Product Summary

BV_{DSS}	$R_{DS(ON)}$ Max	I_D Max T_A = +25°C
-20V	38mΩ @ V_{GS} = -4.5V	-5.4A
	56mΩ @ V_{GS} = -2.5V	-4.4A

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- 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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative.**
  https://www.diodes.com/quality/product-definitions/

Description and Applications

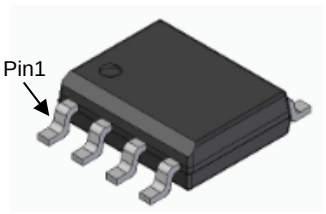
This MOSFET is designed to minimize the on-state resistance ($R_{DS(ON)}$) yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- Backlighting
- Power management functions
- DC-DC converters

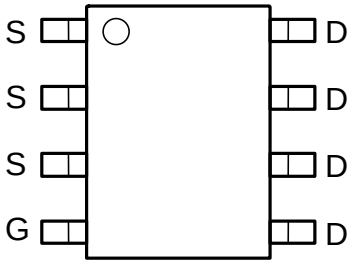
Mechanical Data

- 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 Connections: See Diagram
- Terminals: Finish — Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.072g (Approximate)

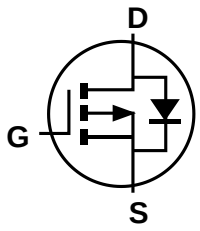
SO-8



Top View



Pin-Out
Top View



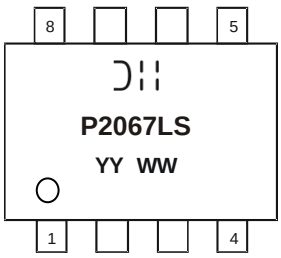
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMP2067LSS-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



= Manufacturer's Marking
P2067LS = Product Type Marking Code
YYWW = Date Code Marking
YY or YY= Year (ex: 22 = 2022)
WW = Week (01 to 53)

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-20	V
Gate-Source Voltage			V_{GSS}	±8	V
Continuous Drain Current (Note 6) V_{GS} = -4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	-5.4 -3.2	A
Continuous Drain Current (Note 7) V_{GS} = -4.5V	Steady State	T_C = +25°C T_C = +70°C	I_D	-12.9 -10.4	A
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I_{DM}	-30	A
Continuous Source-Drain Diode Current (Note 6)			I_S	-1.4	A
Avalanche Current, L= 0.1mH (Note 10)			I_{AS}	-18.7	A
Avalanche Energy, L= 0.1mH (Note 10)			E_{AS}	17.5	mJ

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

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	1.2	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	104	°C/W
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	1.67	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	75	°C/W
Thermal Resistance, Junction to Case (Note 7)	Steady State	$R_{\theta JC}$	14	°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}	-20	—	—	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-100	nA	V_{DS} = -16V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±8V, V_{DS} = 0V
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(TH)}$	-0.5	—	-1.5	V	V_{DS} = V_{GS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	31	38	mΩ	V_{GS} = -4.5V, I_D = -5A
		—	37	56		V_{GS} = -2.5V, I_D = -4.3A
Diode Forward Voltage	V_{SD}	-0.5	-0.7	-1.2	V	V_{GS} = 0V, I_S = -2.1A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	1575	—	pF	V_{DS} = -10V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	124	—		
Reverse Transfer Capacitance	C_{rss}	—	89	—		
Gate Resistance	R_g	—	10	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	—	27.9	—	nC	V_{DS} = -10V, I_D = -4.5A
Total Gate Charge (V_{GS} = -8V)	Q_g	—	15.5	—		
Gate-Source Charge	Q_{gs}	—	1.6	—		
Gate-Drain Charge	Q_{gd}	—	3.4	—		
Turn-On Delay Time	$t_{D(ON)}$	—	5.2	—	ns	V_{DD} = -5V, R_L = 6Ω V_{GS} = -4.5V, R_g = 6Ω, I_D = -1A
Turn-On Rise Time	t_R	—	12.2	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	103	—		
Turn-Off Fall Time	t_F	—	30.7	—		
Body Diode Reverse Recovery Time	t_{RR}	—	13	—	ns	I_F = -8.9A, di/dt = -100A/µs
Body Diode Reverse Recovery Charge	Q_{RR}	—	6.3	—	nC	I_F = -8.9A, di/dt = -100A/µs

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout, single sided.
6. Device mounted on FR-4 substrate PCB, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
7. Thermal resistance from junction to soldering point (on the exposed drain pad).
8. Short duration pulse test used to minimize self-heating effect.
9. Guaranteed by design. Not subject to product testing.
10. I_{AS} and E_{AS} ratings are based on low frequency and duty cycles to keep T_J = +25°C.

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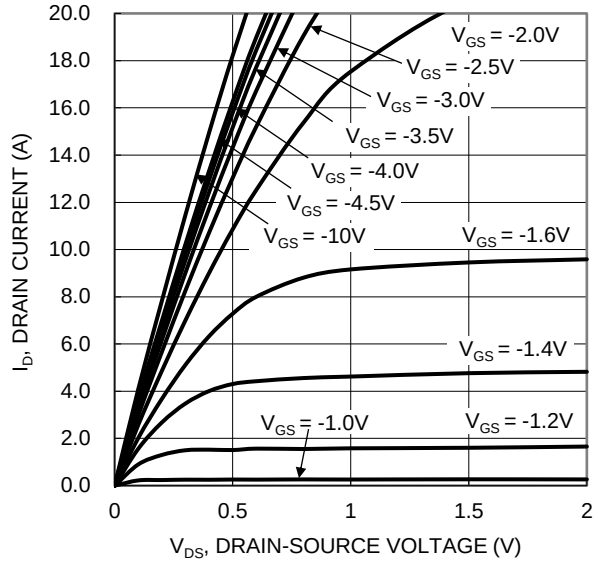


Figure 1. Typical Output Characteristic

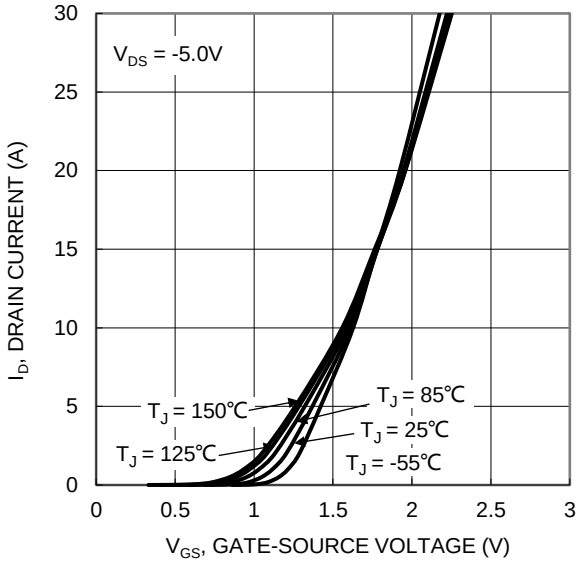


Figure 2. Typical Transfer Characteristic

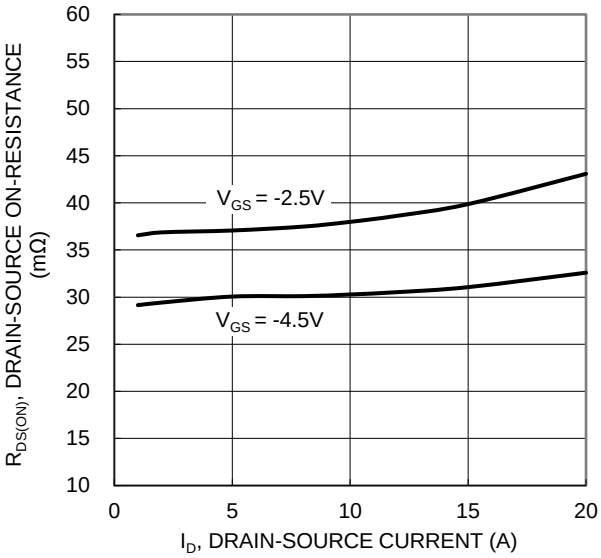


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

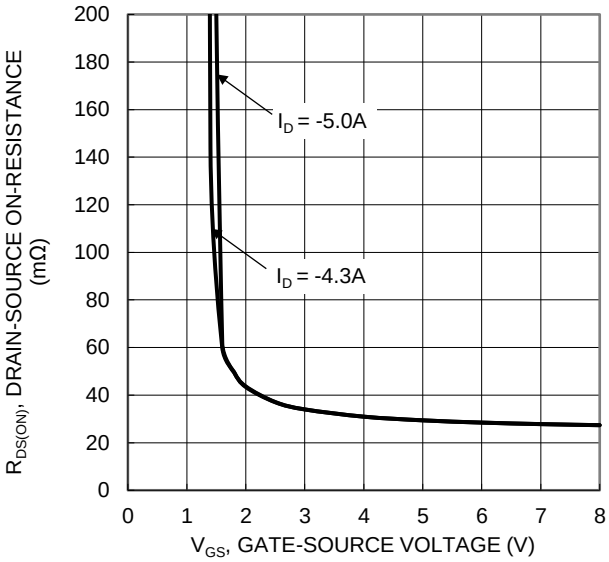


Figure 4. Typical Transfer Characteristic

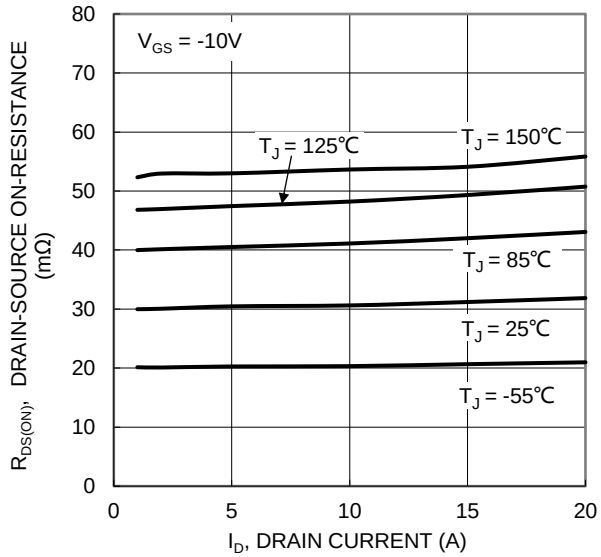


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

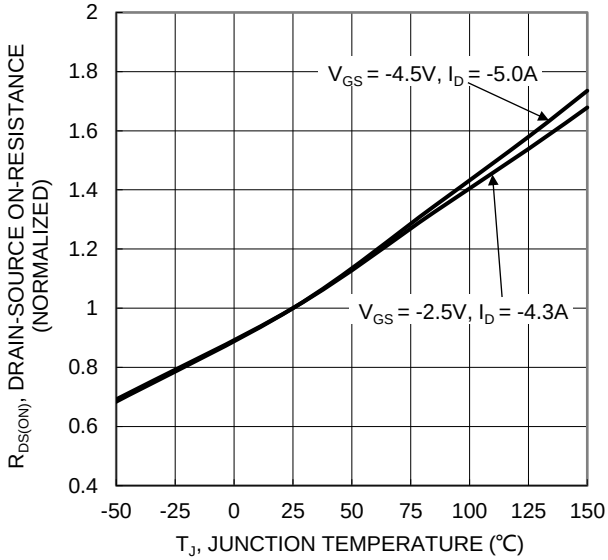


Figure 6. On-Resistance Variation with Temperature

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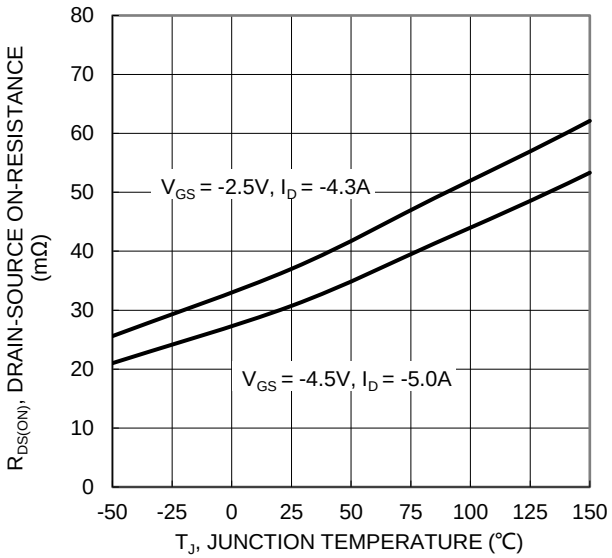


Figure 7. On-Resistance Variation with Temperature

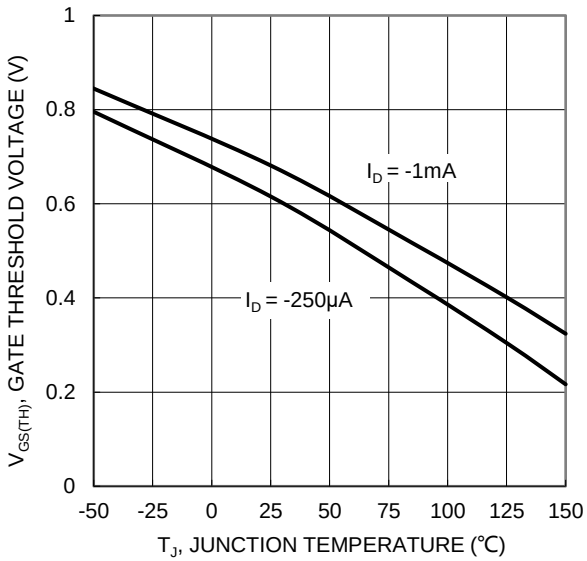


Figure 8. Gate Threshold Variation vs. Junction Temperature

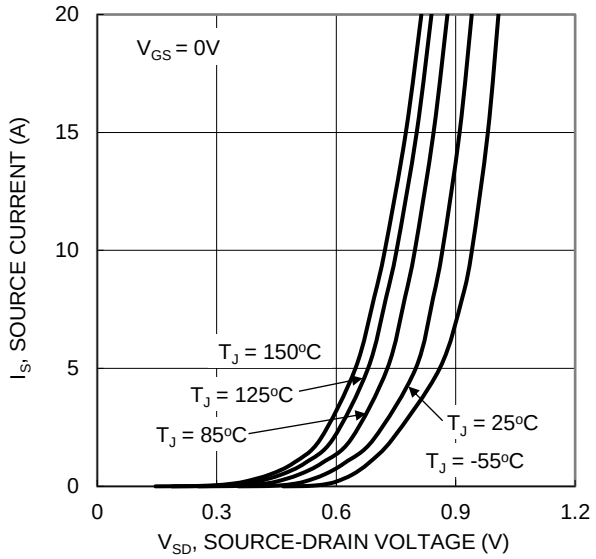


Figure 9. Diode Forward Voltage vs. Current

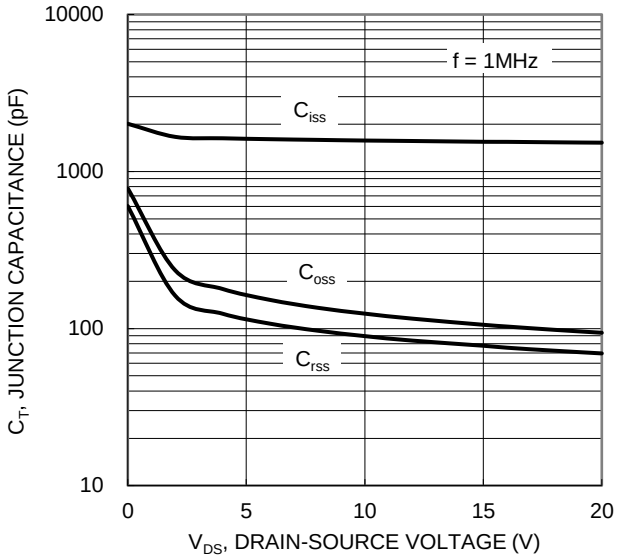


Figure 10. Typical Junction Capacitance

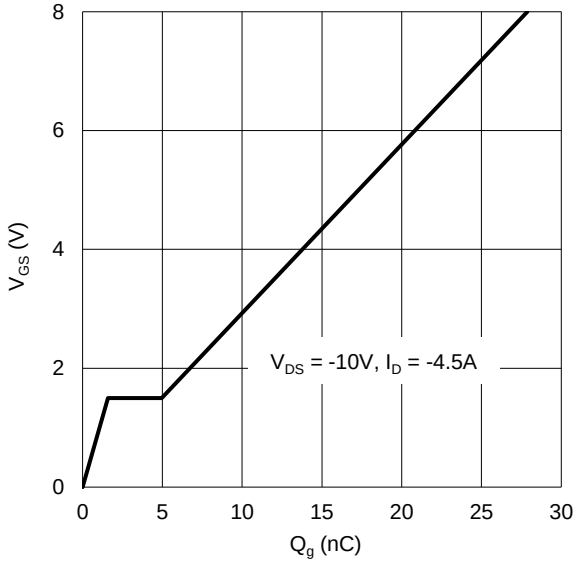


Figure 11. Gate Charge

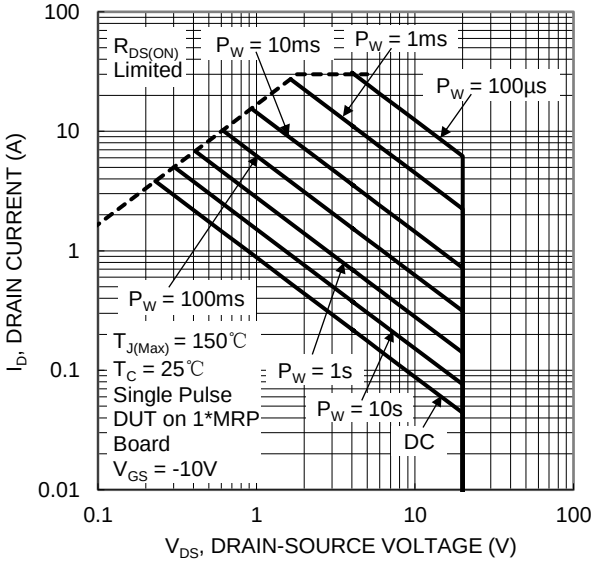


Figure 12. SOA, Safe Operation Area

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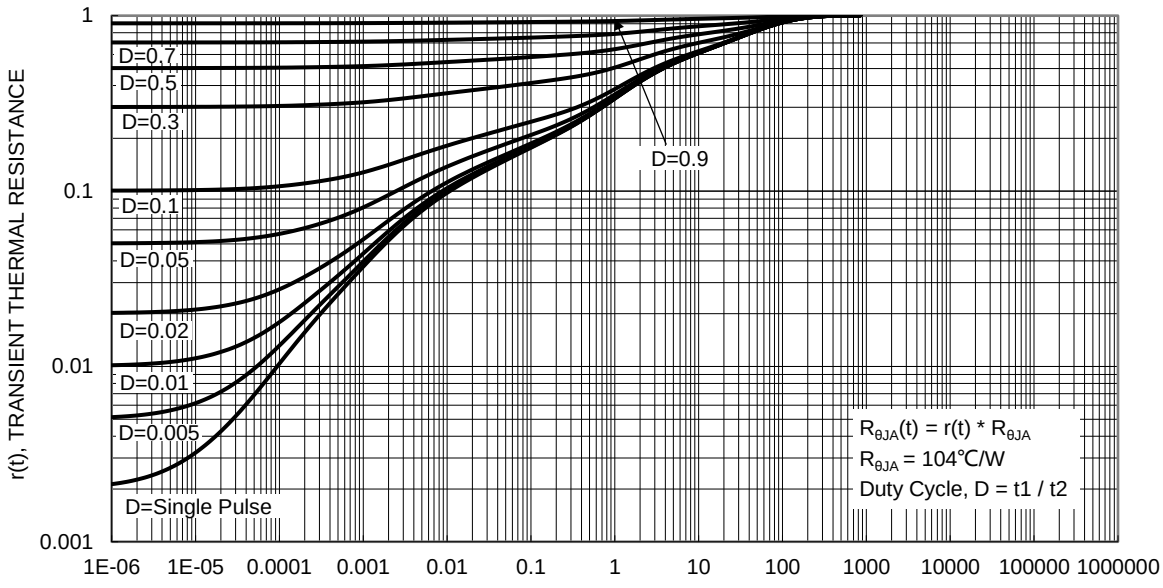


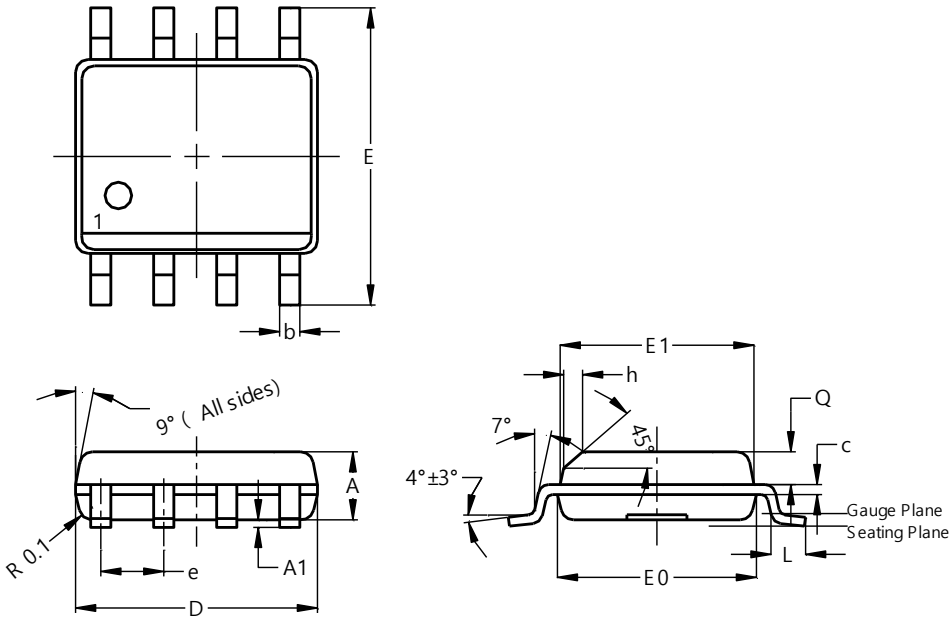
Figure 13. Transient Thermal Resistance

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Package Outline Dimensions

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

SO-8

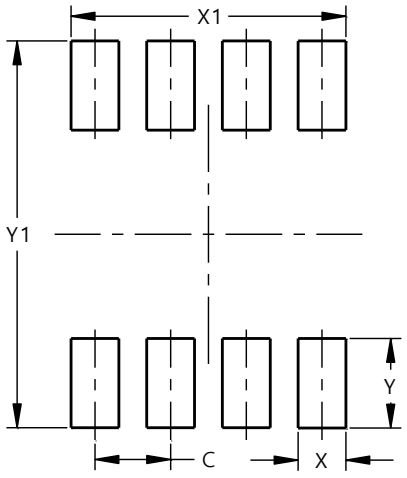


SO-8			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	--	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

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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