

Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C (t<10s)
-30V	7.0mΩ @ V _{GS} = -10V	-17A
	10.0mΩ @ V _{GS} = -4.5V	-13A

Features and Benefits


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

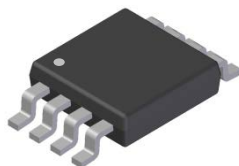
Description and Applications

This 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.

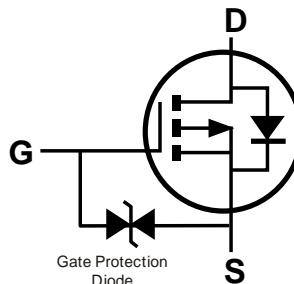
- Backlighting
- Power Management Functions
- DC-DC Converters

Mechanical Data

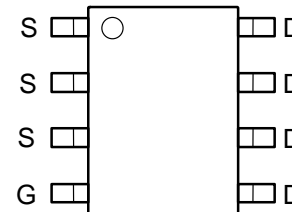
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections Indicator: See Diagram Below
- Terminals: Finish—Matte Tin Annealed Over Copper Leadframe.
Solderable per MIL-STD-202, Method 208 
- Weight: 0.074 grams (Approximate)



Top View



Internal Schematic



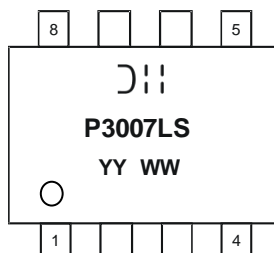
Top View
Pin Configuration


Ordering Information (Note 4)

Part Number	Case	Packaging
DMP3007LSS-13	SO-8	2,500/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



 = Manufacturer's Marking
 P3007LS = Product Type Marking Code
 YYWW = Date Code Marking
 YY or YY = Year (ex: 18 = 2018)
 WW = Week (01 to 53)

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}	±25	V
Continuous Drain Current, V _{GS} = 10V (Note 6)	Steady State	T _A = +25°C T _A = +70°C	I _D	-14 -11.5	A
	t < 10s	T _A = +25°C T _A = +70°C		-17 -12.5	A
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	-16.5	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I _{DM}	-120	A
Pulsed Body Diode Forward Current (10µs Pulse, Duty Cycle = 1%)			I _{SM}	-120	A
Avalanche Current, L=1mH (Note 7)			I _{AS}	-13	A
Avalanche Energy, L=1mH (Note 7)			E _{AS}	87	mJ

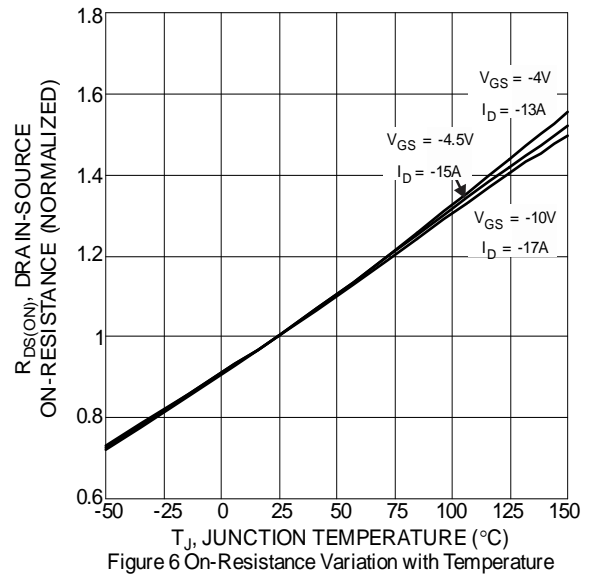
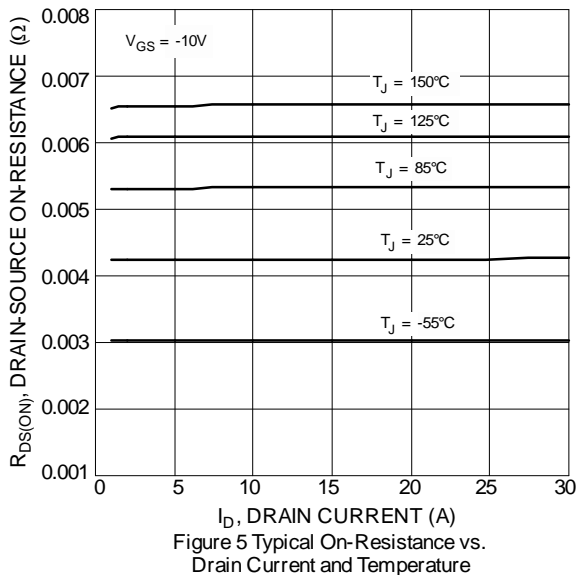
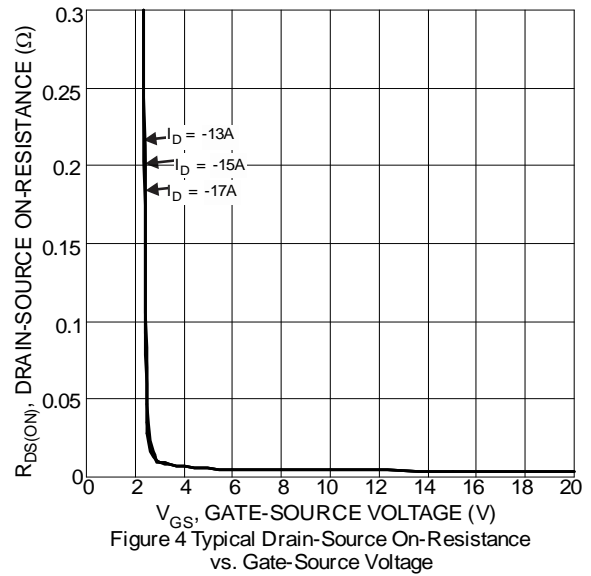
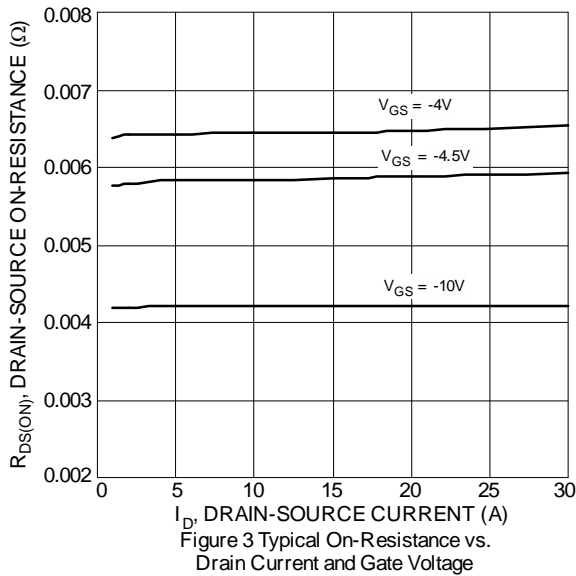
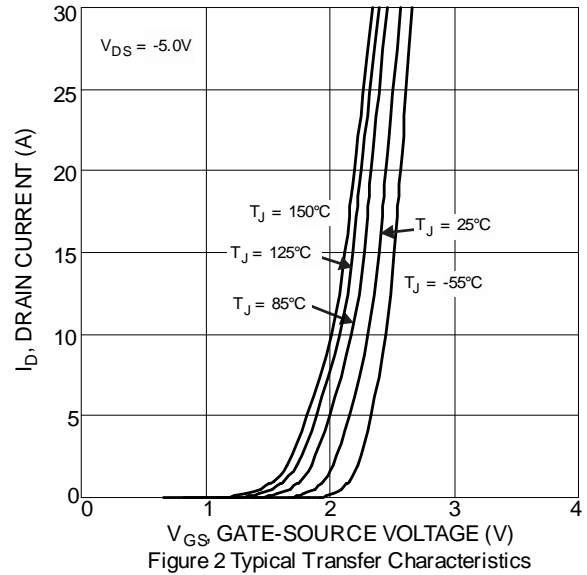
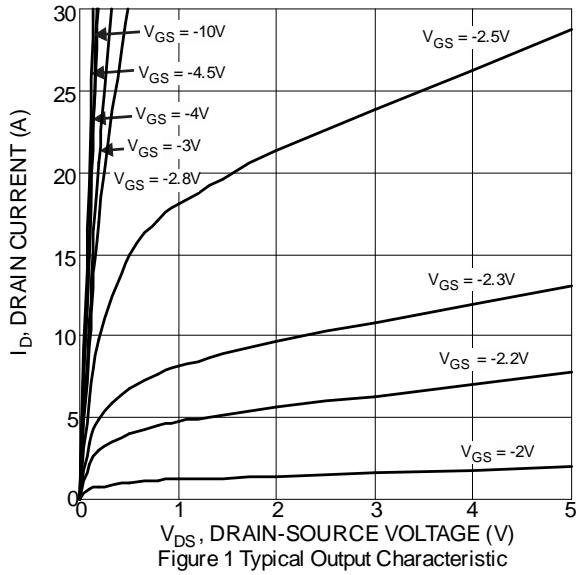
Thermal Characteristics

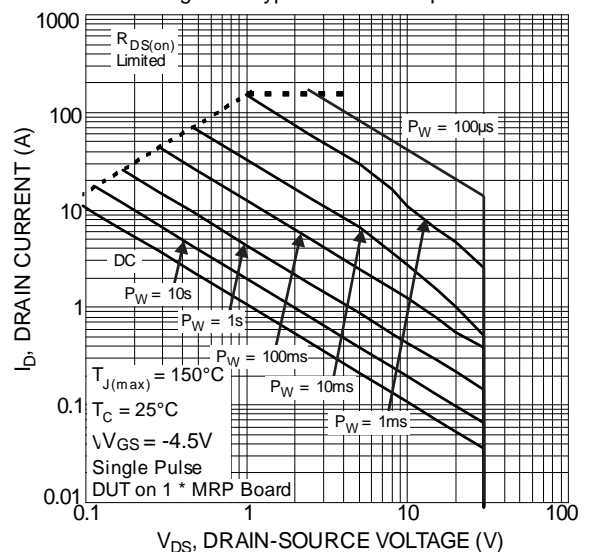
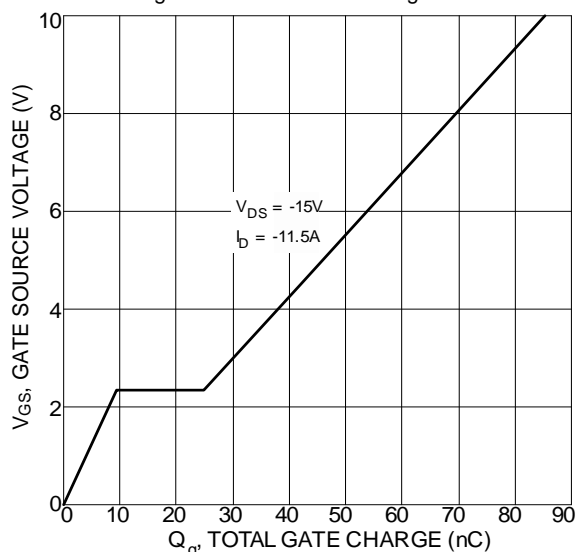
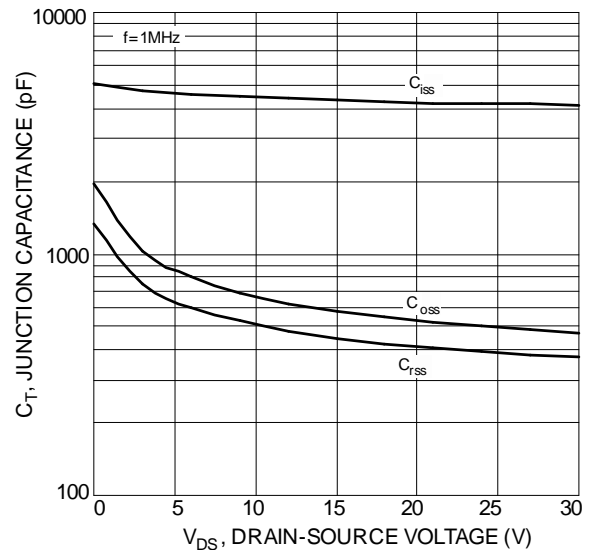
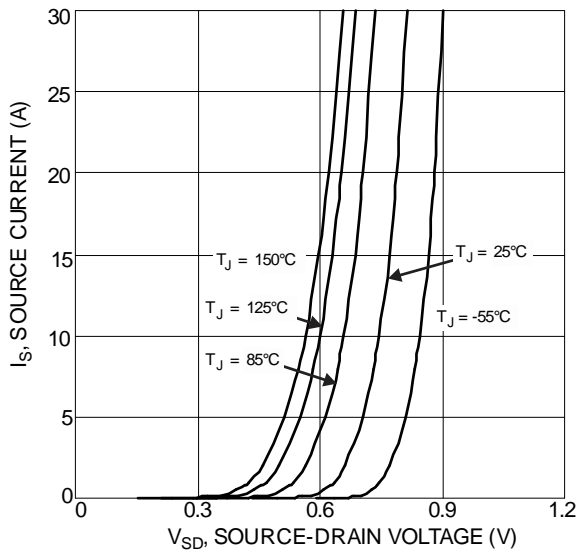
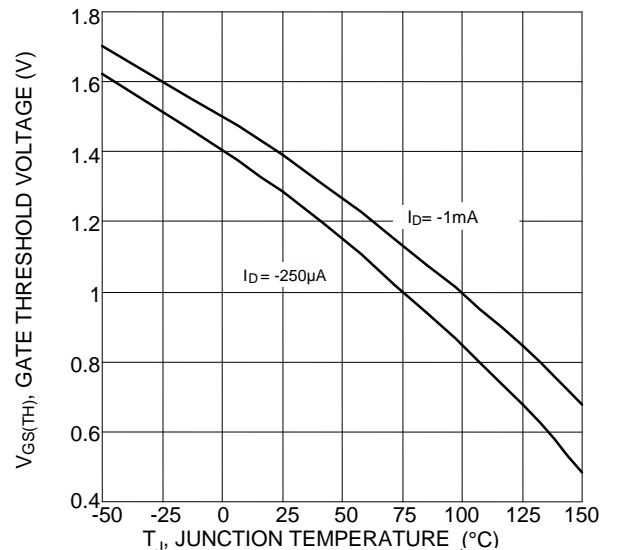
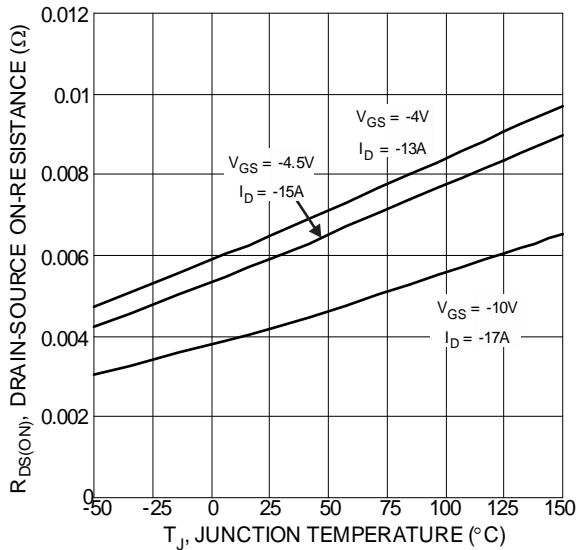
Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T _A = +25°C	P _D	1.4	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{ΘJA}	91	°C/W
	t < 10s		51	°C/W
Total Power Dissipation (Note 6)	T _A = +25°C	P _D	2.1	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{ΘJA}	59	°C/W
	t < 10s		48	°C/W
Thermal Resistance, Junction to Case (Note 6)		R _{ΘJC}	9	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

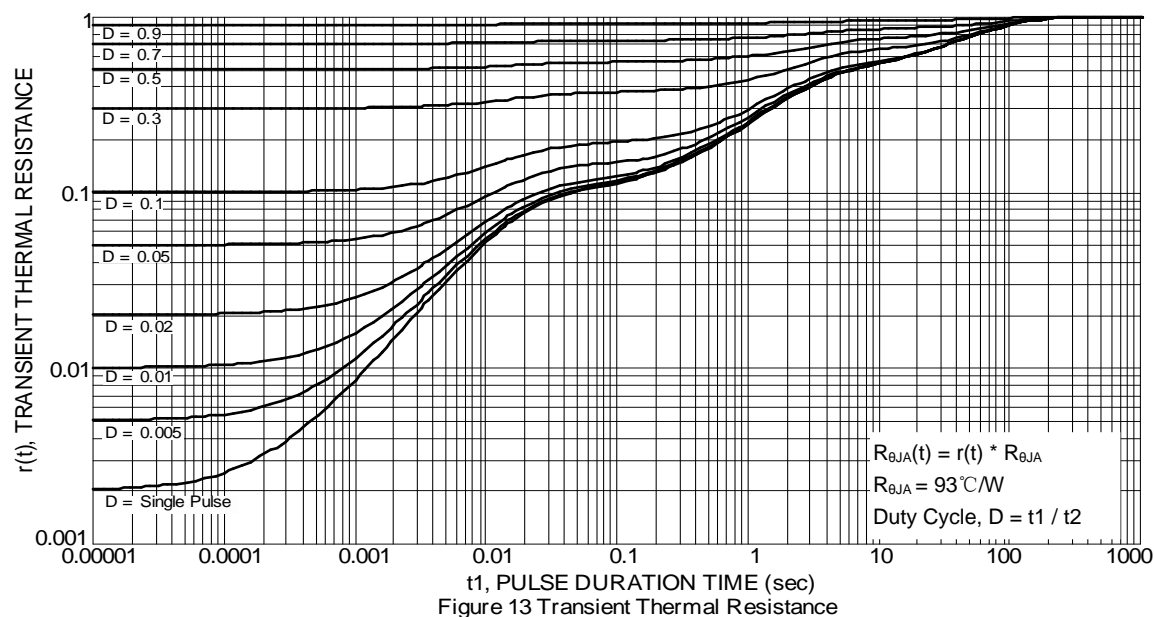
Electrical Characteristics (T_A = +25°C, unless otherwise specified.)

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	I _{DSS}	—	—	-1	µA	V _{DS} = -24V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	µA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	V _{GS(TH)}	-1.0	—	-2.8	V	V _{DS} = V _{GS} , I _D = -250µA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	4.1	7	mΩ	V _{GS} = -10V, I _D = -17A
		—	5.9	10		V _{GS} = -4.5V, I _D = -15A
		—	6.4	12		V _{GS} = -4.0V, I _D = -13A
Diode Forward Voltage	V _{SD}	—	-0.7	-1.2	V	V _{GS} = 0V, I _S = -1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	2826	—	pF	V _{DS} = -15V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	606	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	305	—	pF	
Gate Resistance	R _g	—	22.8	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
Total Gate Charge (V _{GS} = -4.5V)	Q _g	—	31.2	—	nC	V _{DS} = -15V, I _D = -11.5A
Total Gate Charge (V _{GS} = -10V)	Q _g	—	64.2	—	nC	
Gate-Source Charge	Q _{gs}	—	10.6	—	nC	
Gate-Drain Charge	Q _{gd}	—	11.6	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	4.8	—	ns	
Turn-On Rise Time	t _R	—	4.3	—	ns	V _{DD} = -15V, V _{GS} = -10V, R _g = 6Ω, I _D = -11.5A
Turn-Off Delay Time	t _{D(OFF)}	—	306	—	ns	
Turn-Off Fall Time	t _F	—	125	—	ns	
Reverse Recovery Time	t _{RR}	—	19	—	ns	I _S = -11.5A, di/dt = 100A/µs
Reverse Recovery Charge	Q _{RR}	—	9.8	—	nC	

- Notes:
- Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 - Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
 - I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.
 - Short duration pulse test used to minimize self-heating effect.
 - Guaranteed by design. Not subject to product testing.



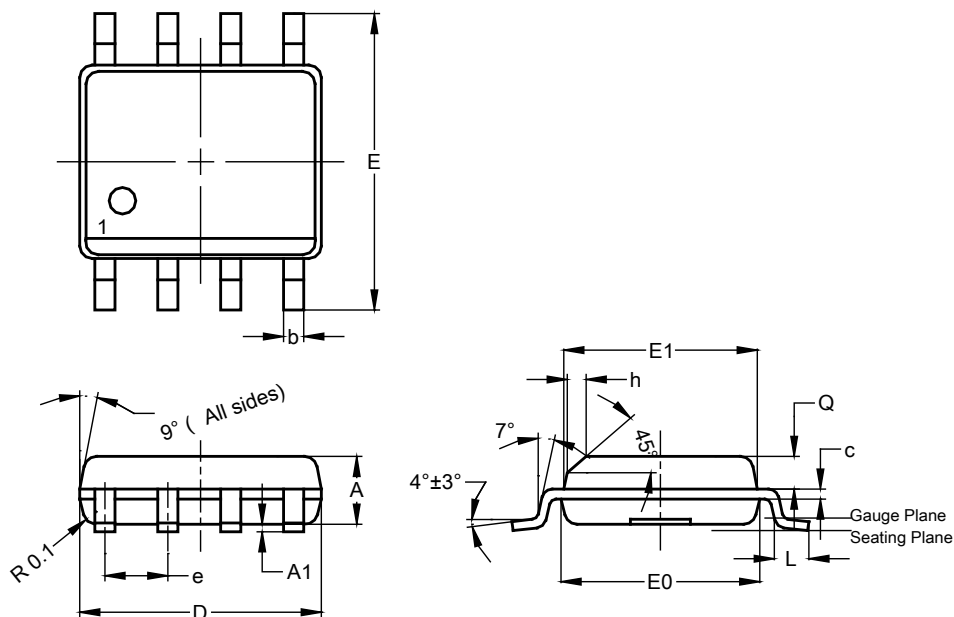




Package Outline Dimensions

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

SO-8

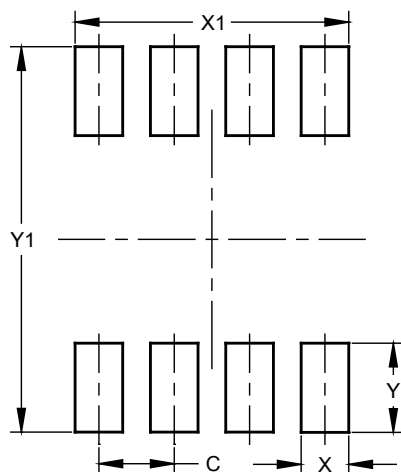


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	—	—	1.27
h	—	—	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

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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