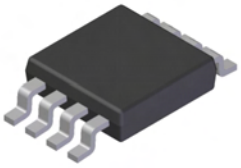
NEW PRODUCT

Features

- Low On-Resistance
- N-Channel: 21mΩ @ 10V
  32mΩ @ 4.5V
- P-Channel: 39mΩ @ 10V
  53mΩ @ 4.5V
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Complementary Pair MOSFET
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

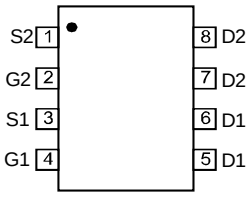
Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 6
- Ordering Information: See Page 6
- Weight: 0.072 grams (approximate)

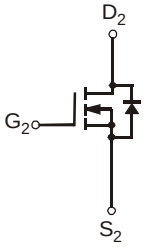


Top View

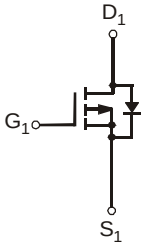
SO-8



Top View



N-Channel MOSFET



P-Channel MOSFET

Maximum Ratings N-CHANNEL – Q1 @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 3)	Steady State	T_A = 25°C T_A = 85°C	I_D	8.5 7.1	A
Pulsed Drain Current (Note 4)			I_{DM}	26	A

Maximum Ratings P-CHANNEL – Q2 @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 3)	Steady State	T_A = 25°C T_A = 85°C	I_D	-7.0 -4.5	A
Pulsed Drain Current (Note 4)			I_{DM}	-25	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	2.5	W
Thermal Resistance, Junction to Ambient (Note 3)	$R_{\theta JA}$	50	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. No purposefully added lead.
2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
3. Device mounted on FR-4 PCB, with minimum recommended pad layout.
4. Repetitive rating, pulse width limited by junction temperature.

NEW PRODUCT

Electrical Characteristics N-CHANNEL – Q1 @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	1.0	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	1	1.45	2.1	V	V_{DS} = V_{GS}, I_C = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	14	21	mΩ	V_{GS} = 10V, I_C = 7A
			18	32		V_{GS} = 4.5V, I_C = 5.6A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	8.1	-	S	V_{DS} = 5V, I_C = 7A
Diode Forward Voltage (Note 5)	V_{SD}	-	0.7	1.0	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	767	-	pF	V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	110	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	105	-	pF	
Gate Resistance	R_g	-	1.4	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q_g	-	7.8	-	nC	V_{GS} = 10V, V_{DS} = 15V, I_D = 9A
Total Gate Charge (10V)	Q_g	-	16.1	-	nC	
Gate-Source Charge	Q_{gs}	-	1.8	-	nC	
Gate-Drain Charge	Q_{gd}	-	2.5	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	5.0	-	ns	V_{GS} = 10V, V_{DS} = 15V, R_G = 6Ω , I_D = 1A
Turn-On Rise Time	t_r	-	4.5	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	26.3	-	ns	
Turn-Off Fall Time	t_f	-	8.55	-	ns	

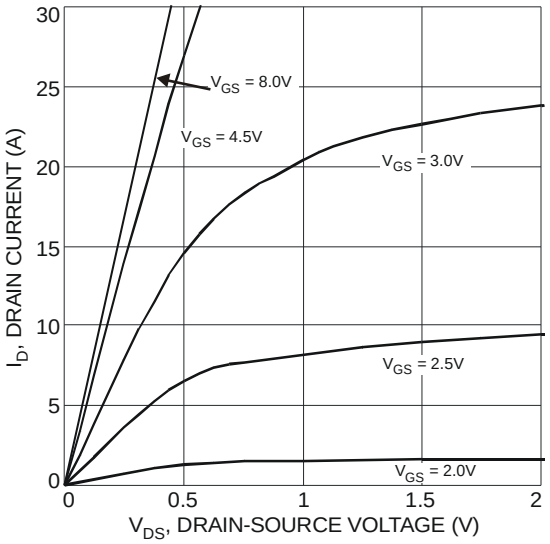


Fig. 1 Typical Output Characteristics

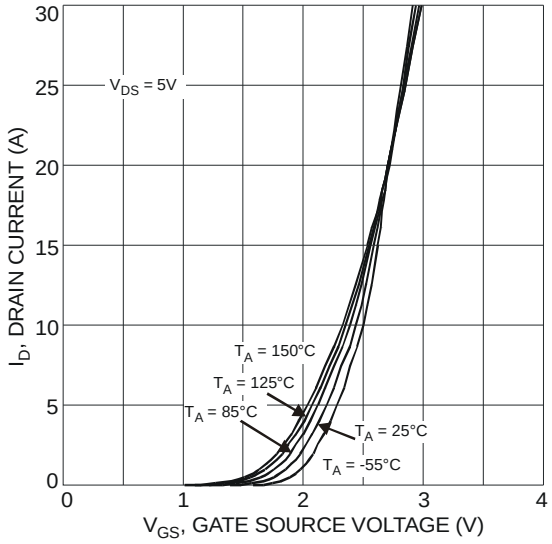


Fig. 2 Typical Transfer Characteristics

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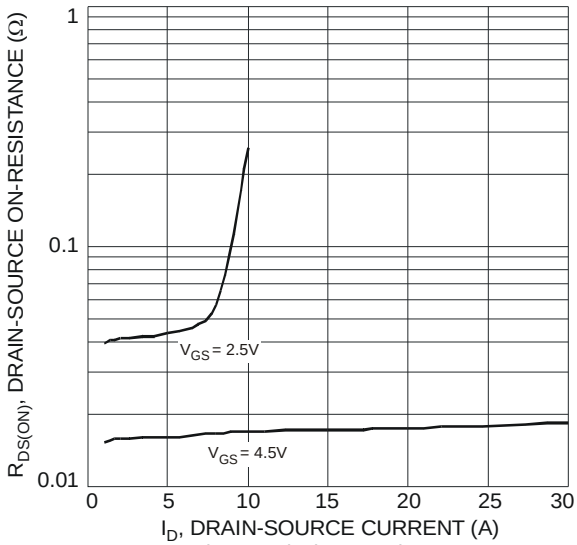

Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

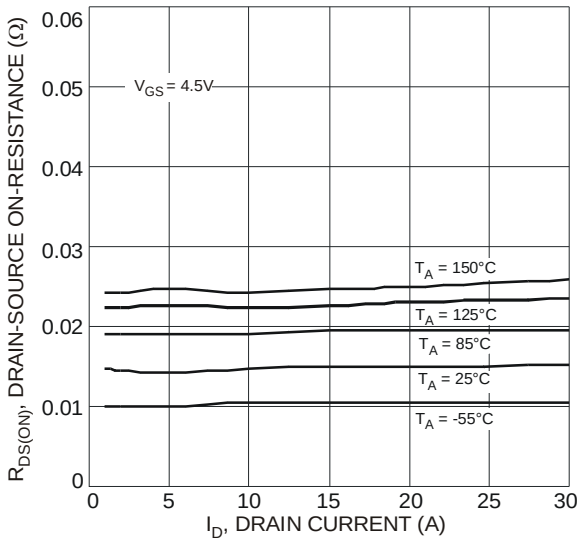

Fig. 4 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

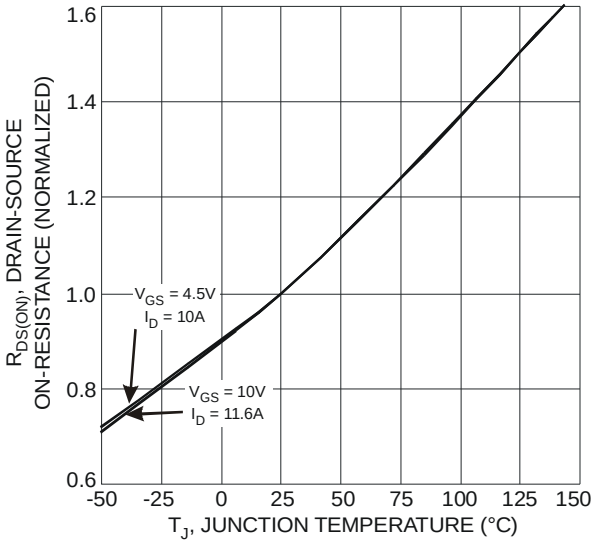

Fig. 5 On-Resistance Variation with Temperature

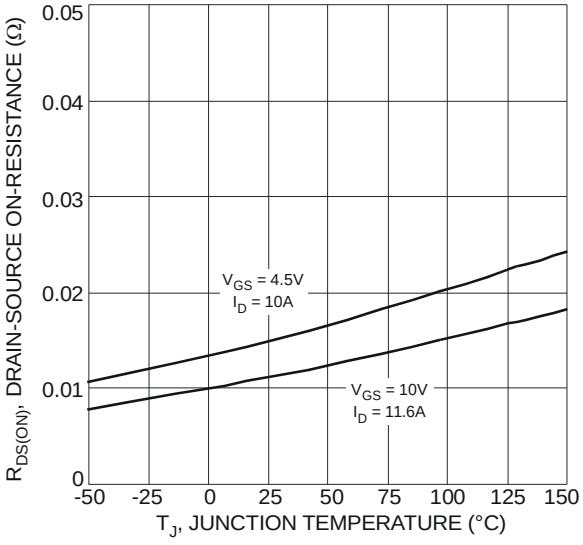

Fig. 6 On-Resistance Variation with Temperature

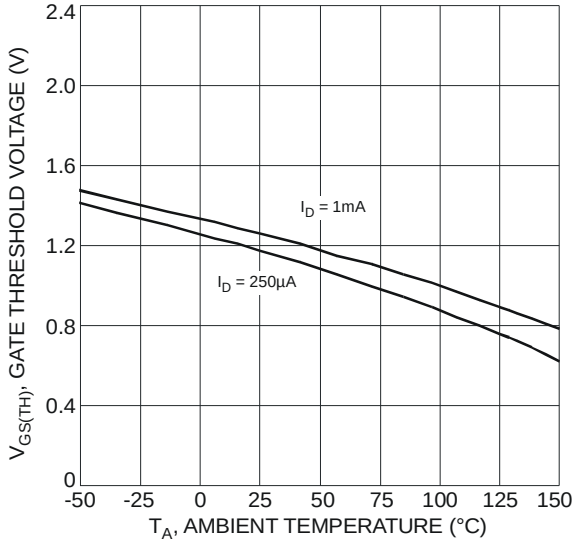

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

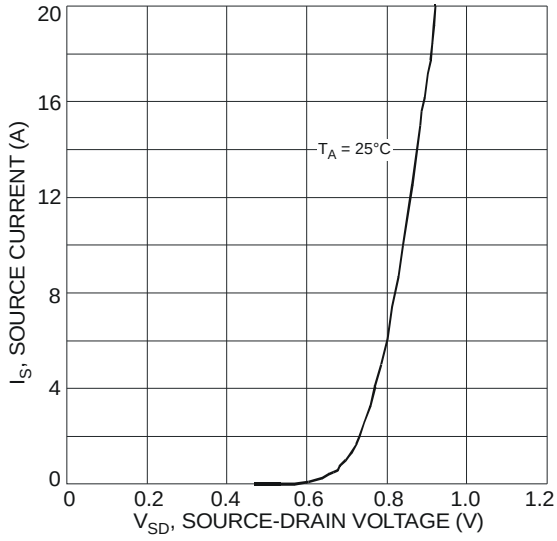

Fig. 8 Diode Forward Voltage vs. Current

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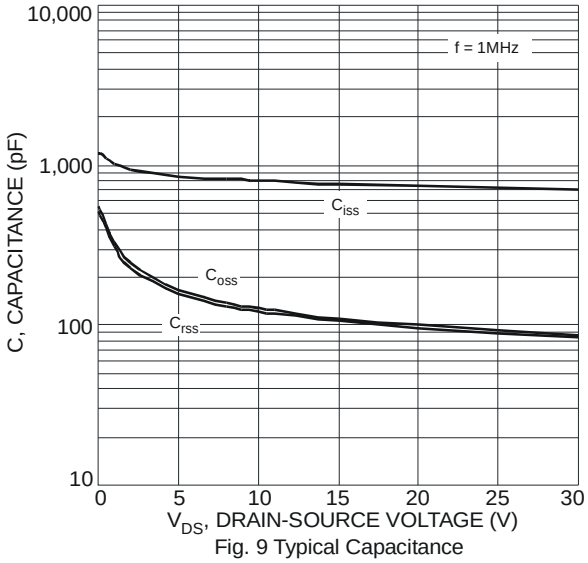

Fig. 9 Typical Capacitance

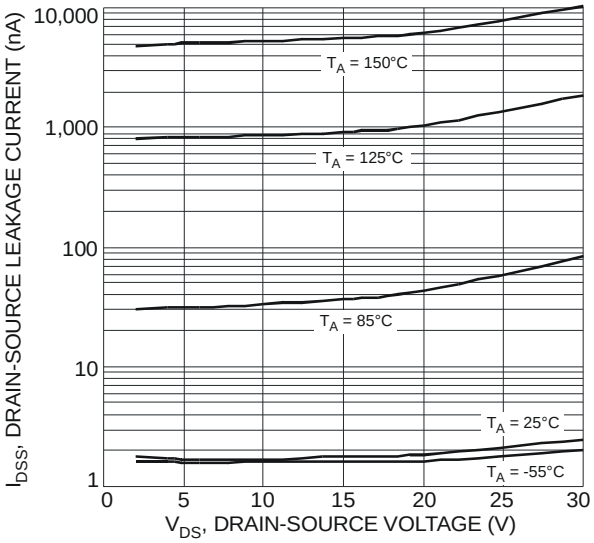

Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

Electrical Characteristics P-CHANNEL @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	-1.0	µA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.7	-2.2	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	30	39	mΩ	V_{GS} = -10V, I_D = -4.3A
			42	53		V_{GS} = -4.5V, I_D = -3.7A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	7	-	S	V_{DS} = -5V, I_D = -4.3A
Diode Forward Voltage (Note 5)	V_{SD}	-	-0.75	-1.0	V	V_{GS} = 0V, I_S = -1.7A
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	1002	-	pF	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	125	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	118	-	pF	
Gate Resistance	R_g	-	13	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q_g	-	10.1	-	nC	V_{GS} = -4.5V, V_{DS} = -15V, I_D = -6A
Total Gate Charge (10V)	Q_g	-	21.1	-	nC	
Gate-Source Charge	Q_{gs}	-	2.8	-	nC	
Gate-Drain Charge	Q_{gd}	-	3.2	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	10.1	-	ns	V_{GS} = -10V, V_{DS} = -15V, R_G = 6Ω , I_D = -1A
Turn-On Rise Time	t_r	-	6.5	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	50.1	-	ns	
Turn-Off Fall Time	t_f	-	22.2	-	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.
6. Guaranteed by design. Not subject to production testing.

NEW PRODUCT

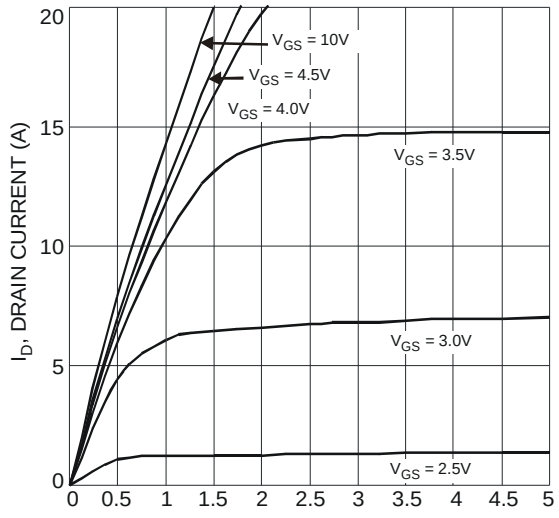

Fig. 11 Typical Output Characteristics

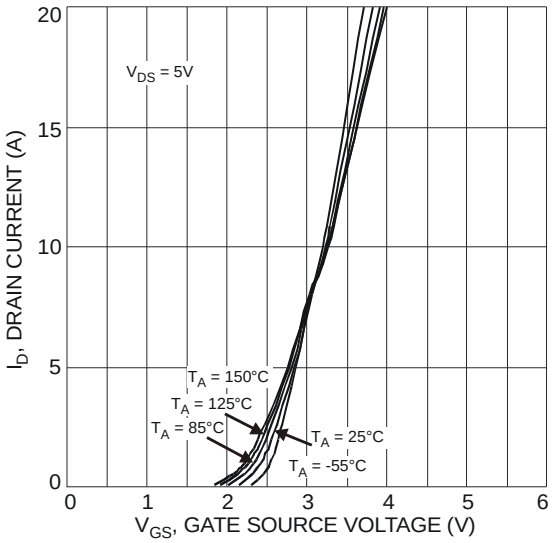

Fig. 12 Typical Transfer Characteristics

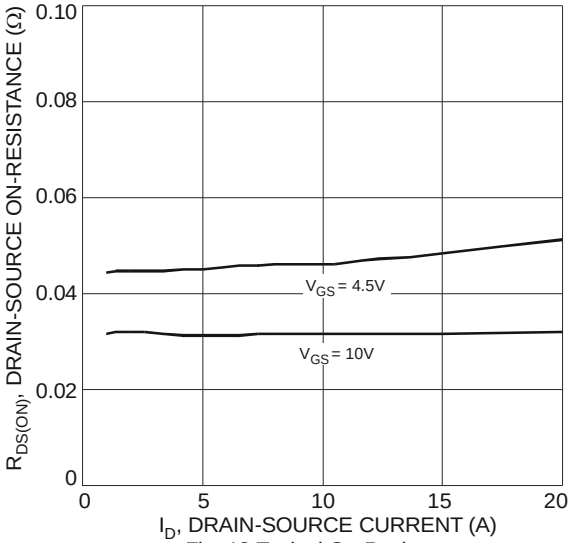

Fig. 13 Typical On-Resistance
vs. Drain Current and Gate Voltage

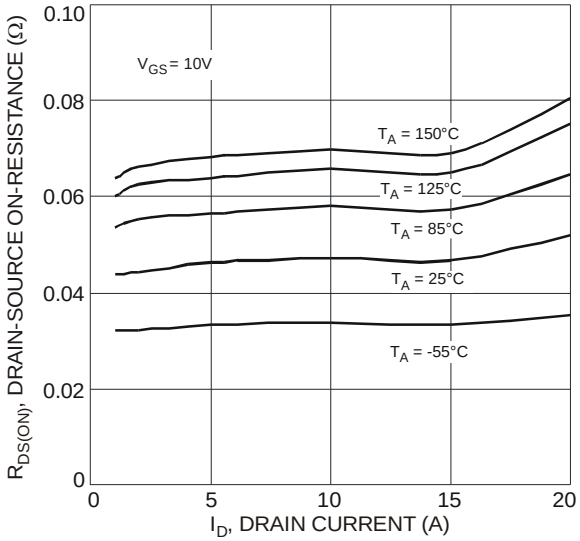

Fig. 14 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

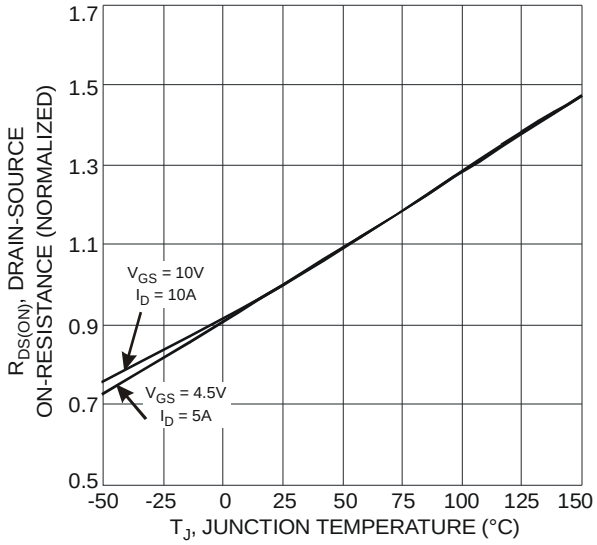

Fig. 15 On-Resistance Variation with Temperature

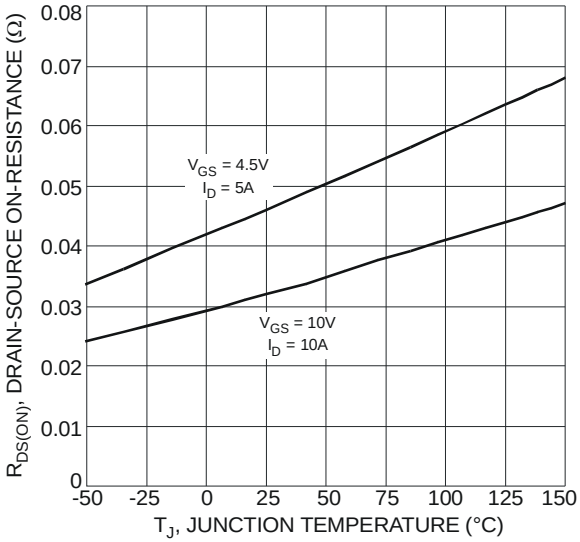

Fig. 16 On-Resistance Variation with Temperature

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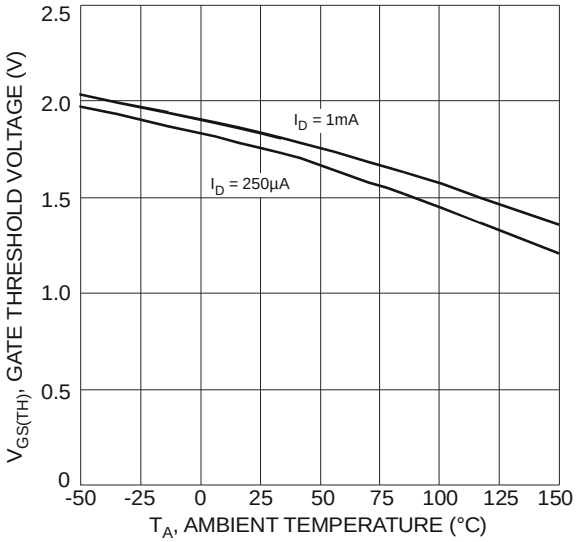


Fig. 17 Gate Threshold Variation vs. Ambient Temperature

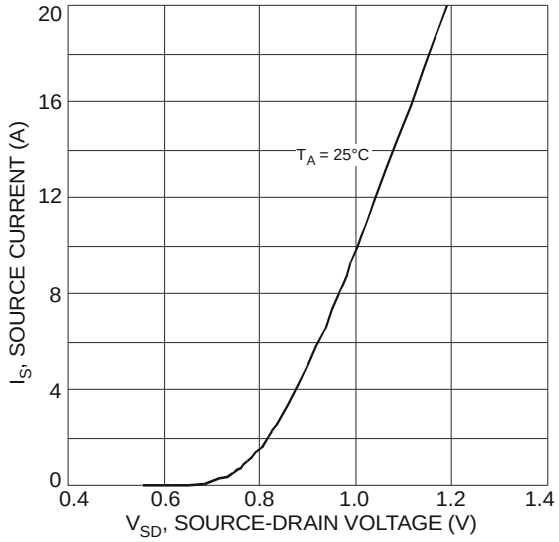


Fig. 18 Diode Forward Voltage vs. Current

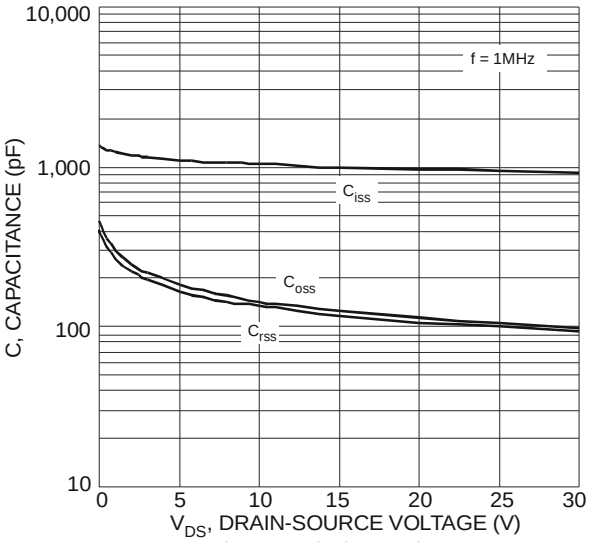


Fig. 19 Typical Capacitance

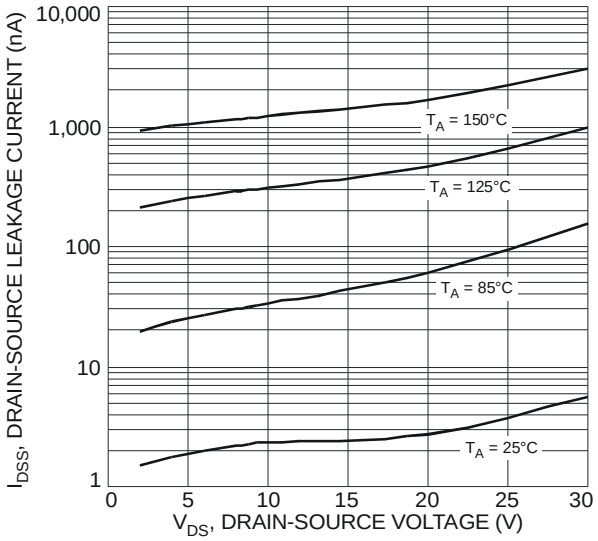


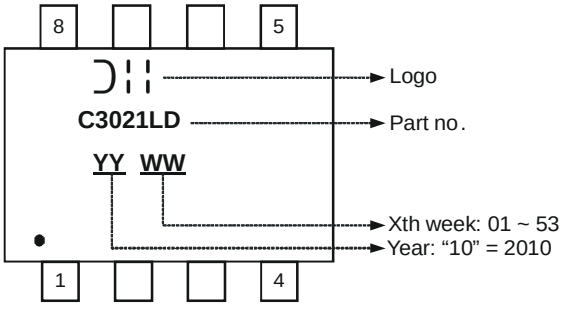
Fig. 20 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

Ordering Information (Note 7)

Part Number	Case	Packaging
DMC3021LSD-13	SO-8	2500/Tape & Reel

Notes: 7. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

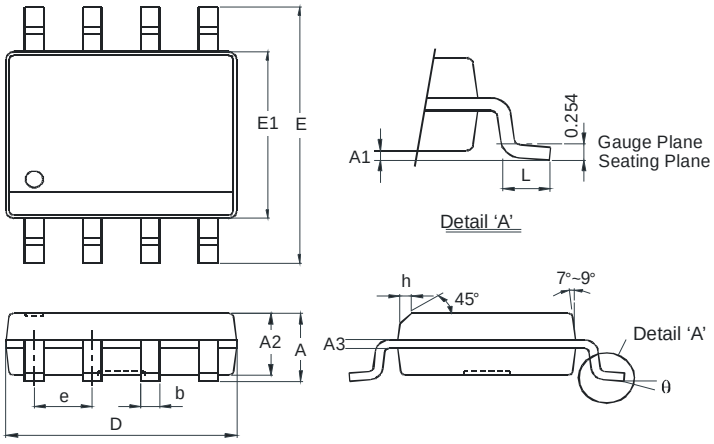
Marking Information



Top View

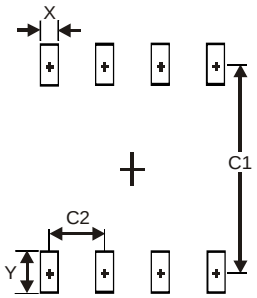
NEW PRODUCT

Package Outline Dimensions



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



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

NEW PRODUCT

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1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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