COMPLEMENTARY PAIR ENHANCEMENT MODE MOSFET

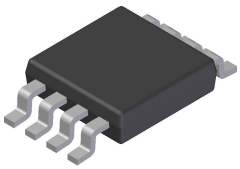
NEW PRODUCT

Features

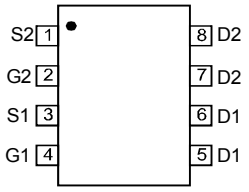
- Complementary Pair MOSFETs
- Low On-Resistance
  - N-Channel: 36mΩ @ 10V
    61mΩ @ 4.5V
  - P-Channel: 36mΩ @ -10V
- 64mΩ @ -4.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

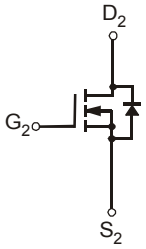
- Case: SOP-8L
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method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



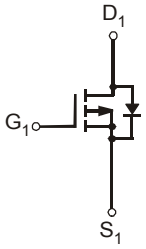
TOP VIEW



TOP VIEW
Internal Schematic



N-Channel MOSFET



P-Channel MOSFET

Maximum Ratings N-CHANNEL @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
Drain Current (Note 1)	T_A = 25°C T_A = 70°C	I_D	6.9 5.8	A
Pulsed Drain Current (Note 4)		I_{DM}	24	A

Maximum Ratings P-CHANNEL @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
Drain Current (Note 1)	T_A = 25°C T_A = 70°C	I_D	-6 -5	A
Pulsed Drain Current (Note 4)		I_{DM}	-21	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 1)	P_D	2.5	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Device mounted on FR-4 PCB, on 2oz. Copper pads with $R_{\theta JA}$ = 50°C/W.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
4. Repetitive rating, pulse width limited by junction temperature.

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Electrical Characteristics N-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	I_{DSS}	—	—	1	μA	V_{DS} = 24V, 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	—	2.1	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	— —	28 51	36 61	mΩ	V_{GS} = 10V, I_D = 6.9A V_{GS} = 4.5V, I_D = 5.0A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	7.7	—	S	V_{DS} = 5V, I_D = 6.9A
Diode Forward Voltage (Note 5)	V_{SD}	0.5	—	1.2	V	V_{GS} = 0V, I_S = 1A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	384	—	pF	V_{DS} = 15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	67	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	48	—	pF	
Gate Resistance	R_G	—	1.3	—	Ω	V_{GS} = 0V V_{DS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_g	—	4.3 8.6	—	nC	V_{DS} = 10V, V_{GS} = 4.5V, I_D = 10A V_{DS} = 10V, V_{GS} = 10V, I_D = 10A
Gate-Source Charge	Q_{gs}	—	1.2	—		V_{DS} = 10V, V_{GS} = 10V, I_D = 10A
Gate-Drain Charge	Q_{gd}	—	2.5	—		V_{DS} = 10V, V_{GS} = 10V, I_D = 10A

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	I_{DSS}	—	—	-1.0	μA	V_{DS} = -24V, 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	—	-2.2	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	— —	30 53	36 64	mΩ	V_{GS} = -10V, I_D = -6A V_{GS} = -4.5V, I_D = -5A
Forward Transfer Admittance	$\|Y_{fs}\|$	—	8.8	—	S	V_{DS} =-5V, I_D = -6A
Diode Forward Voltage (Note 5)	V_{SD}	-0.5	—	-1.2	V	V_{GS} = 0V, I_S = -1A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	—	637	—	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	147	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	105	—	pF	
Gate Resistance	R_G	—	3.3	—	Ω	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_g	—	6.8 13.7	—	nC	V_{DS} = 15V, V_{GS} = -4.5V, I_D = 6A V_{DS} = 15V, V_{GS} = -10V, I_D = 6A
Gate-Source Charge	Q_{gs}	—	1.6	—		V_{DS} = 15V, V_{GS} = -10V, I_D = 6A
Gate-Drain Charge	Q_{gd}	—	4.2	—		V_{DS} = 15V, V_{GS} = -10V, I_D = 6A

Notes: 5. Short duration pulse test used to minimize self-heating effect.

NEW PRODUCT

N-CHANNEL

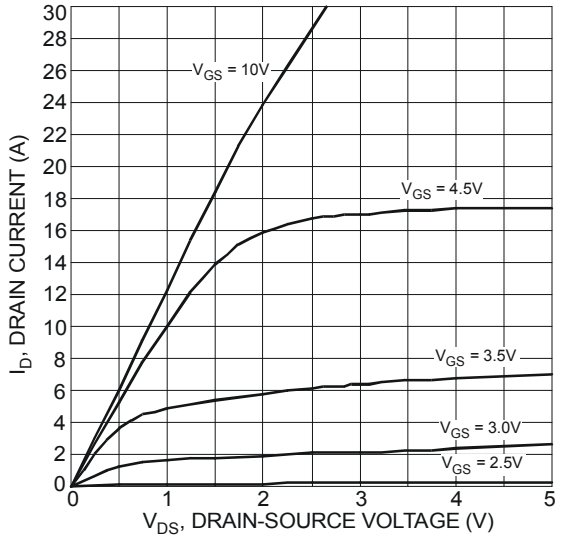

Fig. 1 Typical Output Characteristics

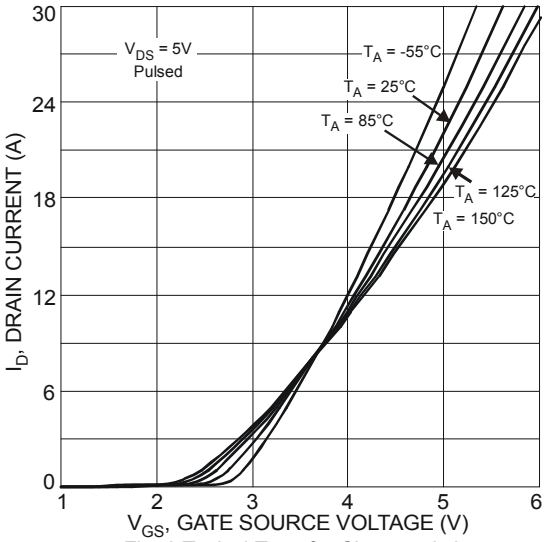

Fig. 2 Typical Transfer Characteristics

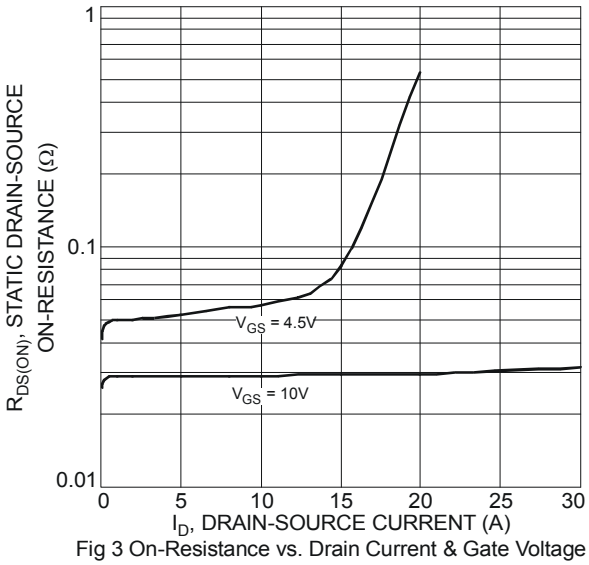

Fig 3 On-Resistance vs. Drain Current & Gate Voltage

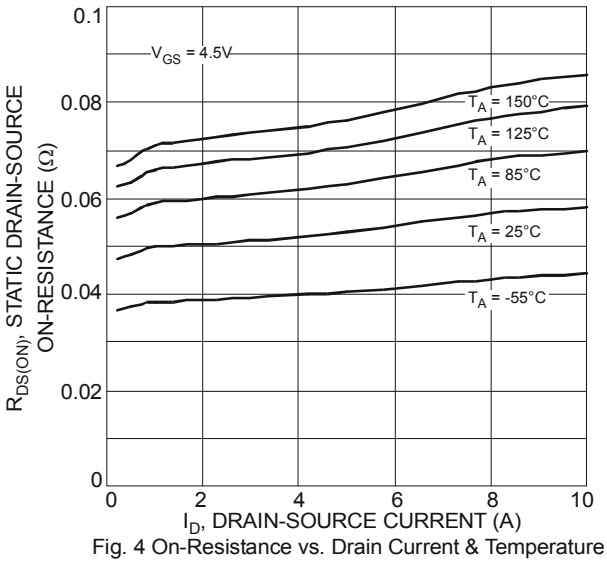

Fig. 4 On-Resistance vs. Drain Current & Temperature

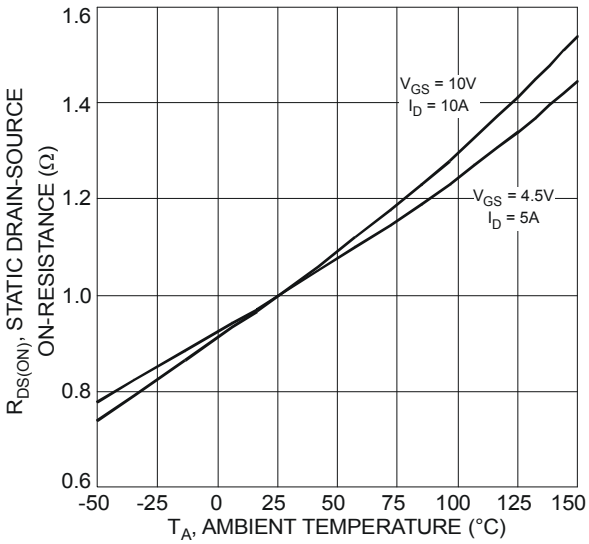

Fig. 5 Static Drain-Source On-Resistance vs. Ambient Temperature

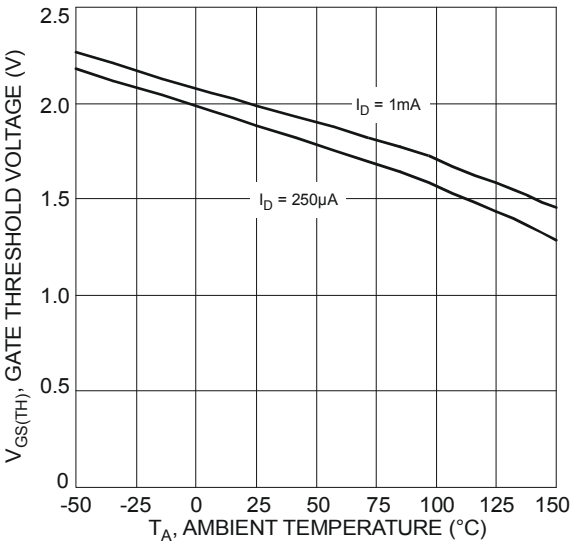

Fig. 6 Gate Threshold Variation vs. Ambient Temperature

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N-CHANNEL (continued)

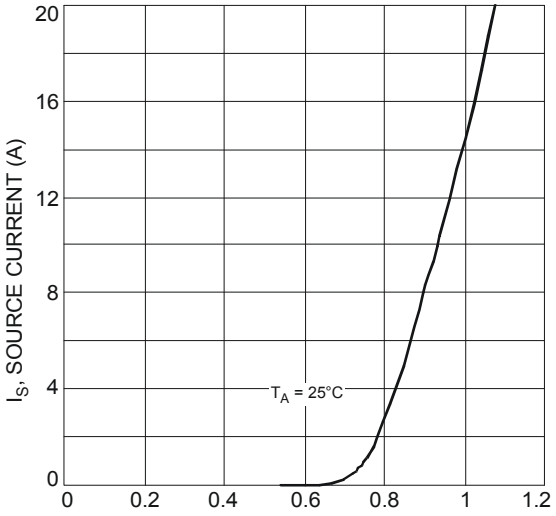

Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

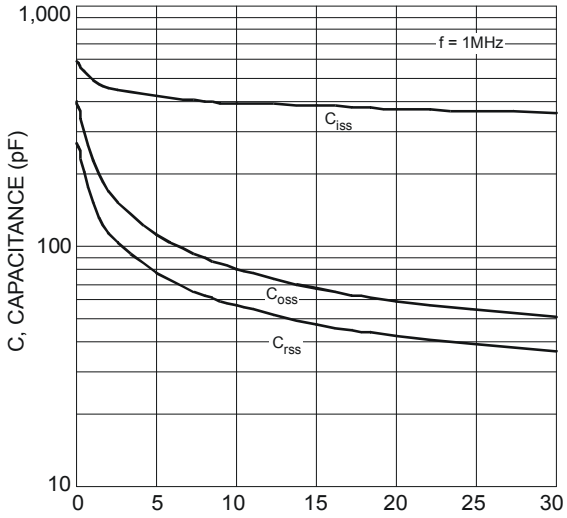

Fig. 8 Typical Total Capacitance

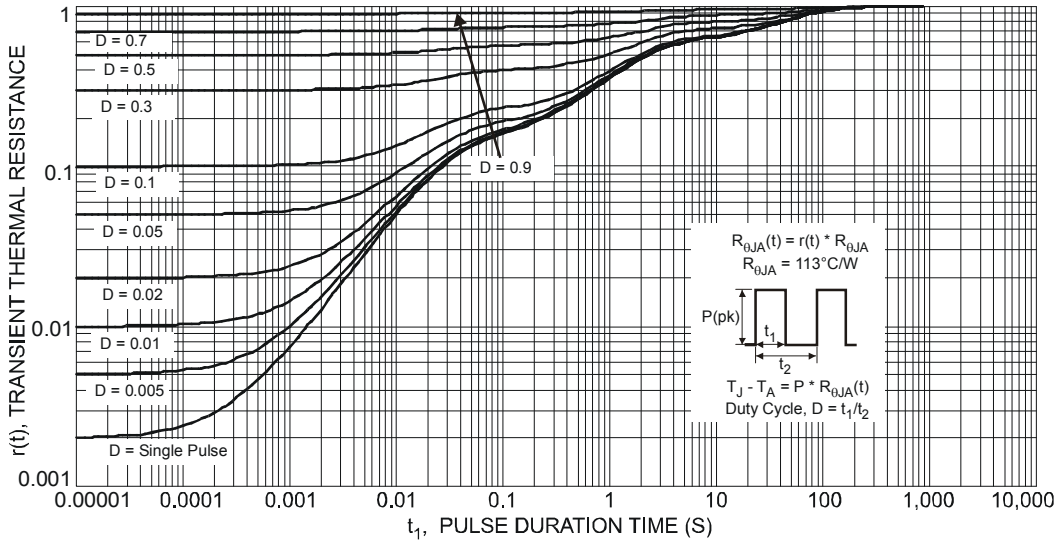

Fig. 9 Transient Thermal Resistance

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P-CHANNEL

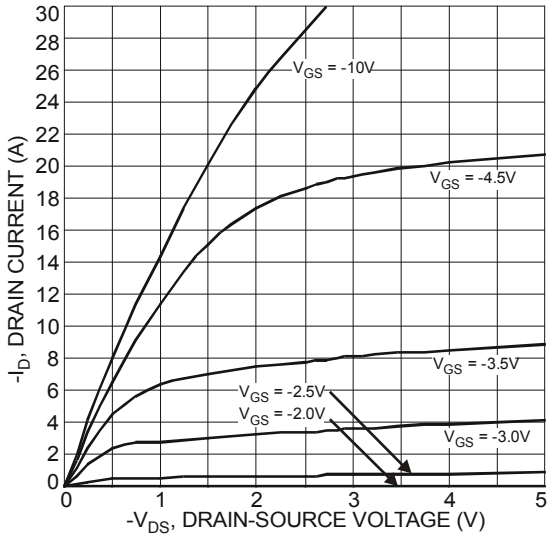

Fig. 10 Typical Output Characteristics

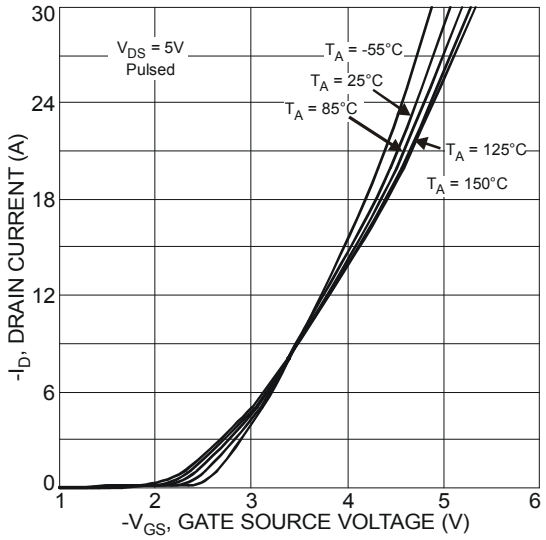

Fig. 11 Typical Transfer Characteristics

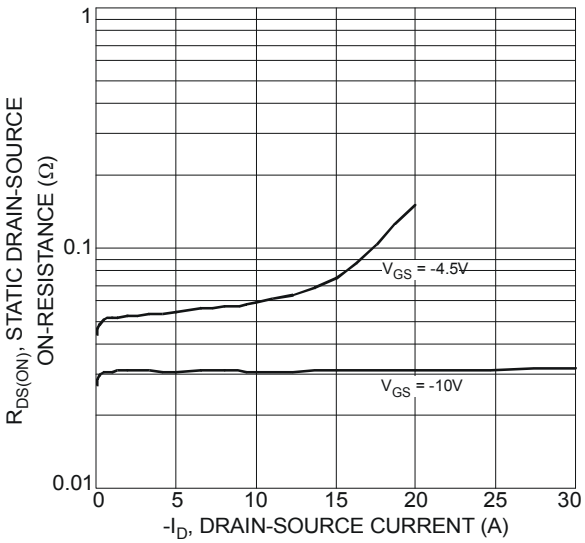

Fig 12 On-Resistance vs. Drain Current & Gate Voltage

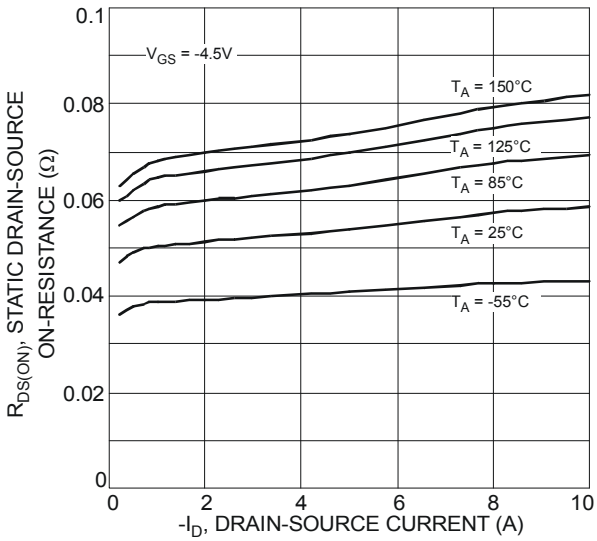

Fig 13 On-Resistance vs. Drain Current & Temperature

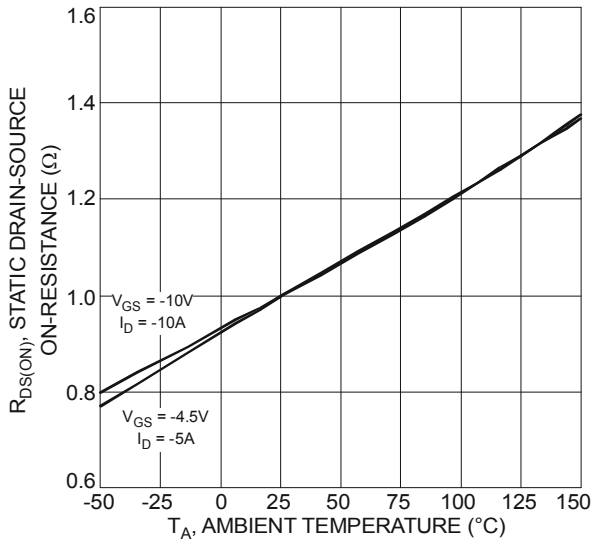

Fig. 14 Static Drain-Source On-Resistance vs. Ambient Temperature

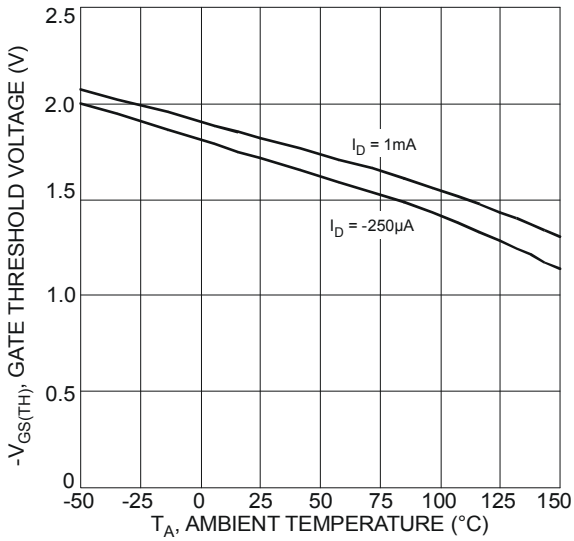

Fig. 15 Gate Threshold Variation vs. Ambient Temperature

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P-CHANNEL (continued)

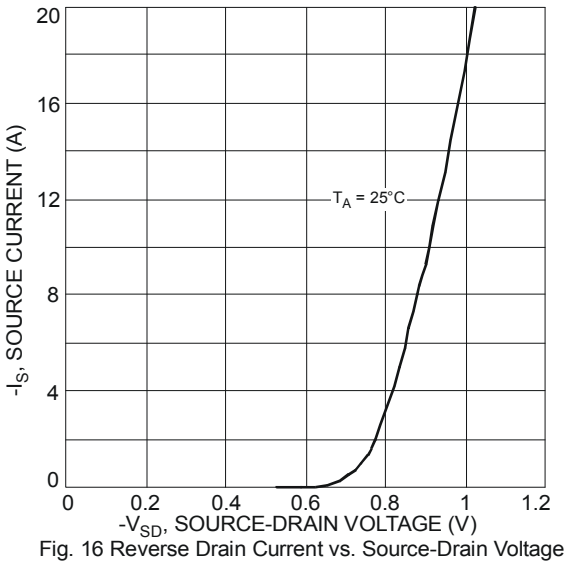


Fig. 16 Reverse Drain Current vs. Source-Drain Voltage

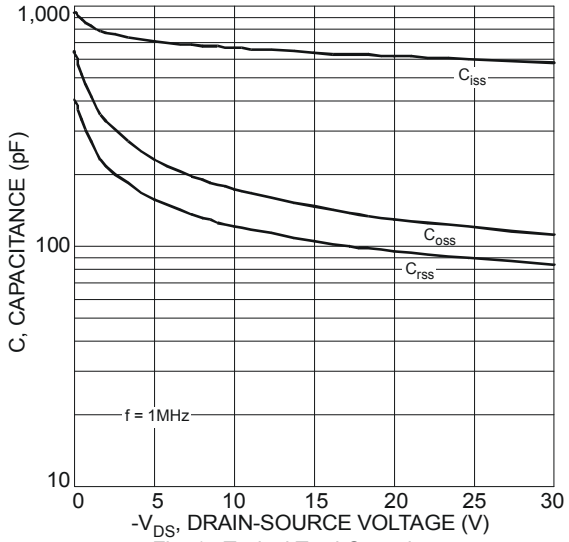


Fig. 17 Typical Total Capacitance

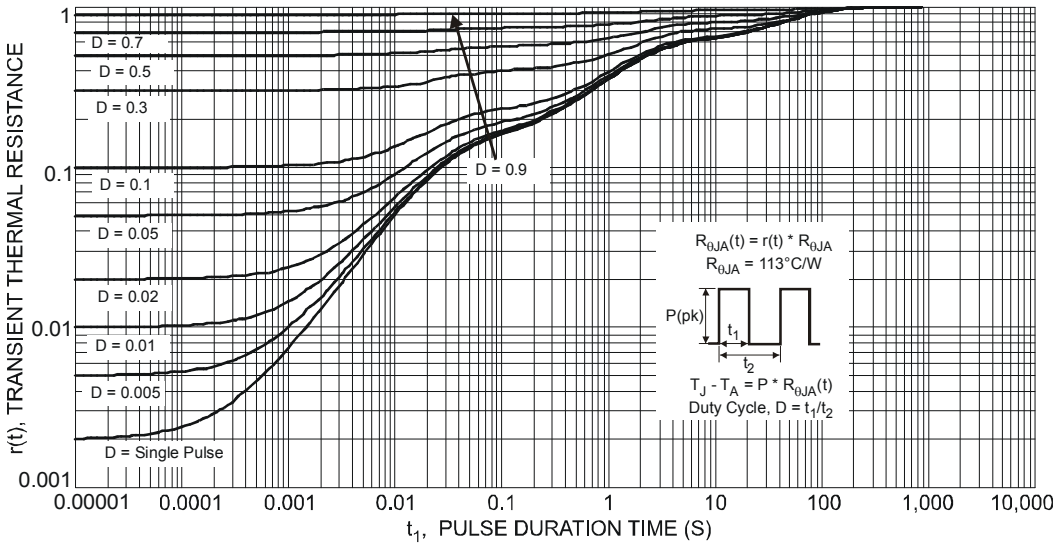


Fig. 18 Transient Thermal Resistance

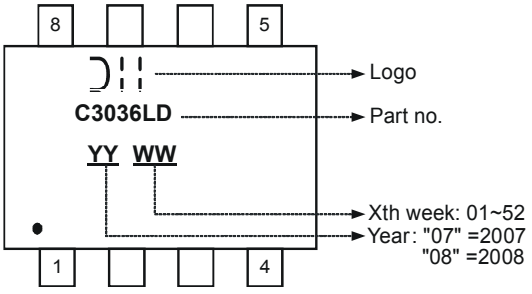
Ordering Information (Note 6)

Part Number	Case	Packaging
DMC3036LSD-13	SOP-8L	2500/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

(Top View)



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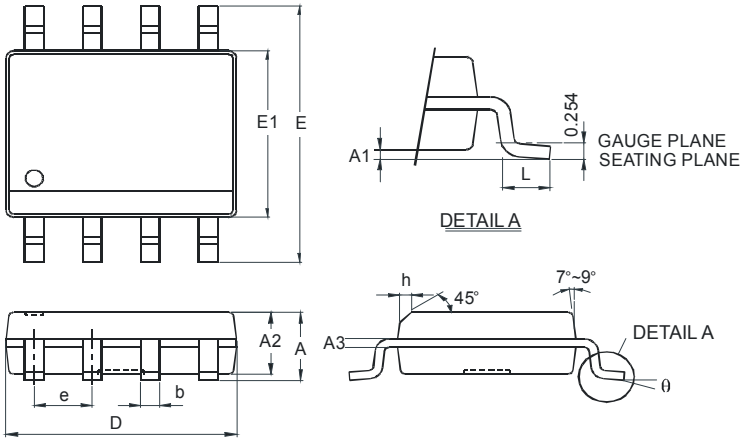
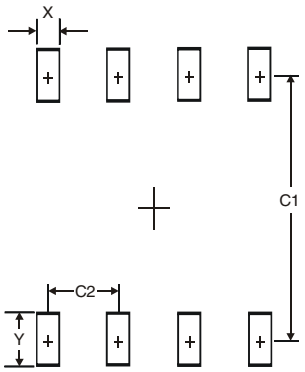
Package Outline Dimensions



SOP-8L		
Dim	**Min**	**Max**
A	-	1.75
A1	0.08	0.25
A2	1.30	1.50
A3	0.20 Typ.	
b	0.3	0.5
D	4.80	5.30
E	5.79	6.20
E1	3.70	4.10
e	1.27 Typ.	
h	-	0.35
L	0.38	1.27
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