NEW PRODUCT

Product Summary

Device	$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D Max T_A = +25°C (Notes 5 & 7)
Q1	30V	32mΩ @ V_{GS} = 10V	8.1A
		46mΩ @ V_{GS} = 4.5V	6.1A
Q2	-30V	39mΩ @ V_{GS} = -10V	-7A
		53mΩ @ V_{GS} = -4.5V	-5.6A

Description

This MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Power Management Functions
- Analog Switch
- Load Switch

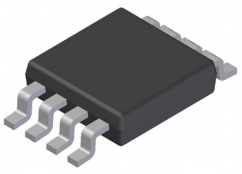
Features

- Low On-Resistance
- N-Channel: 32mΩ @ 10V
  46mΩ @ 4.5V
- P-Channel: 39mΩ @ 10V
  53mΩ @ 4.5V
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Complementary Pair MOSFET
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

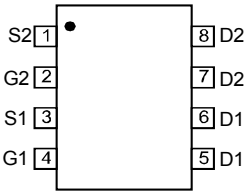
Mechanical Data

- 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 e3
- Marking Information (See Page 2)
- Ordering Information
- Weight: 0.072 grams (approximate)

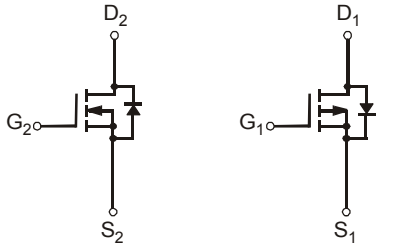
SO-8



Top View



Top View



N-Channel MOSFET P-Channel MOSFET

Ordering Information (Note 4)

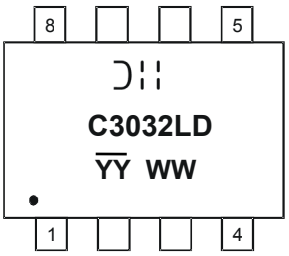
Part Number	Case	Packaging
DMC3032LSD-13	SO-8	2,500/Tape & Reel

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

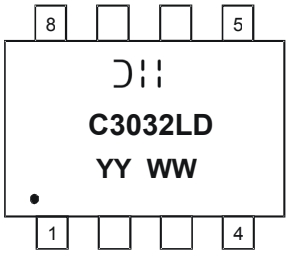
© Diodes Incorporated

NEW PRODUCT

Marking Information



Chengdu A/T Site



Shanghai A/T Site

= Manufacturer's Marking
C3032LD = Product Type Marking Code
YYWW = Date Code Marking
YY or $\overline{YY}$ = Year (ex: 14 = 2014)
WW = Week (01 - 53)
YY = Date Code Marking for SAT (Shanghai Assembly/ Test site)
$\overline{YY}$ = Date Code Marking for CAT (Chengdu Assembly/ Test site)

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 5)	Steady State	T_A = +25°C T_A = +85°C	I_D	8.1 5.1	A
Pulsed Drain Current (Note 6)			I_{DM}	25	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 5)	Steady State	T_A = +25°C T_A = +85°C	I_D	-7.0 -4.5	A
Pulsed Drain Current (Note 6)			I_{DM}	-25	A

Thermal Characteristics @T_A = +25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	2.5	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	50	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Repetitive rating, pulse width limited by junction temperature.

© Diodes Incorporated

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 7)						
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	μA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(th)}$	1	1.45	2.1	V	V_{DS} = V_{GS}, I_C = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	23	32	mΩ	V_{GS} = 10V, I_C = 7A
			32	46		V_{GS} = 4.5V, I_C = 5.6A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	7.6	-	S	V_{DS} = 5V, I_C = 7A
Diode Forward Voltage (Note 7)	V_{SD}	-	0.7	1	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	404.5	-	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	-	51.8	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	45.1	-	pF	
Gate Resistance	R_g	-	1.5	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (10V)	Q_g	-	9.2	-	nC	V_{GS} = 10V, V_{DS} = 15V, I_D = 5.8A
Gate-Source Charge	Q_{gs}	-	1.2	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.8	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	3.4	-	ns	V_{GS} = 10V, V_{DS} = 15V, R_G = 3Ω, R_L = 2.6Ω
Turn-On Rise Time	t_r	-	6.18	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	13.92	-	ns	
Turn-Off Fall Time	t_f	-	2.84	-	ns	

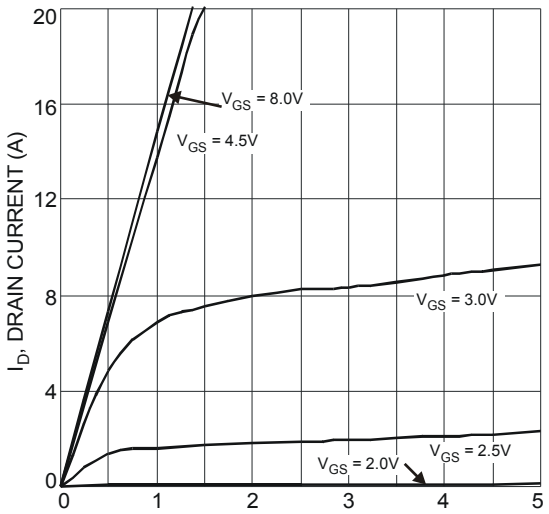


Fig. 1 Typical Output Characteristics

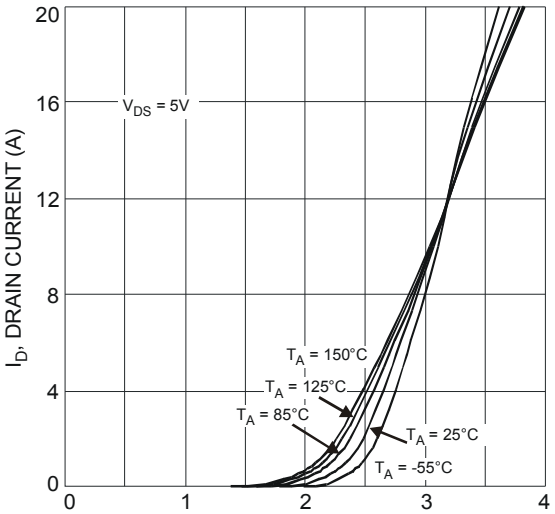


Fig. 2 Typical Transfer Characteristics

© Diodes Incorporated

NEW PRODUCT

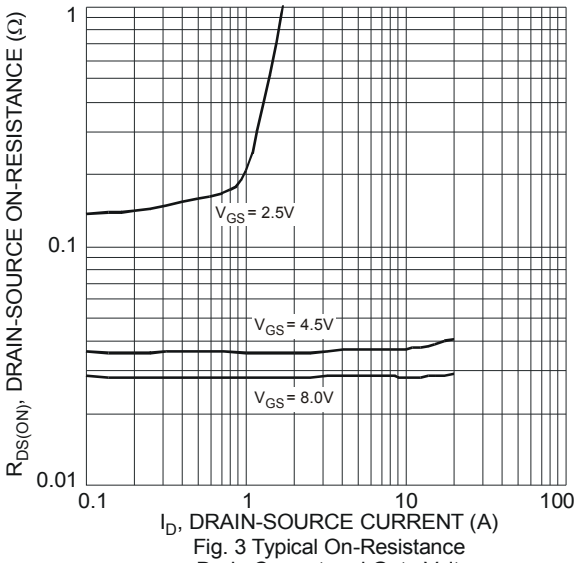


Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

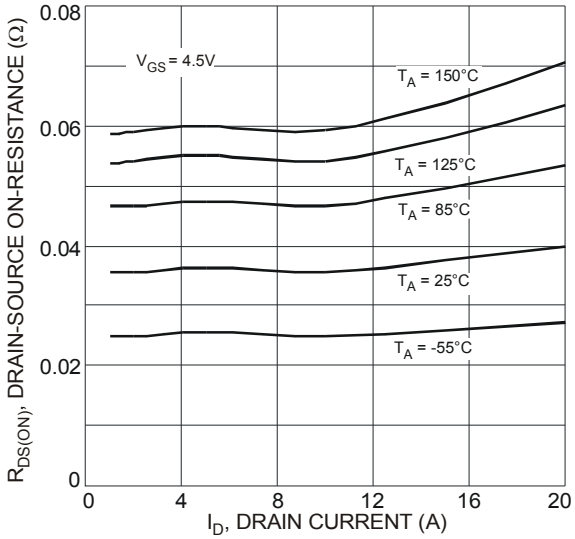


Fig. 4 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

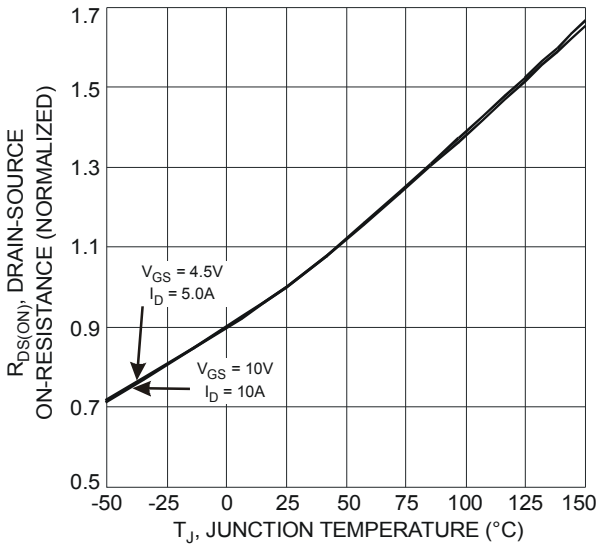


Fig. 5 On-Resistance Variation with Temperature

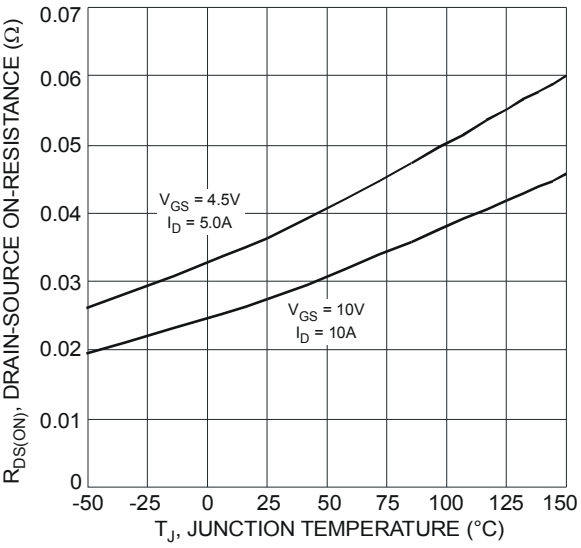


Fig. 6 On-Resistance Variation with Temperature

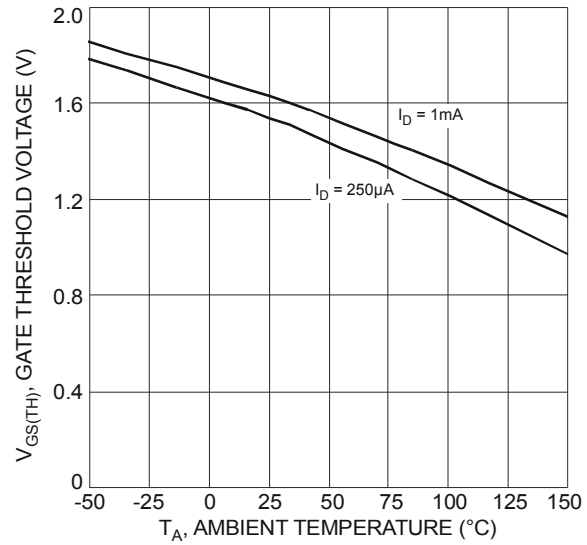


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

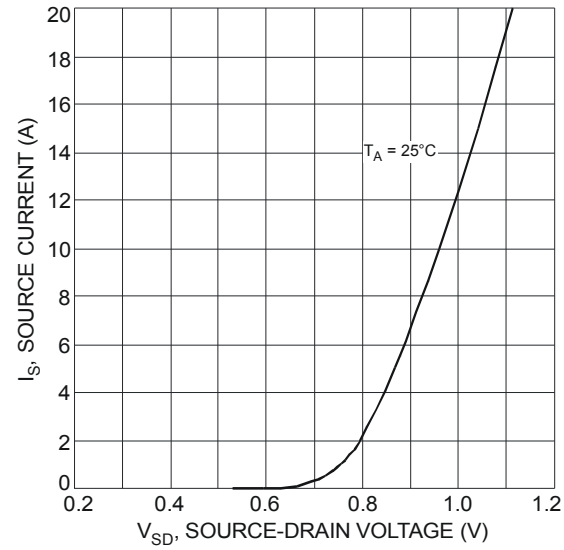


Fig. 8 Diode Forward Voltage vs. Current

© Diodes Incorporated

NEW PRODUCT

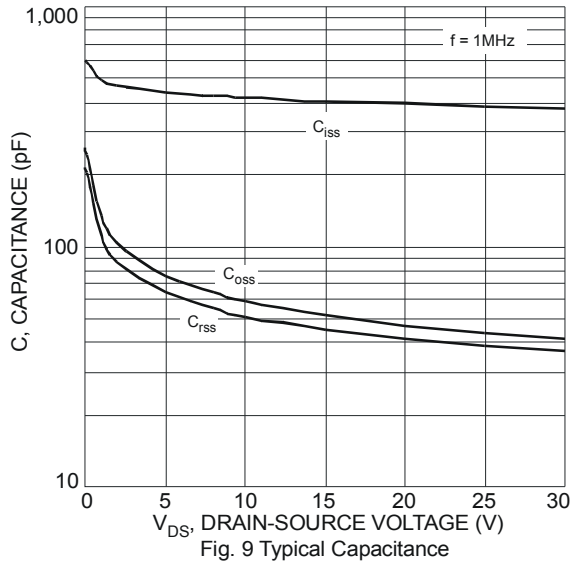


Fig. 9 Typical Capacitance

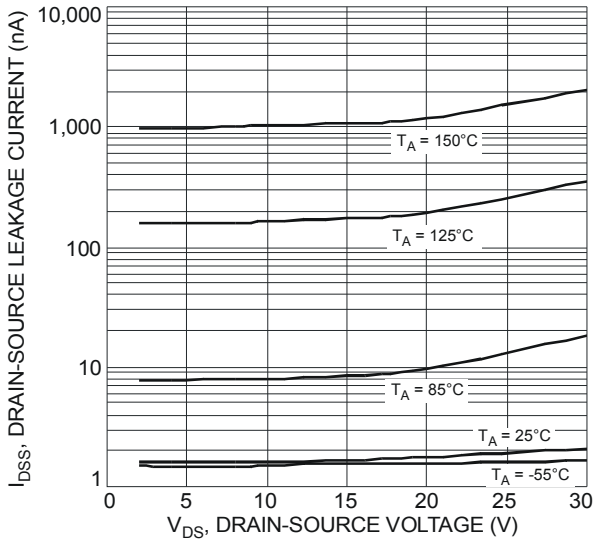


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

© Diodes Incorporated

NEW PRODUCT

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
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	µA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
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 7)	V_{SD}	-	-0.75	-1	V	V_{GS} = 0V, I_S = -1.7A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	-	1002	-	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1MHz
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/-10V, 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: 7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

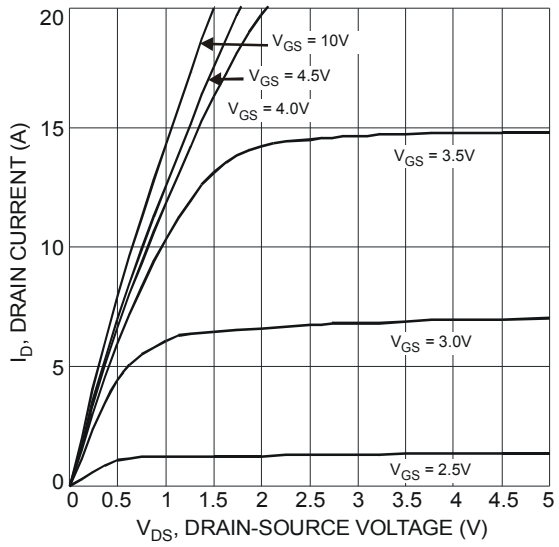


Fig. 11 Typical Output Characteristics

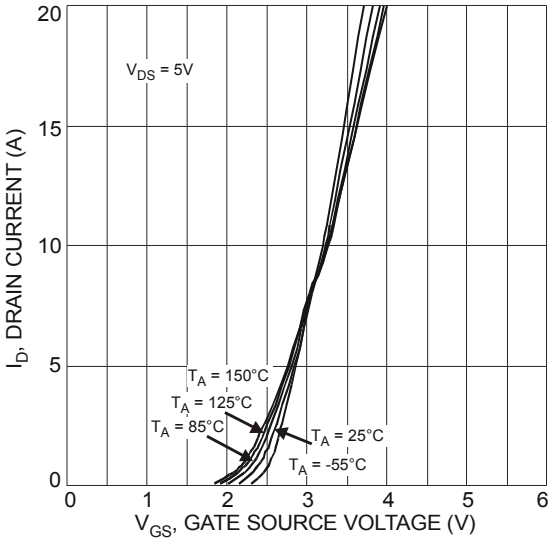


Fig. 12 Typical Transfer Characteristics

© Diodes Incorporated

NEW PRODUCT

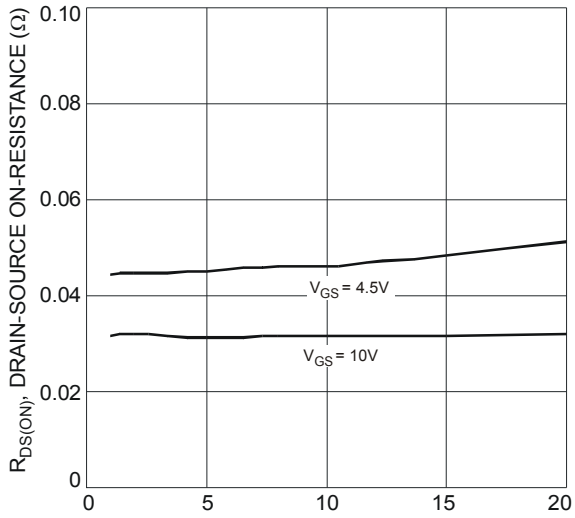


Fig. 13 Typical On-Resistance
vs. Drain Current and Gate Voltage

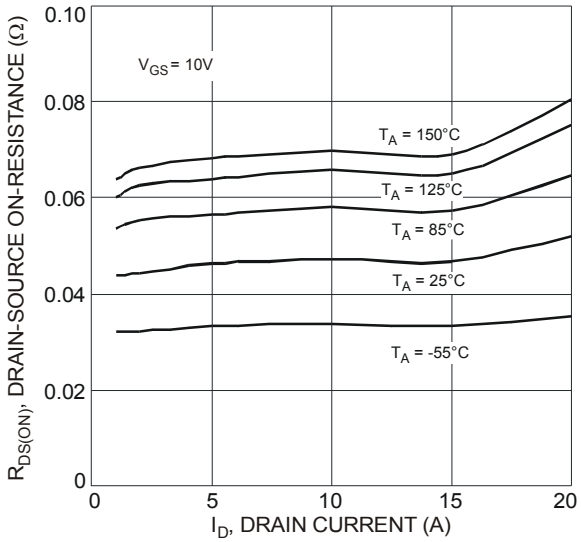


Fig. 14 Typical Drain-Source On-Resistance
vs. Drain Current and Temperature

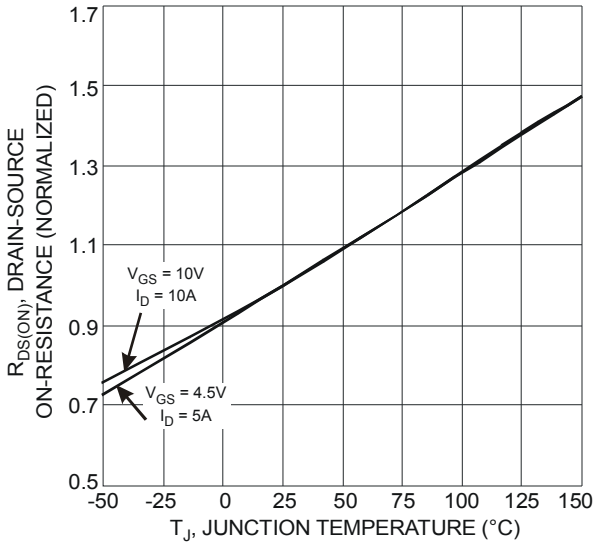


Fig. 15 On-Resistance Variation with Temperature

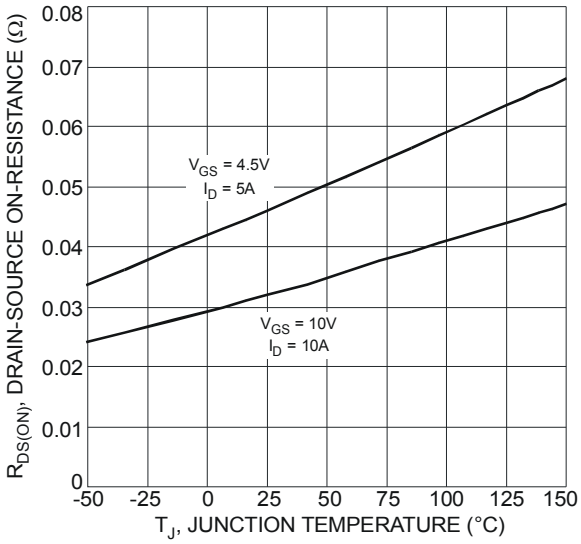


Fig. 16 On-Resistance Variation with Temperature

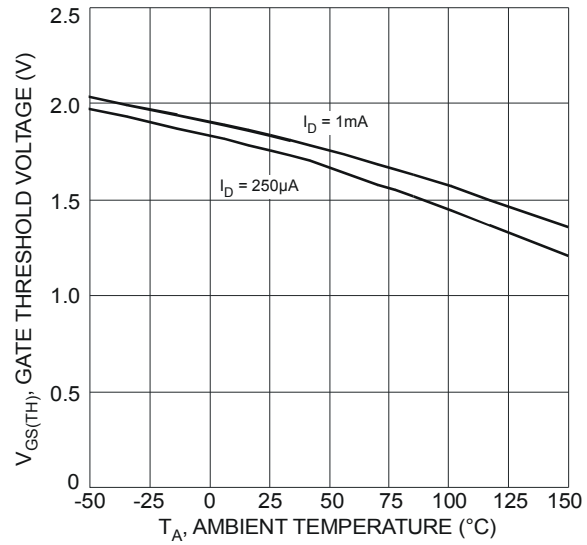


Fig. 17 Gate Threshold Variation vs. Ambient Temperature

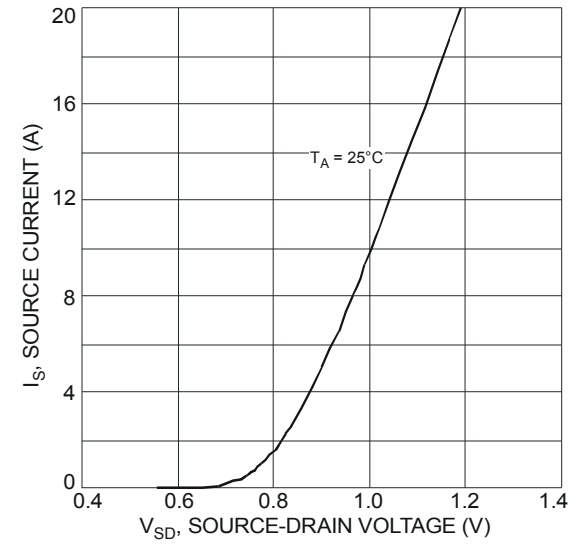


Fig. 18 Diode Forward Voltage vs. Current

© Diodes Incorporated

NEW PRODUCT

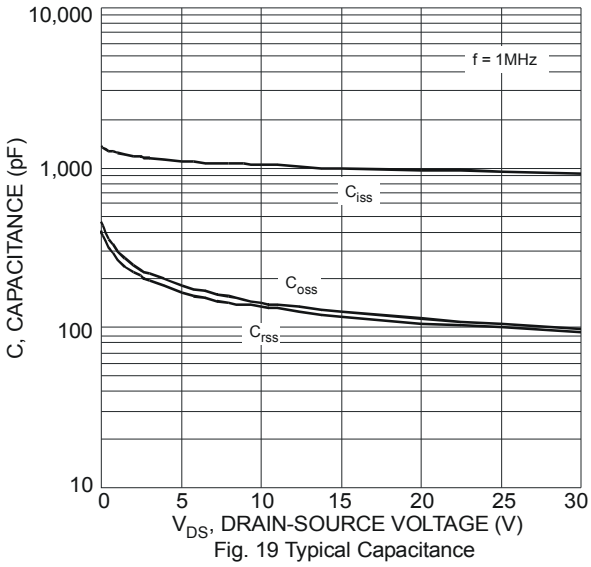


Fig. 19 Typical Capacitance

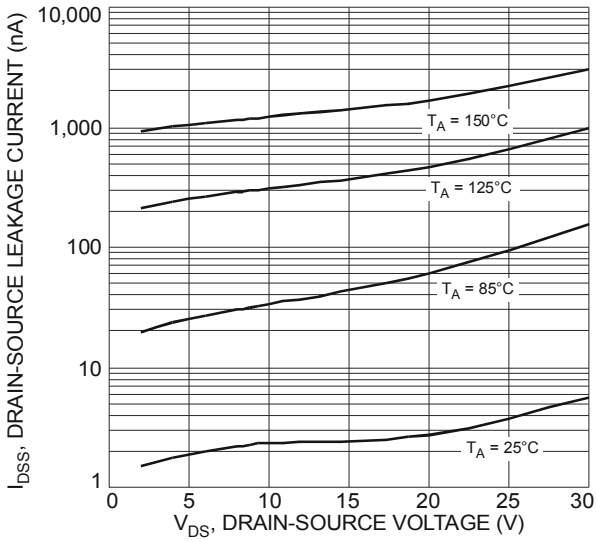
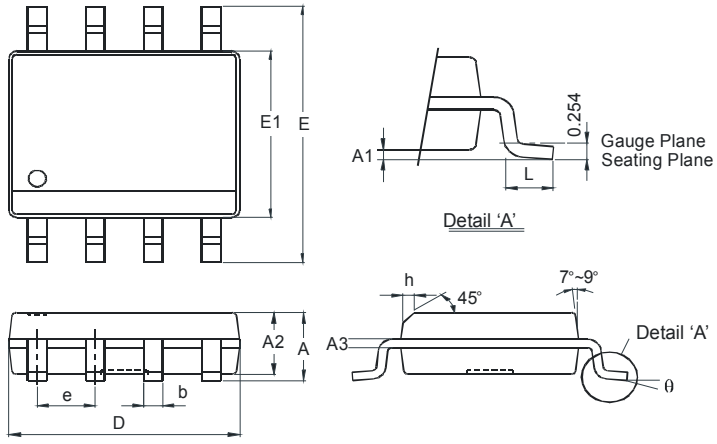


Fig. 20 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

Package Outline Dimensions

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

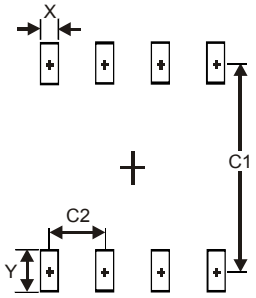


SO-8		
Dim	**Min**	**Max**
A	-	1.75
A1	0.10	0.20
A2	1.30	1.50
A3	0.15	0.25
b	0.3	0.5
D	4.85	4.95
E	5.90	6.10
E1	3.85	3.95
e	1.27 Typ	
h	-	0.35
L	0.62	0.82
θ	0°	8°
All Dimensions in mm		

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

© Diodes Incorporated

NEW PRODUCT

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

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.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2014, Diodes Incorporated

www.diodes.com