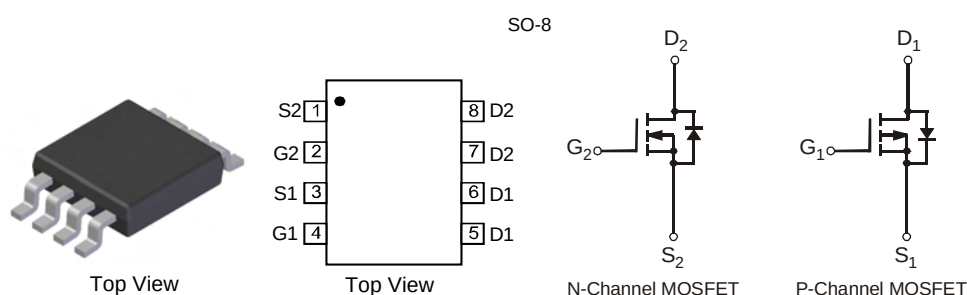


Features

- 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)



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	I _D	8.5	A
		T _A = 85°C		7.1	
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	I _D	-7.0	A
		T _A = 85°C		-4.5	
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 _{θJA}	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.

Electrical Characteristics N-CHANNEL – Q1 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$	I_{DSS}	-	-	1.0	μA	$V_{DS} = 30V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	1	1.45	2.1	V	$V_{DS} = V_{GS}, I_C = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	14	21	$m\Omega$	$V_{GS} = 10V, I_C = 7A$
			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	$V_{GS} = 10V, V_{DS} = 15V, R_G = 6\Omega, I_D = 1A$
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	

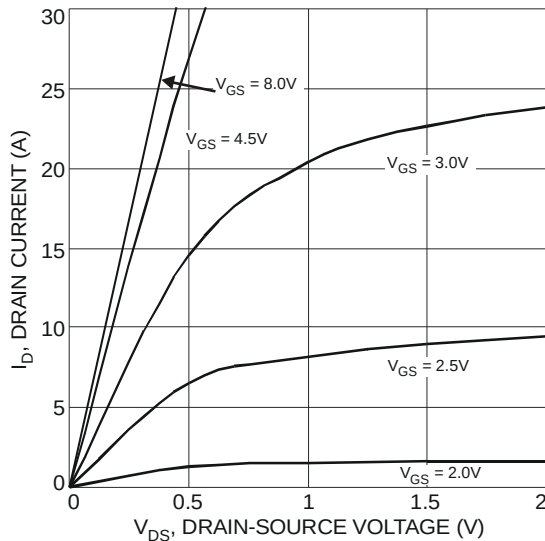


Fig. 1 Typical Output Characteristics

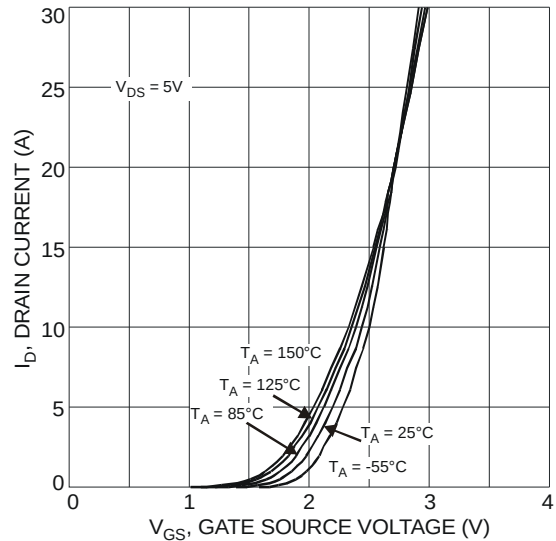


Fig. 2 Typical Transfer Characteristics

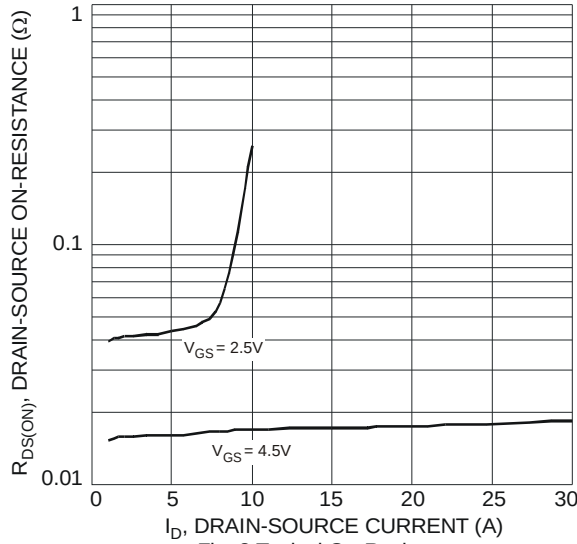


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

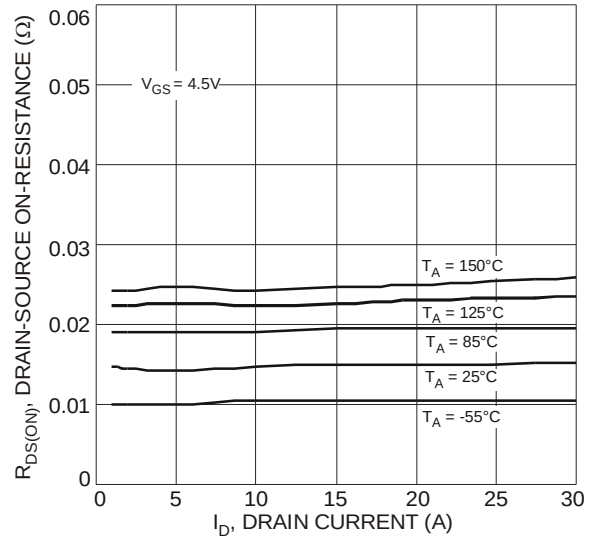


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

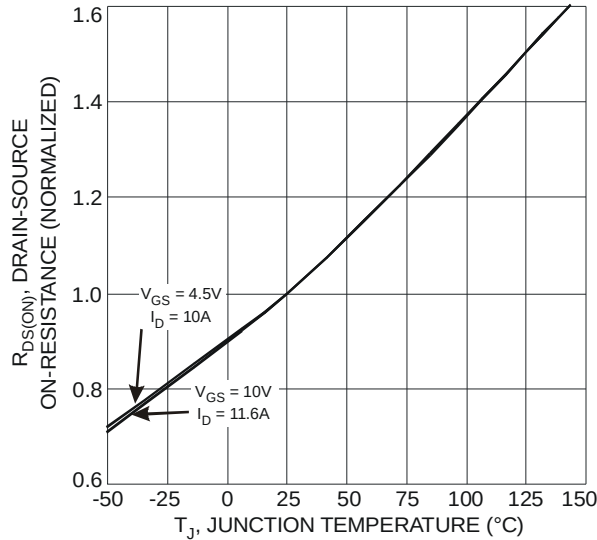


Fig. 5 On-Resistance Variation with Temperature

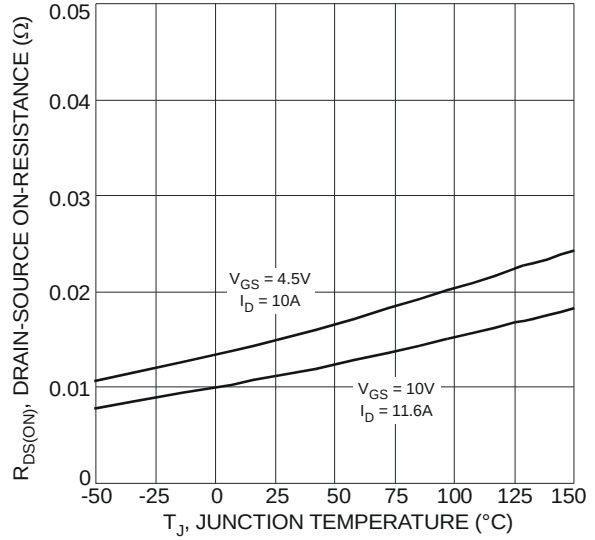


Fig. 6 On-Resistance Variation with Temperature

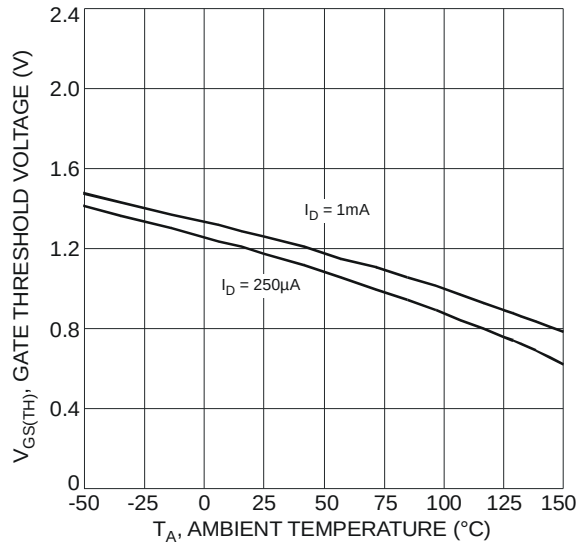


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

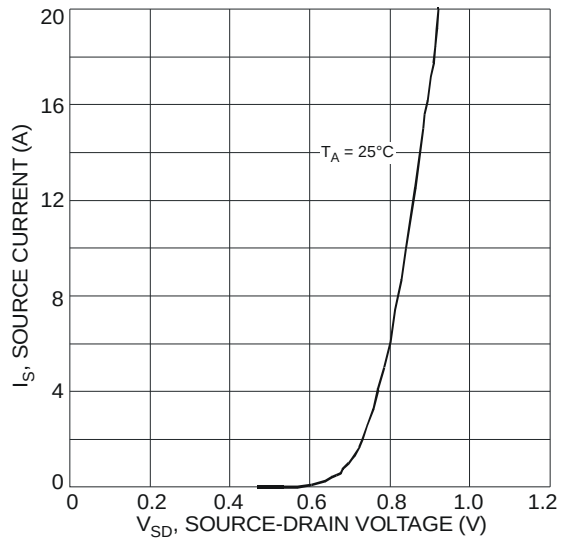
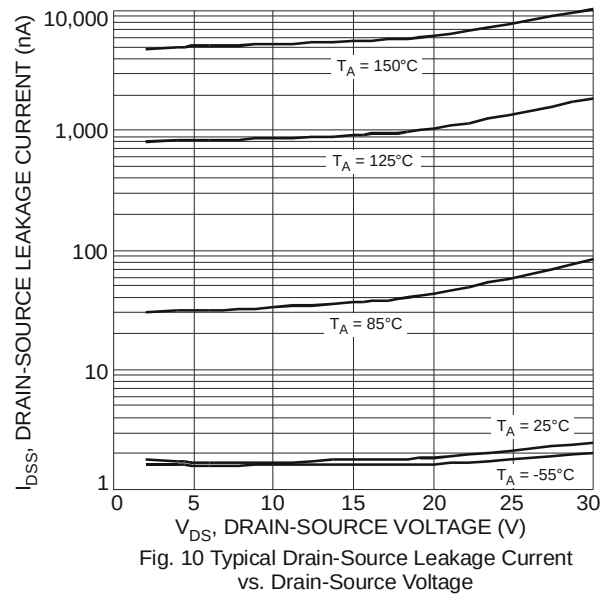
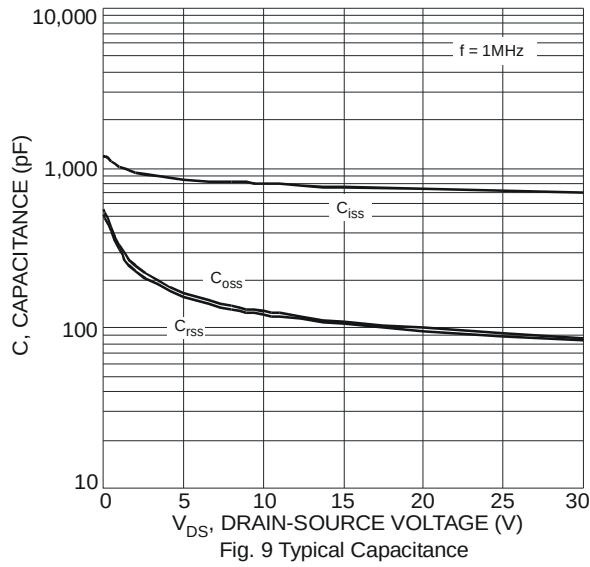


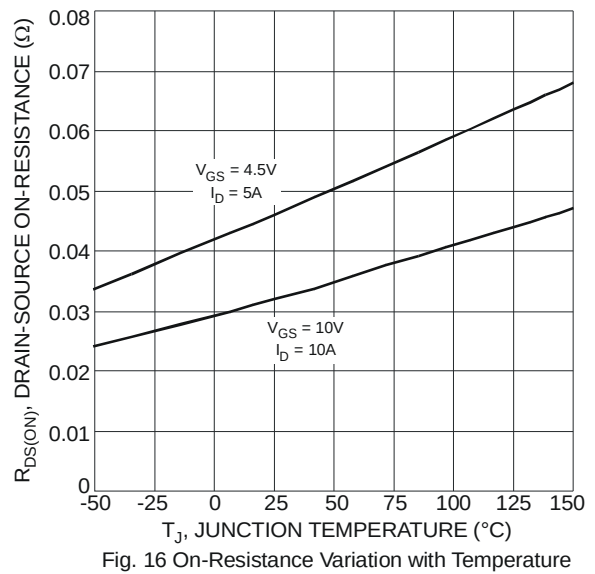
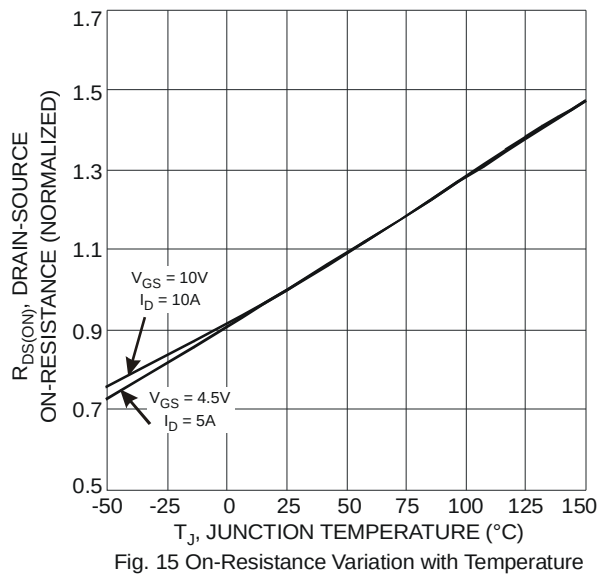
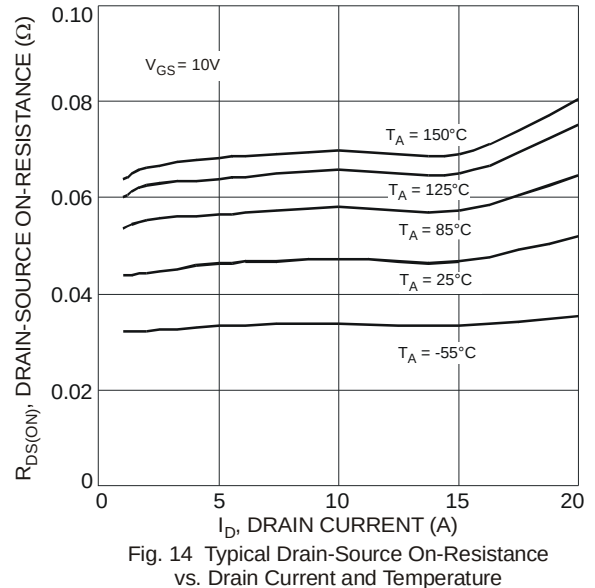
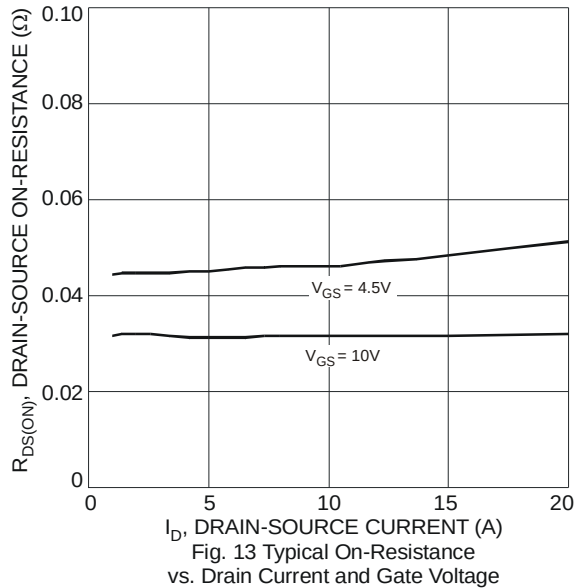
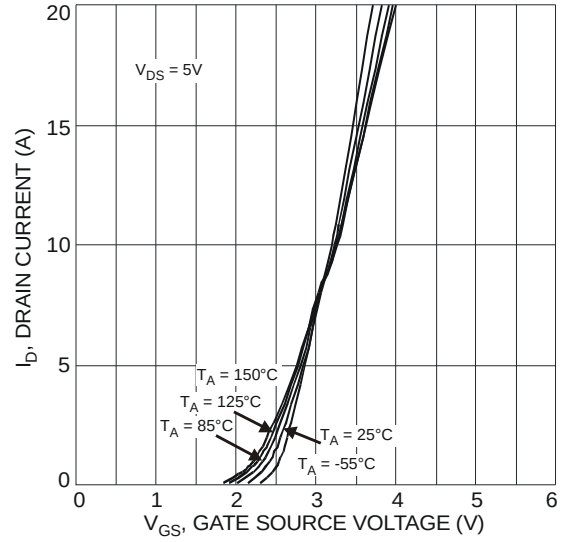
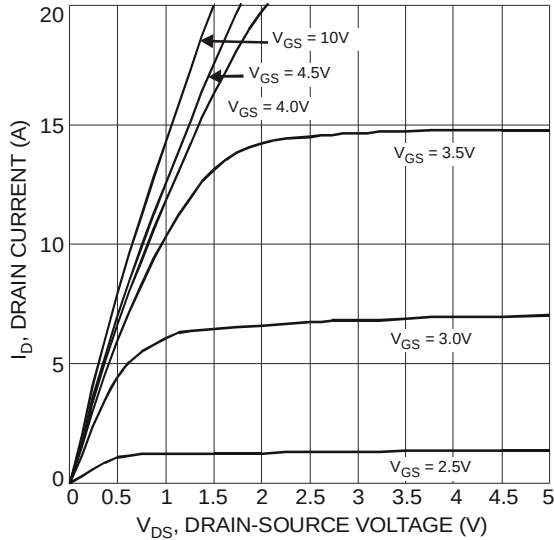
Fig. 8 Diode Forward Voltage vs. Current



Electrical Characteristics P-CHANNEL @TA = 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.



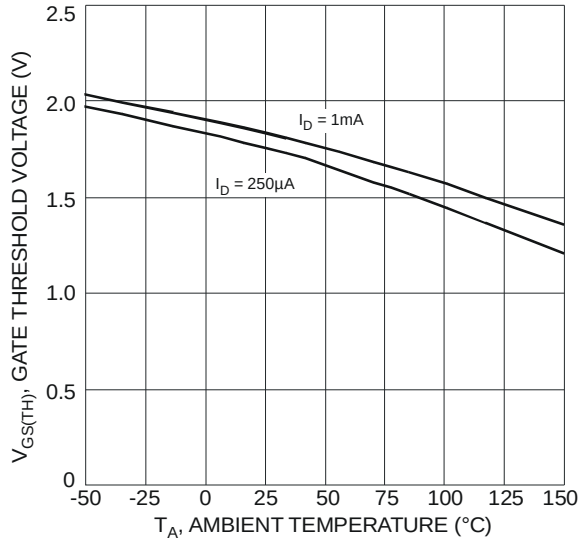


Fig. 17 Gate Threshold Variation vs. Ambient Temperature

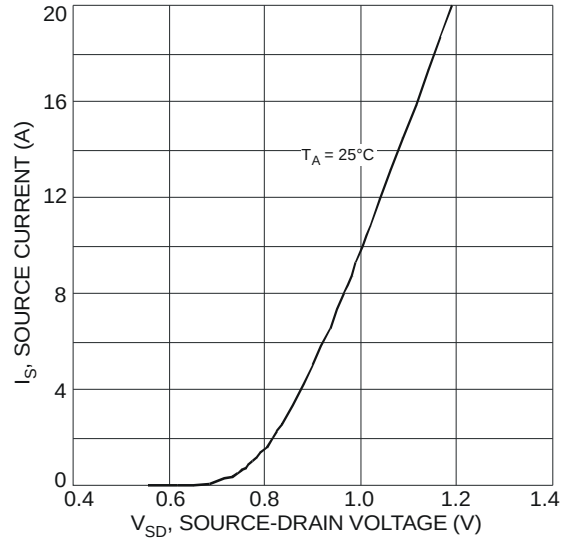


Fig. 18 Diode Forward Voltage vs. Current

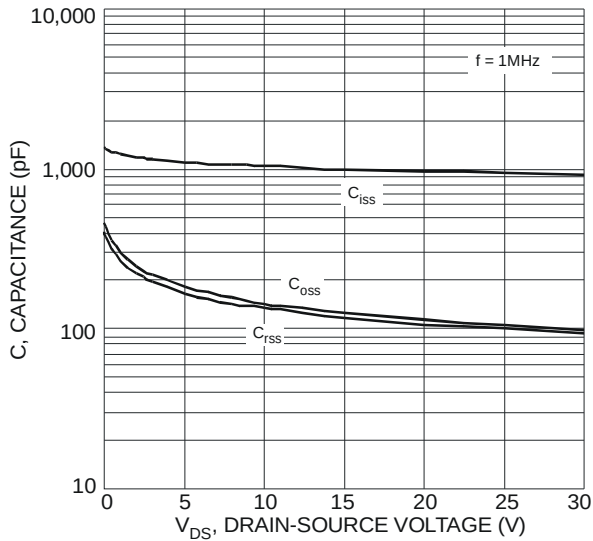


Fig. 19 Typical Capacitance

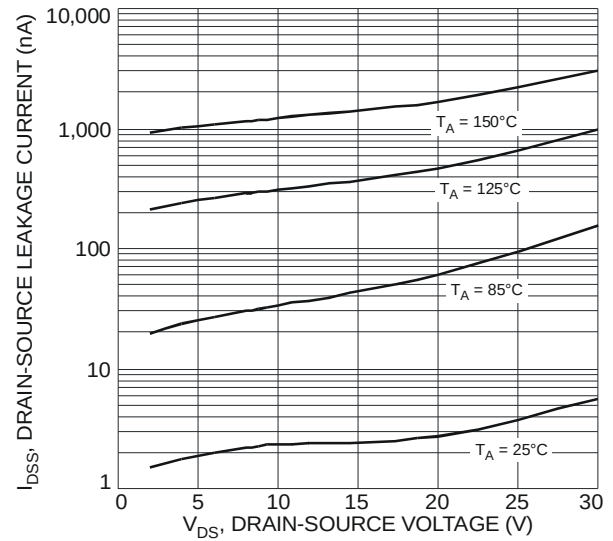


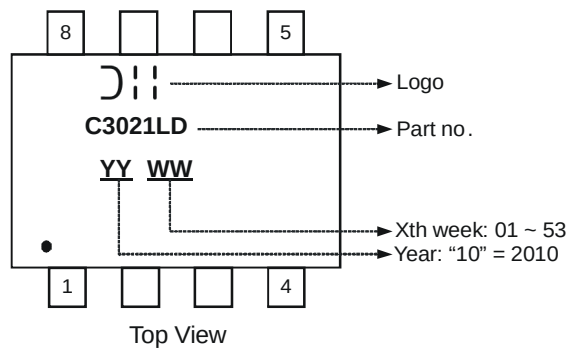
Fig. 20 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

Ordering Information (Note 7)

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

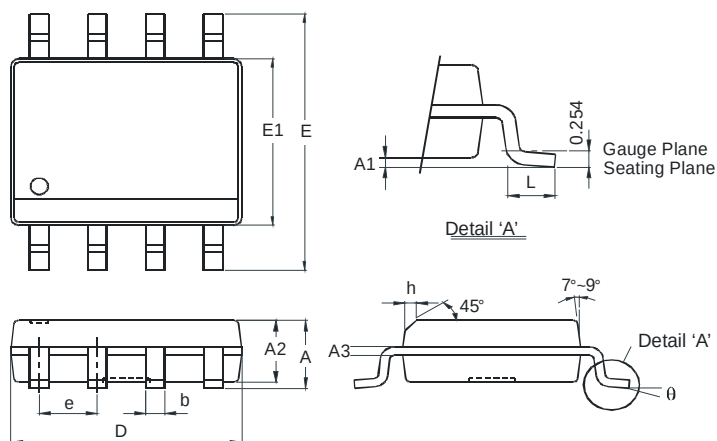
Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



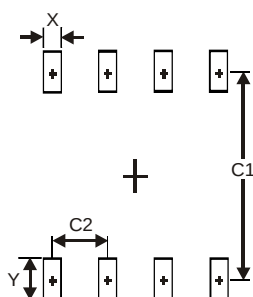
Top View

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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Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А