

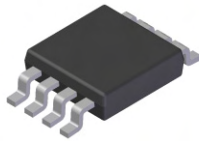
Features

- 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**

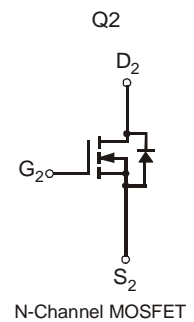
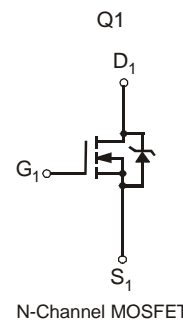
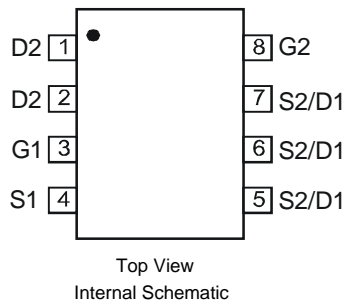
Mechanical Data

- 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}	± 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}	± 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

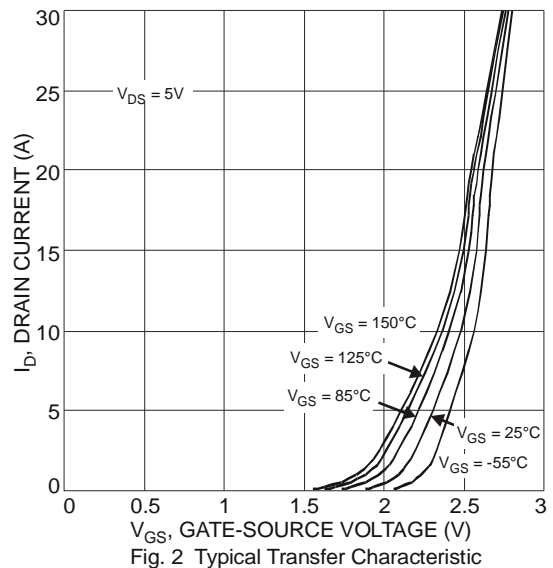
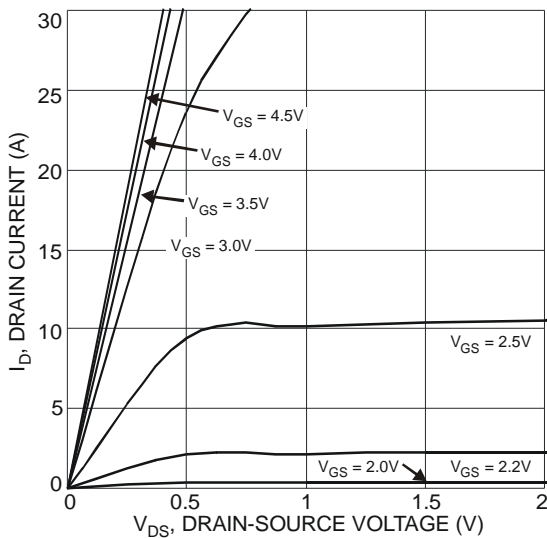
Thermal Characteristics

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.
 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_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 = 1mA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	0.1	mA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	±100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	1.0	-	2.4	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(ON)}	-	10	15	mΩ	V _{GS} = 10V, I _D = 9A
			12	18		V _{GS} = 4.5V, I _D = 7A
Forward Transfer Admittance	Y _{fs}	-	14	-	S	V _{DS} = 10V, I _D = 9A
Diode Forward Voltage	V _{SD}	-	0.4	0.6	V	V _{GS} = 0V, I _S = 1A
Maximum Body-Diode + Schottky Continuous Current	I _S	-	-	5	A	-
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iSS}	-	1932	-	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	154	-	pF	
Reverse Transfer Capacitance	C _{rSS}	-	121	-	pF	
Gate Resistance	R _g	-	2.68	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q _g	-	18.1	-	nC	V _{DS} = 15V, V _{GS} = 10V, I _D = 9A
Total Gate Charge (10V)	Q _g	-	42.0	-	nC	
Gate-Source Charge	Q _{gs}	-	4.5	-	nC	
Gate-Drain Charge	Q _{gd}	-	4.0	-	nC	
Turn-On Delay Time	t _{D(on)}	-	6.16	-	ns	V _{GS} = 10V, V _{DS} = 15V, R _G = 3Ω, R _L = 1.7Ω
Turn-On Rise Time	t _r	-	7.22	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	36.76	-	ns	
Turn-Off Fall Time	t _f	-	5.38	-	ns	



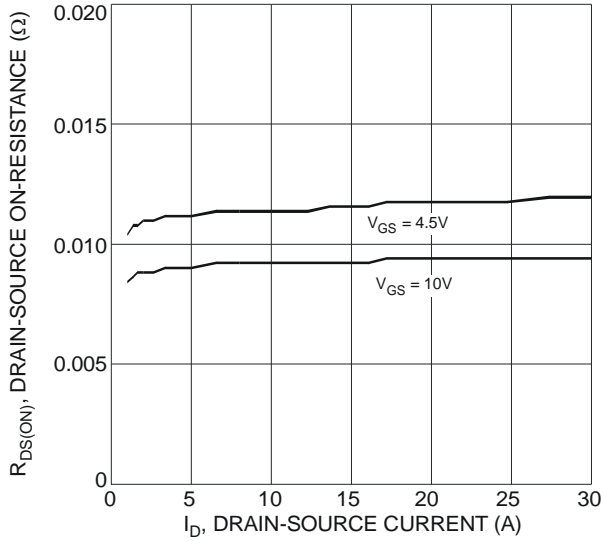


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

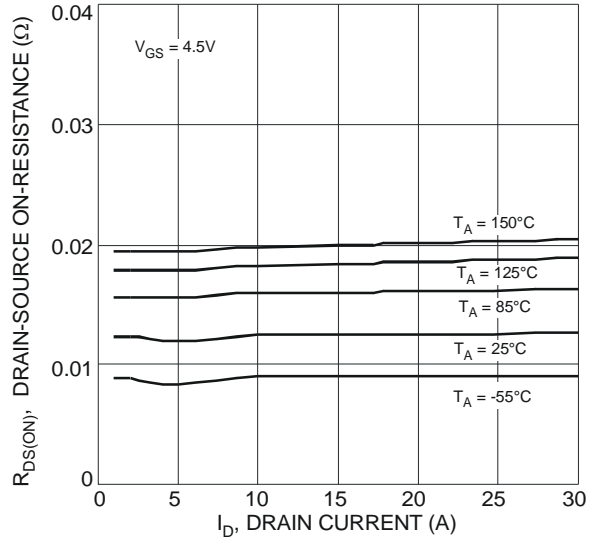


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

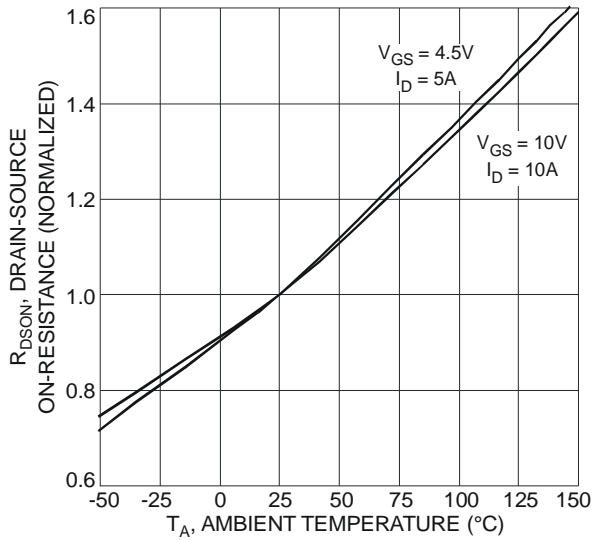


Fig. 5 On-Resistance Variation with Temperature

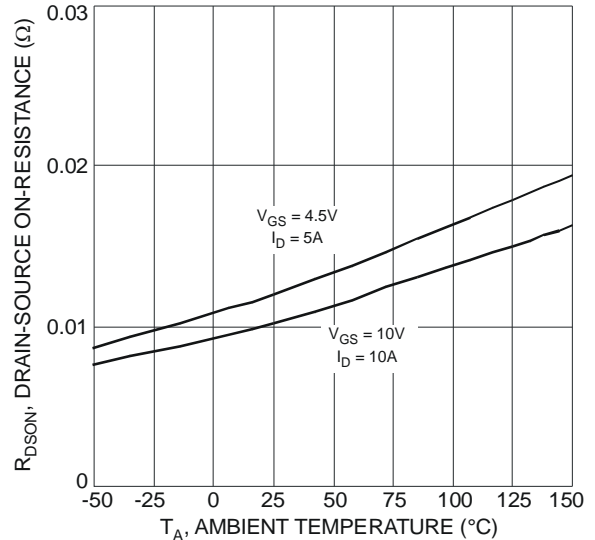


Fig. 6 On-Resistance Variation with Temperature

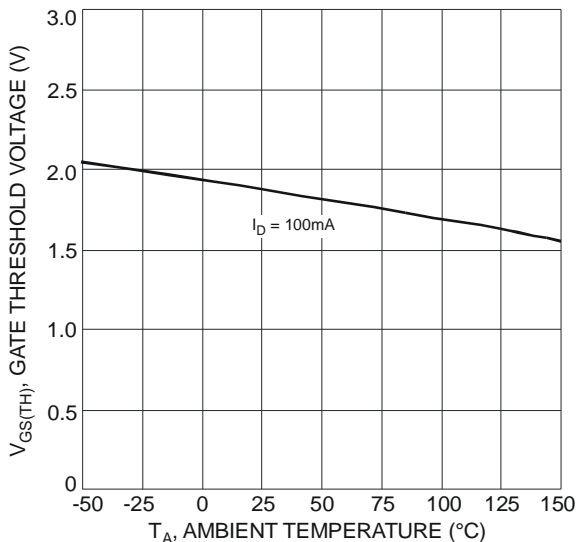


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

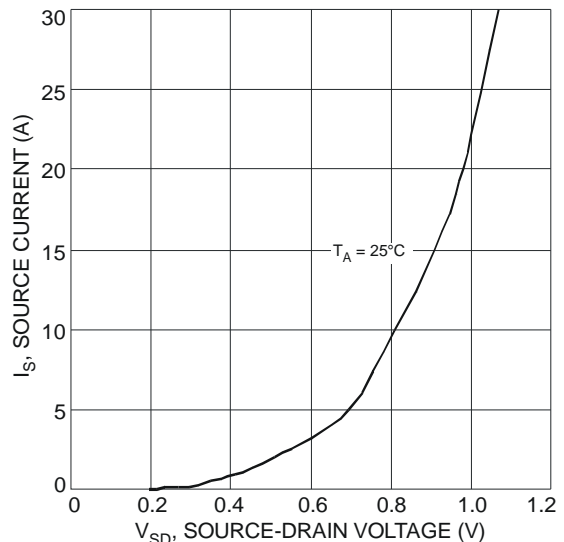


Fig. 8 Diode Forward Voltage vs. Current

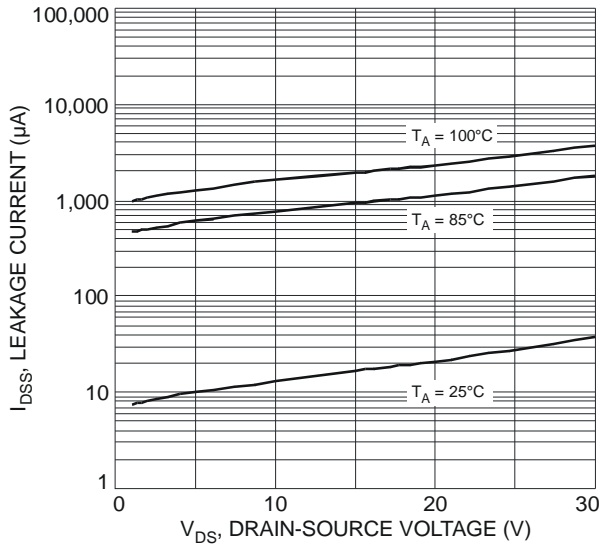


Fig. 9 Typical Leakage Current vs. Drain-Source Voltage

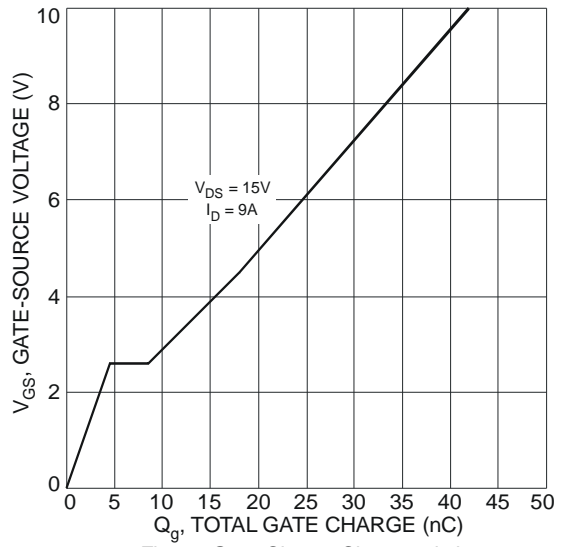


Fig. 10 Gate-Charge Characteristics

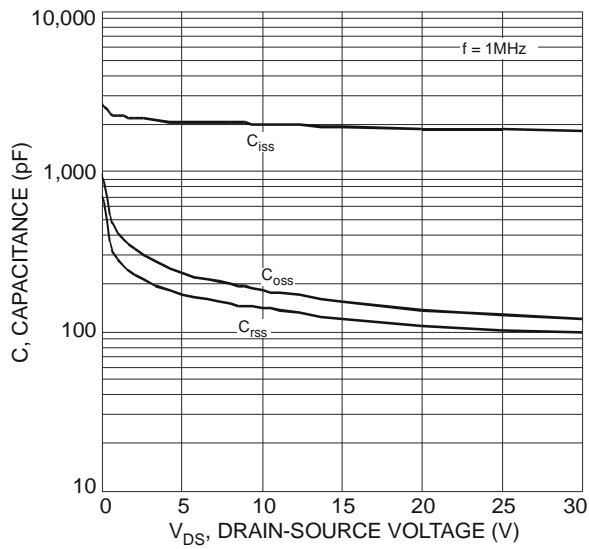
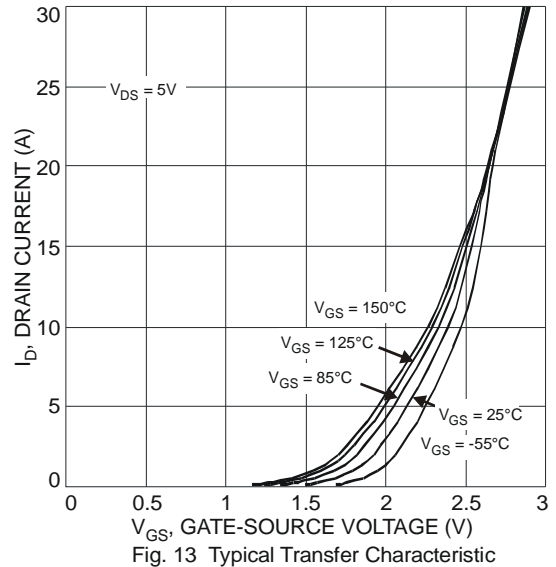
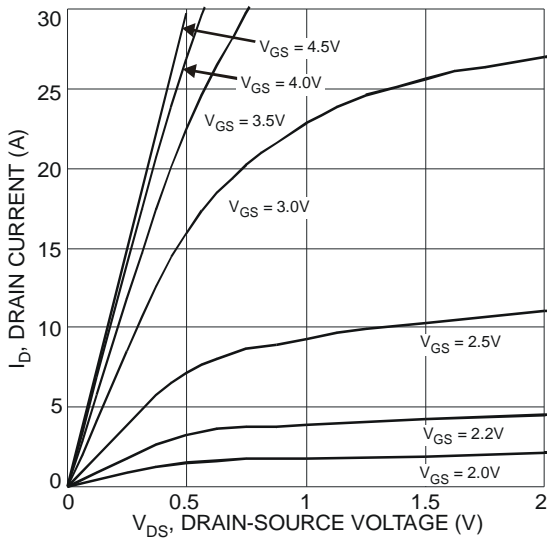


Fig. 11 Typical Total Capacitance

Electrical Characteristics – Q2 @T_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}	-	-	1	μA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	+100	nA	V _{GS} = +25V, V _{DS} = 0V
		-	-	-800		V _{GS} = -25V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	1.0	-	2.3	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance	R _{DS(on)}	-	12	15.8	mΩ	V _{GS} = 10V, I _D = 9A
		-	16	23		V _{GS} = 4.5V, I _D = 7A
Forward Transfer Admittance	Y _{fs}	-	8	-	S	V _{DS} = 10V, I _D = 9A
Diode Forward Voltage	V _{SD}	-	0.65	1.0	V	V _{GS} = 0V, I _S = 1A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	-	675	-	pF	V _{DS} = 15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	98	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	90	-	pF	
Gate Resistance	R _g	-	1.6	-	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (4.5V)	Q _g	-	7.8	-	nC	V _{DS} = 15V, V _{GS} = 10V, I _D = 9A
Total Gate Charge (10V)	Q _g	-	16.0	-	nC	
Gate-Source Charge	Q _{gs}	-	1.9	-	nC	
Gate-Drain Charge	Q _{gd}	-	2.6	-	nC	
Turn-On Delay Time	t _{D(on)}	-	5.05	-	ns	V _{GS} = 10V, V _{DS} = 15V, R _G = 3Ω, R _L = 1.7Ω
Turn-On Rise Time	t _r	-	9.21	-	ns	
Turn-Off Delay Time	t _{D(off)}	-	20.76	-	ns	
Turn-Off Fall Time	t _f	-	4.94	-	ns	

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



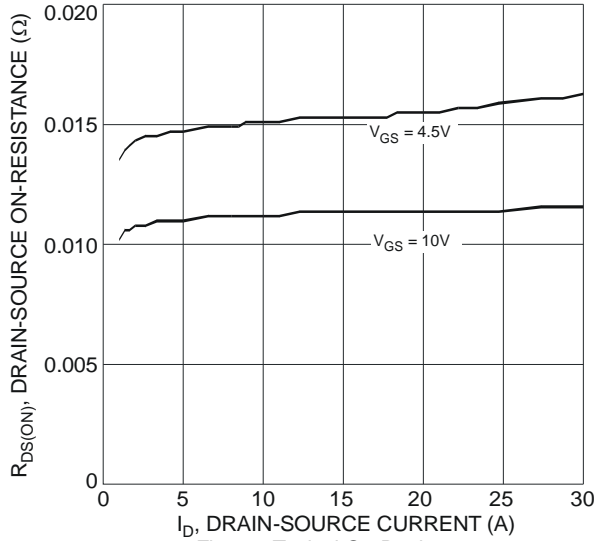


Fig. 14 Typical On-Resistance vs. Drain Current and Gate Voltage

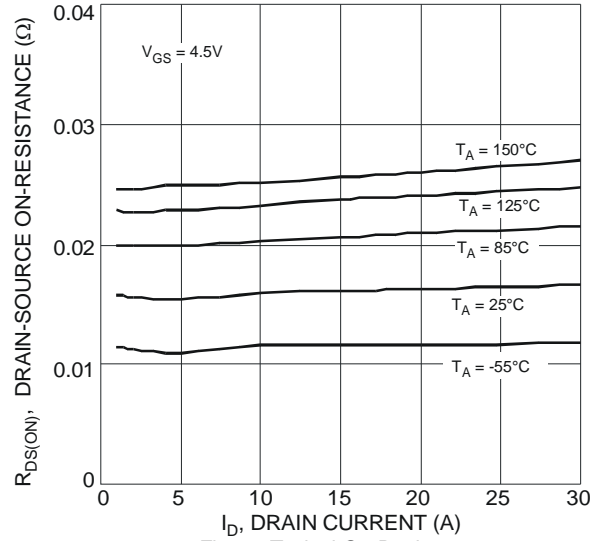


Fig. 15 Typical On-Resistance vs. Drain Current and Temperature

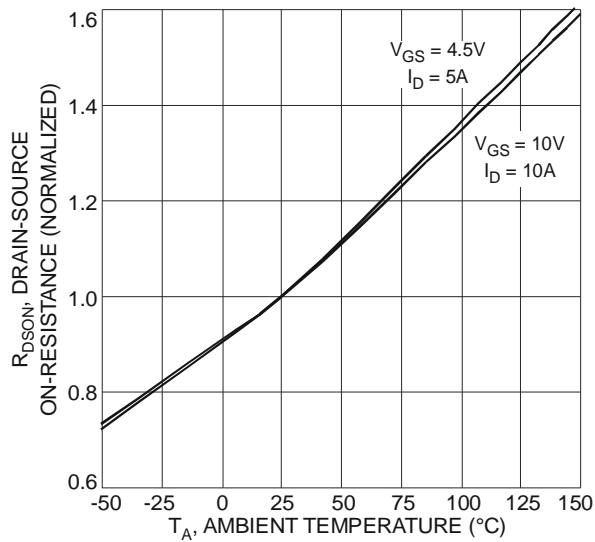


Fig. 16 On-Resistance Variation with Temperature

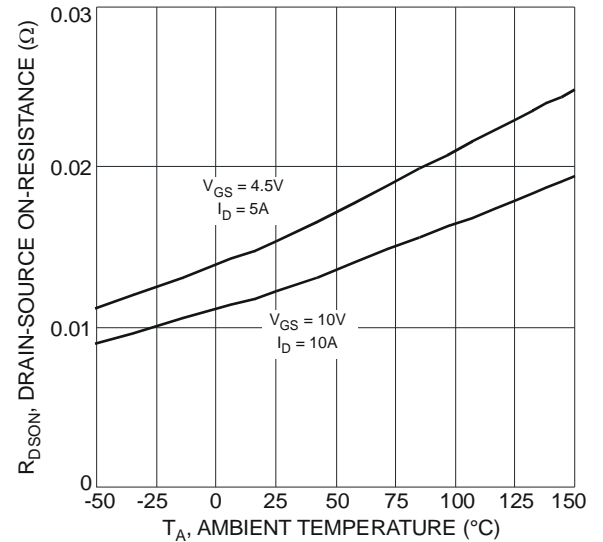


Fig. 17 On-Resistance Variation with Temperature

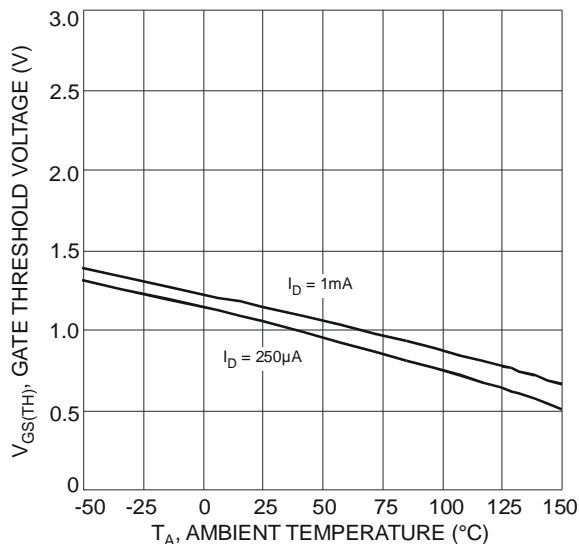


Fig. 18 Gate Threshold Variation vs. Ambient Temperature

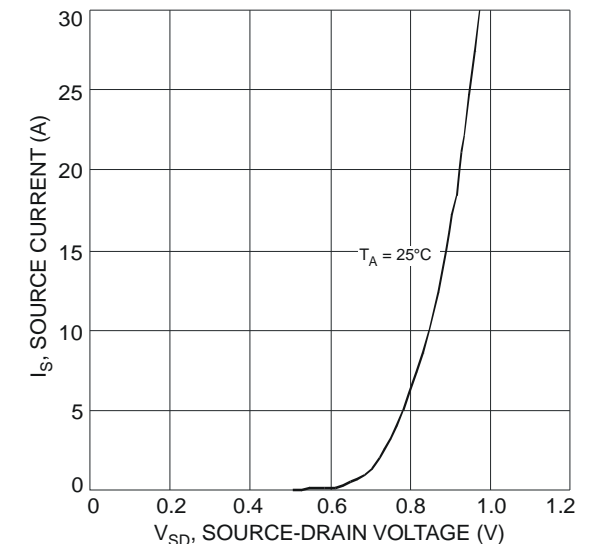


Fig. 19 Diode Forward Voltage vs. Current

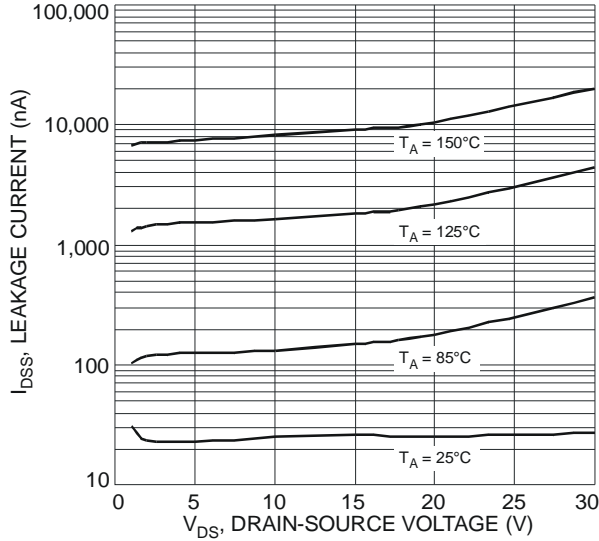


Fig. 20 Typical Leakage Current vs. Drain-Source Voltage

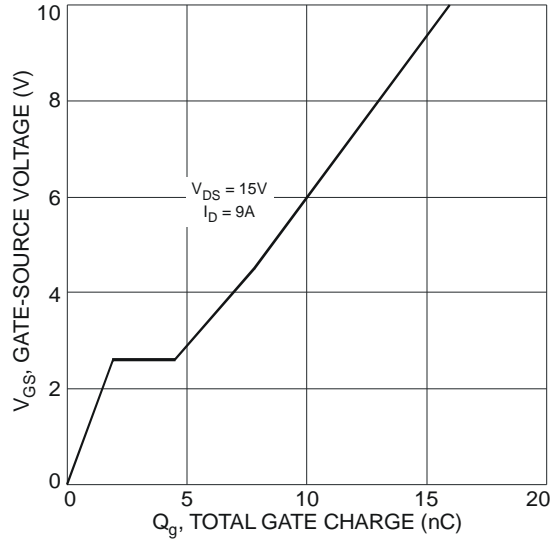


Fig. 21 Gate-Charge Characteristics

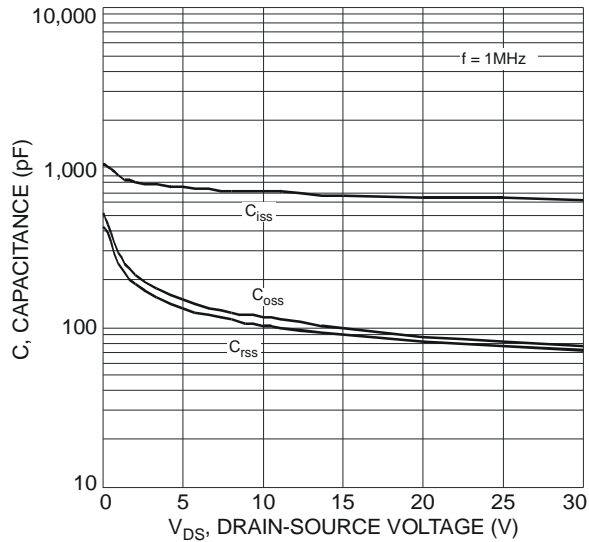


Fig. 22 Typical Total Capacitance

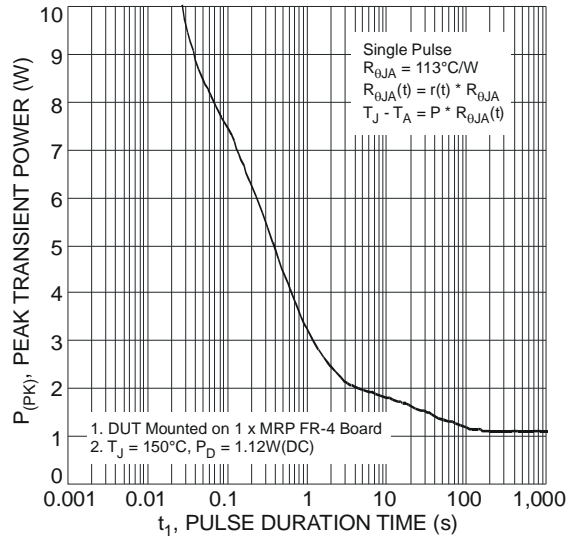


Fig. 23 Single Pulse Maximum Power Dissipation

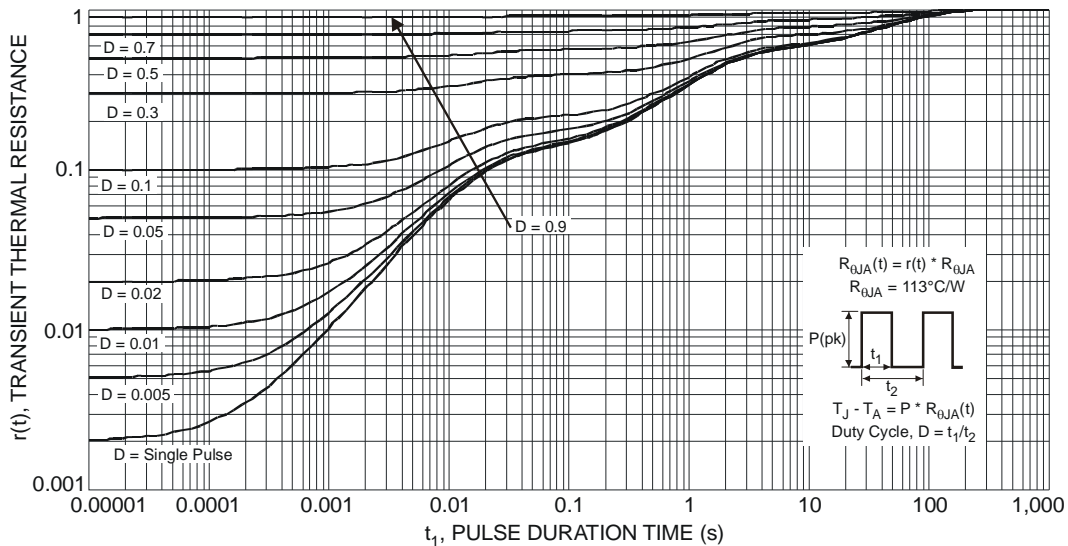


Fig. 24 Transient Thermal Response

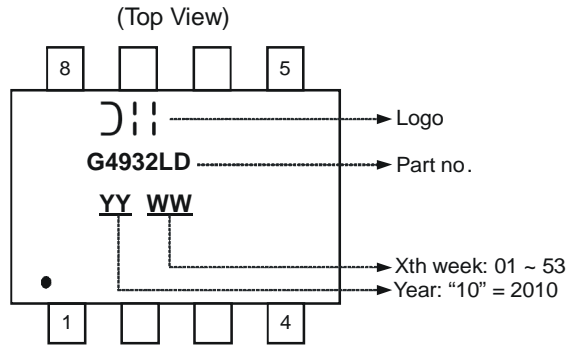
NEW PRODUCT

Ordering Information (Note 8)

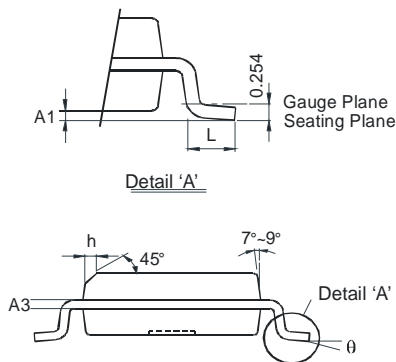
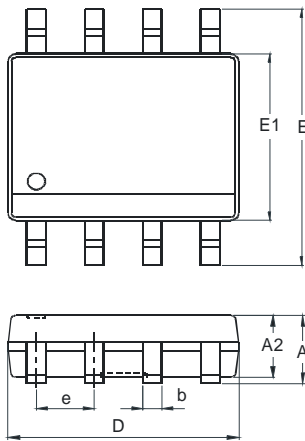
Part Number	Case	Packaging
DMG4932LSD-13	SO-8	2500 / Tape & Reel

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

Marking Information

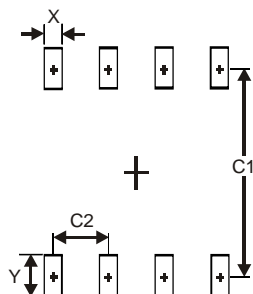


Package Outline Dimensions



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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