

Product Summary

BV _{DSS}	R _{D(on)} Max	I _D Max T _A = +25°C
100V	160mΩ @ V _{GS} = 10V	2.6A
	200mΩ @ V _{GS} = 4.5V	2.3A

Description

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

Applications

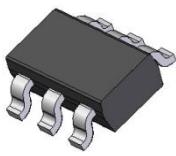
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc.

Features and Benefits

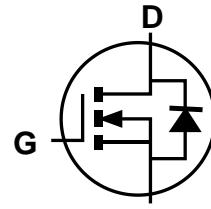
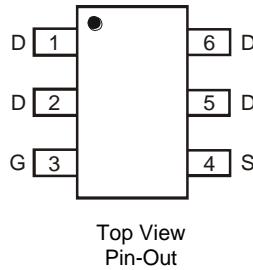
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability**
- PPAP Capable (Note 4)**

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 (e3)
- Weight: 0.015 grams (Approximate)



Top View



Equivalent Circuit

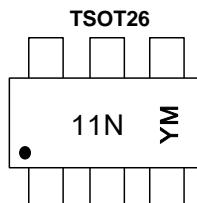
Ordering Information (Note 5)

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

Notes:

- 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.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
- 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}	± 20	V
Continuous Drain Current (Note 7), $V_{GS} = 10\text{V}$	I_D	2.6 2.1	A
Pulsed Drain Current (10 μs 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
		1.7	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	101	$^\circ\text{C}/\text{W}$
		73	
Thermal Resistance, Junction to Case	$R_{\theta JC}$	15	
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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 8)						
Drain-Source Breakdown Voltage	BV_{DSS}	100	—	—	V	$V_{\text{GS}} = 0\text{V}$, $I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1.0	μA	$V_{\text{DS}} = 100\text{V}$, $V_{\text{GS}} = 0\text{V}$
Gate-Body Leakage	I_{GSS}	—	—	± 100	nA	$V_{\text{GS}} = \pm 20\text{V}$, $V_{\text{DS}} = 0\text{V}$
ON CHARACTERISTICS (Note 8)						
Gate Threshold Voltage	$V_{\text{GS(TH)}}$	1.0	2.0	3.0	V	$V_{\text{DS}} = V_{\text{GS}}$, $I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{\text{DS(ON)}}$	—	115	160	$\text{m}\Omega$	$V_{\text{GS}} = 10\text{V}$, $I_D = 5.0\text{A}$
		—	124	200		$V_{\text{GS}} = 4.5\text{V}$, $I_D = 5.0\text{A}$
Diode Forward Voltage	V_{SD}	—	0.9	1.0	V	$V_{\text{GS}} = 0\text{V}$, $I_S = 10\text{A}$
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	1,167	—	pF	$V_{\text{DS}} = 25\text{V}$, $V_{\text{GS}} = 0\text{V}$, $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	36	—		
Reverse Transfer Capacitance	C_{rss}	—	25	—	nC	$V_{\text{DS}} = 80\text{V}$, $I_D = 12.8\text{A}$
Gate Resistance	R_g	—	1.3	—		
Total Gate Charge ($V_{\text{GS}} = 4.5\text{V}$)	Q_g	—	4.9	—	ns	$V_{\text{DD}} = 50\text{V}$, $V_{\text{GS}} = 10\text{V}$, $R_g = 25\Omega$, $I_D = 12.8\text{A}$
Total Gate Charge ($V_{\text{GS}} = 10\text{V}$)	Q_g	—	9.7	—		
Gate-Source Charge	Q_{gs}	—	2.0	—	ns	$V_{\text{GS}} = 0\text{V}$, $I_S = 12.8\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$
Gate-Drain Charge	Q_{gd}	—	2.0	—		
Turn-On Delay Time	$t_{\text{D(ON)}}$	—	10	—	ns	$V_{\text{DD}} = 50\text{V}$, $V_{\text{GS}} = 10\text{V}$, $R_g = 25\Omega$, $I_D = 12.8\text{A}$
Turn-On Rise Time	t_{R}	—	11	—		
Turn-Off Delay Time	$t_{\text{D(OFF)}}$	—	42	—		
Turn-Off Fall Time	t_{F}	—	12	—		
Reverse Recovery Time	t_{RR}	—	30	—	nC	$V_{\text{GS}} = 0\text{V}$, $I_S = 12.8\text{A}$, $di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{RR}	—	35	—		

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

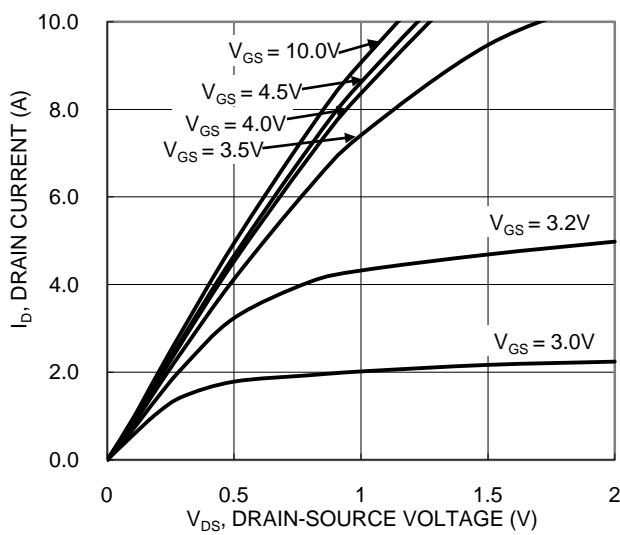


Figure 1. Typical Output Characteristic

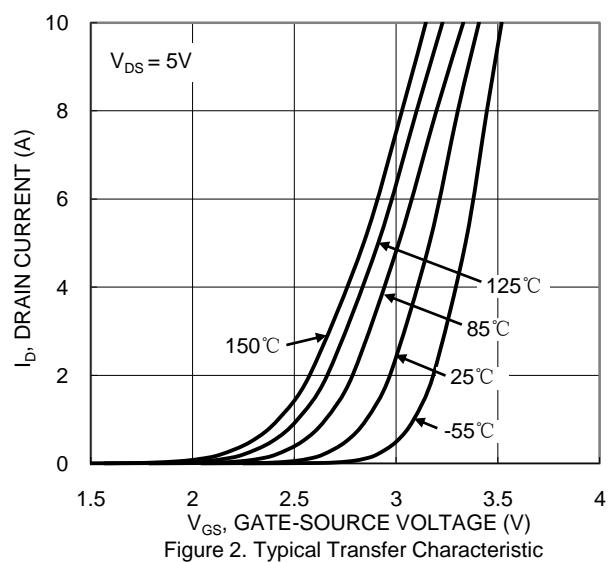


Figure 2. Typical Transfer Characteristic

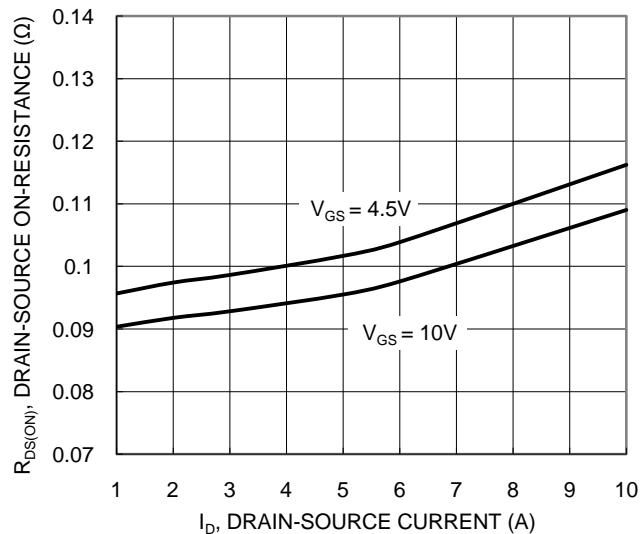


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

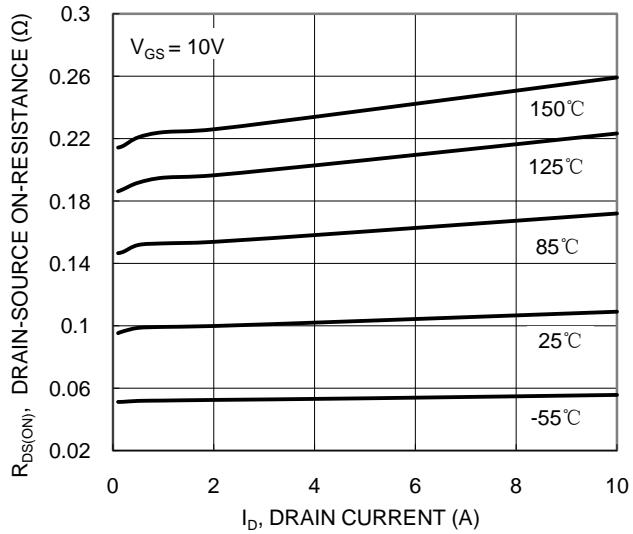


Figure 4. Typical On-Resistance vs. Drain Current and Junction Temperature

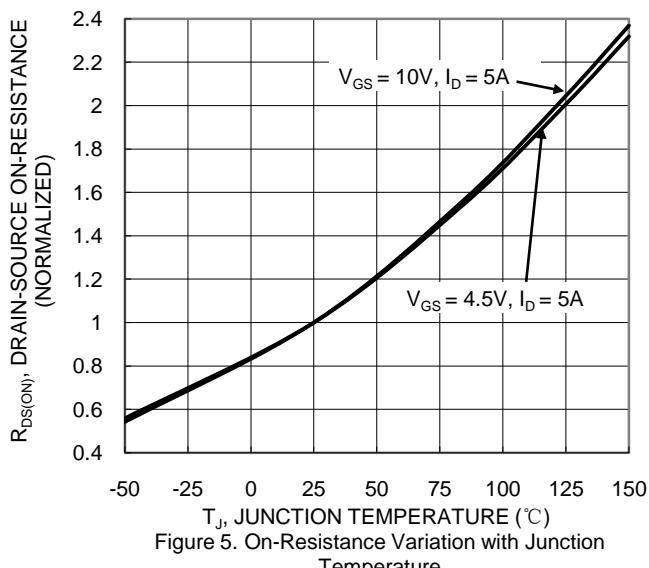


Figure 5. On-Resistance Variation with Junction Temperature

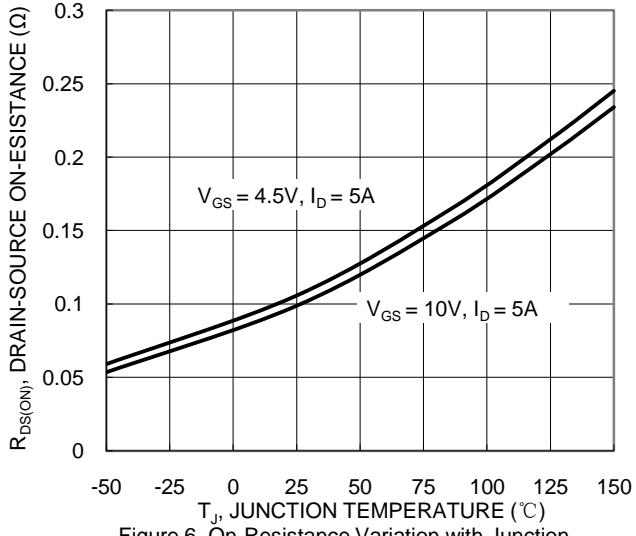


Figure 6. On-Resistance Variation with Junction Temperature

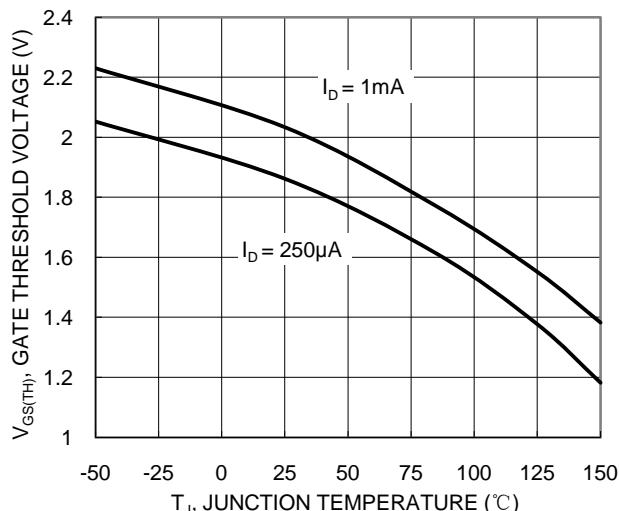


Figure 7. Gate Threshold Variation vs. Junction Temperature

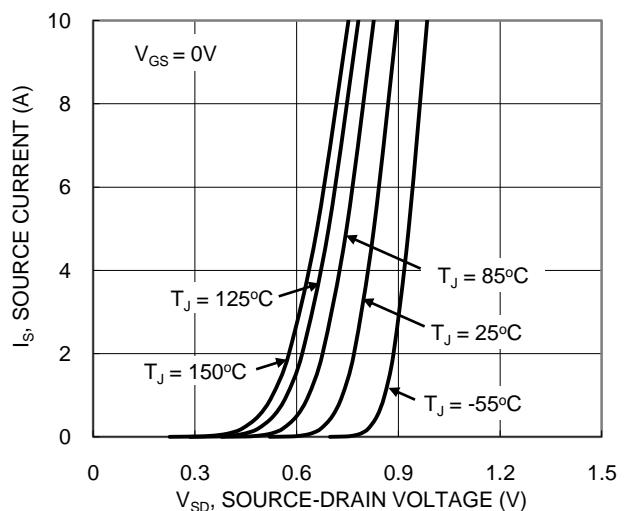


Figure 8. Diode Forward Voltage vs. Current

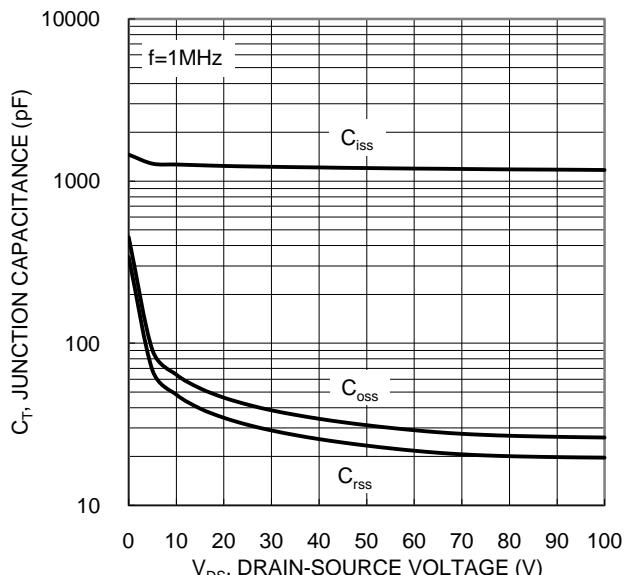


Figure 9. Typical Junction Capacitance

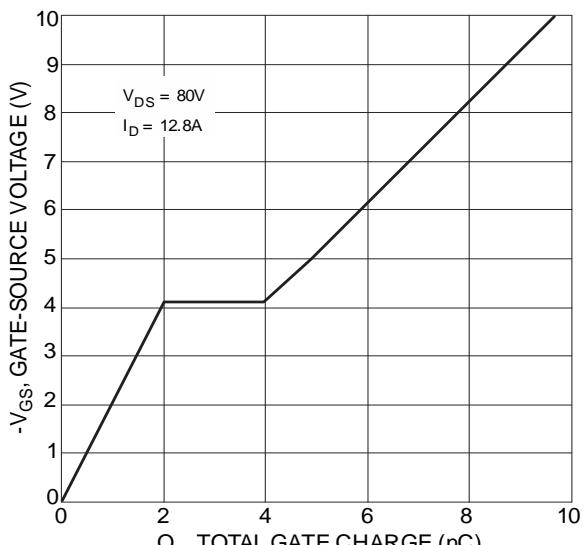


Figure 10 Gate-Charge Characteristics

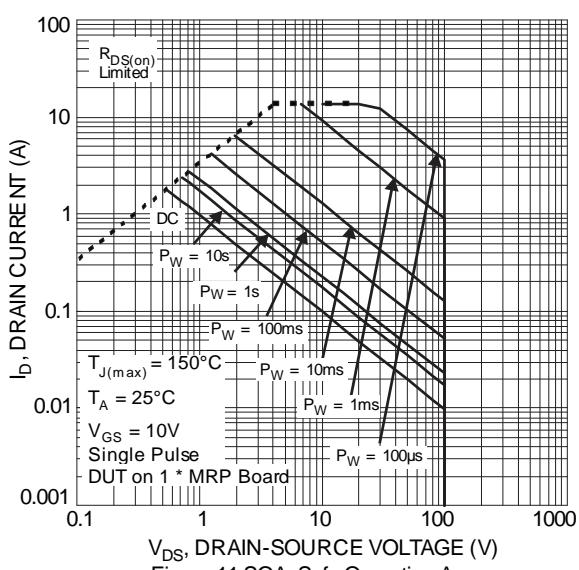


Figure 11 SOA, Safe Operation Area

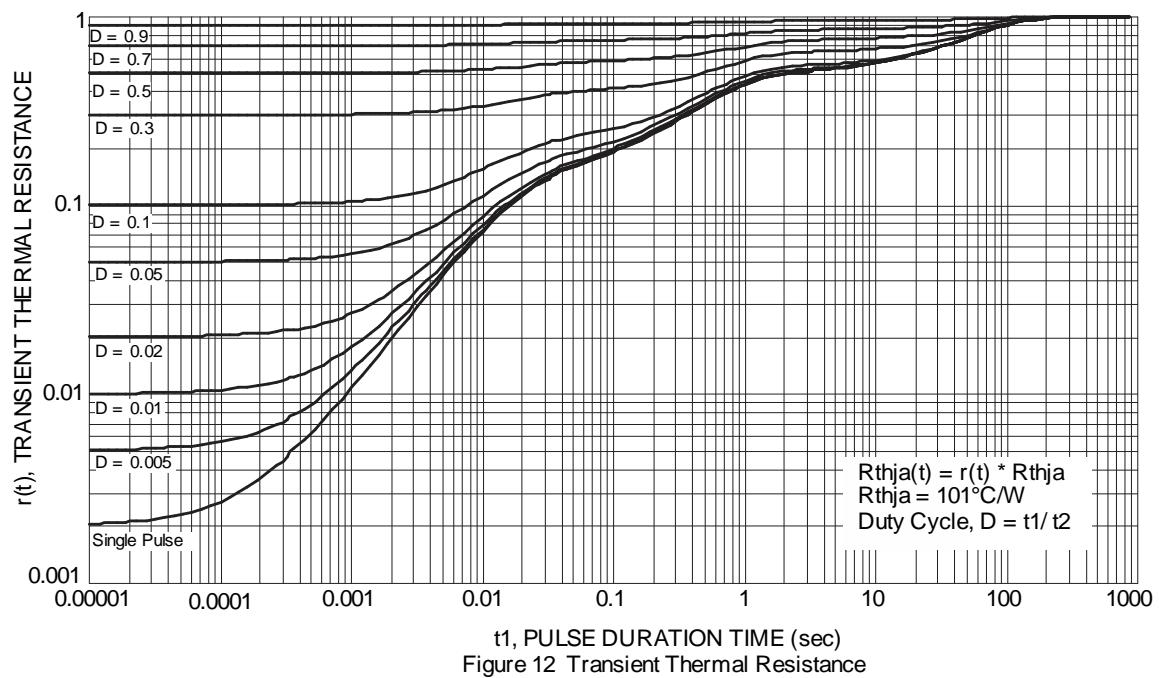
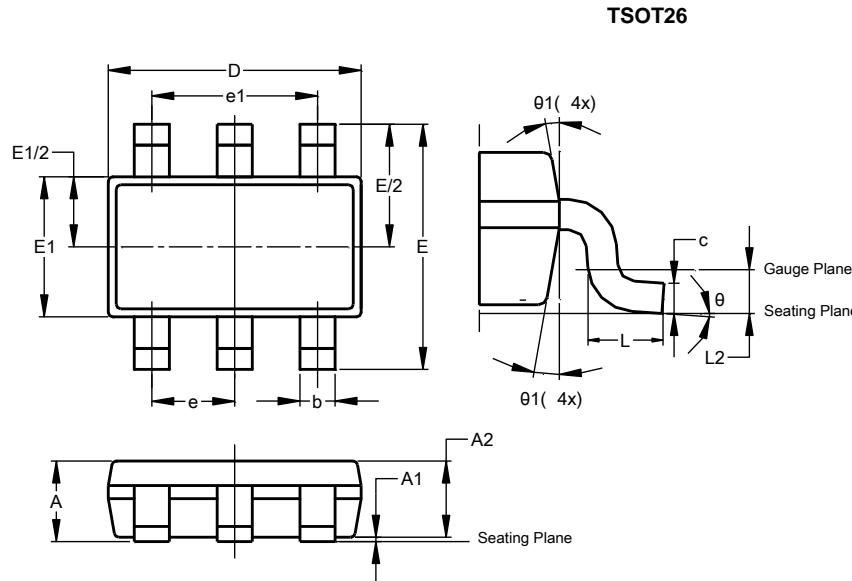


Figure 12 Transient Thermal Resistance

Package Outline Dimensions

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



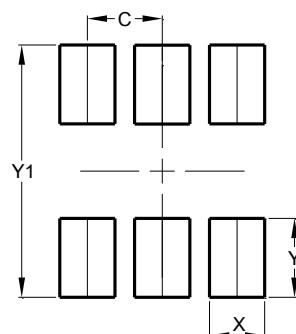
TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.010	0.100	—
A2	0.840	0.900	—
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	—
c	0.120	0.200	—
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	—
L2	0.250 BSC		
θ	0°	8°	4°
θ_1	4°	12°	—

All Dimensions in mm

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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