	nC	

Notes: 6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to product testing.

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Typical Characteristics - N-CHANNEL

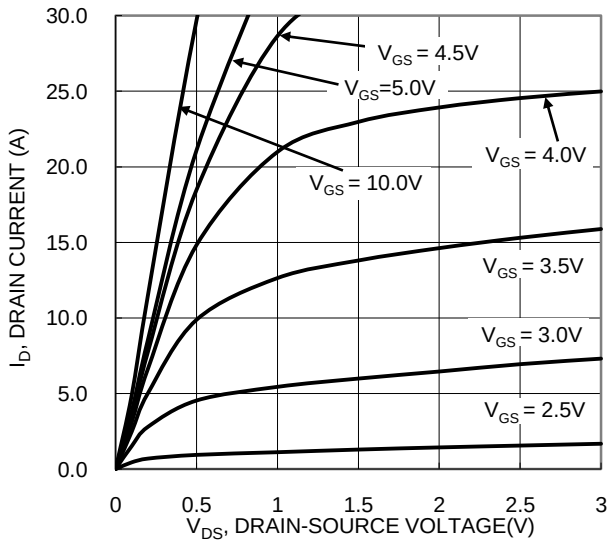

Figure 1. Typical Output Characteristic

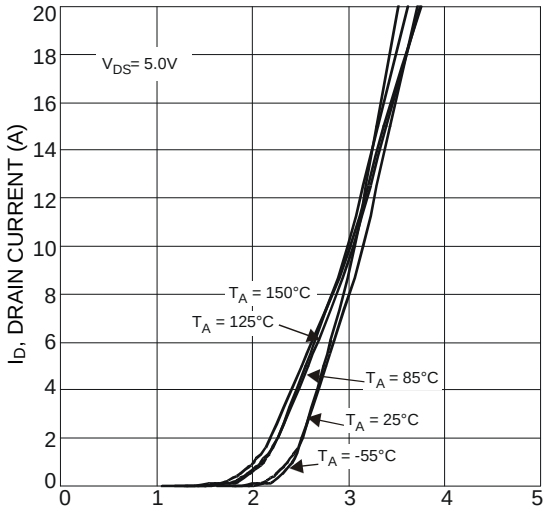

Figure 2 Typical Transfer Characteristics

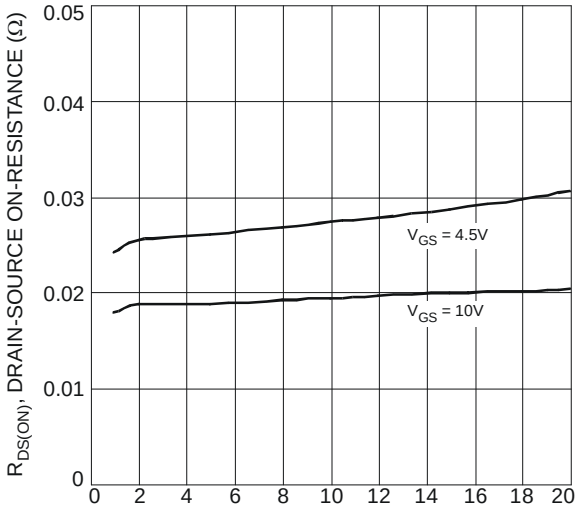

Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

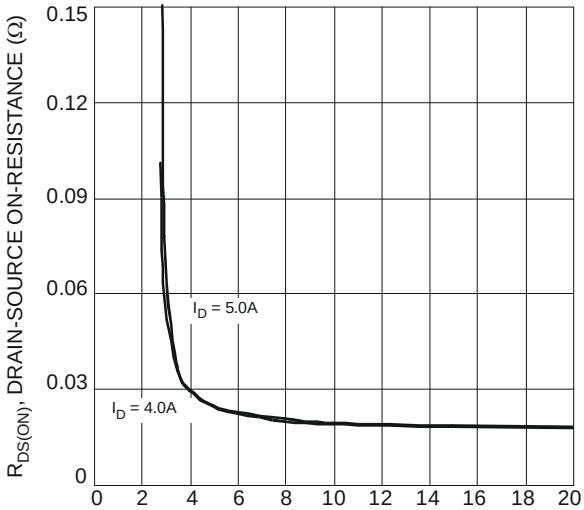

Figure 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

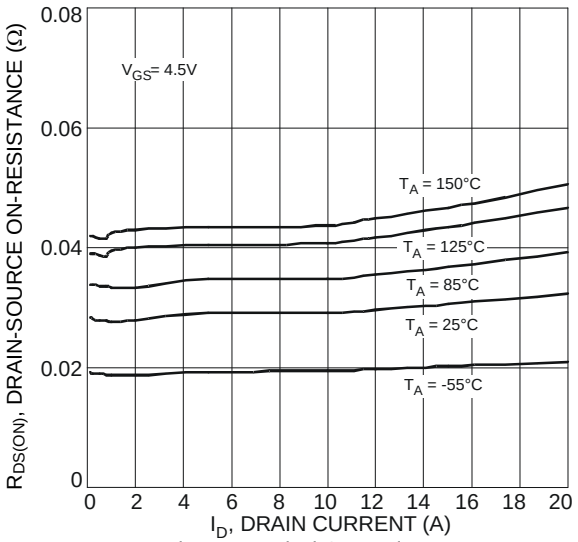

Figure 5 Typical On-Resistance vs. Drain Current and Temperature

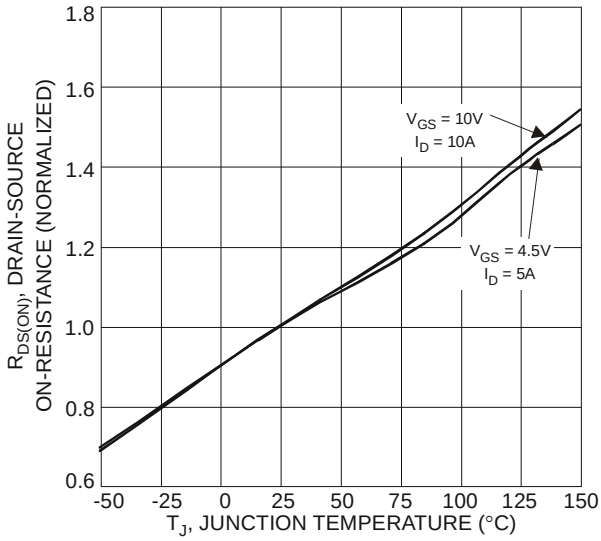

Figure 6 On-Resistance Variation with Temperature

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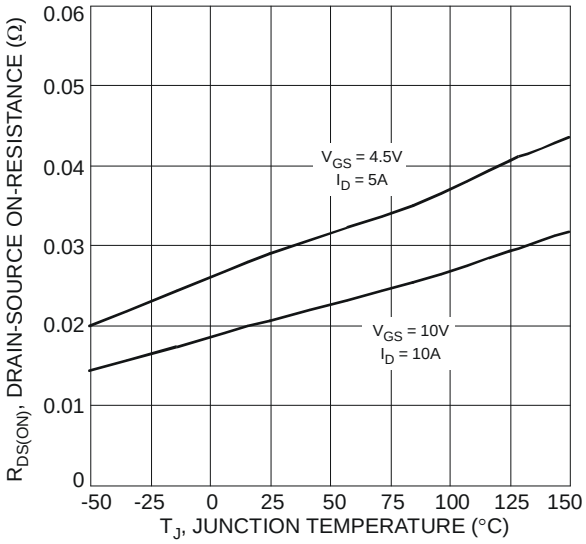

Figure 7 On-Resistance Variation with Temperature

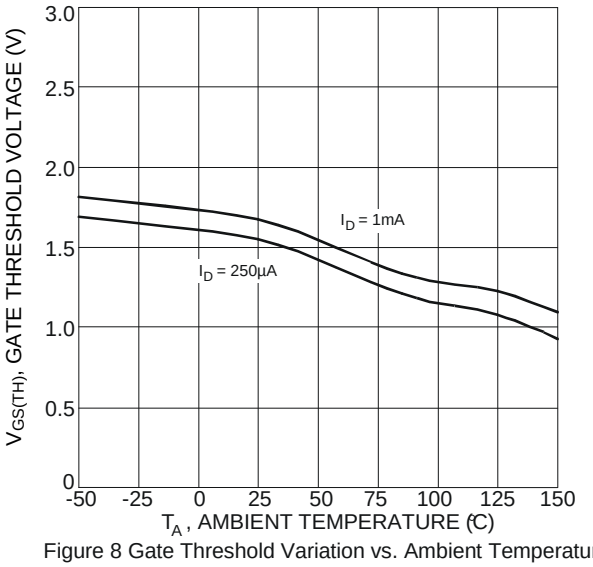

Figure 8 Gate Threshold Variation vs. Ambient Temperature

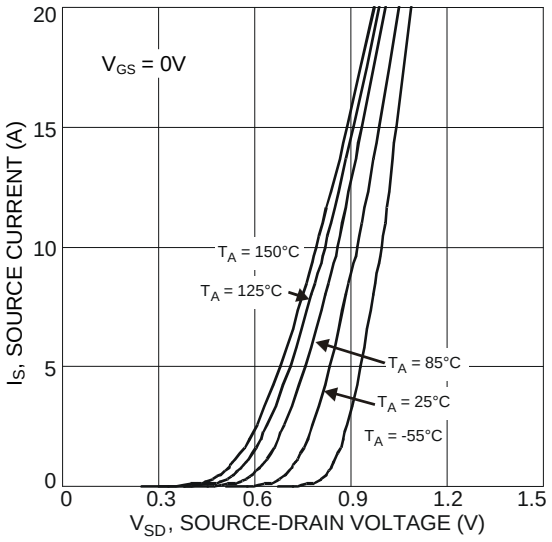

Figure 9 Diode Forward Voltage vs. Current

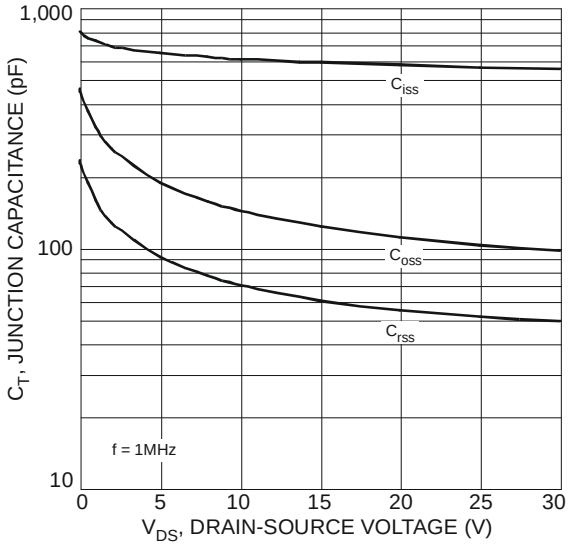

Figure 10 Typical Junction Capacitance

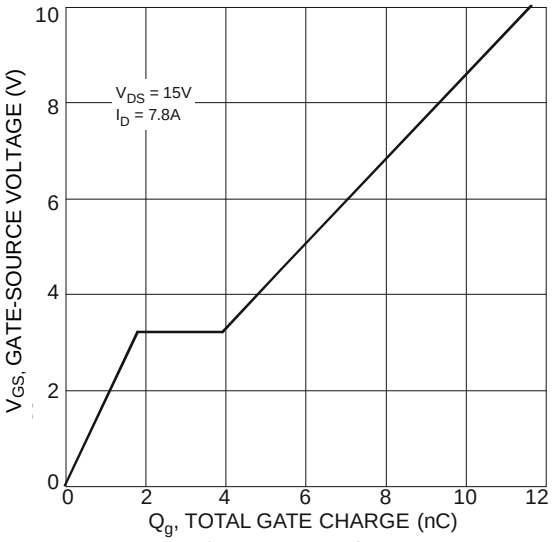

Figure 11 Gate Charge

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Typical Characteristics - P-CHANNEL

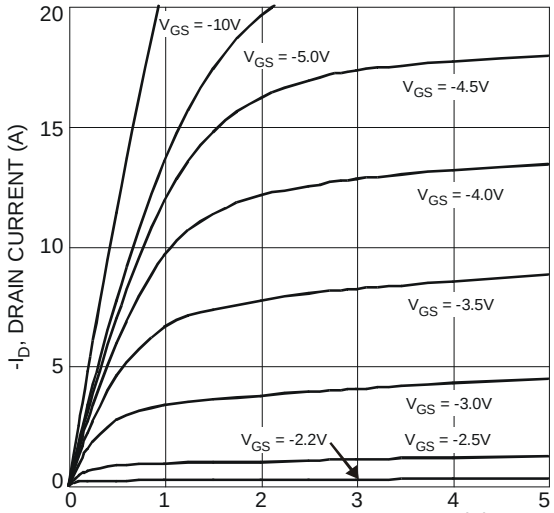

Figure 12 Typical Output Characteristics

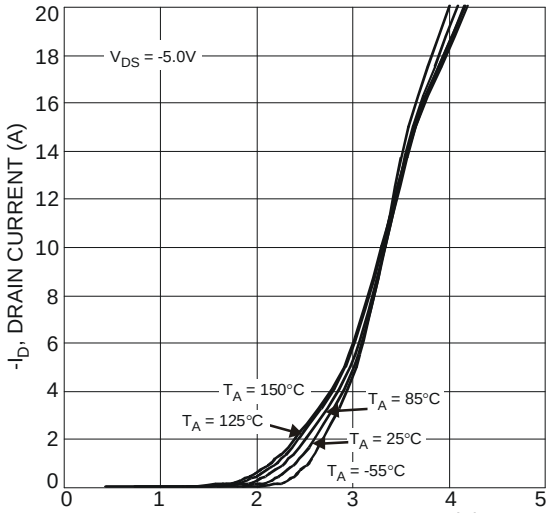

Figure 13 Typical Transfer Characteristics

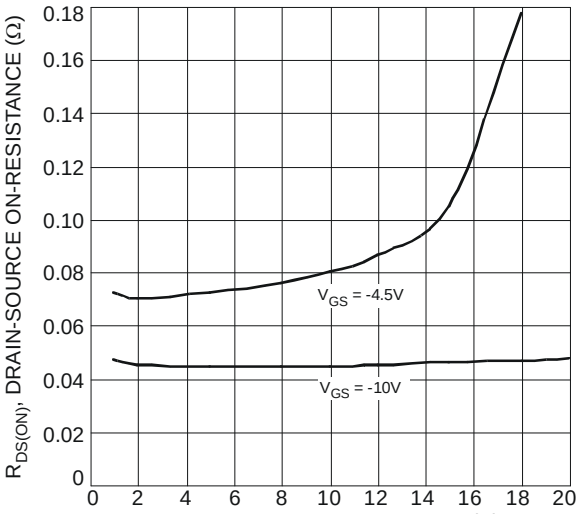

Figure 14 Typical On-Resistance vs. Drain Current and Gate Voltage

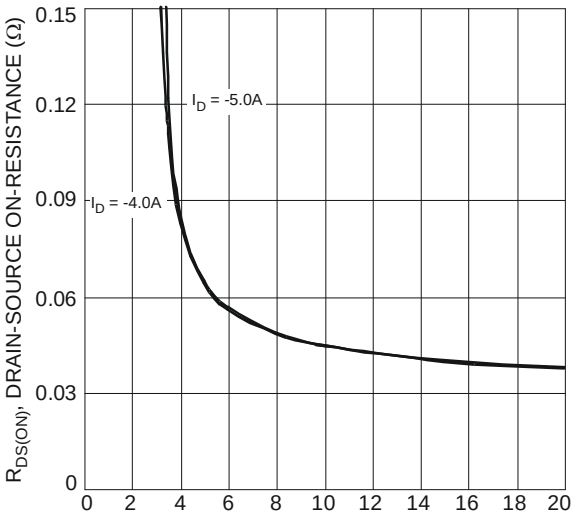

Figure 15 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

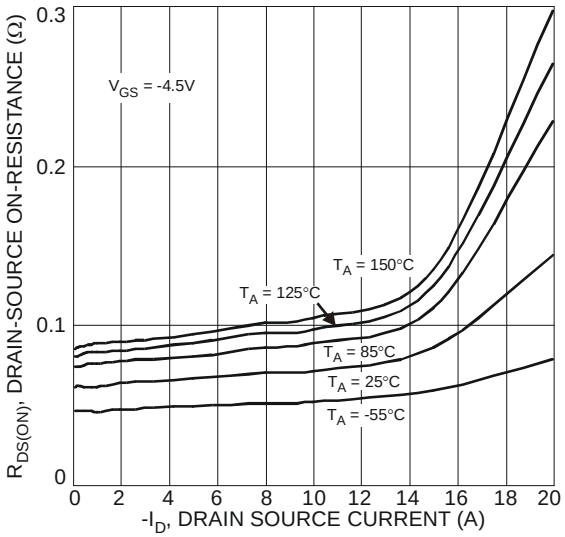

Figure 16 Typical On-Resistance vs. Drain Current and Temperature

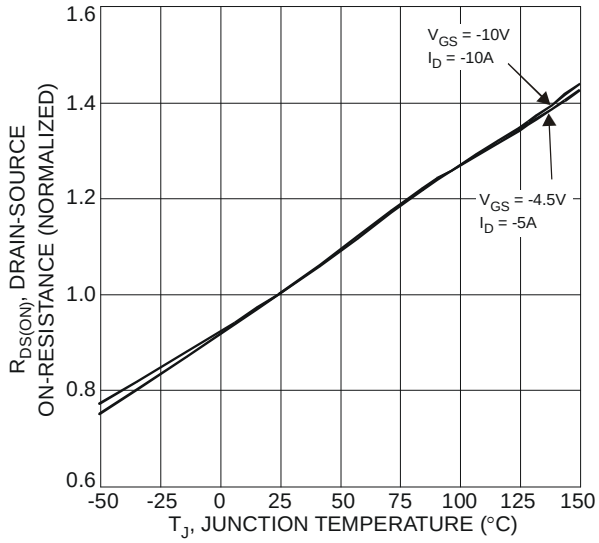

Figure 17 On-Resistance Variation with Temperature

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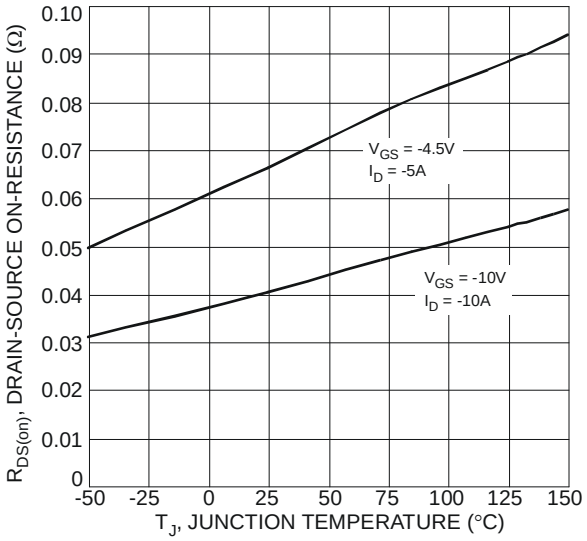

Figure 18 On-Resistance Variation with Temperature

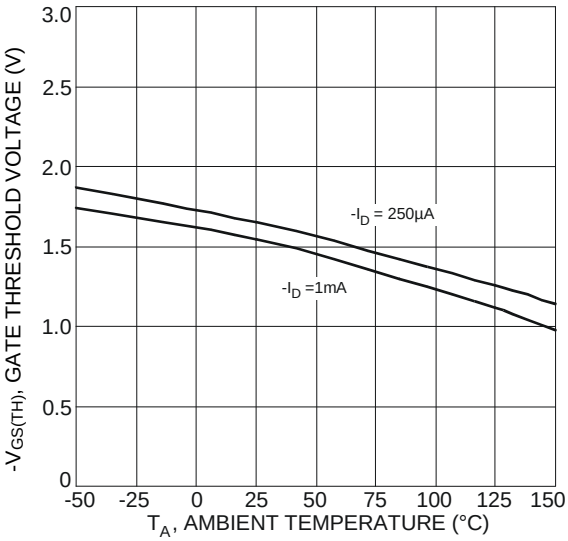

Figure 19 Gate Threshold Variation vs. Ambient Temperature

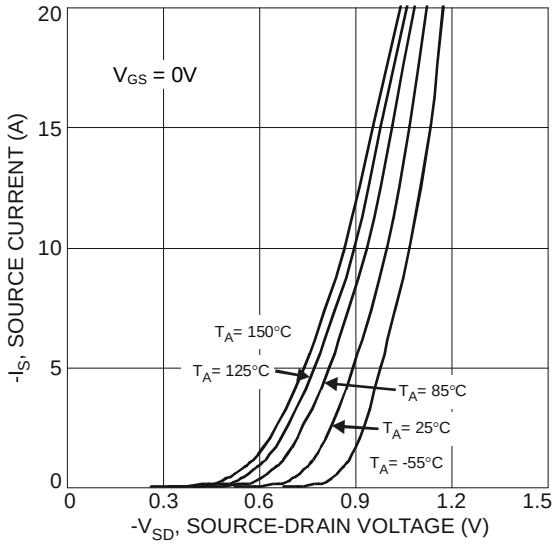

Figure 20 Diode Forward Voltage vs. Current

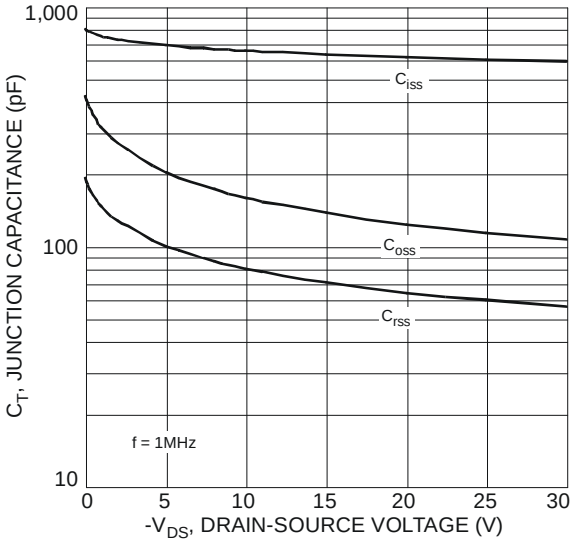

Figure 21 Typical Junction Capacitance

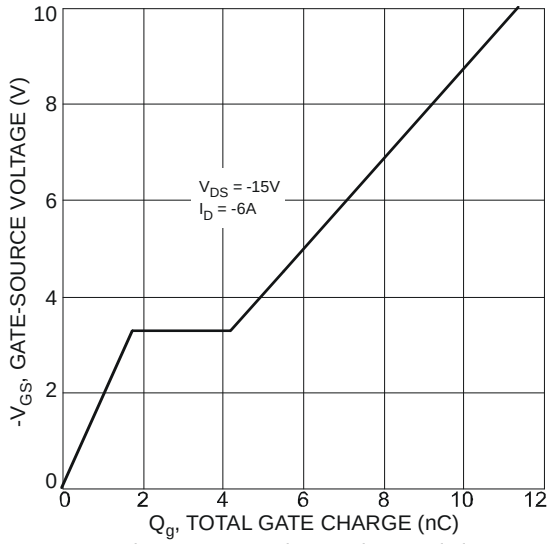

Figure 22 Gate-Charge Characteristics

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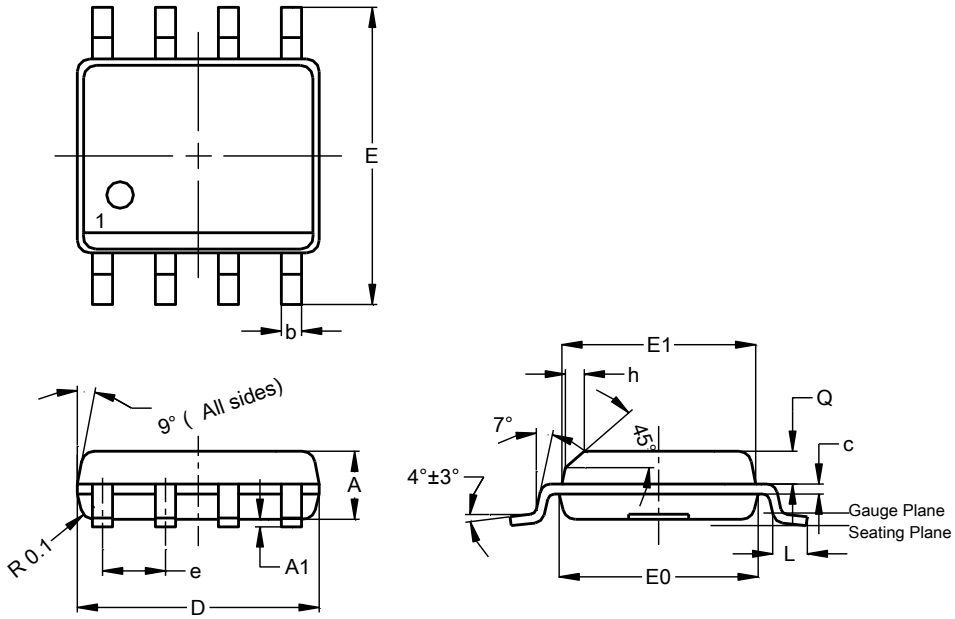
Package Outline Dimensions

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

SO-8

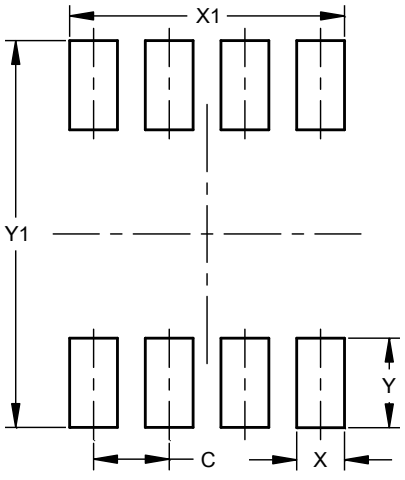


SO-8			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

Suggested Pad Layout

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

SO-8



Dimensions	Value (in mm)
C	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50

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