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Product Summary

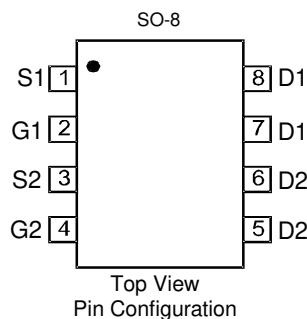
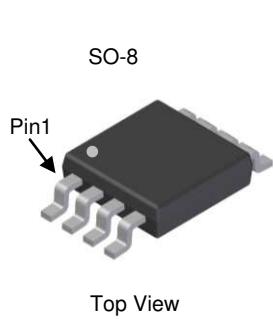
$V_{(BR)DSS}$	$R_{DS(on)}$ max	I_D $T_c = +25^\circ C$
-30V	20m Ω @ $V_{GS} = -10V$	-18.0A
	29m Ω @ $V_{GS} = -5V$	-15.0A

Description

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

Applications

- DC-DC Converters
- Power Management Functions
- Backlighting

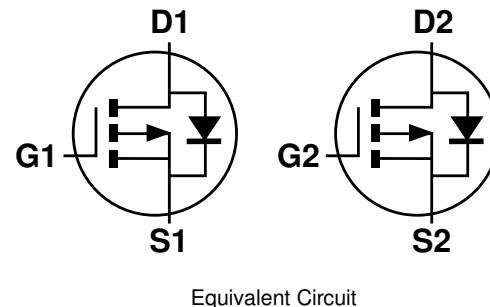


Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- 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
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.074 grams (Approximate)



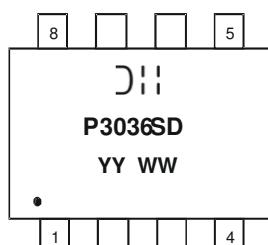
Ordering Information (Note 4)

Part Number	Case	Packaging
DMP3036SSD-13	SO-8	2,500 / Tape & Reel

Notes:

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

Marking Information



DII = Manufacturer's Marking
P3036SD = Product Type Marking Code
YYWW = Date Code Marking
YY or YY = Year (ex: 14 = 2014)
WW = Week (01 - 53)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	-30	V
Gate-Source Voltage	V_{GSS}	± 25	V
Continuous Drain Current (Note 6) $V_{GS} = -10\text{V}$	$T_C = +25^\circ\text{C}$	I_D	-18.0
	$T_C = +70^\circ\text{C}$		-14.3
Pulsed Drain Current (10 μs pulse, duty cycle = 1%)	$T_A = +25^\circ\text{C}$	I_D	-10.6
	$T_A = +70^\circ\text{C}$		-8.5
Maximum Continuous Body Diode Forward Current (Note 6)	I_{DM}	-80	A
Avalanche Current (Note 7) $L = 0.3\text{mH}$	I_{AS}	-17.5	A
Avalanche Energy (Note 7) $L = 0.3\text{mH}$	E_{AS}	64	mJ

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	1.2	W
		0.9	
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	104	°C/W
		45	
Total Power Dissipation (Note 6)	P_D	1.7	W
		1.1	
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	72	°C/W
		37	
Thermal Resistance, Junction to Case (Note 6)	$R_{\theta JC}$	13	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	$V_{GS} = 0\text{V}, I_D = -1\text{mA}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	-	-	-1.0	μA	$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 25\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{GS(\text{th})}$	-1.0	-1.7	-3.0	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	-	16	20	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -9\text{A}$
		-	22	29		$V_{GS} = -5\text{V}, I_D = -7\text{A}$
Diode Forward Voltage	V_{SD}	-	-0.7	-1.0	V	$V_{GS} = 0\text{V}, I_S = -1\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	-	1931	-	pF	$V_{DS} = -15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	226	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	168	-	pF	
Gate Resistance	R_g	-	10.9	-	Ω	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Total Gate Charge at $V_{GS} = -5\text{V}$	Q_g	-	8.8	-	nC	$V_{DS} = -15\text{V}, I_D = -10\text{A}$
Total Gate Charge at $V_{GS} = -10\text{V}$	Q_g	-	16.5	-	nC	
Gate-Source Charge	Q_{gs}	-	2.6	-	nC	$V_{DS} = -15\text{V}, I_D = -10\text{A}$
Gate-Drain Charge	Q_{gd}	-	3.6	-	nC	
Turn-On Delay Time	$t_{D(\text{on})}$	-	8.2	-	ns	
Turn-On Rise Time	t_r	-	14	-	ns	$V_{\text{GEN}} = -10\text{V}, V_{DD} = -15\text{V}, R_{\text{GEN}} = 3\Omega, I_D = -10\text{A}$
Turn-Off Delay Time	$t_{D(\text{off})}$	-	65	-	ns	
Turn-Off Fall Time	t_f	-	31.6	-	ns	

Notes: 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

7. I_{AS} and E_{AS} rating are based on low frequency and duty cycles to keep $T_J = +25^\circ\text{C}$.

8. Short duration pulse test used to minimize self-heating effect.

9. Guaranteed by design. Not subject to product testing.

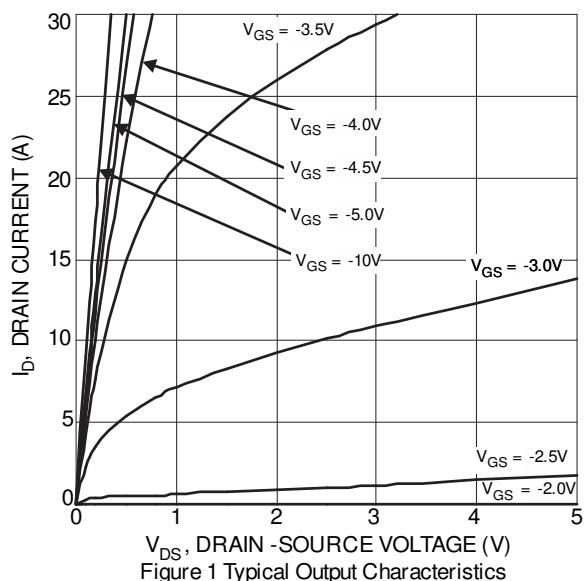


Figure 1 Typical Output Characteristics

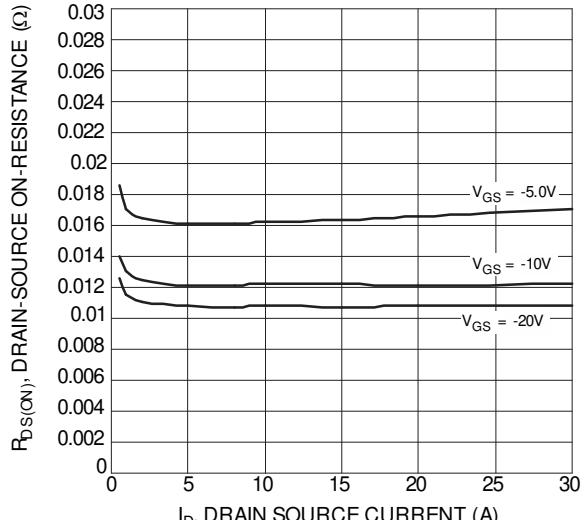


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

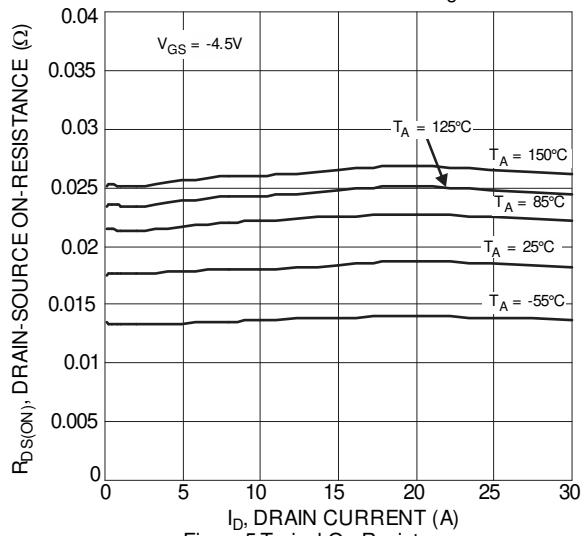


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

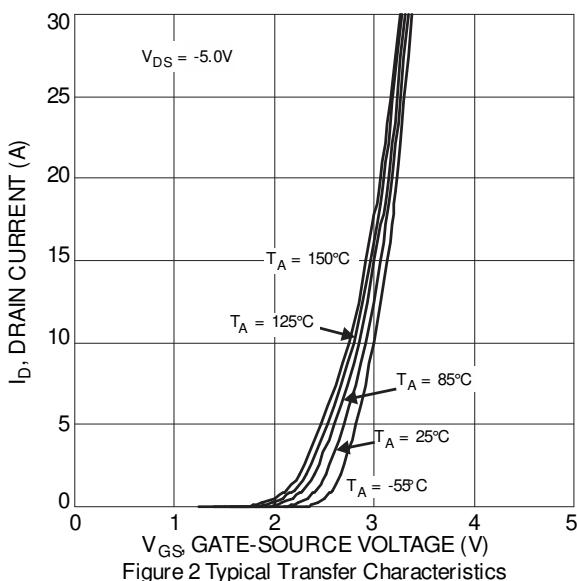


Figure 2 Typical Transfer Characteristics

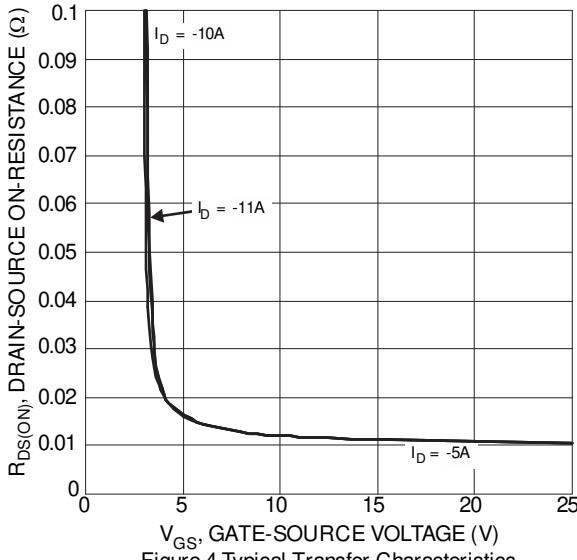


Figure 4 Typical Transfer Characteristics

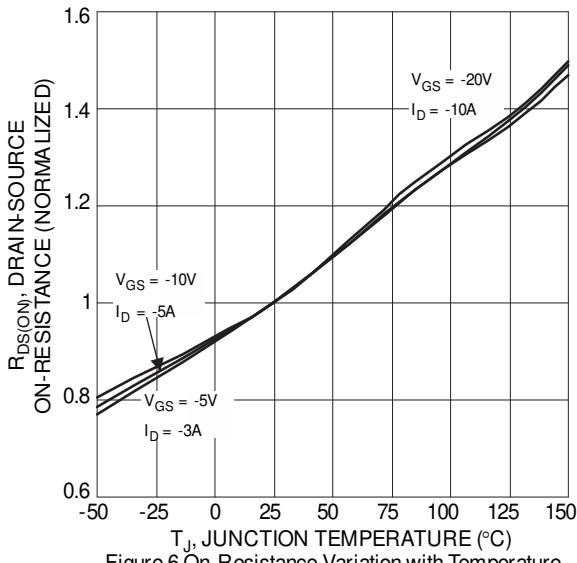


Figure 6 On-Resistance Variation with Temperature

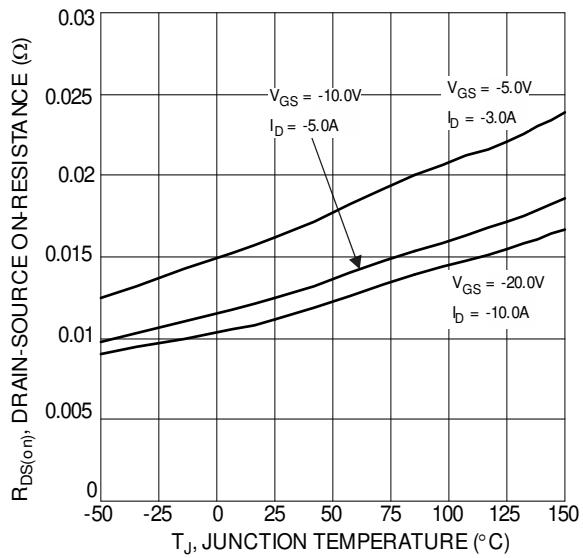


Figure 7 On-Resistance Variation with Temperature

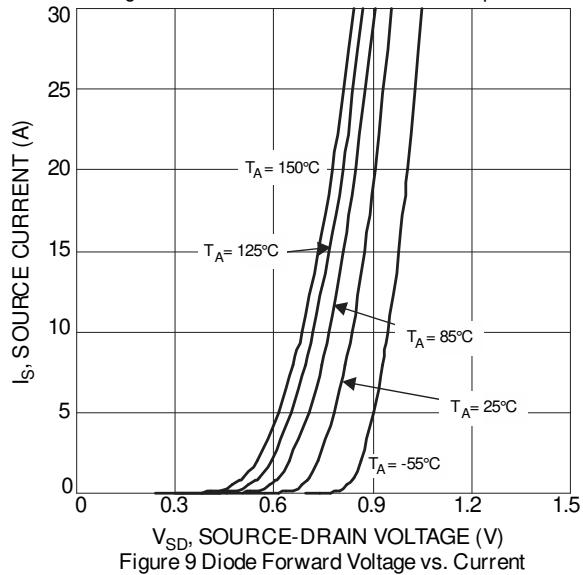


Figure 9 Diode Forward Voltage vs. Current

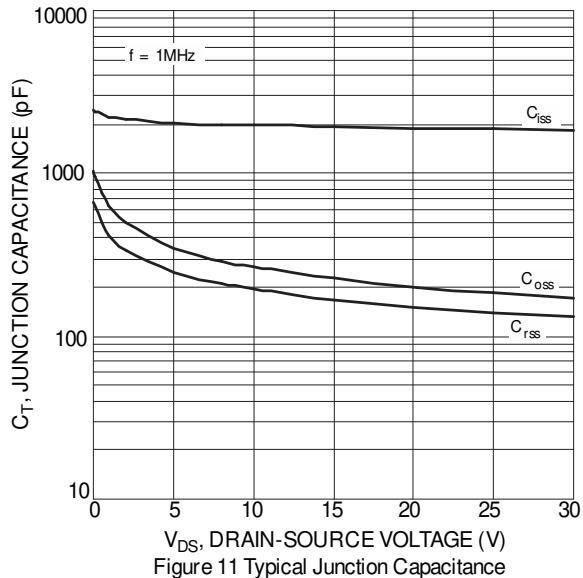


Figure 11 Typical Junction Capacitance

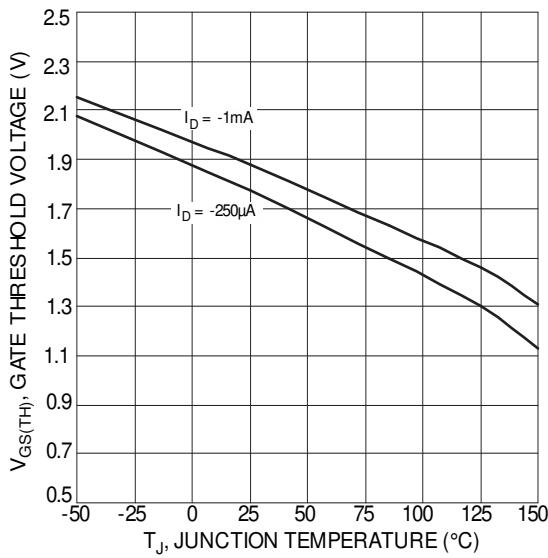


Figure 8 Gate Threshold Variation vs. Ambient Temperature

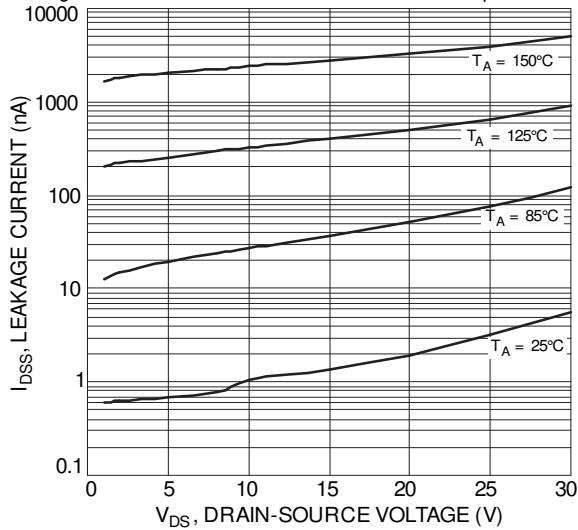


Figure 10 Typical Drain-Source Leakage Current vs. Voltage

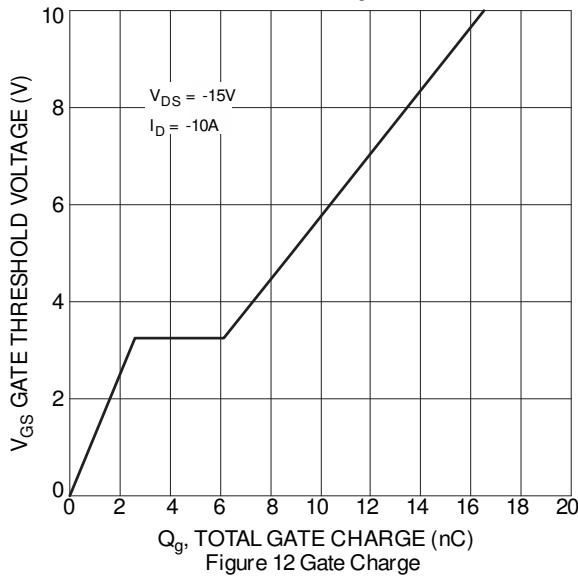


Figure 12 Gate Charge

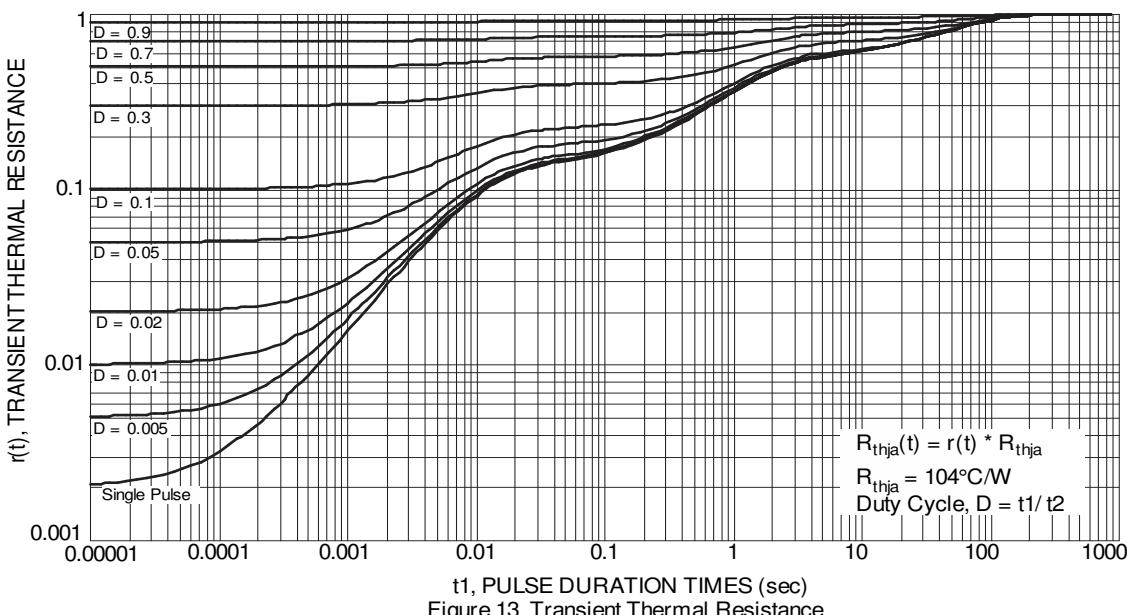
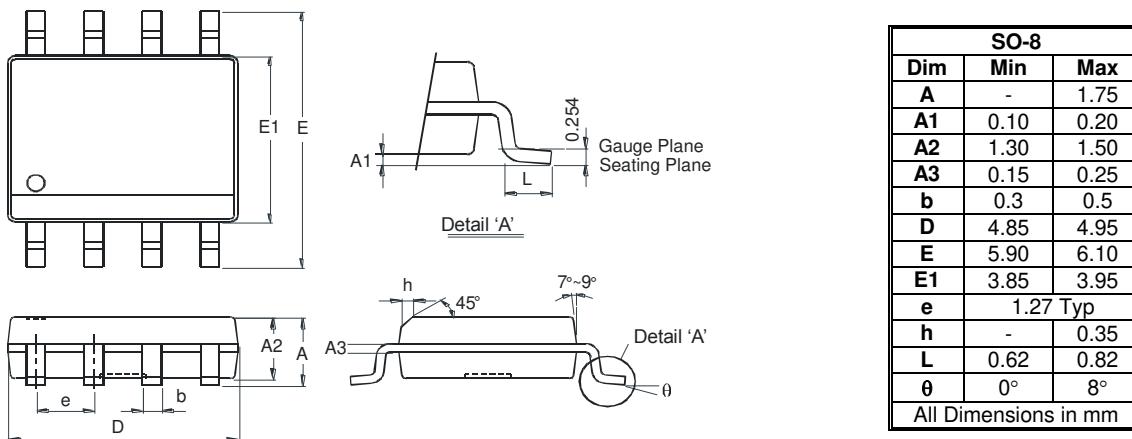


Figure 13 Transient Thermal Resistance

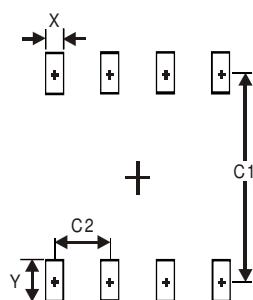
Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
X	0.60
Y	1.55
C1	5.4
C2	1.27

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