

## Product Summary

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>A</sub> = +25°C
100V	9.2mΩ @ V <sub>GS</sub> = 10V	12A

## Description and Applications

This MOSFET is designed to minimize the on-state resistance (R<sub>DS(ON)</sub>) yet maintain superior switching performance, making it ideal for high-efficiency power-management applications.

- High-frequency switching
- Synchronous rectification
- DC-DC converters

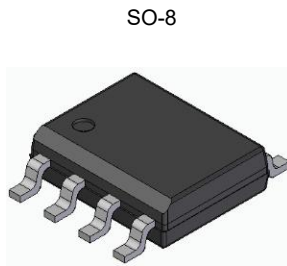
## Features and Benefits

- High Conversion Efficiency
- Low R<sub>DS(ON)</sub>—Minimizes On-State Losses
- Low Input Capacitance
- Fast Switching Speed
- 100% Unclamped Inductive Switching (UIS) Test in Production – Ensures More Reliable and Robust End Application
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **The DMT10H009SSSQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

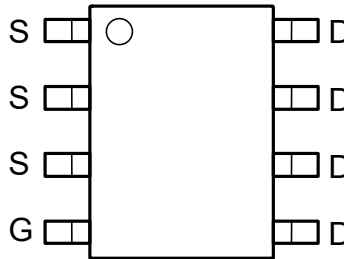
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

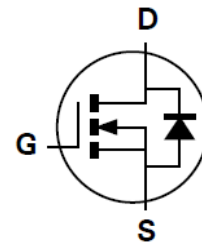
- Package: SO-8
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Finish—Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ3
- Weight: 0.074 grams (Approximate)



Top View



Top View  
Pin Configuration



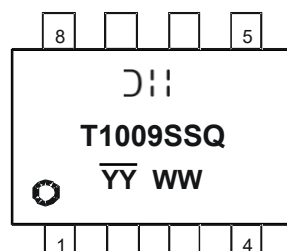
Equivalent Circuit

## Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMT10H009SSSQ-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



DII = Manufacturer's Marking  
 T1009SSQ = Product Type Marking Code  
 YYWW = Date Code Marking  
 YY = Year (ex: 25 = 2025)  
 WW = Week (01 to 53)

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

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V <sub>DSS</sub>	100	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Continuous Drain Current (Note 6) V <sub>GS</sub> = 10V	T <sub>A</sub> = +25°C	I <sub>D</sub>	12	A
	T <sub>A</sub> = +70°C		10	
	T <sub>C</sub> = +25°C	I <sub>D</sub>	42	A
	T <sub>C</sub> = +70°C		34	
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)		I <sub>DM</sub>	100	A
Maximum Continuous Body Diode Forward Current (Note 6)		I <sub>S</sub>	1.8	A
Pulsed Body Diode Forward Current (10µs Pulse, Duty Cycle = 1%)		I <sub>SM</sub>	100	A
Avalanche Current, L = 0.3mH		I <sub>AS</sub>	27	A
Avalanche Energy, L = 0.3mH		E <sub>AS</sub>	109.4	mJ

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

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P <sub>D</sub>	1.4	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	89	°C/W
Total Power Dissipation (Note 6)	P <sub>D</sub>	2.1	W
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	61	°C/W
Thermal Resistance, Junction to Case (Note 6)	R <sub>θJC</sub>	5	°C/W
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</b> (Note 7)						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	V <sub>GS</sub> = 0, I <sub>D</sub> = 1mA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	µA	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0
<b>ON CHARACTERISTICS</b> (Note 7)						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	2	—	4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250µA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	7.5	9.2	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 10A
Diode Forward Voltage	V <sub>SD</sub>	—	—	1.2	V	V <sub>GS</sub> = 0, I <sub>S</sub> = 20A
<b>DYNAMIC CHARACTERISTICS</b> (Note 8)						
Input Capacitance	C <sub>iss</sub>	—	2085	—	pF	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0 f = 1MHz
Output Capacitance	C <sub>oss</sub>	—	609	—		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	13	—		
Gate Resistance	R <sub>g</sub>	—	1.7	—	Ω	V <sub>DS</sub> = 0, V <sub>GS</sub> = 0, f = 1MHz
Total Gate Charge	Q <sub>g</sub>	—	29.8	—	nC	V <sub>DD</sub> = 50V, I <sub>D</sub> = 13A, V <sub>GS</sub> = 10V
Gate-Source Charge	Q <sub>gs</sub>	—	9.5	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	7.3	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	13	—	ns	V <sub>DD</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 13A, R <sub>g</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	19	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	25.6	—		
Turn-Off Fall Time	t <sub>f</sub>	—	16.2	—		
Reverse-Recovery Time	t <sub>RR</sub>	—	45	—	ns	I <sub>F</sub> = 13A, di/dt = 100A/µs
Reverse-Recovery Charge	Q <sub>RR</sub>	—	68	—	nC	

- Notes:
- Device mounted on FR-4 substrate PCB, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PCB, 2oz copper, with 1inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to product testing.

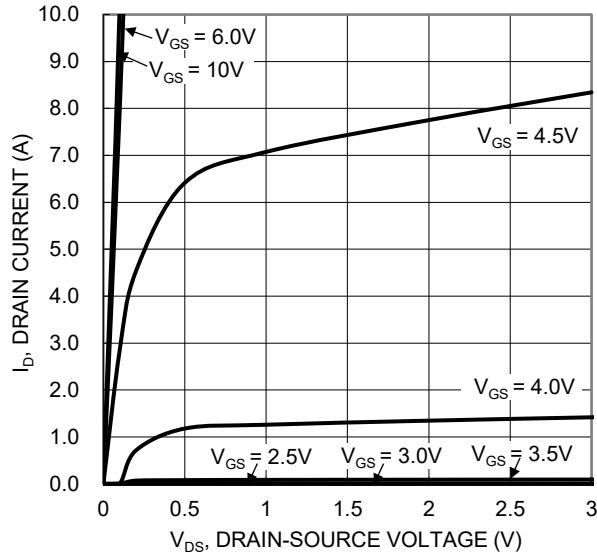


Figure 1. Typical Output Characteristic

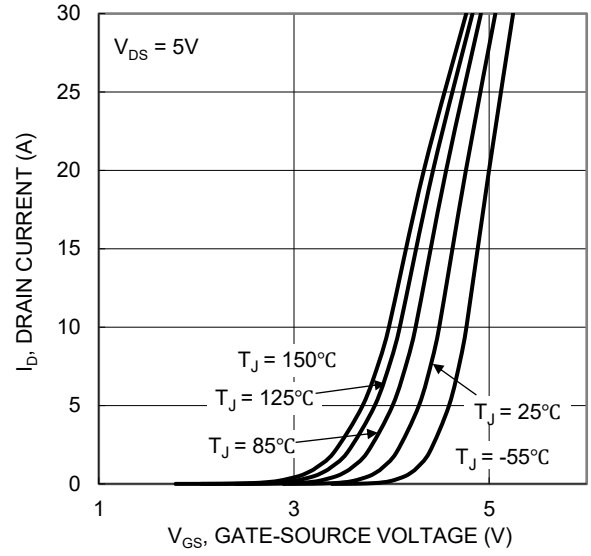


Figure 2. Typical Transfer Characteristic

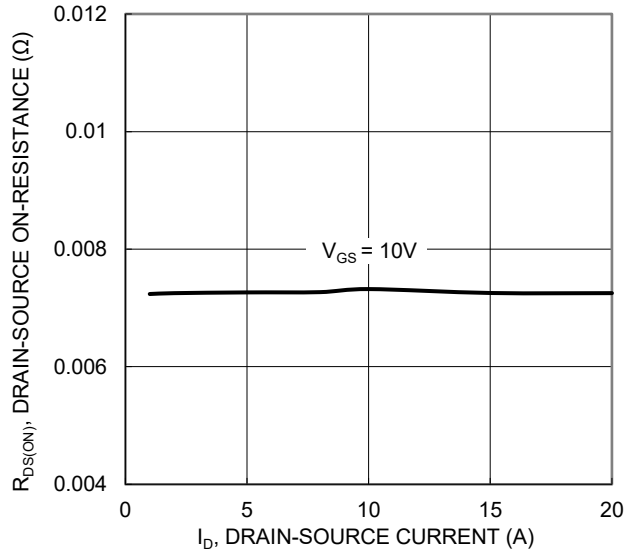


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

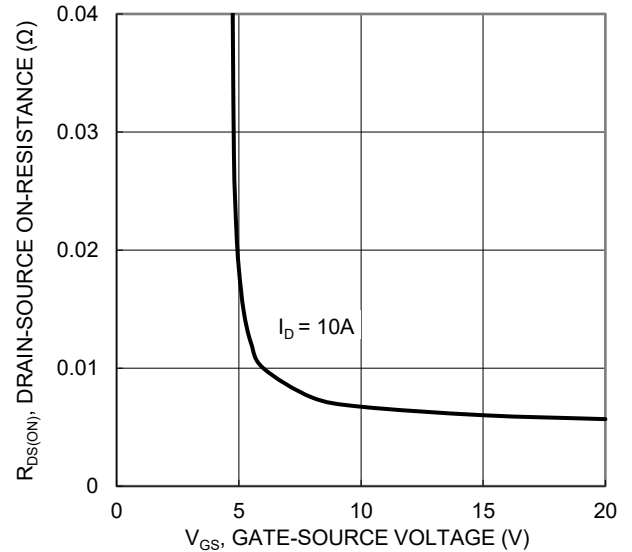


Figure 4. Typical Transfer Characteristic

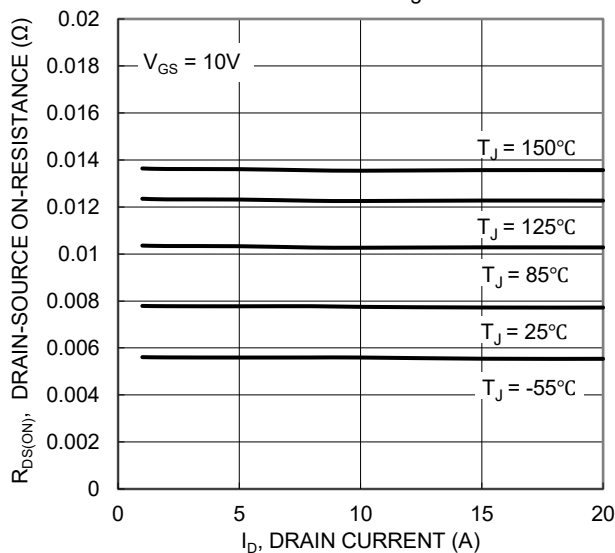


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

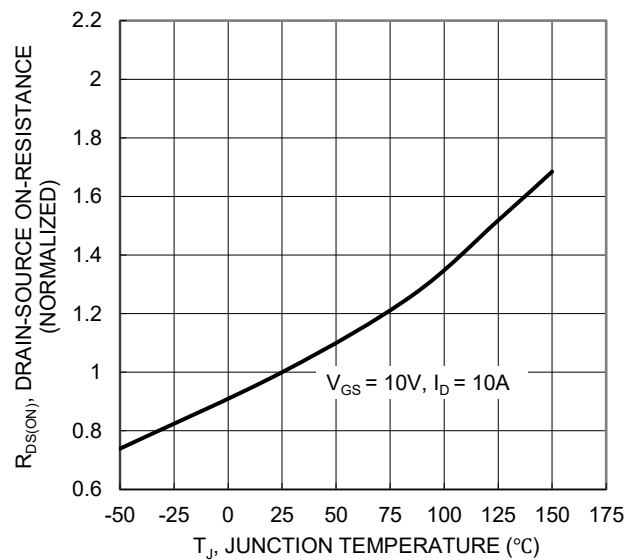
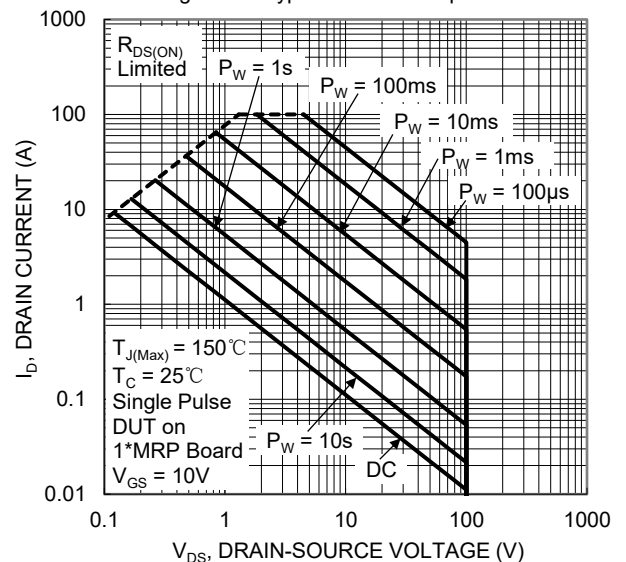
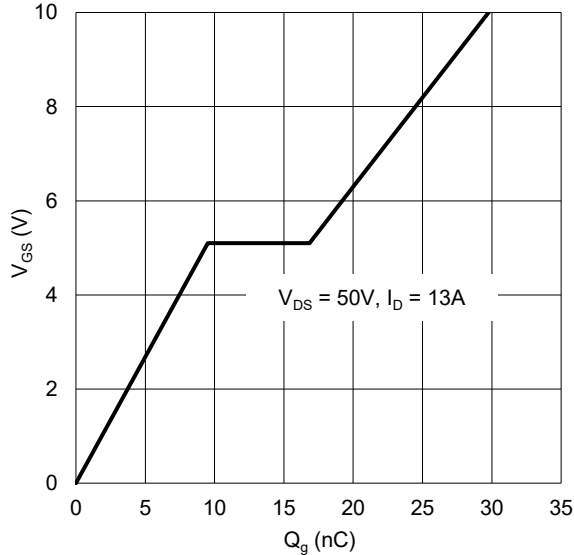
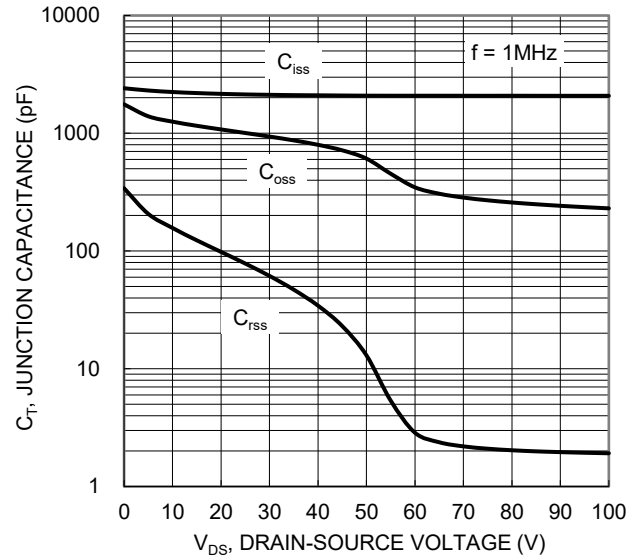
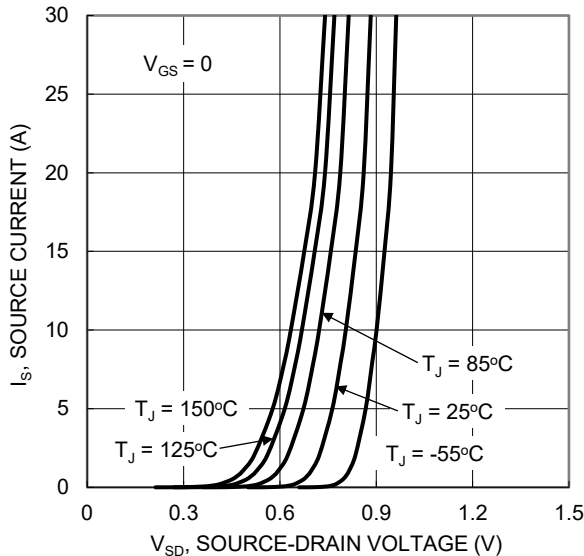
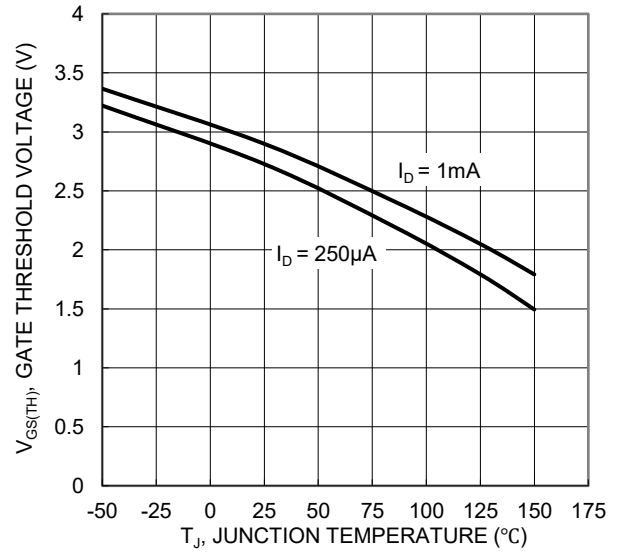
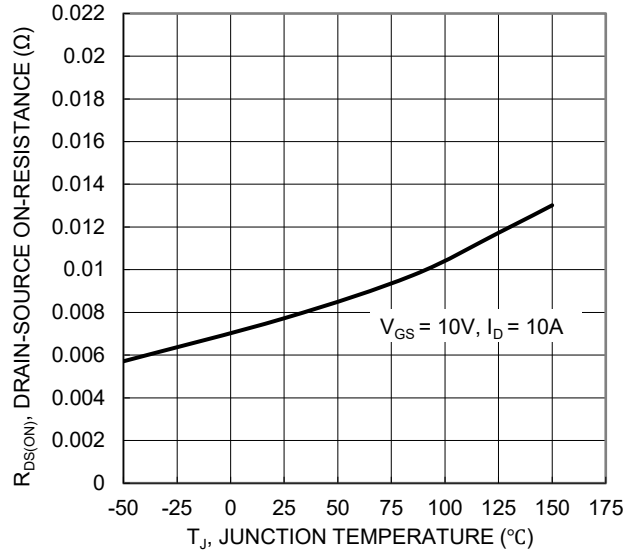


Figure 6. On-Resistance Variation with Junction Temperature



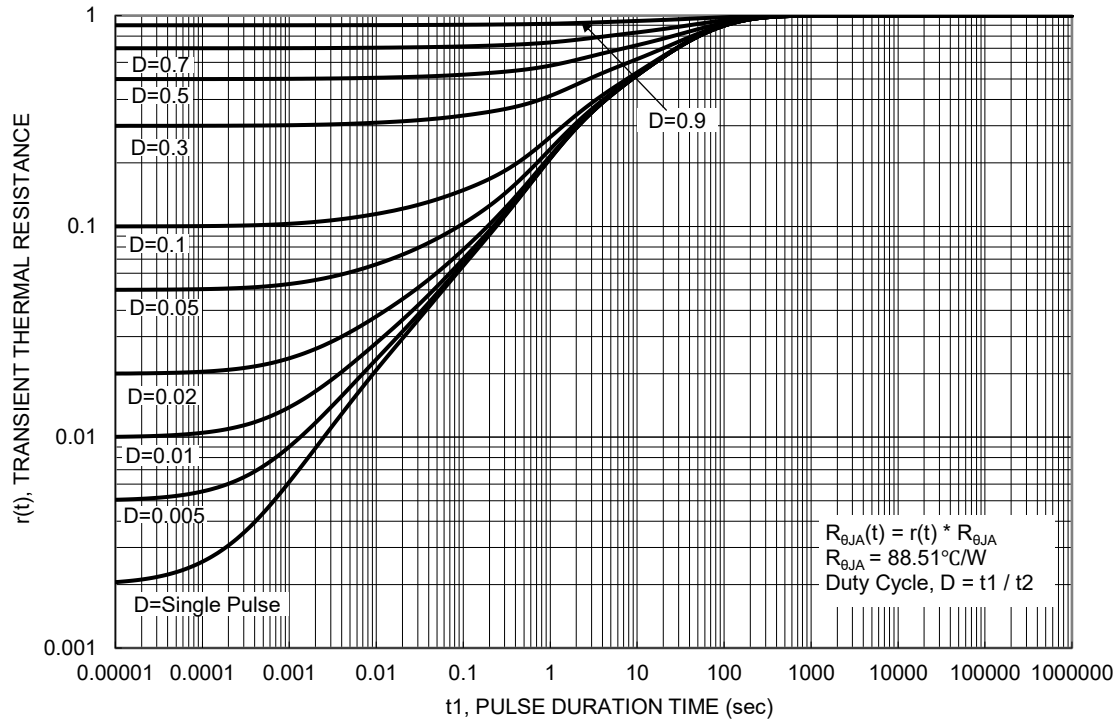
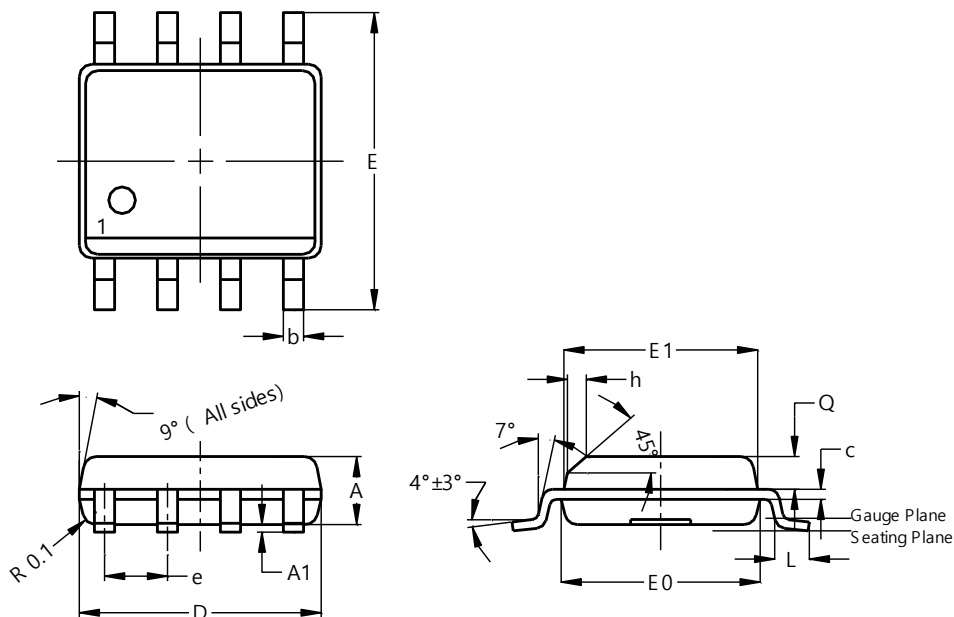


Figure 13. Transient Thermal Resistance

## Package Outline Dimensions

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

### SO-8

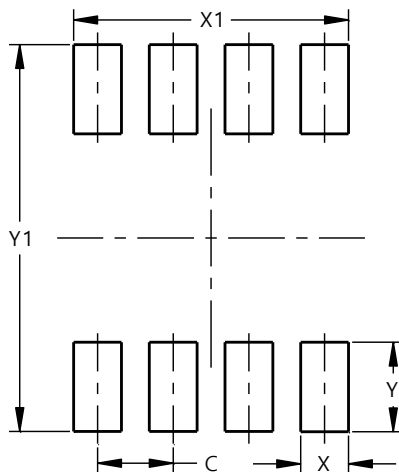


SO-8			
Dim	Min	Max	Typ
A	1.40	1.50	1.45
A1	0.10	0.20	0.15
b	0.30	0.50	0.40
c	0.15	0.25	0.20
D	4.85	4.95	4.90
E	5.90	6.10	6.00
E1	3.80	3.90	3.85
E0	3.85	3.95	3.90
e	--	--	1.27
h	--	--	0.35
L	0.62	0.82	0.72
Q	0.60	0.70	0.65
All Dimensions in mm			

## 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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