



**THE DATASHEET OF  
DMP3036SSS-13**



**P-CHANNEL ENHANCEMENT MODE MOSFET**
**Product Summary**

$V_{(BR)DSS}$	$R_{DS(on) \max}$	$I_D$ $T_C = +25^\circ\text{C}$
-30V	20m $\Omega$ @ $V_{GS} = -10\text{V}$	-19.5A
	29m $\Omega$ @ $V_{GS} = -5\text{V}$	-16.2A

**Description**

This new generation MOSFET is designed to minimize the on-state resistance ( $R_{DS(on)}$ ) yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

**Applications**

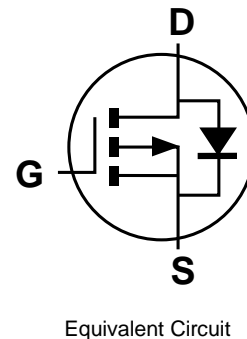
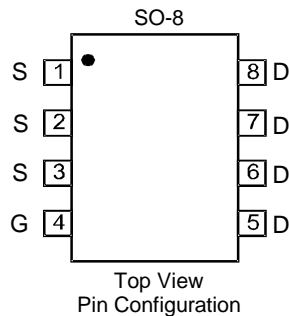
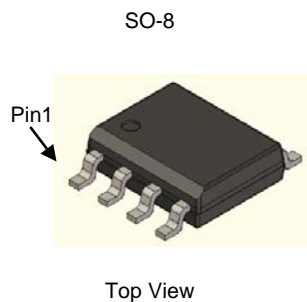
- DC-DC Converters
- Power Management Functions
- Backlighting

**Features**

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

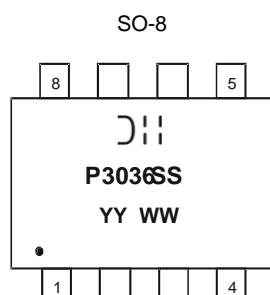
**Mechanical Data**

- 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
- Weight: 0.076 grams (Approximate)


**Ordering Information** (Note 4)

Part Number	Case	Packaging
DMP3036SSS-13	SO-8	2500 / Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


DII = Manufacturer's Marking  
P3036SS = Product Type Marking Code  
YYWW = Date Code Marking  
YY or YY = Year (ex: 19 = 2019)  
WW = Week (01 - 53)

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	V <sub>DSS</sub>	-30	V	
Gate-Source Voltage	V <sub>GSS</sub>	±25	V	
Continuous Drain Current (Note 5) V <sub>GS</sub> = -10V	I <sub>D</sub>	T <sub>C</sub> = +25°C	-19.5	A
		T <sub>C</sub> = +70°C	-15.6	A
	I <sub>D</sub>	T <sub>A</sub> = +25°C	-11.4	A
		T <sub>A</sub> = +70°C	-9.2	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I <sub>DM</sub>	-80	A	
Maximum Continuous Body Diode Forward Current (Note 6)	I <sub>S</sub>	-3.6	A	
Avalanche Current (Note 7) L = 0.3mH	I <sub>AS</sub>	-17.5	A	
Avalanche Energy (Note 7) L = 0.3mH	E <sub>AS</sub>	64	mJ	

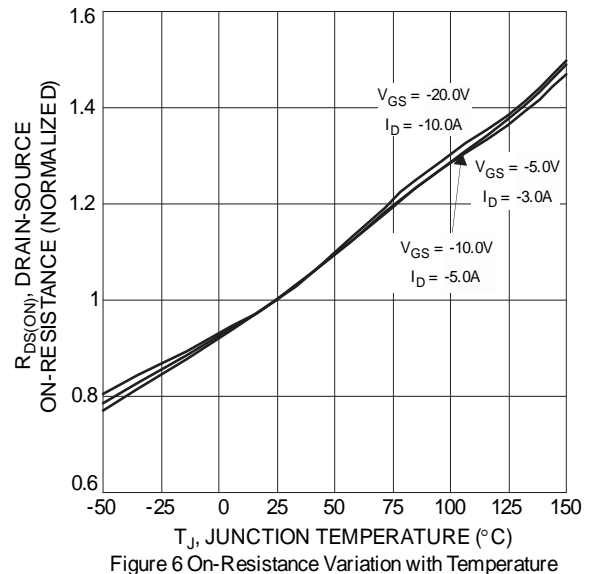
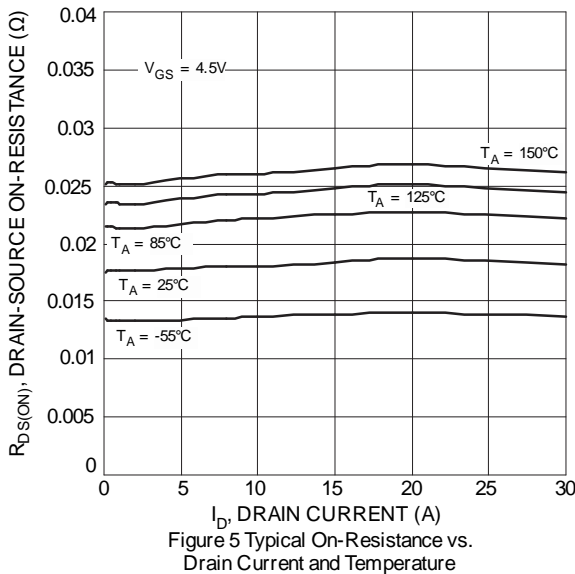
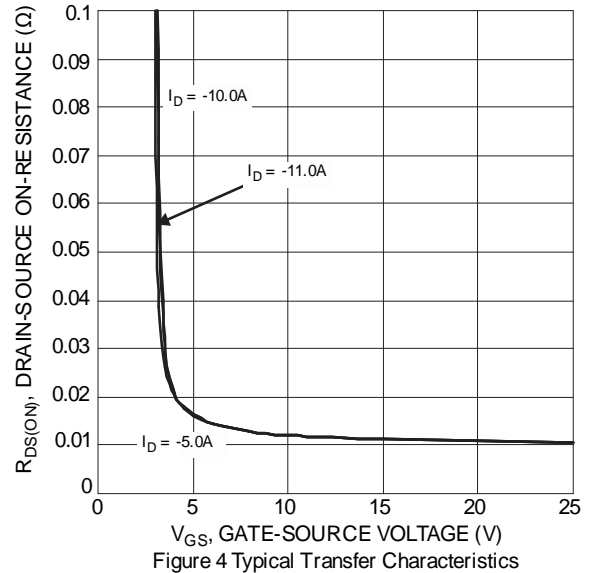
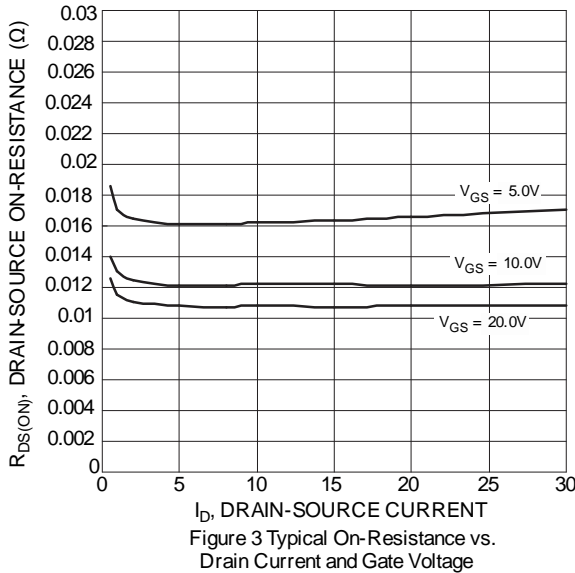
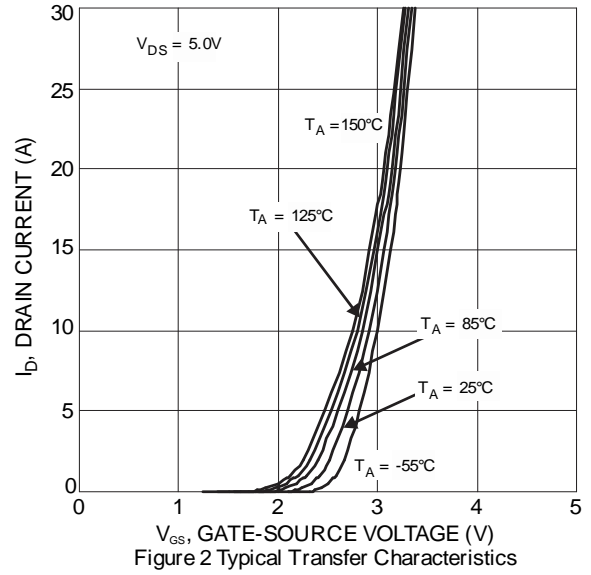
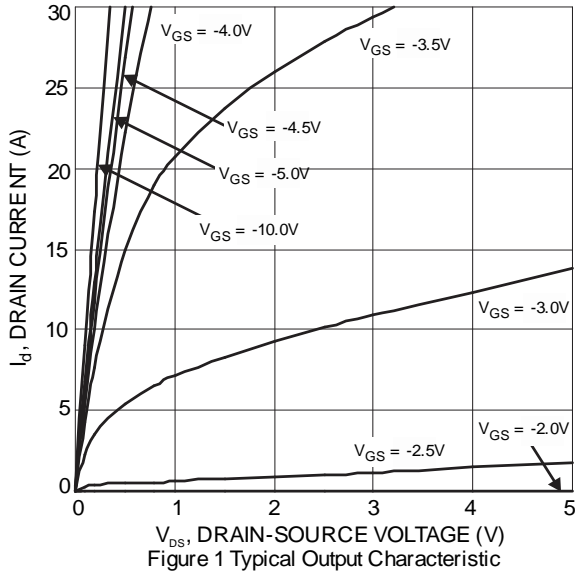
**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units	
Total Power Dissipation (Note 5)	P <sub>D</sub>	T <sub>A</sub> = +25°C	1.4	W
		T <sub>A</sub> = +70°C	0.9	
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	Steady State	88	°C/W
		t < 10s	37	
Total Power Dissipation (Note 6)	P <sub>D</sub>	T <sub>A</sub> = +25°C	1.9	W
		T <sub>A</sub> = +70°C	1.2	
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	Steady State	65	°C/W
		t < 10s	32	
Thermal Resistance, Junction to Case (Note 6)	R <sub>θJC</sub>	11		
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C	

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 8)</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 T <sub>J</sub> = +25°C	I <sub>DSS</sub>	—	—	-1.0	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
<b>ON CHARACTERISTICS (Note 8)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	-1.7	-3.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250µA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	—	16	20	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -9A
		—	22	29		V <sub>GS</sub> = -5V, I <sub>D</sub> = -7A
Diode Forward Voltage	V <sub>SD</sub>	—	-0.7	-1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A
<b>DYNAMIC CHARACTERISTICS (Note 9)</b>						
Input Capacitance	C <sub>iss</sub>	—	1931	—	pF	V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	226	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	168	—	pF	
Gate Resistance	R <sub>g</sub>	—	10.9	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge at (V <sub>GS</sub> = -5V)	Q <sub>g</sub>	—	8.8	—	nC	V <sub>DS</sub> = -15V, I <sub>D</sub> = -10A
Total Gate Charge at (V <sub>GS</sub> = -10V)	Q <sub>g</sub>	—	16.5	—	nC	
Gate-Source Charge	Q <sub>gs</sub>	—	2.6	—	nC	V <sub>DS</sub> = -15V, I <sub>D</sub> = -10A
Gate-Drain Charge	Q <sub>gd</sub>	—	3.6	—	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	—	8.2	—	ns	
Turn-On Rise Time	t <sub>r</sub>	—	14	—	ns	V <sub>GEN</sub> = -10V, V <sub>DD</sub> = -15V, R <sub>GEN</sub> = 3Ω, I <sub>D</sub> = -10A
Turn-Off Delay Time	t <sub>D(off)</sub>	—	65	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	31.6	—	ns	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.
  - I<sub>AS</sub> and E<sub>AS</sub> rating are based on low frequency and duty cycles to keep T<sub>J</sub> = +25°C.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.



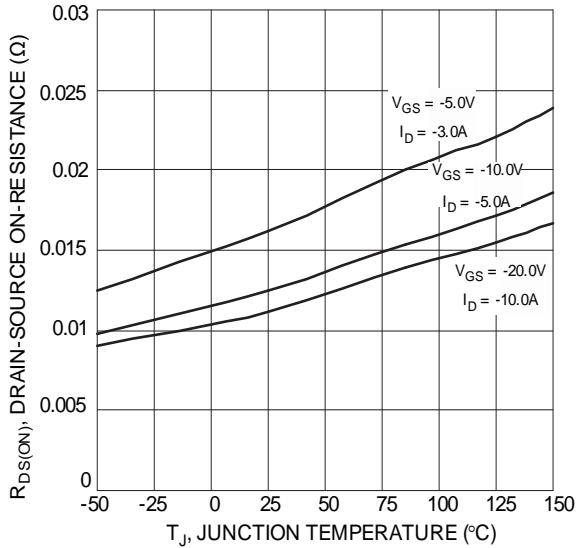


Figure 7 On-Resistance Variation with Temperature

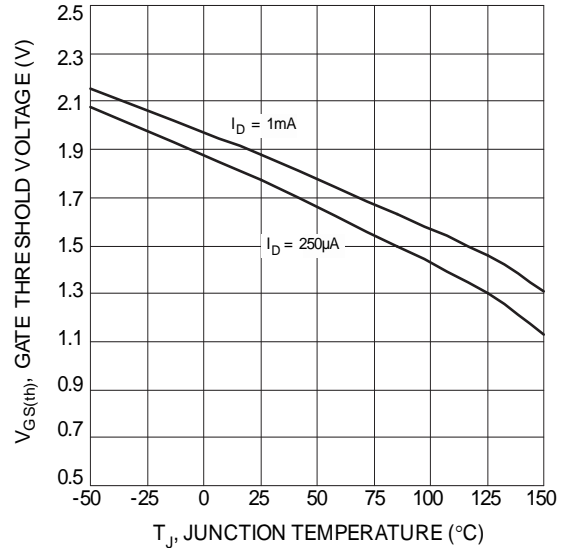


Figure 8 Gate Threshold Variation vs. Ambient Temperature

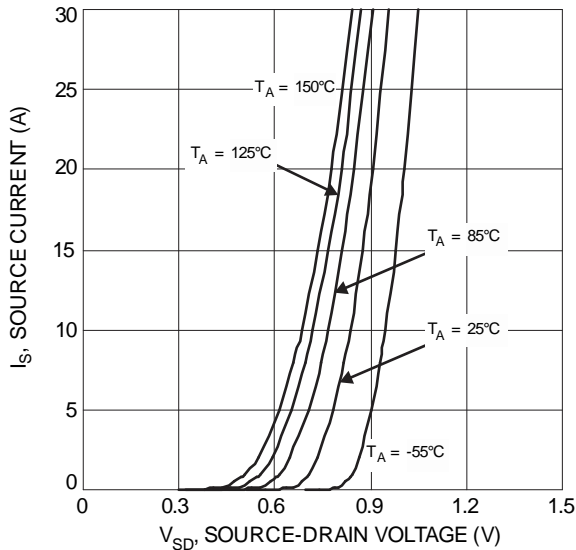


Figure 9 Diode Forward Voltage vs. Current

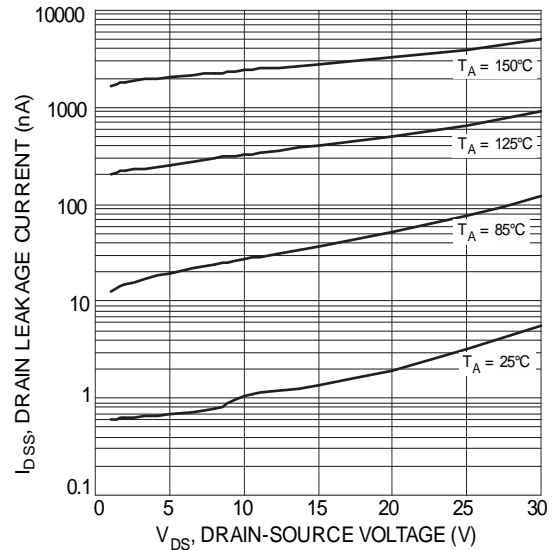


Figure 10 Typical Drain-Source Leakage Current vs. Voltage

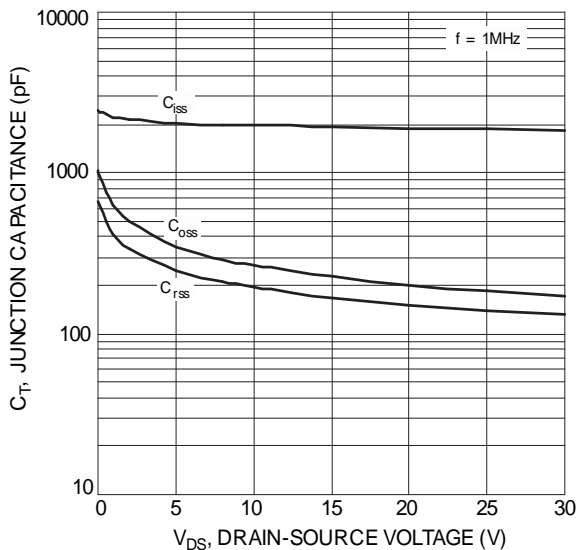


Figure 11 Typical Junction Capacitance

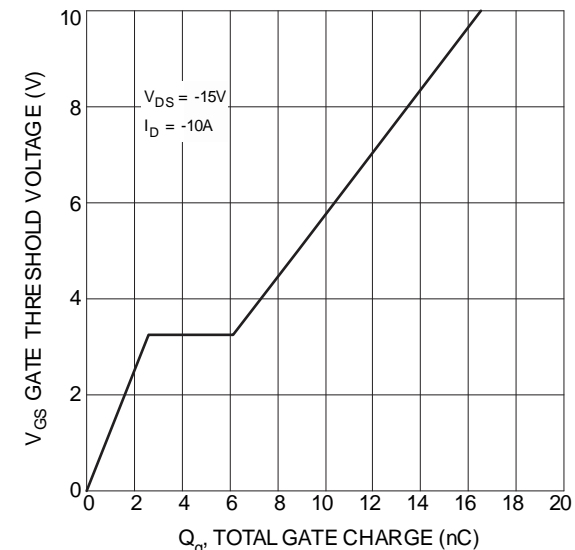
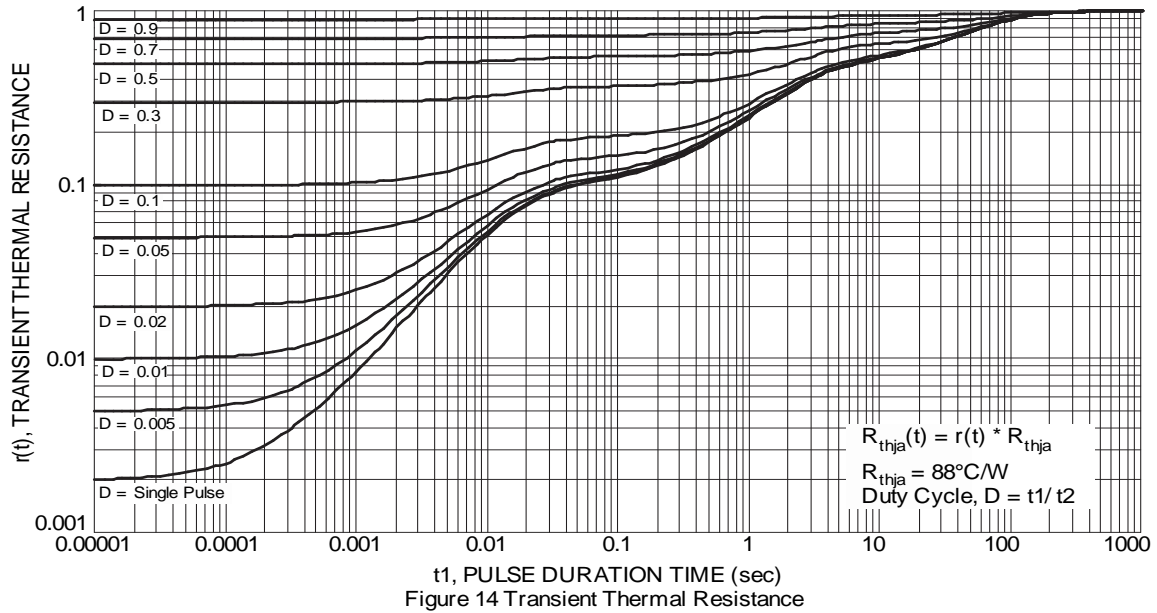
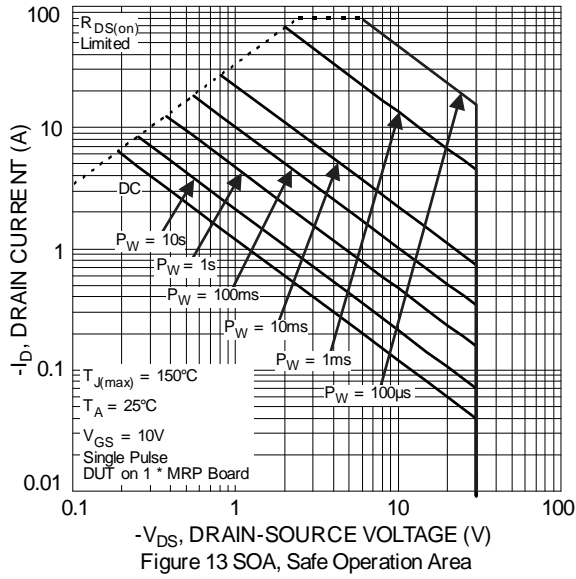


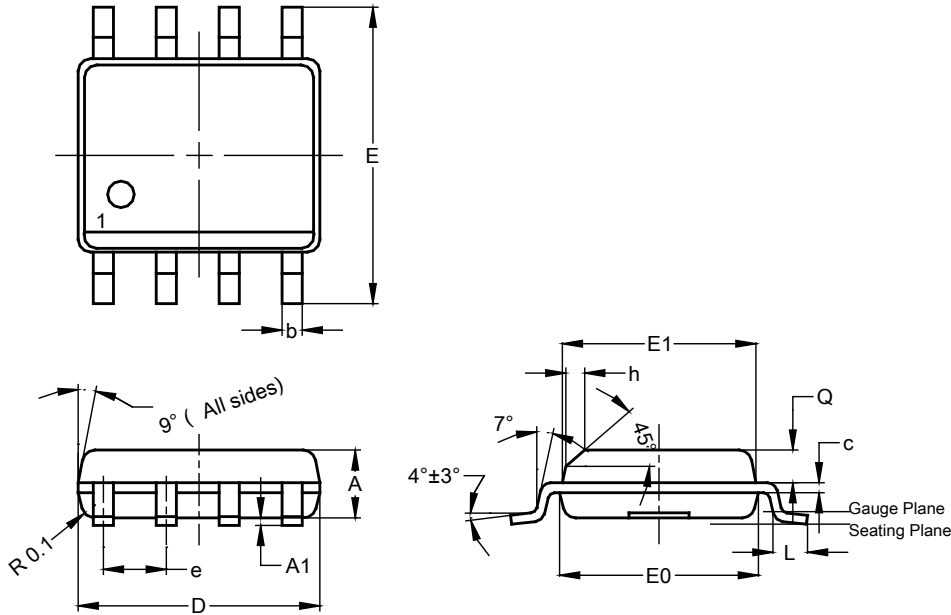
Figure 12 Gate Charge



**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SO-8**

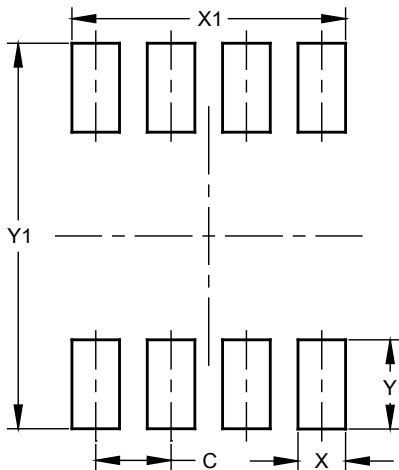


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	-	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

**SO-8**



Dimensions	Value (in mm)
C	1.27
X	0.802
X1	4.612
Y	1.505
Y1	6.50

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