

Product Summary

BV _{DSS}	R _{DS(ON)} MAX	I _D T _A = +25°C
-30V	32mΩ @ V _{GS} = -10V	-5.8A
	50mΩ @ V _{GS} = -4.5V	-4.6A

Description

This new generation MOSFET has been 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

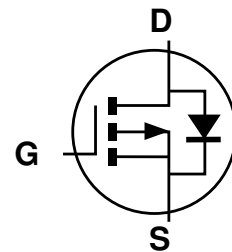
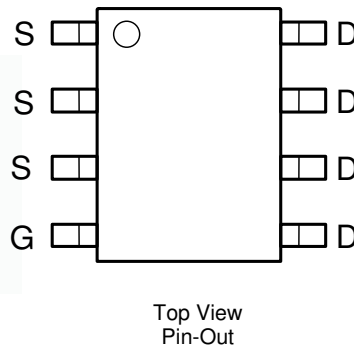
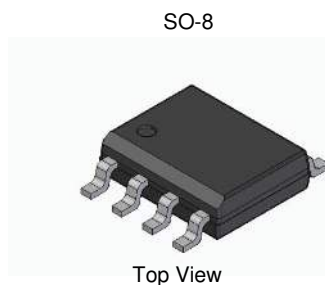
- DC-DC converters
- Power management functions
- Backlighting

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)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([DMP3037LSSQ](#))**

Mechanical Data

- Package: SO-8
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Plated over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram Below
- Weight: 0.072 grams (Approximate)

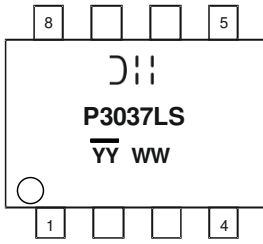


Ordering Information (Note 4)

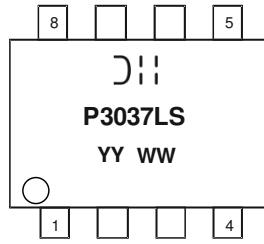
Part Number	Package	Packing	
		Qty.	Carrier
DMP3037LSS-13	SO-8	2500	Tape & Reel

- 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



Chengdu A/T Site



Shanghai A/T Site

⌋|| = Manufacturer's Marking
 P3037LS = Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY = Year (ex: 22 = 2022)
 WW = Week (01 to 53)
 YY = Date Code Marking for SAT (Shanghai Assembly/ Test Site)
 YY = Date Code Marking for CAT (Chengdu Assembly/ Test Site)

Maximum Ratings (@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 6) V _{GS} = -10V	I _D	T _A = +25°C	-5.8
		T _A = +70°C	-4.6
Pulsed Drain Current (10μs Pulse, Duty cycle = 1%)	I _{DM}	-40	A
Avalanche Current (Note 7) L = 0.1mH	I _{AS}	-17	A
Avalanche Energy (Note 7) L = 0.1mH	E _{AS}	15	mJ

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P _D	T _A = +25°C	1.2
		T _A = +70°C	0.8
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	Steady State	100
		t < 10s	58
Total Power Dissipation (Note 6)	P _D	T _A = +25°C	1.6
		T _A = +70°C	1.0
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	Steady State	77
		t < 10s	45
Thermal Resistance, Junction to Case (Note 6)	R _{θJC}	10	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 7. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
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 8)						
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)}	—	19	32	mΩ	V _{GS} = -10V, I _D = -7A
			28	50		
Diode Forward Voltage	V _{SD}	—	-0.75	-1.2	V	V _{GS} = 0V, I _S = -1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	931	—	pF	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	120	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	102	—	pF	
Gate Resistance	R _g	—	23	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = -10V)	Q _g	—	19.3	—	nC	V _{DS} = -15V, I _D = -7A
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	9.7	—	nC	
Gate-Source Charge	Q _{gs}	—	2.5	—	nC	
Gate-Drain Charge	Q _{gd}	—	3.6	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	3.2	—	ns	V _{DS} = -15V, V _{GS} = -10V, R _L = 2.15Ω, R _{GEN} = 3Ω
Turn-On Rise Time	t _r	—	11.5	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	55.8	—	ns	
Turn-Off Fall Time	t _f	—	30.8	—	ns	
Body Diode Reverse Recovery Time	t _{RR}	—	13.6	—	ns	
Body Diode Reverse Recovery Charge	Q _{RR}	—	3.4	—	nC	I _S = -7A, di/dt = 100A/μs

Notes: 8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.

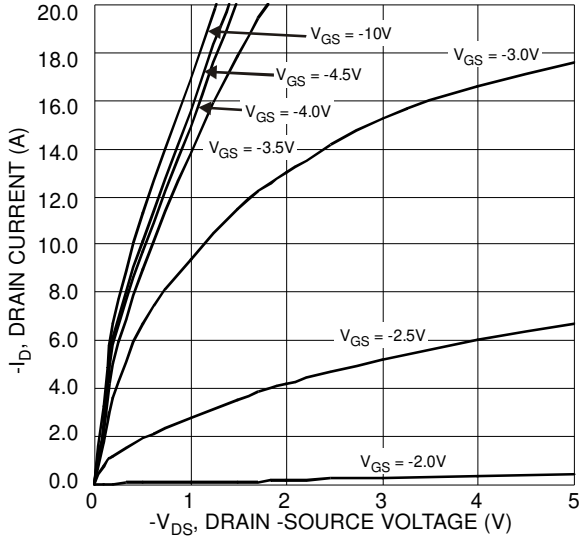


Figure 1 Typical Output Characteristics

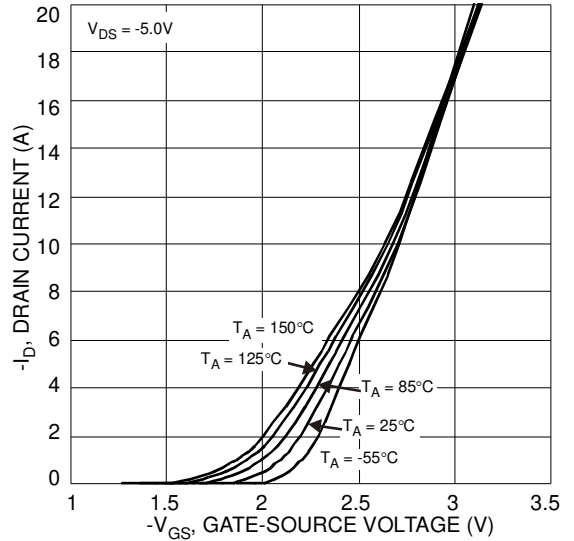


Figure 2 Typical Transfer Characteristics

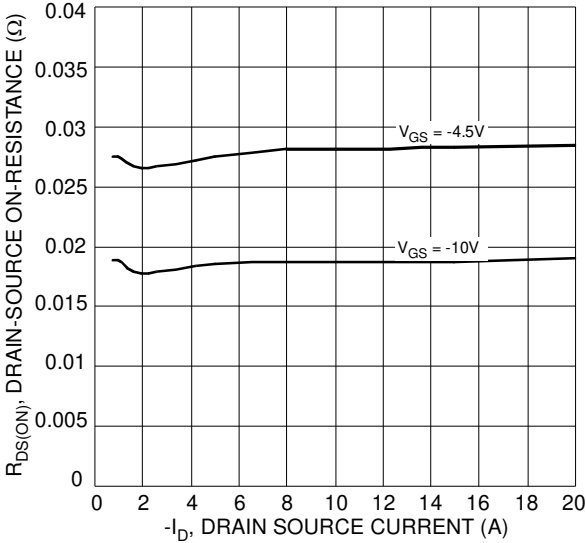


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

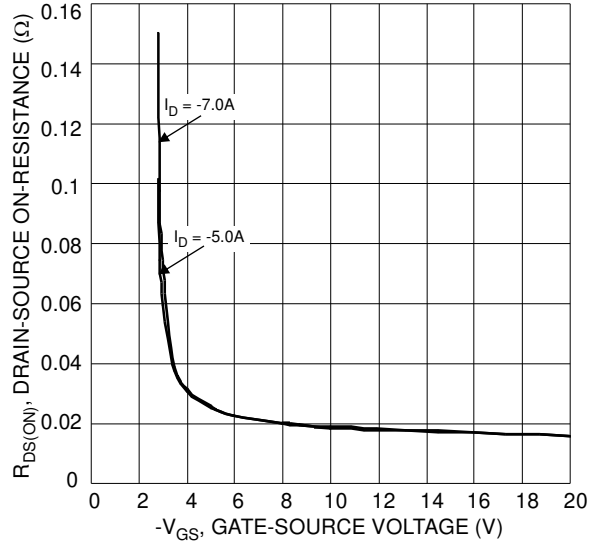


Figure 4 Typical Transfer Characteristics

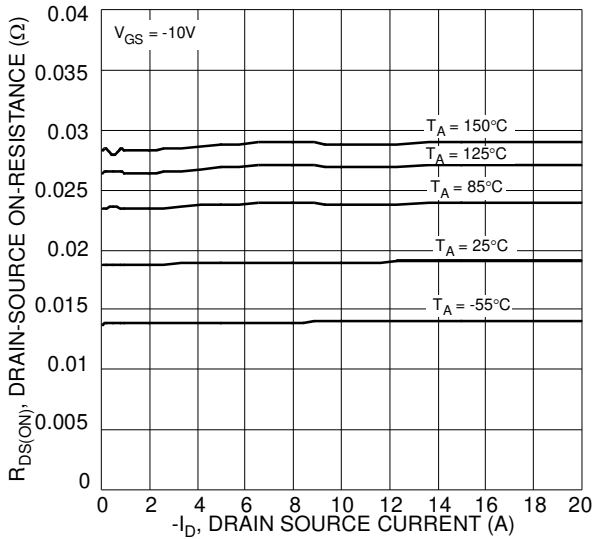


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

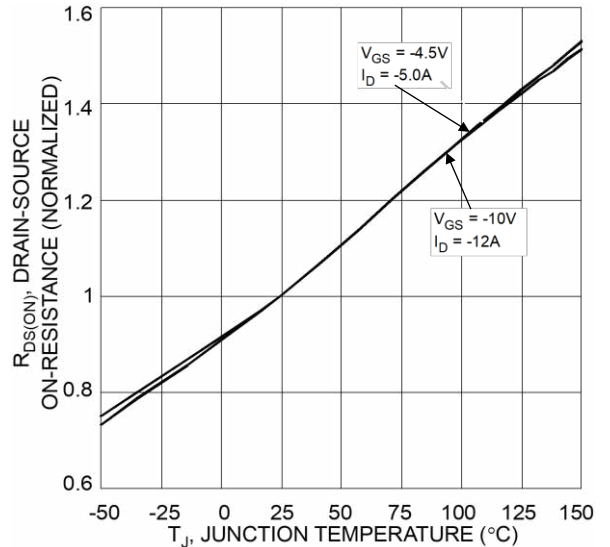


Figure 6 On-Resistance Variation with Temperature

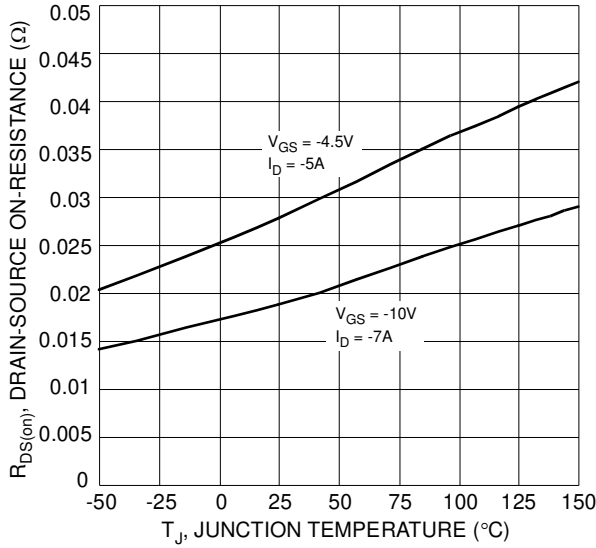


Figure 7 On-Resistance Variation with Temperature

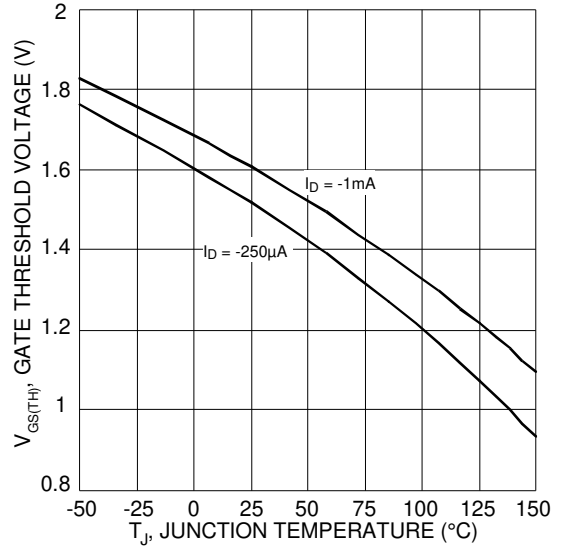


Figure 8 Gate Threshold Variation vs. Junction Temperature

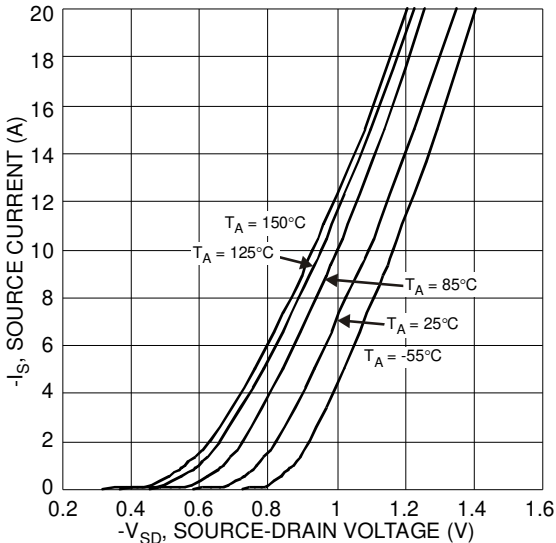


Figure 9 Diode Forward Voltage vs. Current

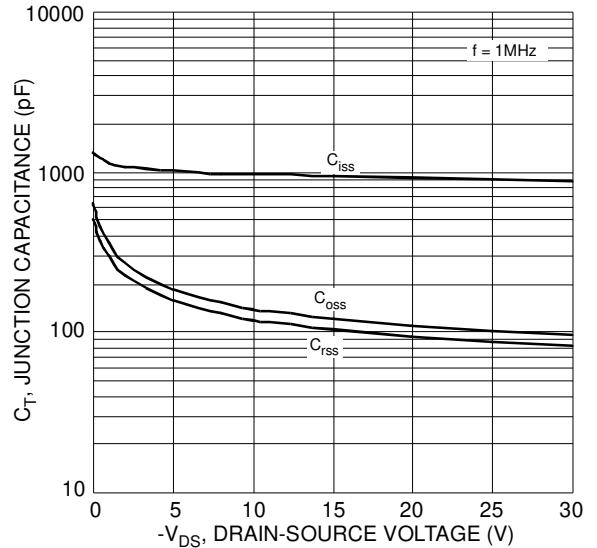


Figure 10 Typical Junction Capacitance

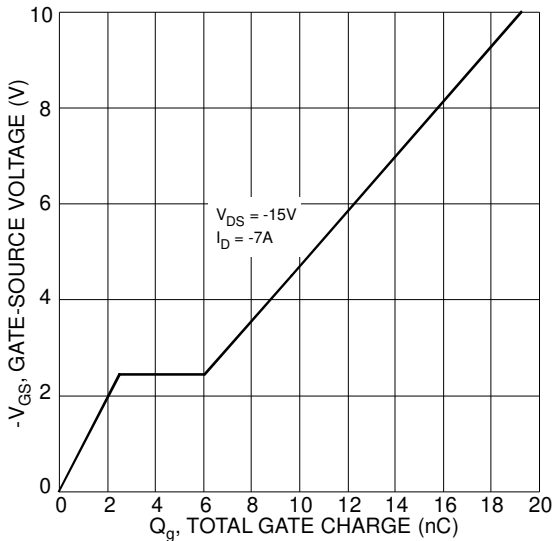


Figure 11 Gate-Charge Characteristics

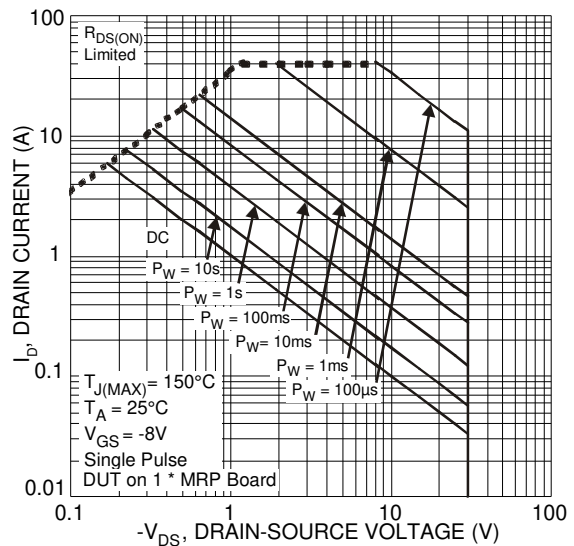
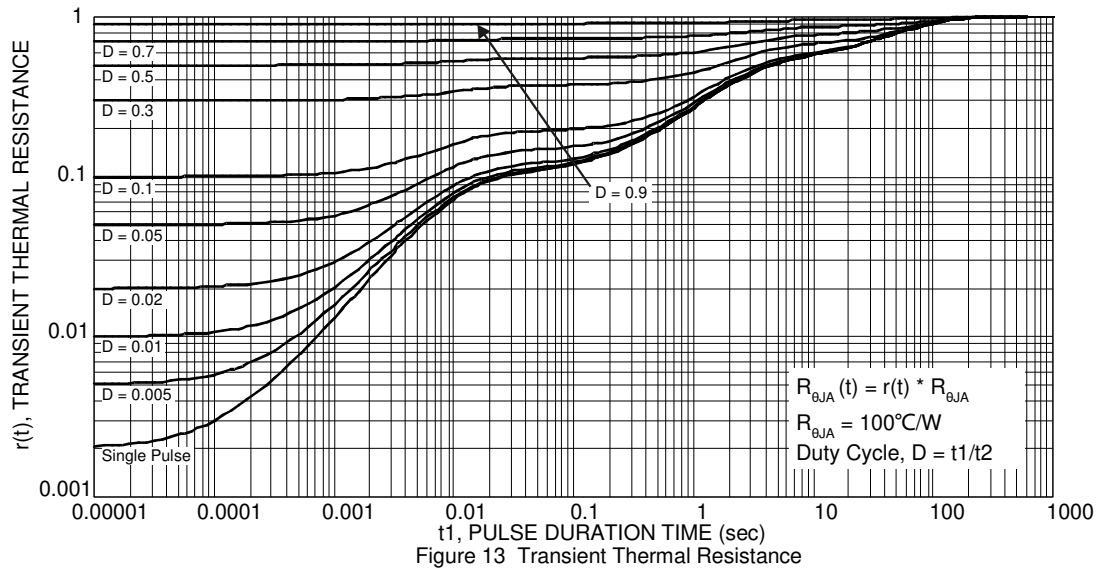


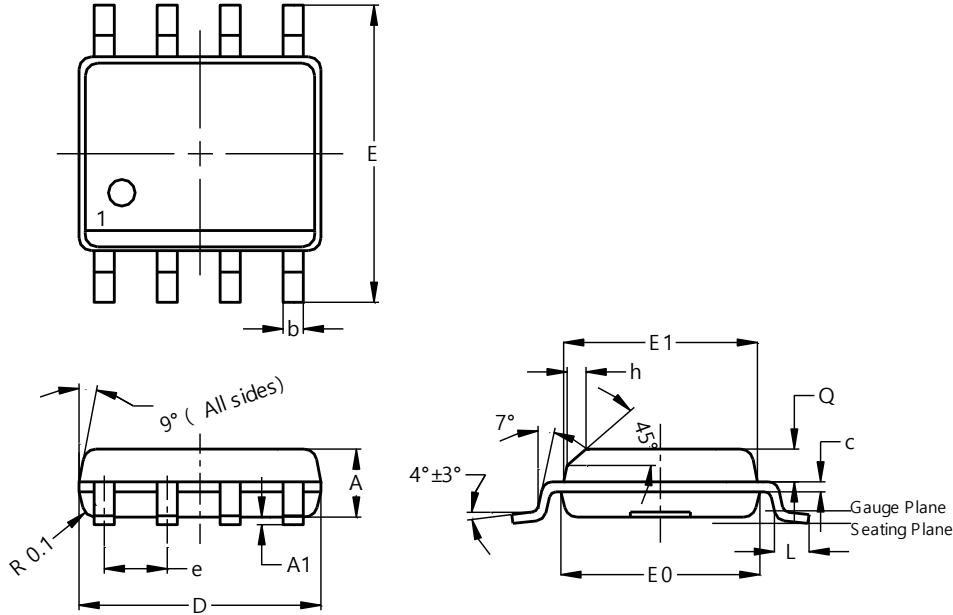
Figure 12 SOA, Safe Operation Area



Package Outline Dimensions

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

SO-8

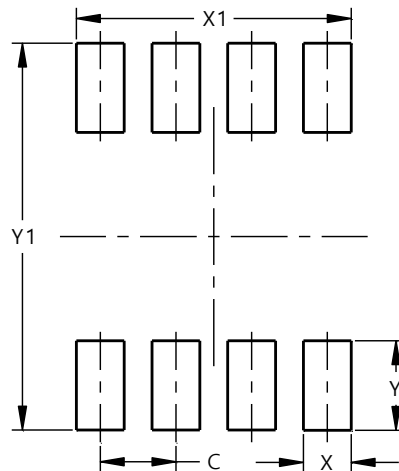


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	--	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

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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