

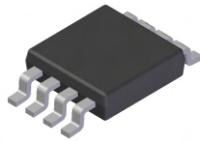
## Features

- High Density UMOS with Schottky Barrier Diode
- Low Leakage Current at High Temp.
- High Conversion Efficiency
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Utilizes Diodes' Monolithic DIOFET Technology to Increase Conversion Efficiency
- 100% UIS and  $R_g$  Tested
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

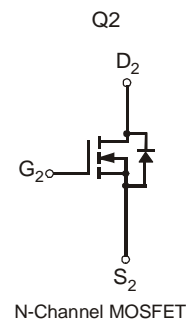
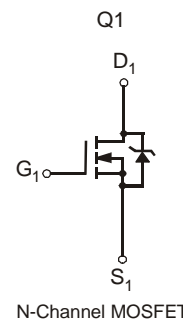
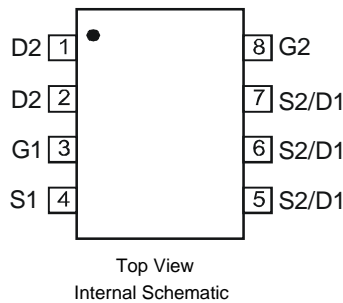
## Mechanical Data

- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Page 8
- Ordering Information: See Page 8
- Weight: 0.072 grams (approximate)

**DIOFET**  
Diodes Schottky Integrated MOSFET



Top View



## Maximum Ratings – Q1 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 12$	V
Continuous Drain Current (Note 3)	Steady State	$T_A = 25^\circ\text{C}$	$I_D$	9.5	A
		$T_A = 85^\circ\text{C}$		7.2	
Pulsed Drain Current (Note 4)			$I_{DM}$	40	A
Avalanche Current (Notes 4 & 5)			$I_{AR}$	13	A
Repetitive Avalanche Energy (Notes 4 & 5) $L = 0.3\text{mH}$			$E_{AR}$	25.4	mJ

## Maximum Ratings – Q2 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			$V_{DSS}$	30	V
Gate-Source Voltage			$V_{GSS}$	$\pm 25$	V
Continuous Drain Current (Note 3)	Steady State	$T_A = 25^\circ\text{C}$	$I_D$	9.5	A
		$T_A = 85^\circ\text{C}$		7.5	
Pulsed Drain Current (Note 4)			$I_{DM}$	40	A
Avalanche Current (Notes 4 & 5)			$I_{AR}$	13	A
Repetitive Avalanche Energy (Notes 4 & 5) $L = 0.3\text{mH}$			$E_{AR}$	25.4	mJ

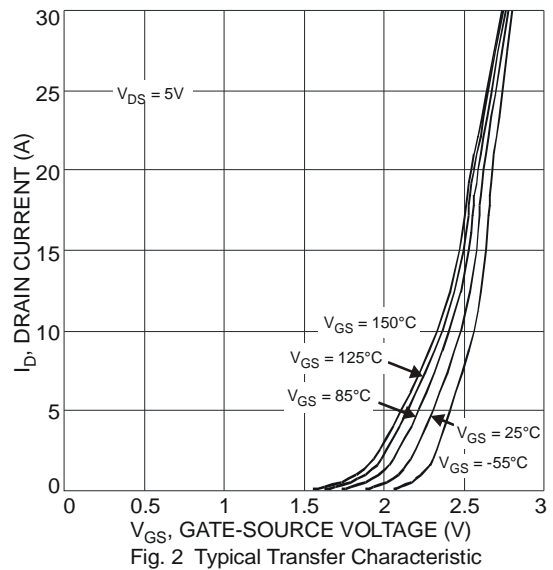
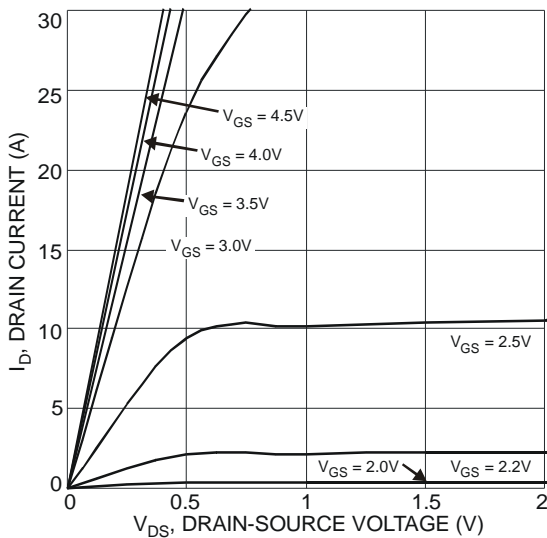
## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	$P_D$	1.19	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	107	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- 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](http://www.diodes.com/products/lead_free/index.php).
  3. Device mounted on FR-4 PCB with minimum recommended pad layout. The value in any given application depends on the user's specific board design.
  4. Repetitive rating, pulse width limited by junction temperature.
  5.  $I_{AR}$  and  $E_{AR}$  rating are based on low frequency and duty cycles to keep  $T_J = 25^\circ\text{C}$

**Electrical Characteristics – Q1** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	0.1	mA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±12V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	-	2.4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	-	10	15	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 9A
			12	18		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 7A
Forward Transfer Admittance	Y <sub>fs</sub>	-	14	-	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 9A
Diode Forward Voltage	V <sub>SD</sub>	-	0.4	0.6	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
Maximum Body-Diode + Schottky Continuous Current	I <sub>S</sub>	-	-	5	A	-
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iSS</sub>	-	1932	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	154	-	pF	
Reverse Transfer Capacitance	C <sub>rSS</sub>	-	121	-	pF	
Gate Resistance	R <sub>g</sub>	-	2.68	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q <sub>g</sub>	-	18.1	-	nC	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 9A
Total Gate Charge (10V)	Q <sub>g</sub>	-	42.0	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	4.5	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	4.0	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	6.16	-	ns	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, R <sub>G</sub> = 3Ω, R <sub>L</sub> = 1.7Ω
Turn-On Rise Time	t <sub>r</sub>	-	7.22	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	36.76	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	5.38	-	ns	



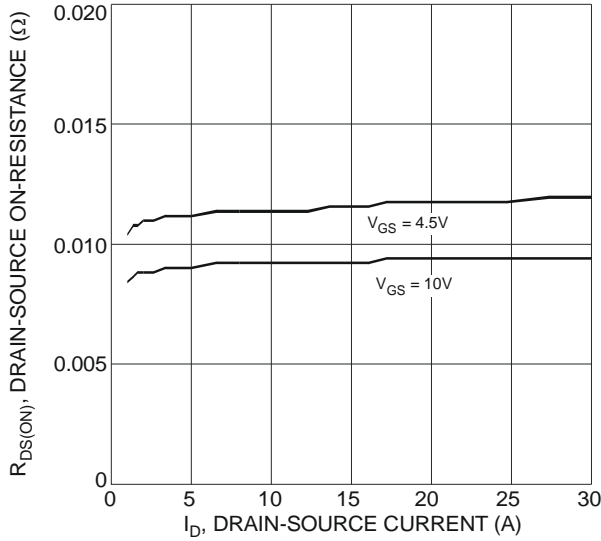


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

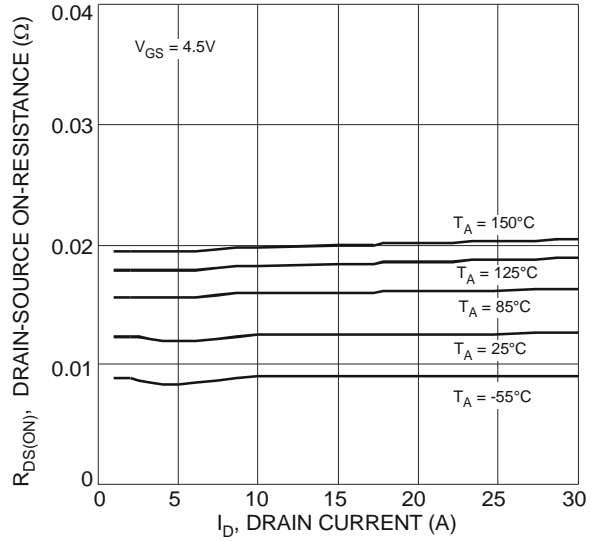


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

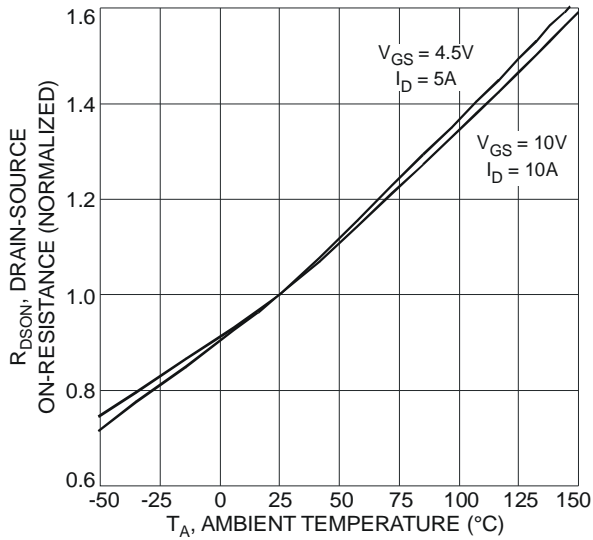


Fig. 5 On-Resistance Variation with Temperature

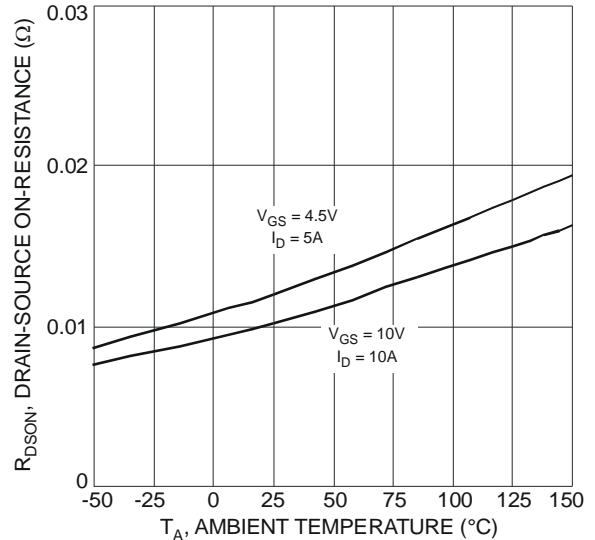


Fig. 6 On-Resistance Variation with Temperature

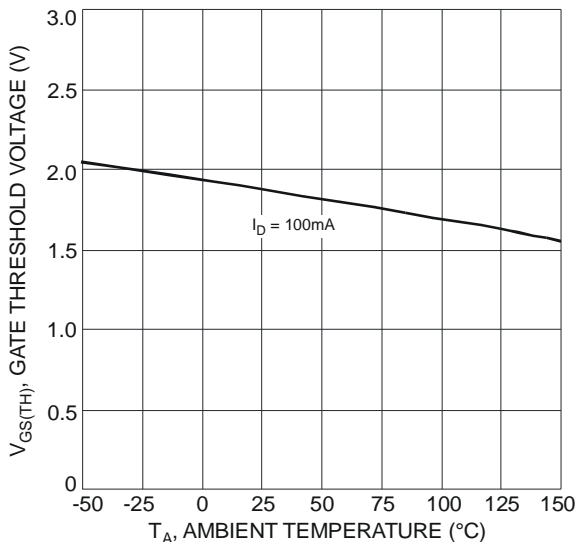


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

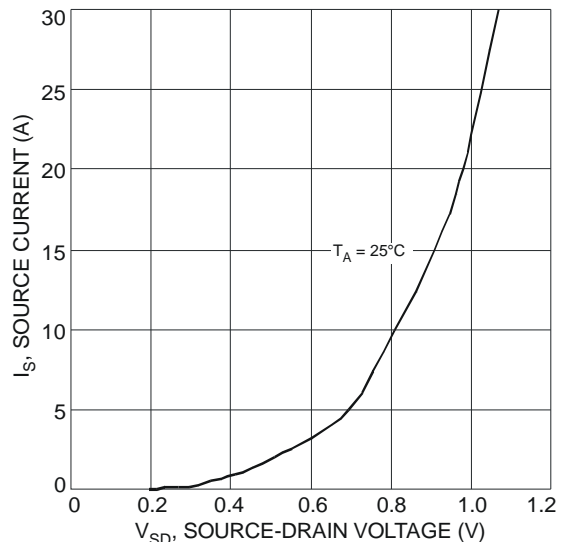


Fig. 8 Diode Forward Voltage vs. Current

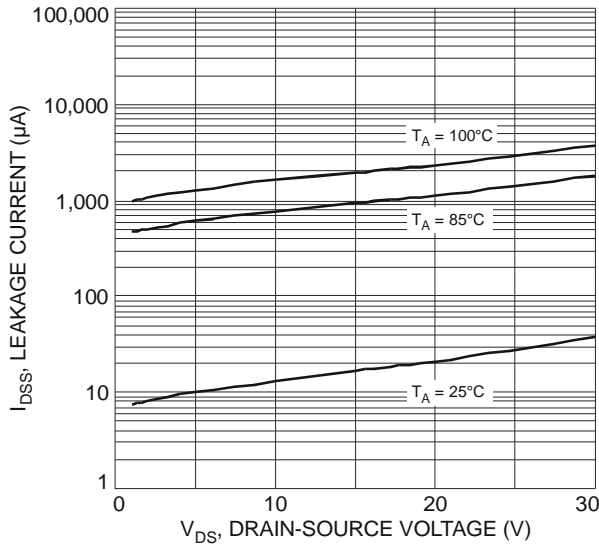


Fig. 9 Typical Leakage Current vs. Drain-Source Voltage

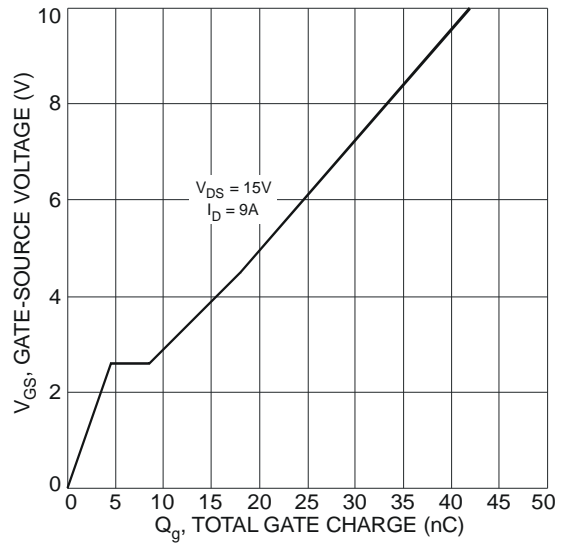


Fig. 10 Gate-Charge Characteristics

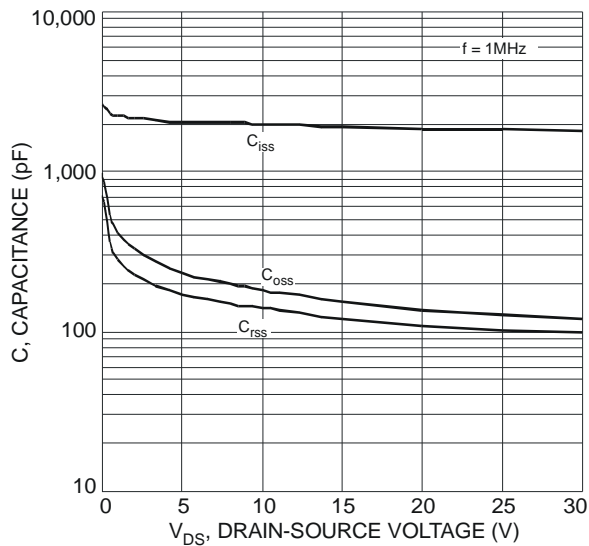
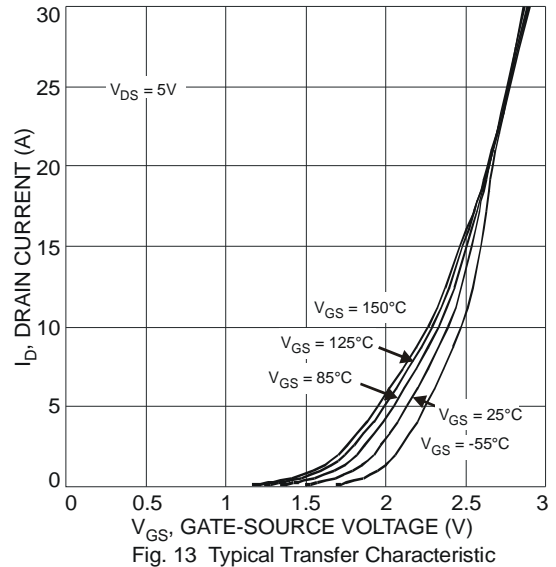
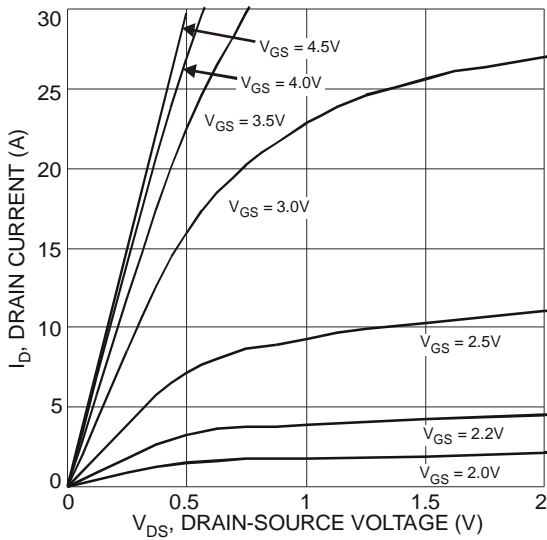


Fig. 11 Typical Total Capacitance

**Electrical Characteristics – Q2** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	+100	nA	V <sub>GS</sub> = +25V, V <sub>DS</sub> = 0V
		-	-	-800		V <sub>GS</sub> = -25V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	-	2.3	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	12	15.8	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 9A
		-	16	23		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 7A
Forward Transfer Admittance	Y <sub>fs</sub>	-	8	-	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 9A
Diode Forward Voltage	V <sub>SD</sub>	-	0.65	1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 7)</b>						
Input Capacitance	C <sub>iSS</sub>	-	675	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	98	-	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	-	90	-	pF	
Gate Resistance	R <sub>g</sub>	-	1.6	-	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q <sub>g</sub>	-	7.8	-	nC	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 9A
Total Gate Charge (10V)	Q <sub>g</sub>	-	16.0	-	nC	
Gate-Source Charge	Q <sub>gs</sub>	-	1.9	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	2.6	-	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	-	5.05	-	ns	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, R <sub>G</sub> = 3Ω, R <sub>L</sub> = 1.7Ω
Turn-On Rise Time	t <sub>r</sub>	-	9.21	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	20.76	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	4.94	-	ns	

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



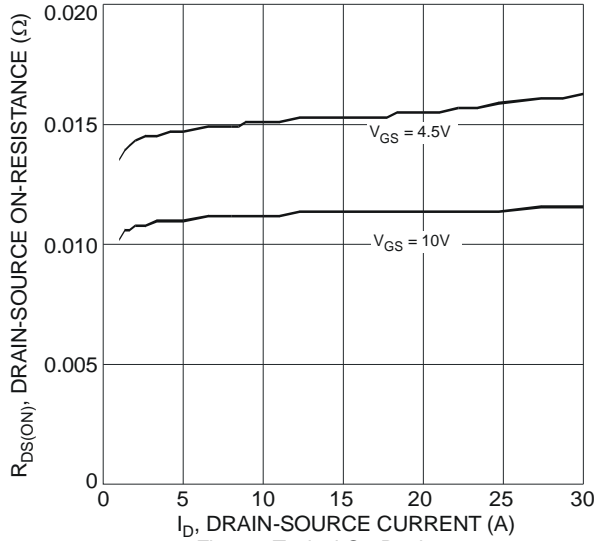


Fig. 14 Typical On-Resistance vs. Drain Current and Gate Voltage

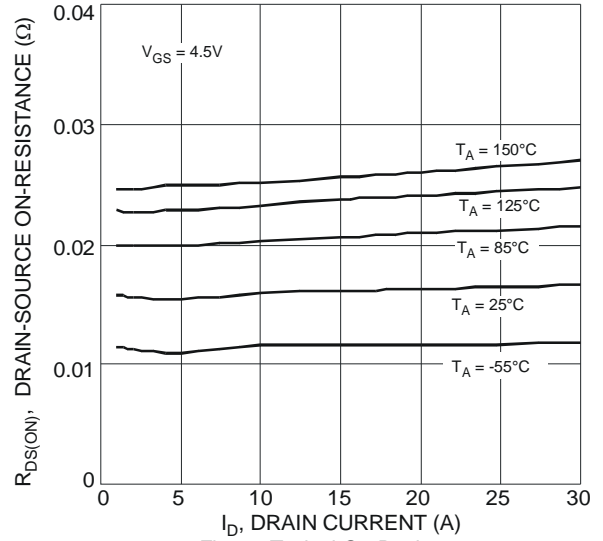


Fig. 15 Typical On-Resistance vs. Drain Current and Temperature

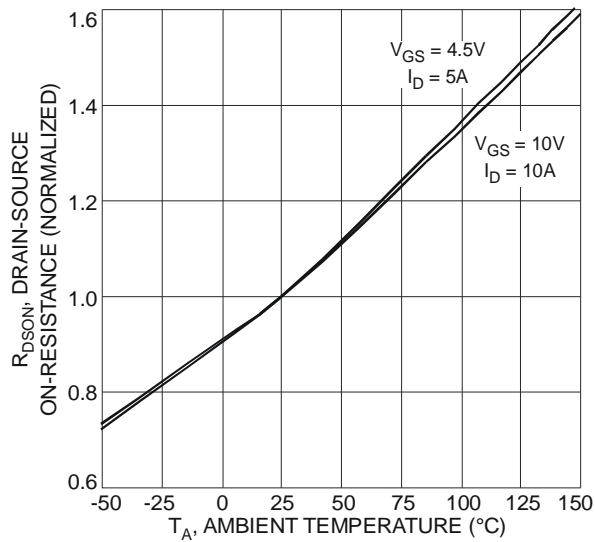


Fig. 16 On-Resistance Variation with Temperature

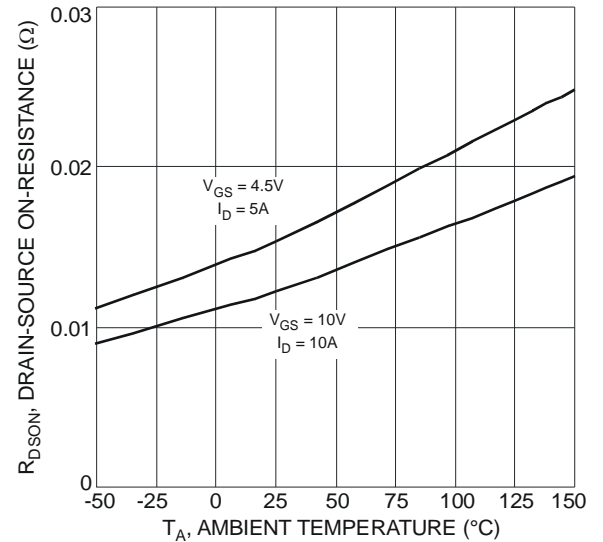


Fig. 17 On-Resistance Variation with Temperature

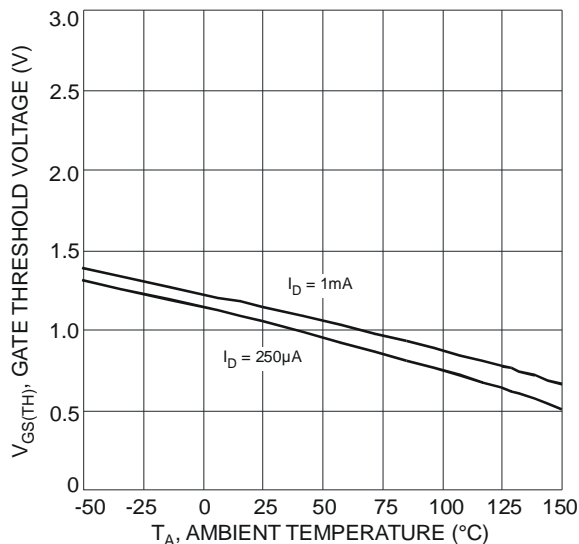


Fig. 18 Gate Threshold Variation vs. Ambient Temperature

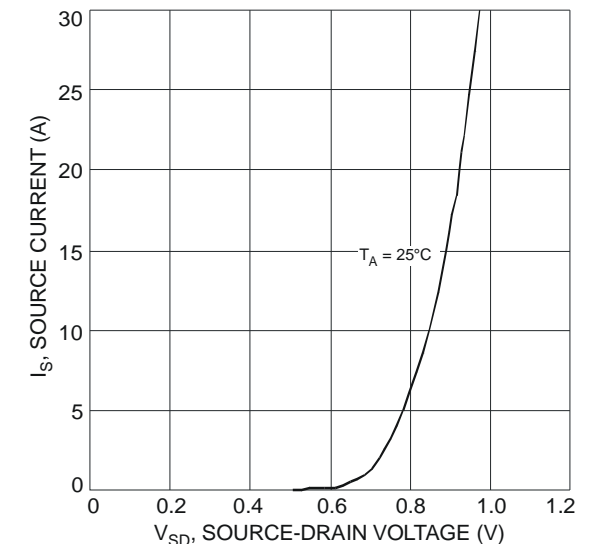


Fig. 19 Diode Forward Voltage vs. Current

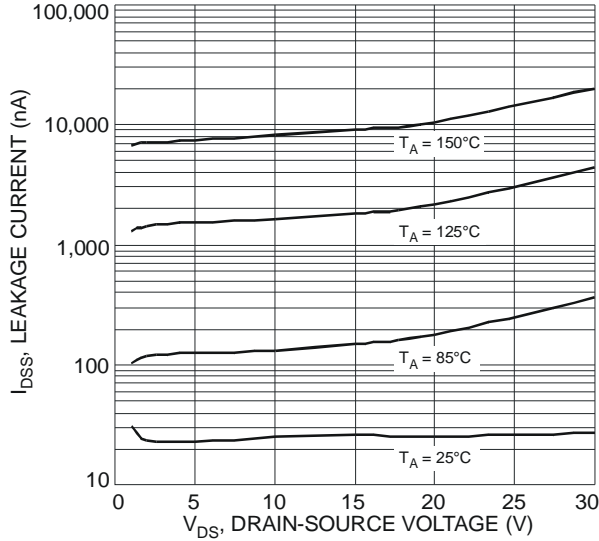


Fig. 20 Typical Leakage Current vs. Drain-Source Voltage

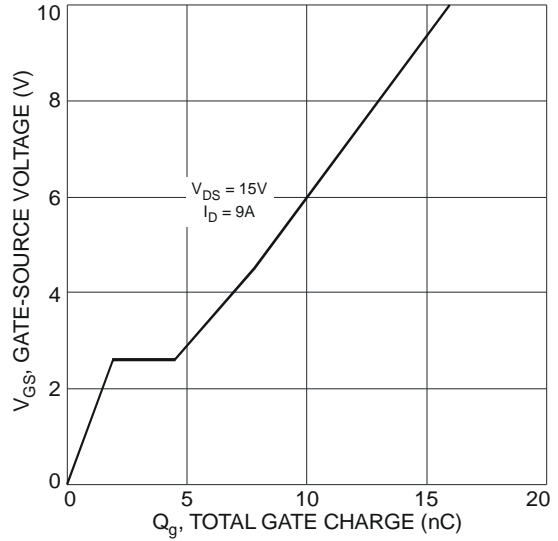


Fig. 21 Gate-Charge Characteristics

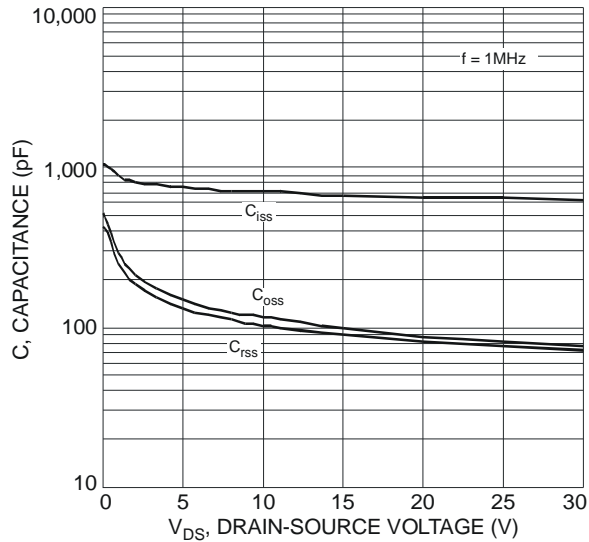


Fig. 22 Typical Total Capacitance

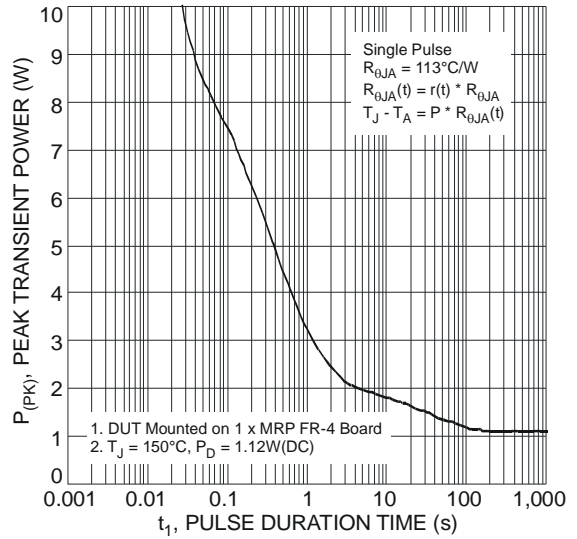


Fig. 23 Single Pulse Maximum Power Dissipation

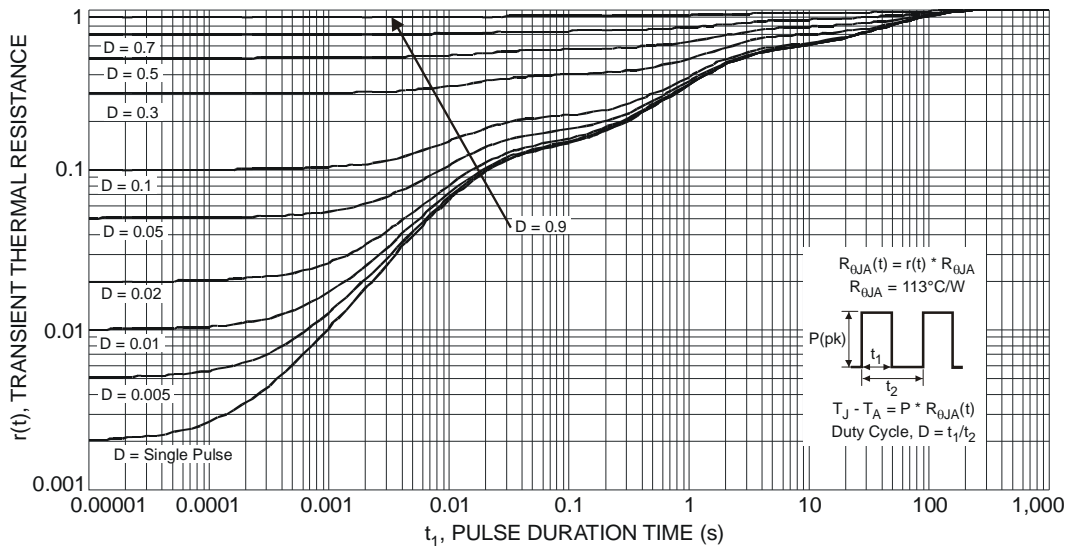


Fig. 24 Transient Thermal Response

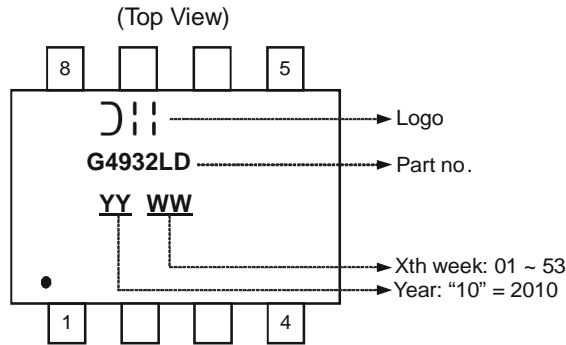
NEW PRODUCT

**Ordering Information** (Note 8)

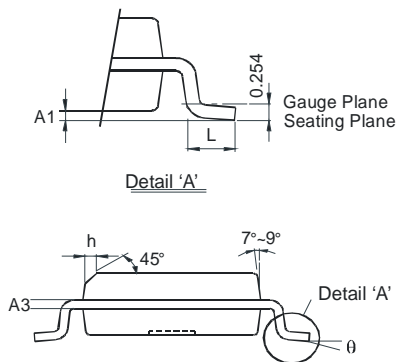
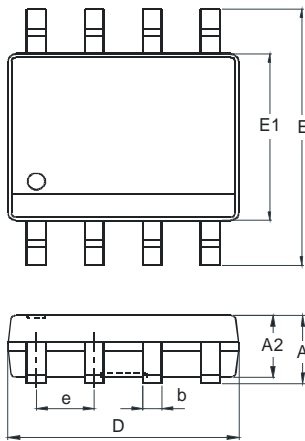
Part Number	Case	Packaging
DMG4932LSD-13	SO-8	2500 / Tape & Reel

Notes: 8. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

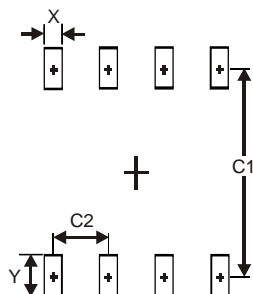


**Package Outline Dimensions**



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



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