



**THE DATASHEET OF  
DMN10H170SVTQ-7**



## Product Summary

BV <sub>DSS</sub>	R <sub>DS(ON)</sub> Max	I <sub>D</sub> Max T <sub>A</sub> = +25°C
100V	160mΩ @ V <sub>GS</sub> = 10V	2.6A
	200mΩ @ V <sub>GS</sub> = 4.5V	2.3A

## Description

This new generation 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.

## Applications

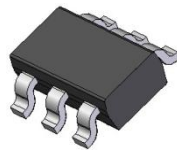
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

## Features and Benefits

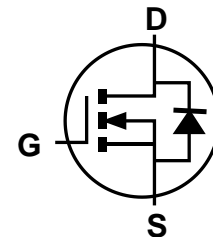
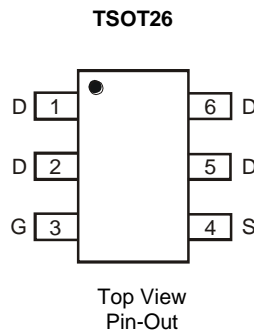
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Mechanical Data

- Case: TSOT26
- 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 Ⓔ
- Weight: 0.015 grams (Approximate)



Top View



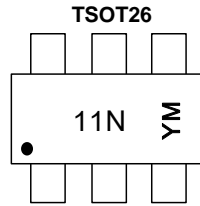
Equivalent Circuit

## Ordering Information (Note 5)

Part Number	Case	Packaging
DMN10H170SVTQ-7	TSOT26	3,000/Tape & Reel
DMN10H170SVTQ-13	TSOT26	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](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.
  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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



11N = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: C = 2015)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2014	2015	2016	2017	2018	2019	2020	2021
Code	B	C	D	E	F	G	H	I

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	100	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current (Note 7), $V_{GS} = 10\text{V}$	$I_D$	2.6	A
Steady State		$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	
Pulsed Drain Current (10 $\mu\text{s}$ Pulse, Duty Cycle $\leq 1\%$ )	$I_{DM}$	11.2	A
Maximum Body Diode Continuous Current (Note 7)	$I_S$	2.0	A

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation	$P_D$	1.2	W
		(Note 6)	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	101	$^\circ\text{C/W}$
		(Note 6)	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	15	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Notes: 6. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.  
 7. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b> (Note 8)						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1.0	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Body Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS</b> (Note 8)						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	1.0	2.0	3.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	115	160	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 5.0A
		—	124	200		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A
Diode Forward Voltage	V <sub>SD</sub>	—	0.9	1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 10A
<b>DYNAMIC CHARACTERISTICS</b> (Note 9)						
Input Capacitance	C <sub>iss</sub>	—	1,167	—	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	36	—		
Reverse Transfer Capacitance	C <sub>rss</sub>	—	25	—		
Gate Resistance	R <sub>g</sub>	—	1.3	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1.0MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	—	4.9	—	nC	V <sub>DS</sub> = 80V, I <sub>D</sub> = 12.8A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	9.7	—		
Gate-Source Charge	Q <sub>gs</sub>	—	2.0	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	2.0	—		
Turn-On Delay Time	t <sub>D(ON)</sub>	—	10	—	ns	V <sub>DD</sub> = 50V, V <sub>GS</sub> = 10V, R <sub>g</sub> = 25Ω, I <sub>D</sub> = 12.8A
Turn-On Rise Time	t <sub>r</sub>	—	11	—		
Turn-Off Delay Time	t <sub>D(OFF)</sub>	—	42	—		
Turn-Off Fall Time	t <sub>f</sub>	—	12	—		
Reverse Recovery Time	t <sub>RR</sub>	—	30	—	ns	V <sub>GS</sub> = 0V, I <sub>S</sub> = 12.8A, di/dt = 100A/μs
Reverse Recovery Charge	Q <sub>RR</sub>	—	35	—	nC	

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

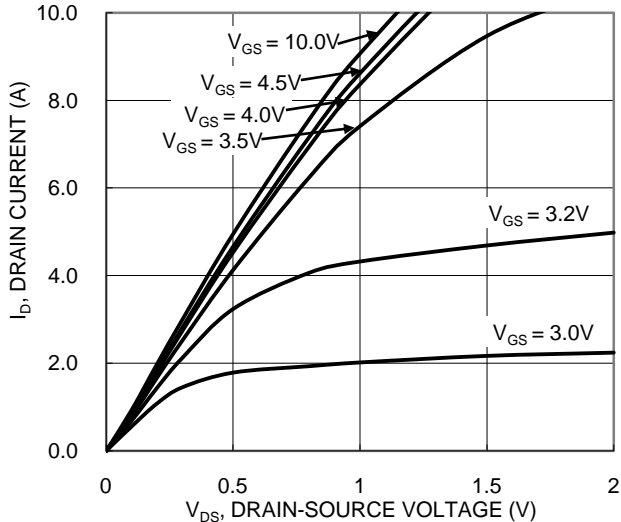


Figure 1. Typical Output Characteristic

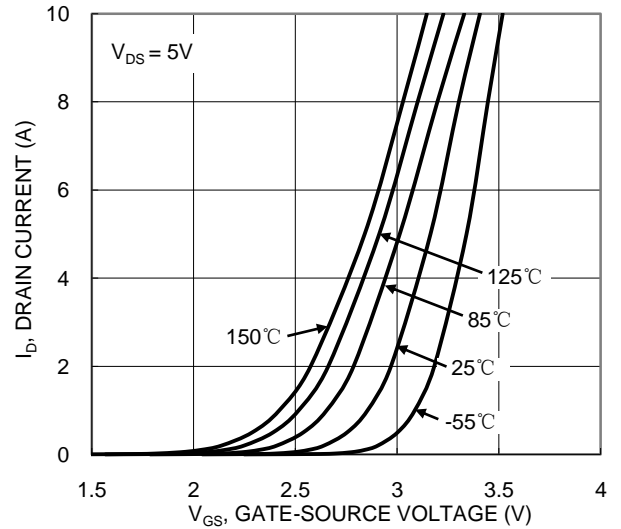


Figure 2. Typical Transfer Characteristic

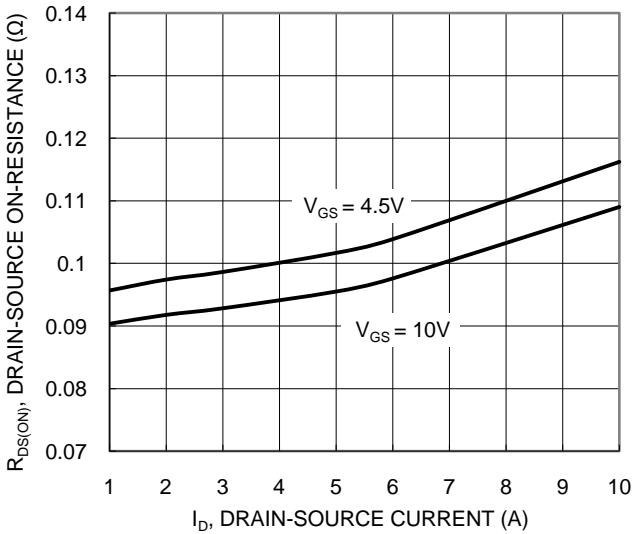


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

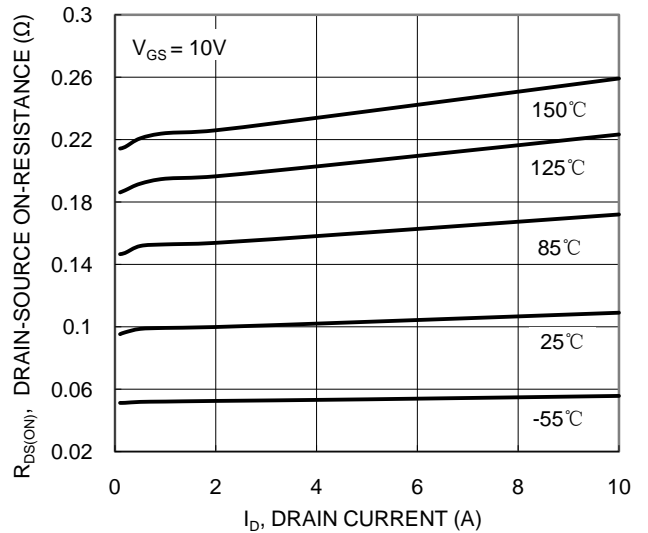


Figure 4. Typical On-Resistance vs. Drain Current and Junction Temperature

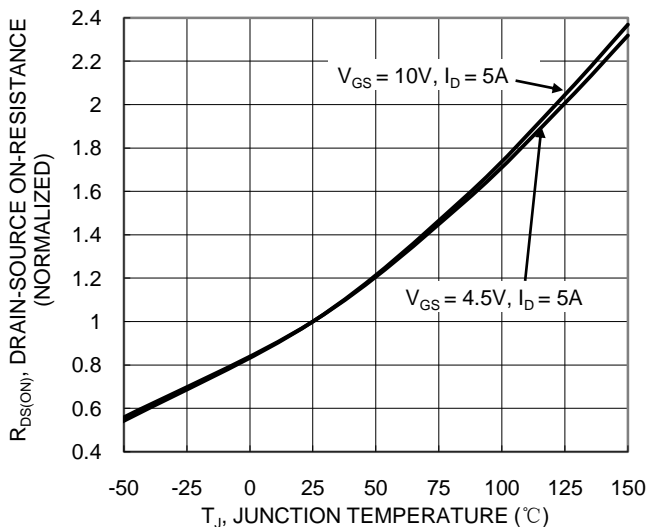


Figure 5. On-Resistance Variation with Junction Temperature

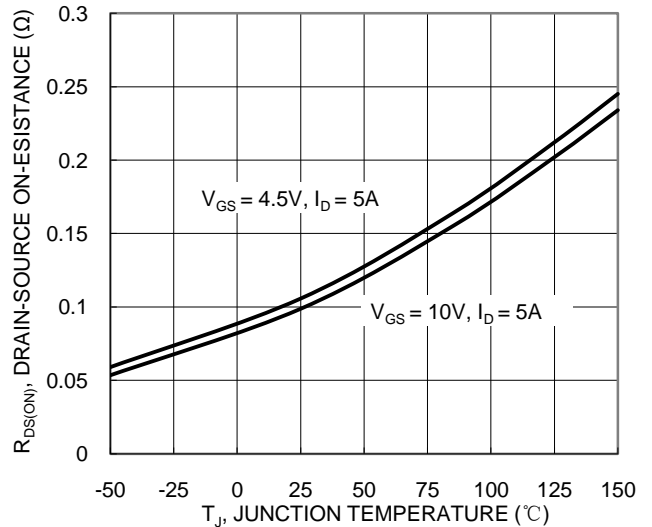


Figure 6. On-Resistance Variation with Junction Temperature

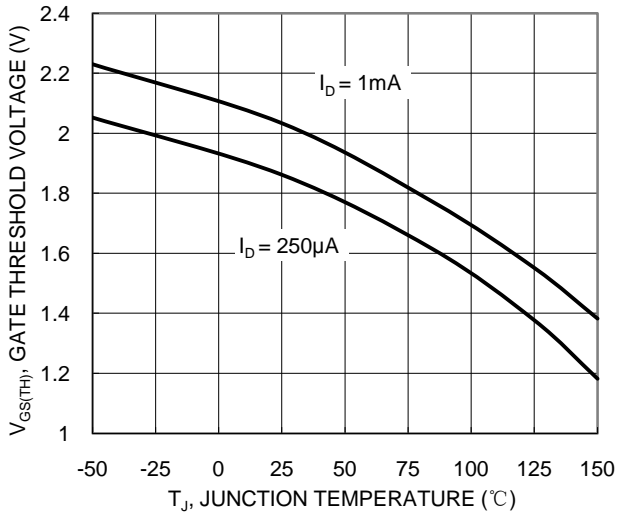


Figure 7. Gate Threshold Variation vs. Junction Temperature

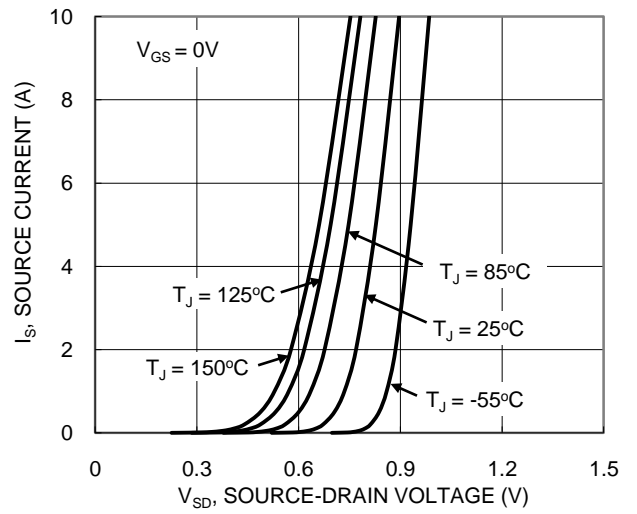


Figure 8. Diode Forward Voltage vs. Current

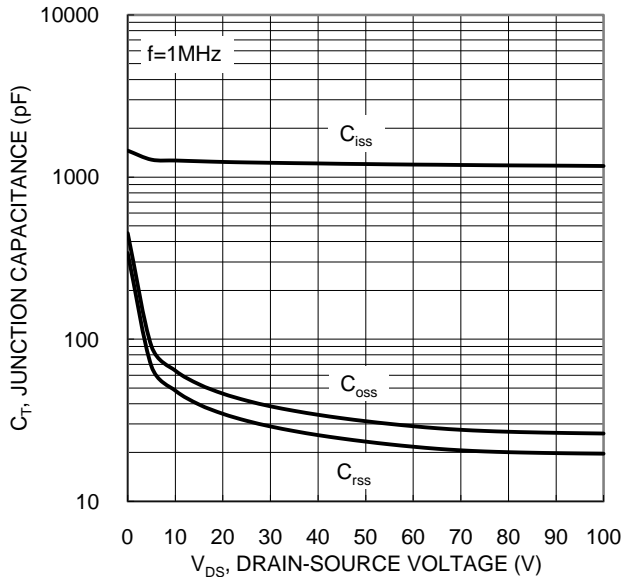


Figure 9. Typical Junction Capacitance

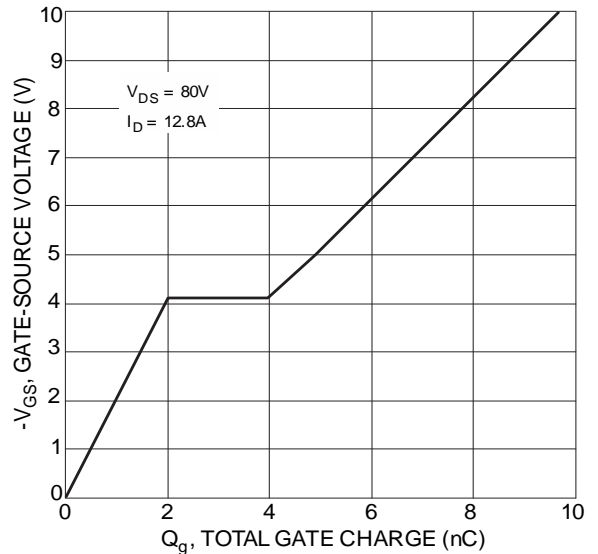


Figure 10 Gate-Charge Characteristics

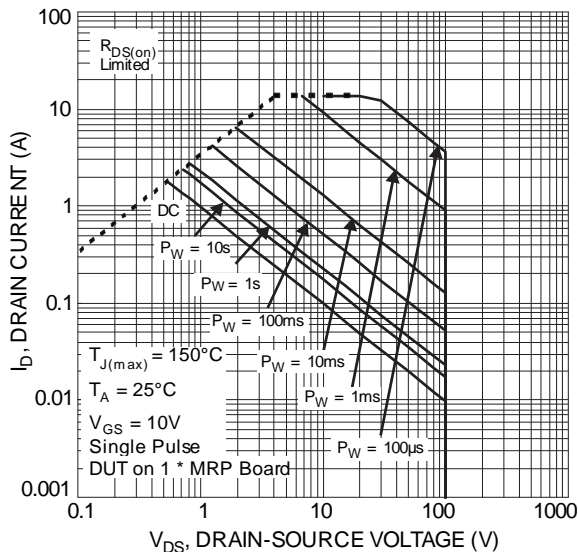
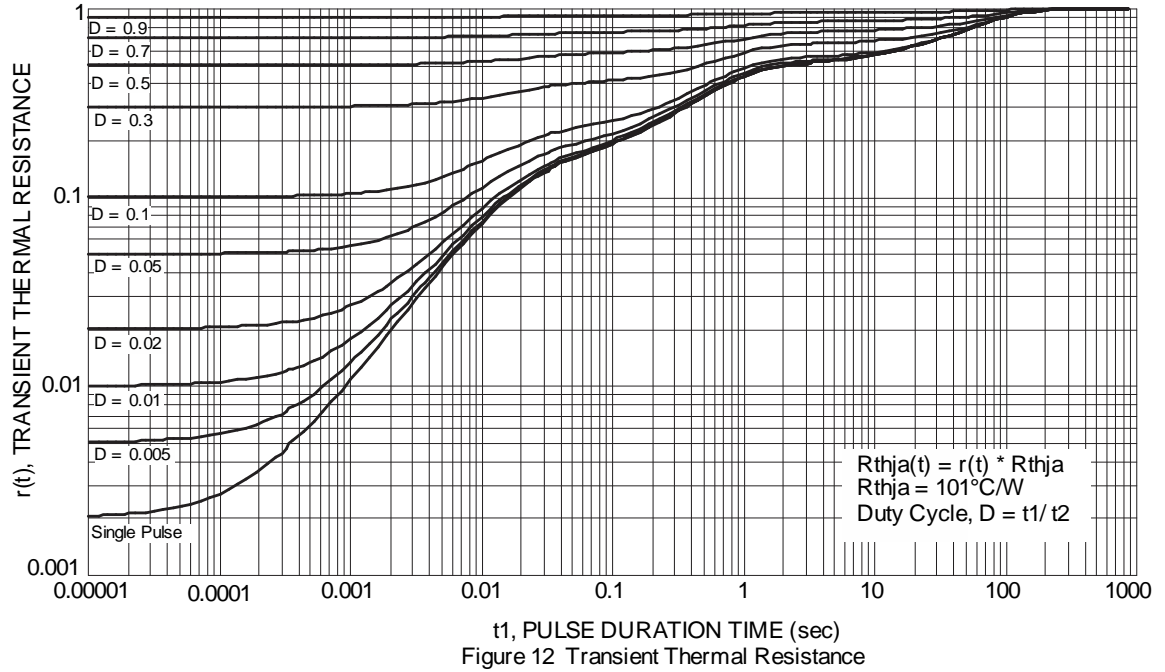


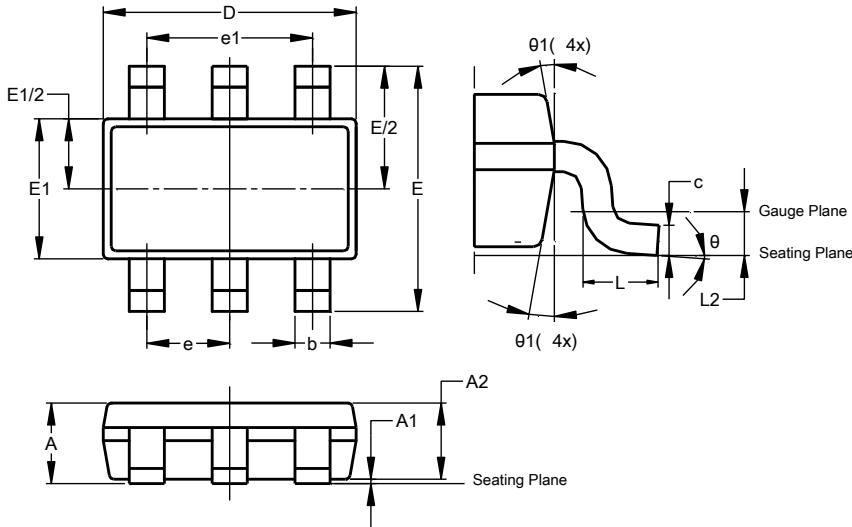
Figure 11 SOA, Safe Operation Area



**Package Outline Dimensions**

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

**TSOT26**

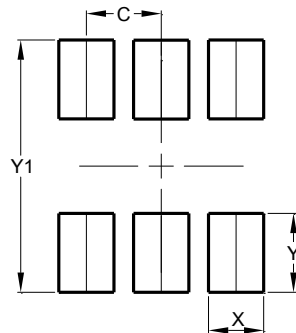


TSOT26			
Dim	Min	Max	Typ
A	-	1.00	-
A1	0.010	0.100	-
A2	0.840	0.900	-
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	-
c	0.120	0.200	-
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	-
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	-
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

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

**TSOT26**



Dimensions	Value (in mm)
C	0.950
X	0.700
Y	1.000
Y1	3.199

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