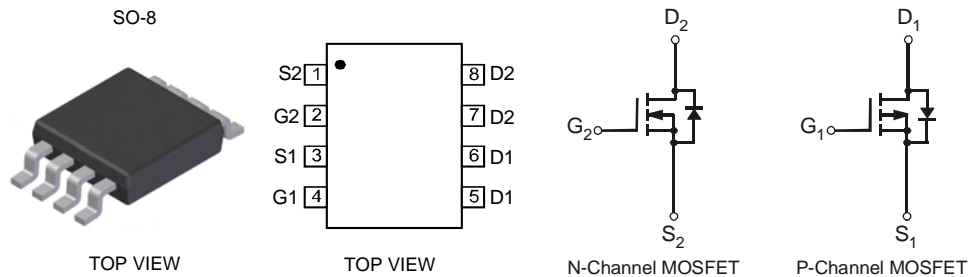


## Features

- Complementary Pair MOSFET
- Low On-Resistance
  - N-Channel: 20mΩ @ 10V  
32mΩ @ 4.5V
  - P-Channel: 45mΩ @ -10V  
65mΩ @ -4.5V
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **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
- Terminals Connections: See Diagram
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208
- Weight: 0.072g (approximate)

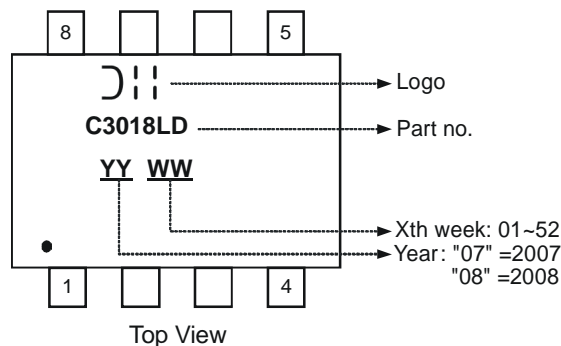


## Ordering Information (Note 3)

Part Number	Case	Packaging
DMC3018LSD-13	SO-8	2500/Tape & Reel

- Notes:
1. No purposefully added lead.
  2. Diodes Inc.'s "Green" Policy can be found on our website at <http://www.diodes.com>
  3. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



**Maximum Ratings N-CHANNEL** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (Note 4)	$I_D$	9.1 7.7	A
Pulsed Drain Current (Note 5)	$I_{DM}$	32	A

**Maximum Ratings P-CHANNEL** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain Source Voltage	$V_{DSS}$	-30	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (Note 4)	$I_D$	-6 -5	A
Pulsed Drain Current (Note 5)	$I_{DM}$	-21	A

**Thermal Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	$P_D$	2.5	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	30	—	—	V	$V_{GS} = 0V, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 24V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	1	1.9	2.1	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	18 29	20 32	$\text{m}\Omega$	$V_{GS} = 10V, I_D = 6.9A$ $V_{GS} = 4.5V, I_D = 5.0A$
Forward Transfer Admittance	$ Y_{fs} $	—	10	—	S	$V_{DS} = 5V, I_D = 6.9A$
Diode Forward Voltage (Note 6)	$V_{SD}$	0.5	—	1.2	V	$V_{GS} = 0V, I_S = 1A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	631	—	pF	$V_{DS} = 15V, V_{GS} = 0V, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	147	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	99	—	pF	
Gate Resistance	$R_G$	—	0.9	—	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	$Q_g$	—	5.9 12.4	—	nC	$V_{DS} = 15V, V_{GS} = 4.5V, I_D = 7A$ $V_{DS} = 15V, V_{GS} = 10V, I_D = 9A$
Gate-Source Charge	$Q_{gs}$	—	1.8	—		$V_{DS} = 15V, V_{GS} = 10V, I_D = 9A$
Gate-Drain Charge	$Q_{gd}$	—	3.4	—		$V_{DS} = 15V, V_{GS} = 10V, I_D = 9A$

- Notes: 4. Device mounted on FR-4 PCB, on 2oz. Copper pads with  $R_{\theta JA} = 50^\circ\text{C/W}$   
5. Repetitive rating, pulse width limited by junction temperature.  
6. Short duration pulse test used to minimize self-heating effect.

**Electrical Characteristics P-CHANNEL** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 6)</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	—	—	-1.0	$\mu A$	$V_{DS} = -24V, V_{GS} = 0V$
Gate-Source Leakage	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$
<b>ON CHARACTERISTICS (Note 6)</b>						
Gate Threshold Voltage	$V_{GS(th)}$	-1	-1.7	-2.1	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	—	35	45	m $\Omega$	$V_{GS} = -10V, I_D = -6A$
		—	56	65		$V_{GS} = -4.5V, I_D = -5.0A$
Forward Transfer Admittance	$ Y_{fs} $	—	8.2	—	S	$V_{DS} = -5V, I_D = -6A$
Diode Forward Voltage (Note 6)	$V_{SD}$	-0.5	—	-1.2	V	$V_{GS} = 0V, I_S = -1A$
<b>DYNAMIC CHARACTERISTICS</b>						
Input Capacitance	$C_{iss}$	—	722	—	pF	$V_{DS} = -15V, V_{GS} = 0V, f = 1.0\text{MHz}$
Output Capacitance	$C_{oss}$	—	114	—	pF	
Reverse Transfer Capacitance	$C_{rss}$	—	92	—	pF	
Gate Resistance	$R_G$	—	1.9	—	$\Omega$	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	$Q_g$	—	7.0 13.7	—	nC	$V_{DS} = -15V, V_{GS} = -4.5V, I_D = -6A$
Gate-Source Charge	$Q_{gs}$	—	1.7	—		$V_{DS} = -15V, V_{GS} = -10V, I_D = -6A$
Gate-Drain Charge	$Q_{gd}$	—	4.1	—		$V_{DS} = -15V, V_{GS} = -4.5V, I_D = -6A$
		—	—	—		$V_{DS} = -15V, V_{GS} = -4.5V, I_D = -6A$

Notes: 6. Short duration pulse test used to minimize self-heating effect.

**N-CHANNEL**

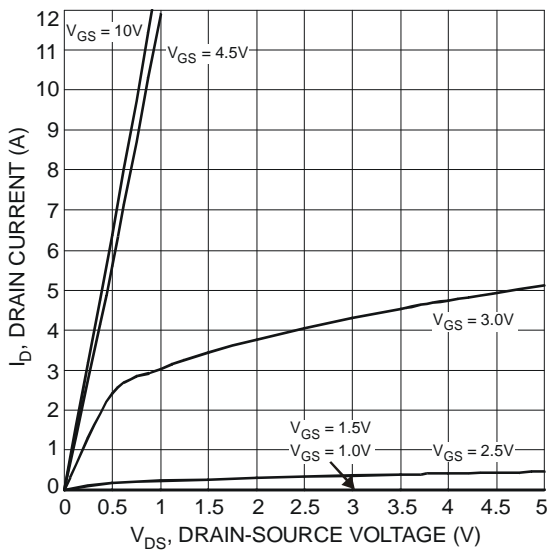


Fig. 1 Typical Output Characteristics

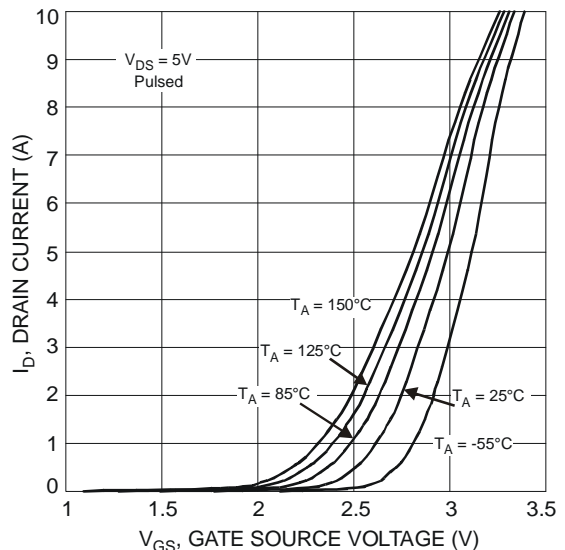


Fig. 2 Typical Transfer Characteristics

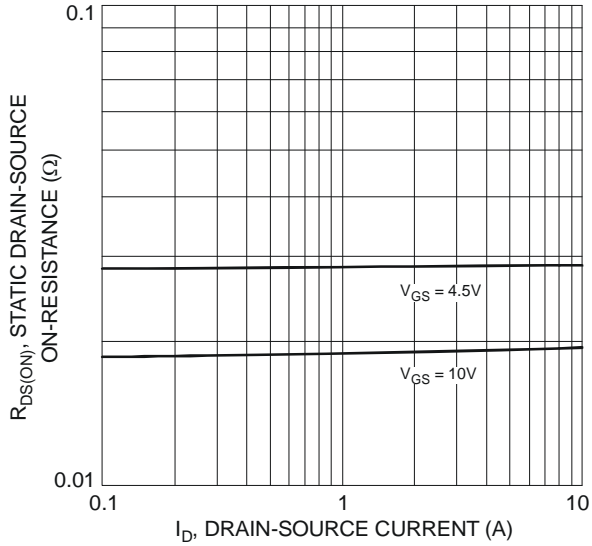


Fig 3 On-Resistance vs. Drain Current & Gate Voltage

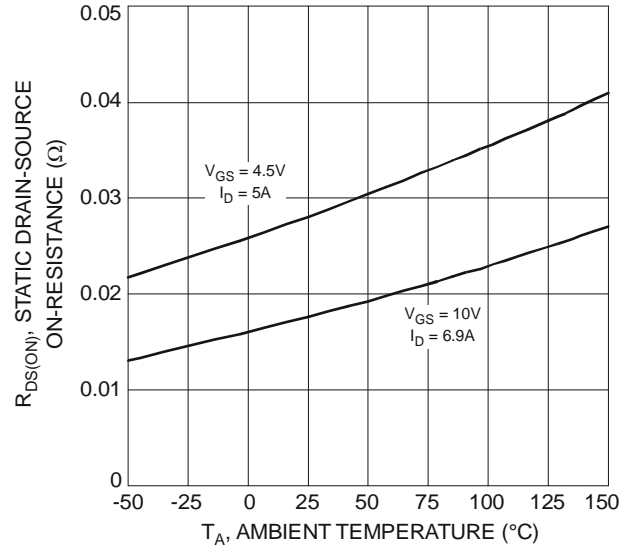


Fig. 4 Static Drain-Source On-Resistance vs. Ambient Temperature

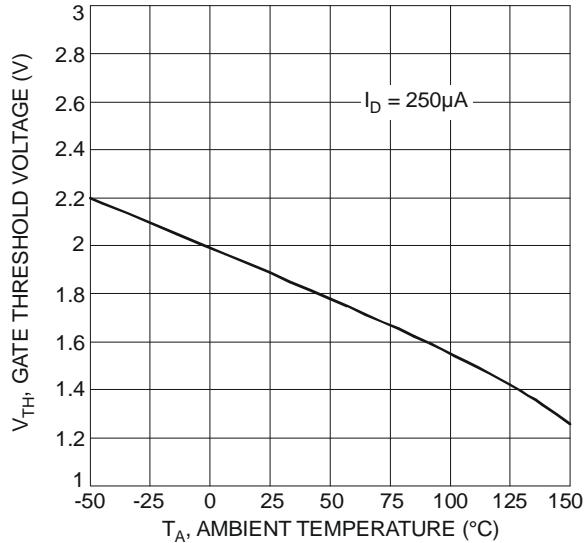


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

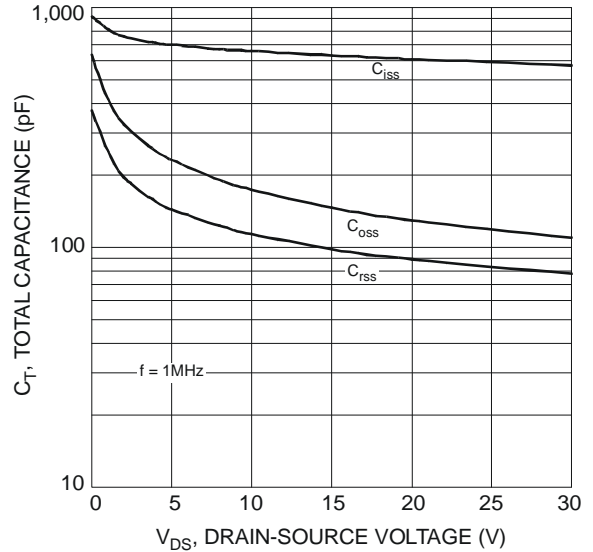


Fig. 6 Typical Total Capacitance

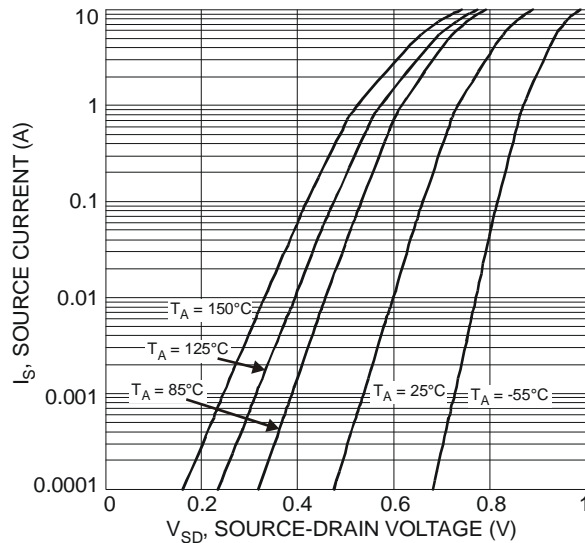


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

**P-CHANNEL**

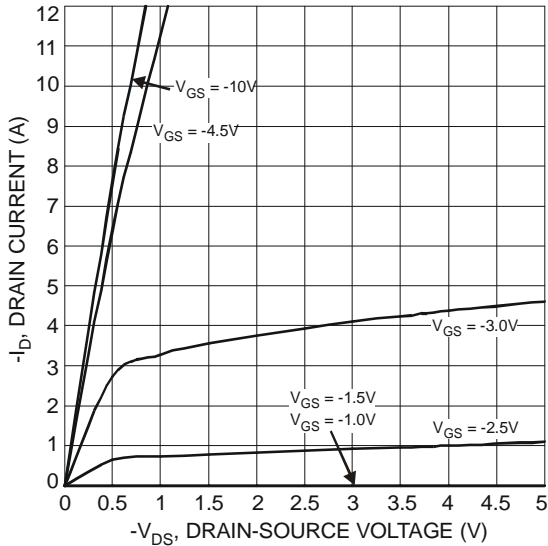


Fig. 8 Typical Output Characteristics

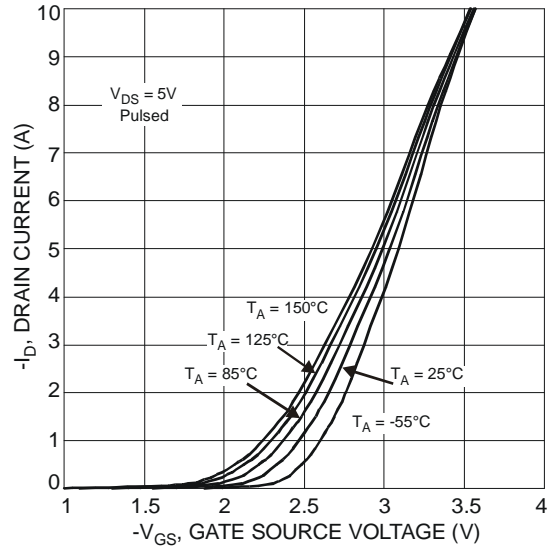


Fig. 9 Typical Transfer Characteristics

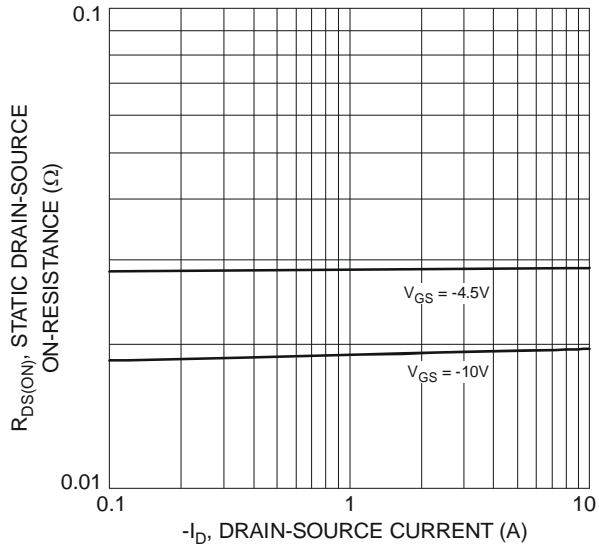


Fig. 10 On-Resistance vs. Drain Current & Gate Voltage

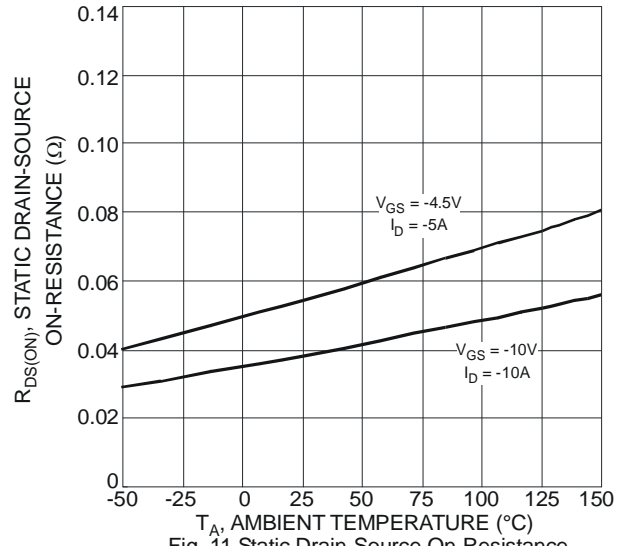


Fig. 11 Static Drain-Source On-Resistance vs. Ambient Temperature

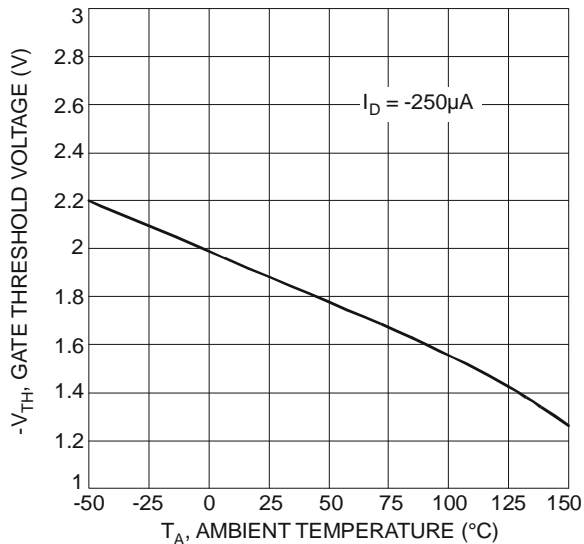


Fig. 12 Gate Threshold Variation vs. Ambient Temperature

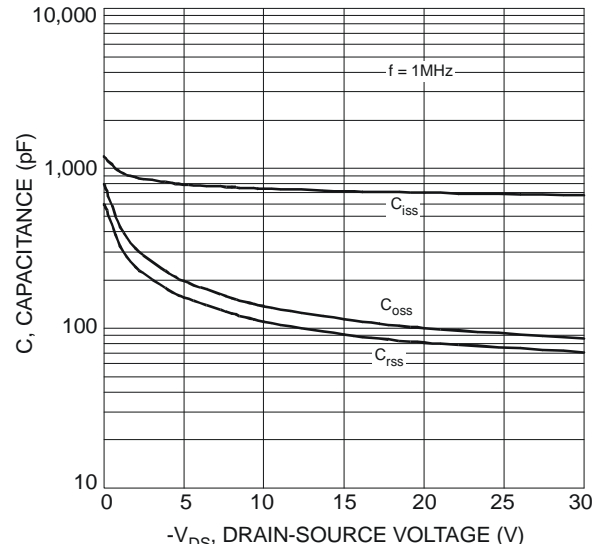


Fig. 13 Typical Total Capacitance

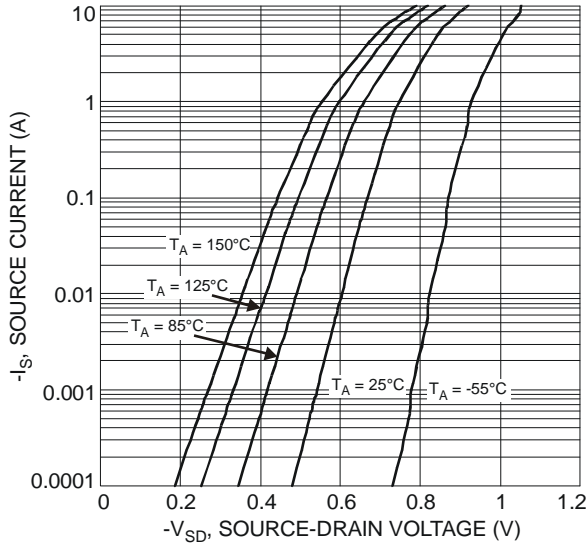
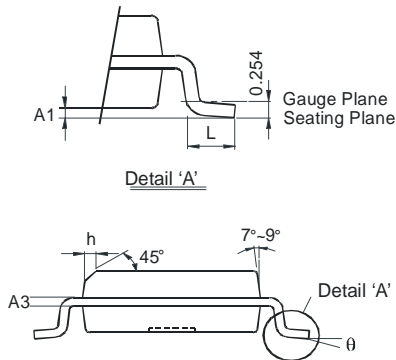
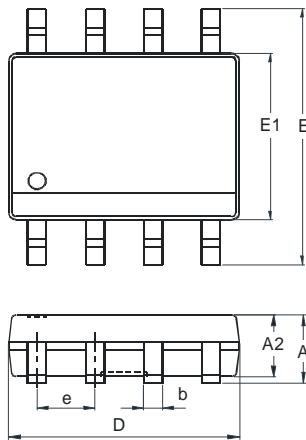


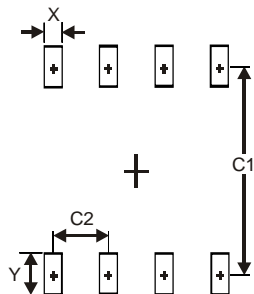
Fig. 14 Reverse Drain Current vs. Source-Drain Voltage

**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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