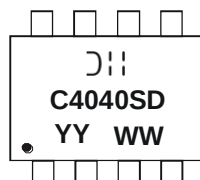


Marking Information



DII = Manufacturer's Marking
 C4040SD = Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY= Year (ex: 10 = 2010)
 WW = Week (01 - 53)

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

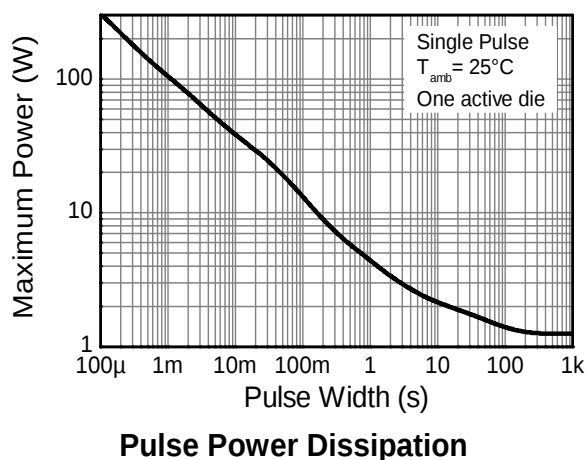
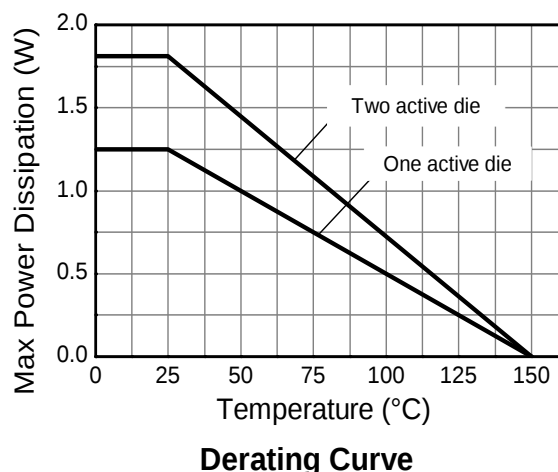
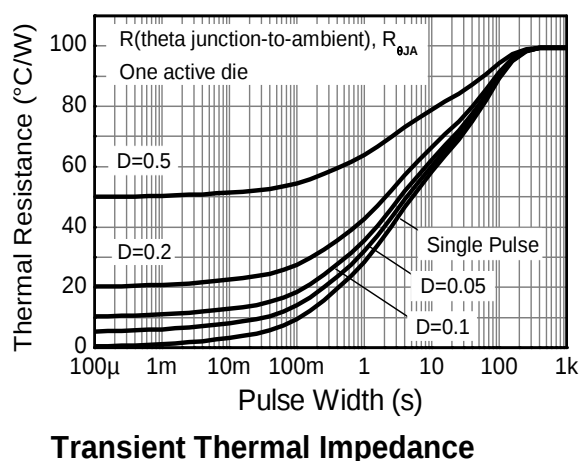
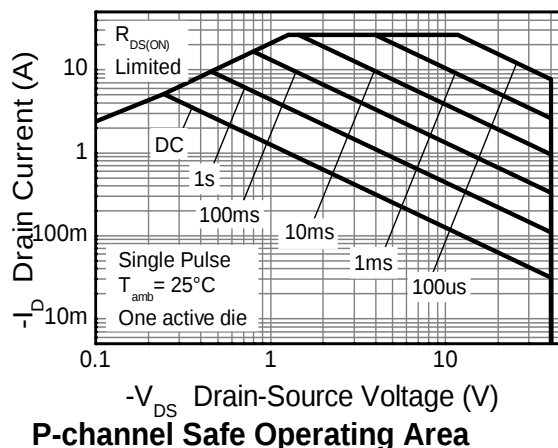
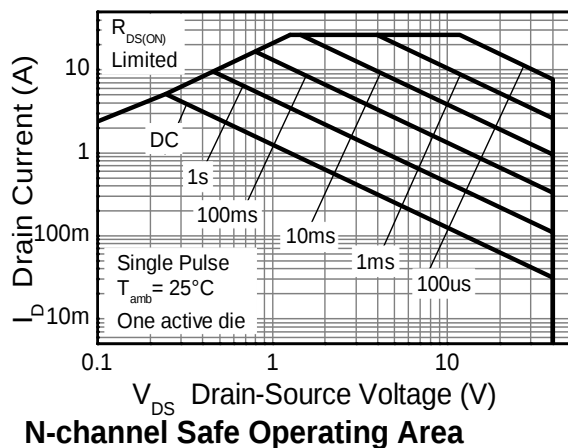
Characteristic			Symbol	N-Channel - Q1	P-Channel - Q2	Unit
Drain-Source Voltage			V _{DSS}	40	-40	V
Gate-Source Voltage			V _{GSS}	±20	±20	
Continuous Drain Current	V _{GS} = 10V	(Notes 6 & 8)	I _D	7.5	-7.5	A
		T _A = +70°C (Notes 6 & 8)		5.8	-5.8	
		(Notes 5 & 8)		5.7	-5.7	
		(Notes 5 & 9)		6.8	-6.8	
Pulsed Drain Current	V _{GS} = 10V	(Notes 7 & 8)	I _{DM}	29.0	-29.0	
Continuous Source Current (Body Diode)			I _S	3.0	-3.0	
Pulsed Source Current (Body Diode)			I _{SM}	29.0	-29.0	

Thermal Characteristics

Characteristic		Symbol	N-Channel - Q1	P-Channel - Q2	Unit
Power Dissipation Linear Derating Factor	(Notes 5 & 8)	P _D	1.25 10		W mW/°C
	(Notes 5 & 9)		1.8 14.3		
	(Notes 6 & 8)		2.14 17.2		
Thermal Resistance, Junction to Ambient	(Notes 5 & 8)	R _{θJA}	100		°C/W
	(Notes 5 & 9)		70		
	(Notes 6 & 8)		58		
Thermal Resistance, Junction to Lead	(Notes 5 & 10)	R _{θJL}	51		
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150		°C

- Notes:
- For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 - Same as note (5), except the device is measured at t ≤ 10 sec.
 - Same as note (5), except the device is pulsed with D = 0.02 and pulse width 300μs.
 - For a dual device with one active die.
 - For a device with two active die running at equal power.
 - Thermal resistance from junction to solder-point (at the end of the drain lead).

Thermal Characteristics (Continued)



Electrical Characteristics (Q1 N-Channel) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	40	—	—	V	I _D = 250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1.0	μA	V _{DS} = 40V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	0.8	1.3	1.8	V	I _D = 250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 11)	R _{DS(on)}	—	0.013	0.025	Ω	V _{GS} = 10V, I _D = 3A
			0.028	0.040		V _{GS} = 4.5V, I _D = 3A
Forward Transconductance (Notes 11 & 12)	G _{fs}	—	12.6	—	S	V _{DS} = 5V, I _D = 3A
Diode Forward Voltage (Note 11)	V _{SD}	—	0.7	1.0	V	I _S = 1A, V _{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 12)						
Input Capacitance	C _{iss}	—	1,790	—	pF	V _{DS} = 20V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	160	—		
Reverse Transfer Capacitance	C _{rss}	—	120	—		
Gate Resistance	R _g	—	1.03	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (Note 13)	Q _g	—	16.0	—	nC	V _{GS} = 4.5V V _{DS} = 20V I _D = 3A
Total Gate Charge (Note 13)	Q _g	—	37.6	—		
Gate-Source Charge (Note 13)	Q _{gs}	—	7.8	—		
Gate-Drain Charge (Note 13)	Q _{gd}	—	6.6	—		
Turn-On Delay Time (Note 13)	t _{D(on)}	—	8.1	—	nS	V _{DD} = 20V, V _{GS} = 10V I _D = 3A
Turn-On Rise Time (Note 13)	t _r	—	15.1	—		
Turn-Off Delay Time (Note 13)	t _{D(off)}	—	24.3	—		
Turn-Off Fall Time (Note 13)	t _f	—	5.3	—		

Electrical Characteristics (Q2 P-Channel) (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	-40	—	—	V	I _D = -250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1.0	μA	V _{DS} = -40V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(th)}	-0.8	-1.3	-1.8	V	I _D = -250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 11)	R _{DS(on)}	—	0.018	0.025	Ω	V _{GS} = -10V, I _D = -3A
			0.030	0.045		V _{GS} = -4.5V, I _D = -3A
Forward Transconductance (Notes 11 & 12)	G _{fs}	—	16.6	—	S	V _{DS} = -5V, I _D = -3A
Diode Forward Voltage (Note 11)	V _{SD}	—	-0.7	-1.0	V	I _S = -1A, V _{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 12)						
Input Capacitance	C _{iss}	—	1,643	—	pF	V _{DS} = -20V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	179	—		
Reverse Transfer Capacitance	C _{rss}	—	128	—		
Gate Resistance	R _g	—	6.43	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (Note 13)	Q _g	—	14.0	—	nC	V _{GS} = -4.5V V _{DS} = -20V I _D = -3A
Total Gate Charge (Note 13)	Q _g	—	33.7	—		
Gate-Source Charge (Note 13)	Q _{gs}	—	5.5	—		
Gate-Drain Charge (Note 13)	Q _{gd}	—	7.3	—		
Turn-On Delay Time (Note 13)	t _{D(on)}	—	6.9	—	nS	V _{DD} = -20V, V _{GS} = -10V I _D = -3A
Turn-On Rise Time (Note 13)	t _r	—	14.7	—		
Turn-Off Delay Time (Note 13)	t _{D(off)}	—	53.7	—		
Turn-Off Fall Time (Note 13)	t _f	—	30.9	—		

- Notes:
11. Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%
 12. For design aid only, not subject to production testing.
 13. Switching characteristics are independent of operating junction temperatures.

Typical Characteristics (Q1 N-Channel)

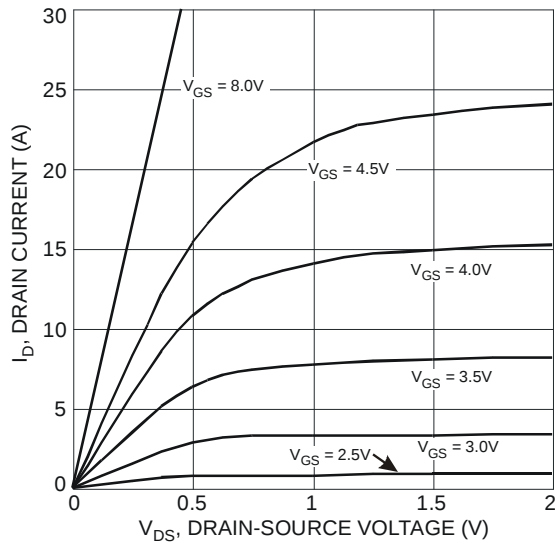


Fig. 1 Typical Output Characteristic

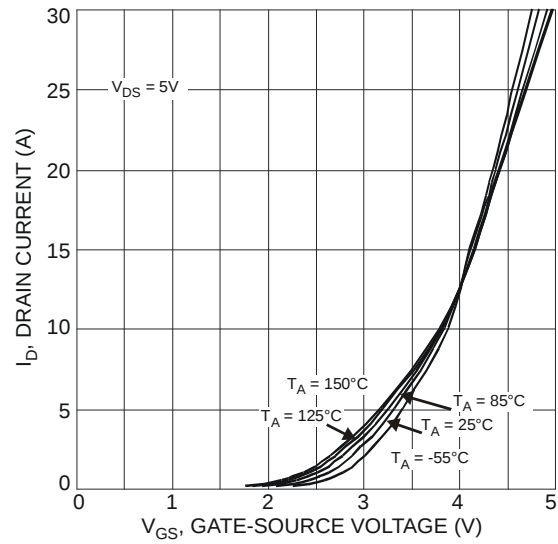


Fig. 2 Typical Transfer Characteristic

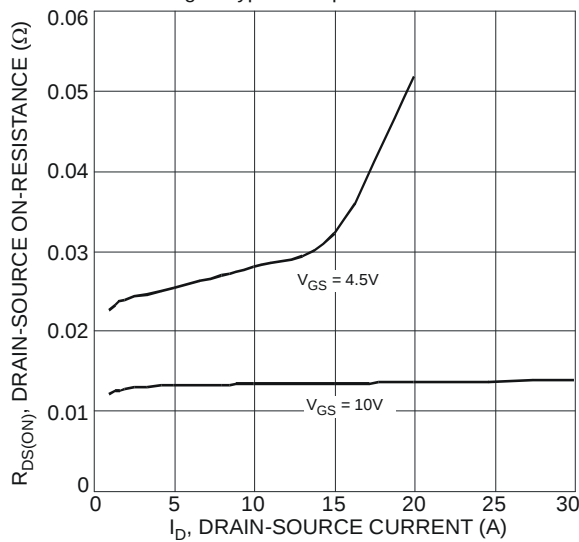


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

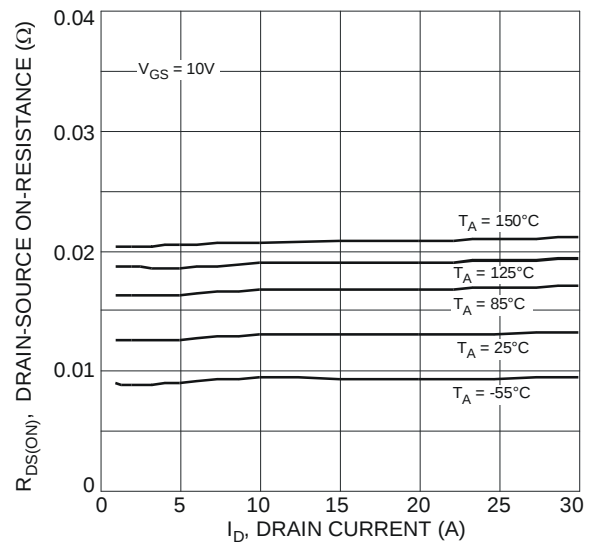


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

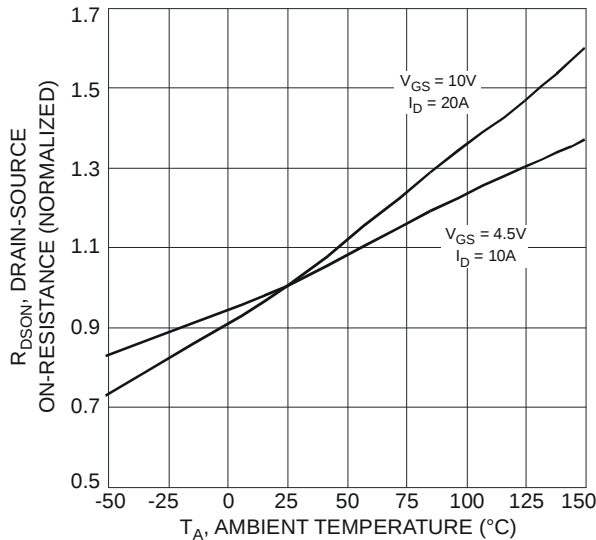


Fig. 5 On-Resistance Variation with Temperature

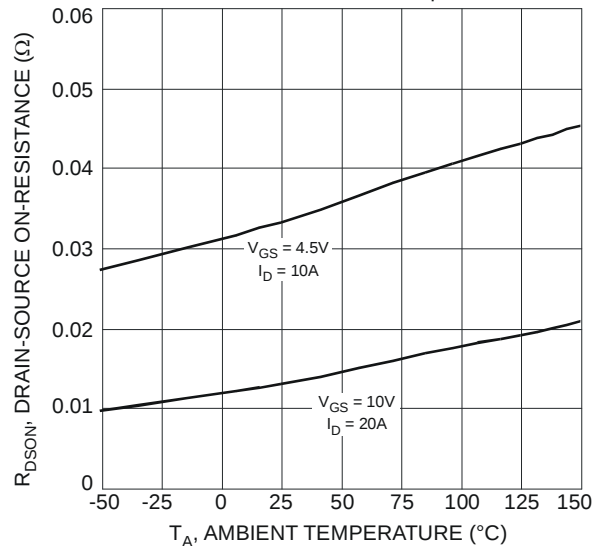


Fig. 6 On-Resistance Variation with Temperature

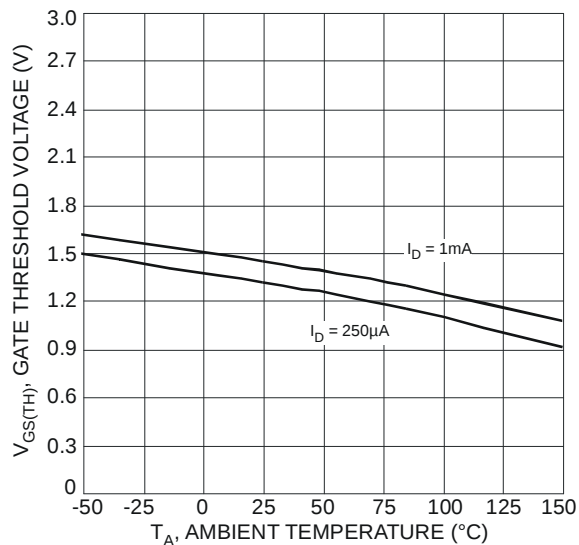


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

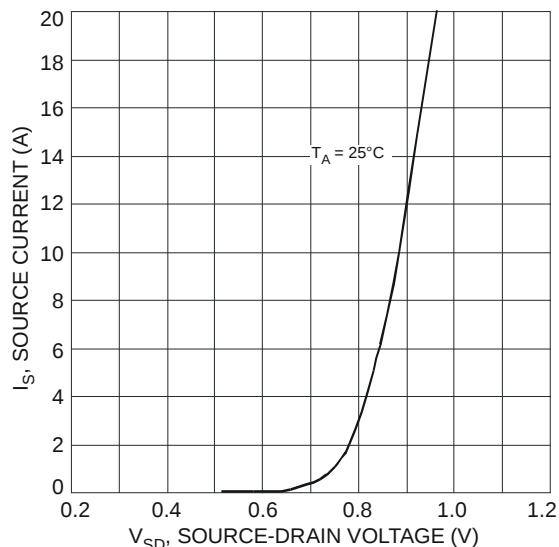


Fig. 8 Diode Forward Voltage vs. Current

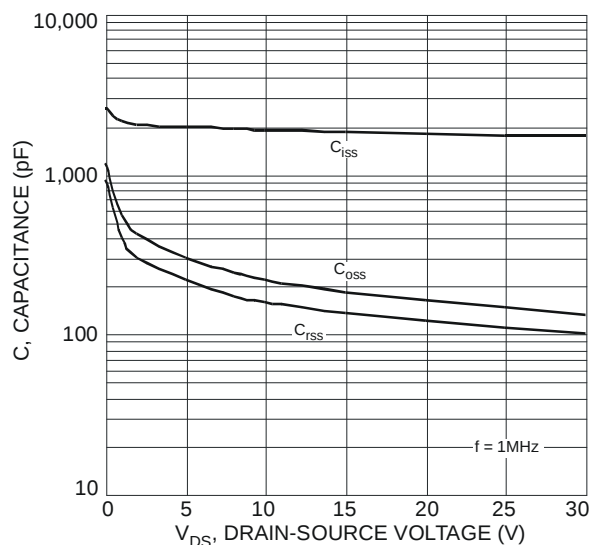


Fig. 9 Typical Total Capacitance

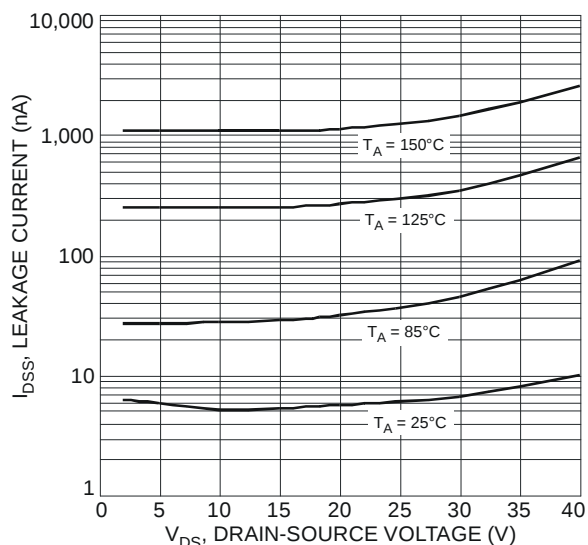


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

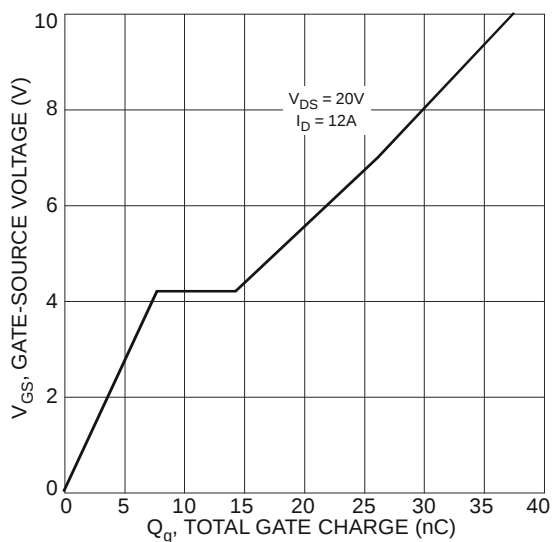


Fig. 11 Gate-Charge Characteristics

Typical Characteristics (Q2 P-Channel)

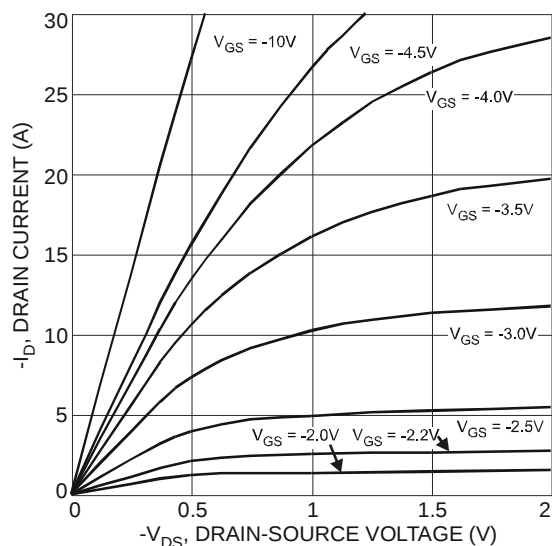


Fig. 12 Typical Output Characteristic

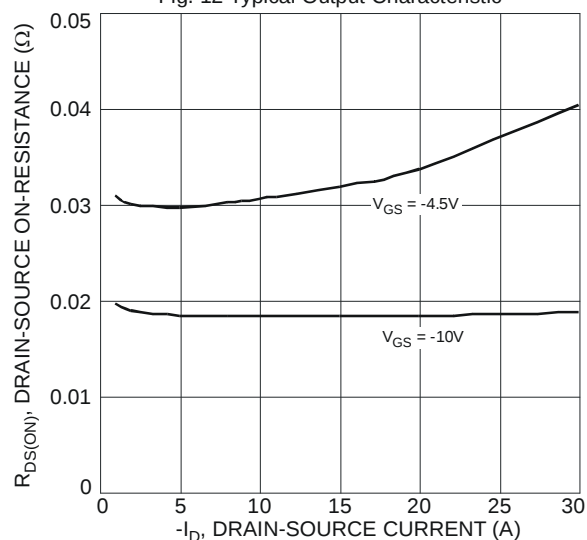


Fig. 14 Typical On-Resistance vs. Drain Current and Gate Voltage

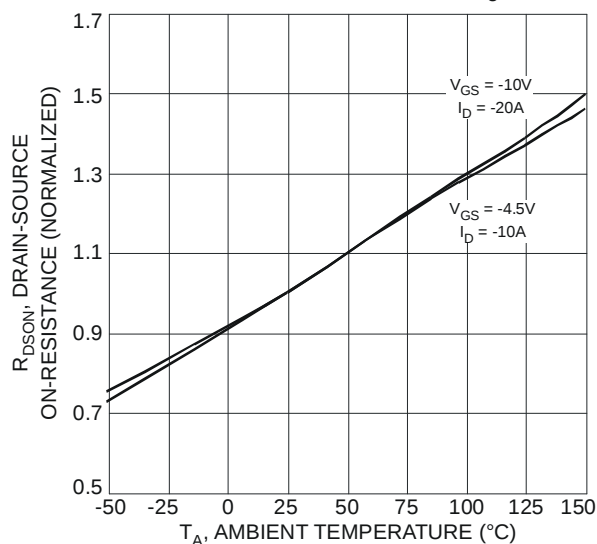


Fig. 16 On-Resistance Variation with Temperature

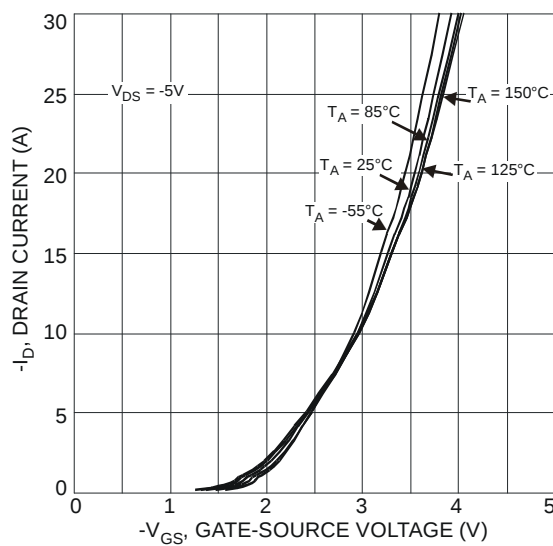


Fig. 13 Typical Transfer Characteristic

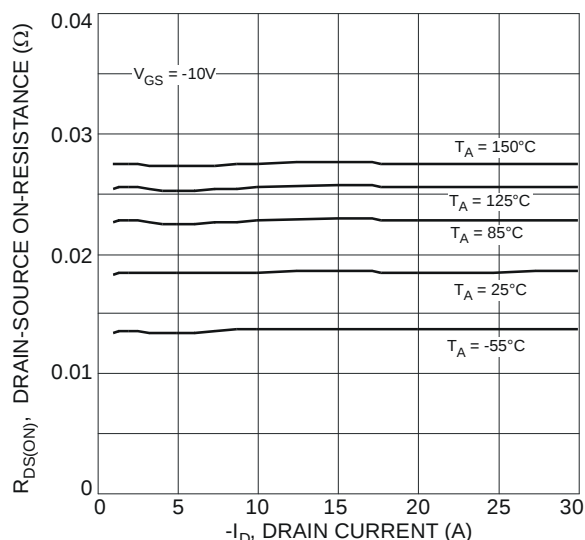


Fig. 15 Typical On-Resistance vs. Drain Current and Temperature

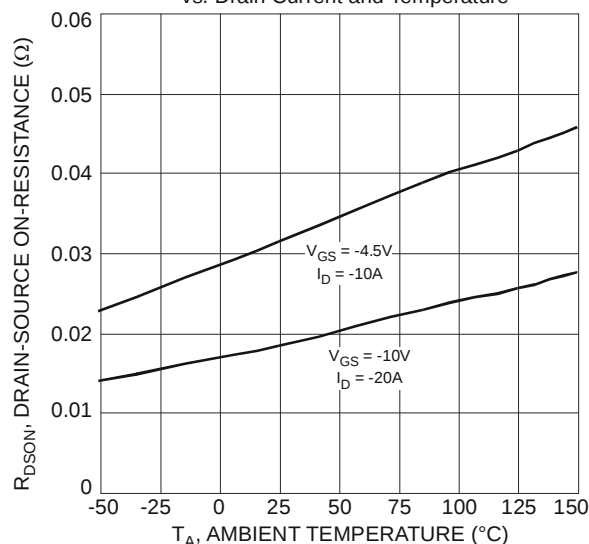


Fig. 17 On-Resistance Variation with Temperature

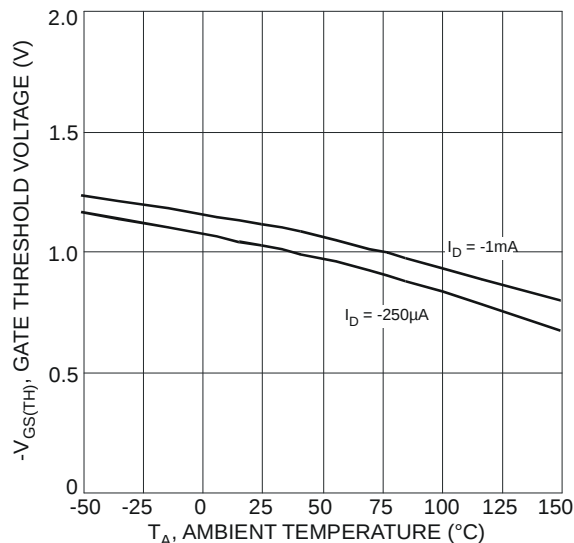


Fig. 18 Gate Threshold Variation vs. Ambient Temperature

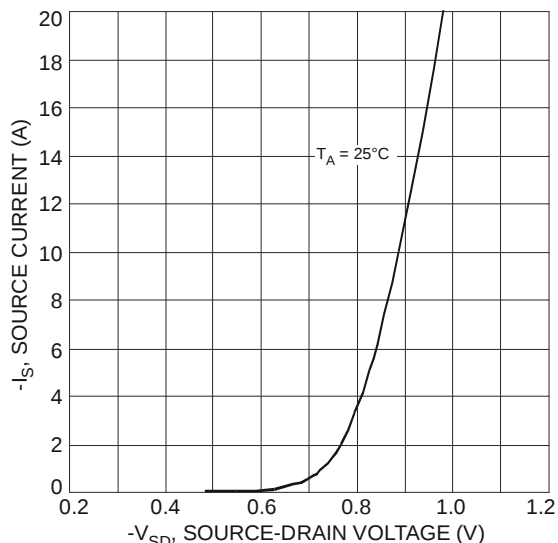


Fig. 19 Diode Forward Voltage vs. Current

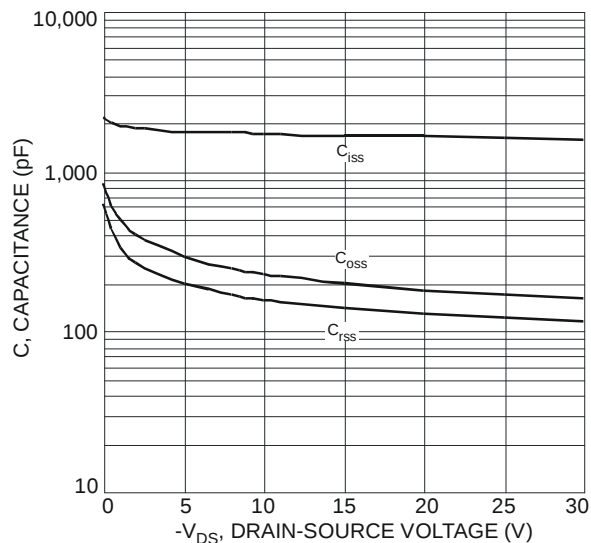


Fig. 20 Typical Total Capacitance

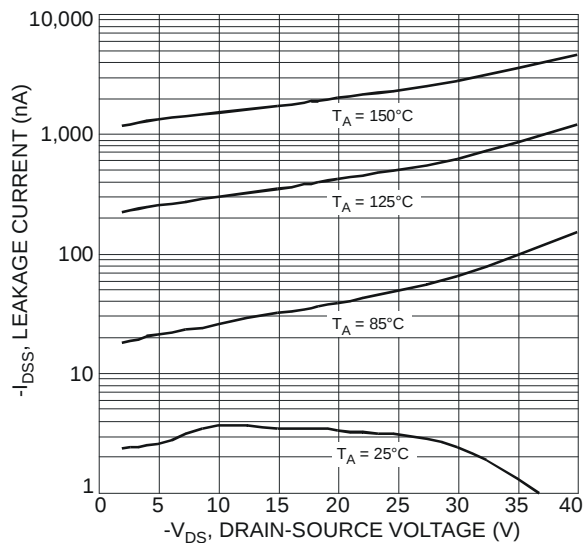


Fig. 21 Typical Leakage Current vs. Drain-Source Voltage

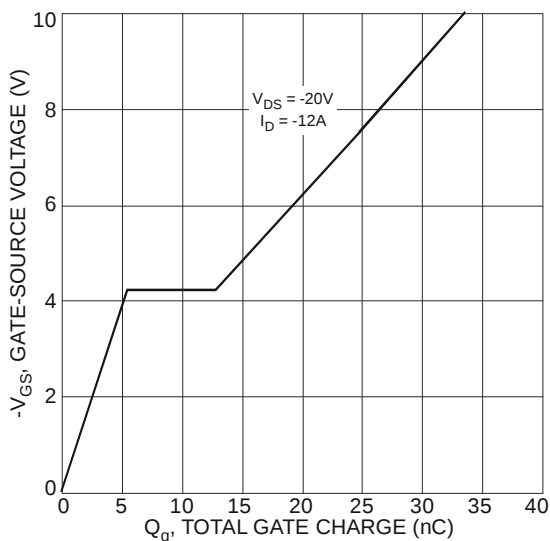
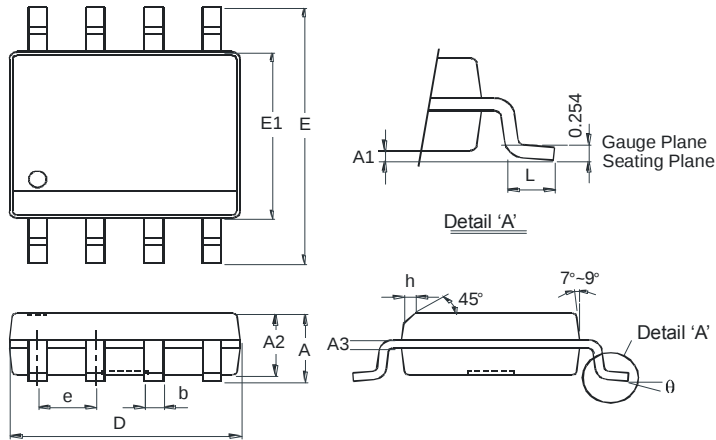


Fig. 22 Gate-Charge Characteristics

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

SO-8

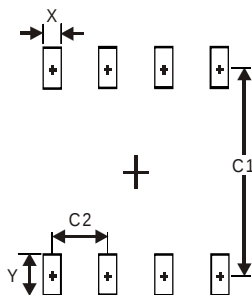


SO-8		
Dim	Min	Max
A	—	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	—	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

SO-8



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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