DUAL 30V N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)\ max}$	$I_{D\ max}$ T_A = +25°C
30V	50mΩ @ V_{GS} = 10V	4.0A
	90mΩ @ V_{GS} = 4.5V	3.3A

Features and Benefits

- Low On-Resistance
- 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)**

Description and Applications

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

- Backlighting
- DC-DC Converters
- Power Management Functions

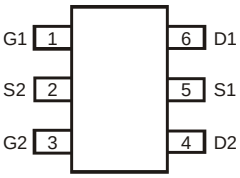
Mechanical Data

- Case: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See Diagram
- Terminals: Finish—Matte Tin Annealed over Copper Leadframe; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.013 grams (Approximate)

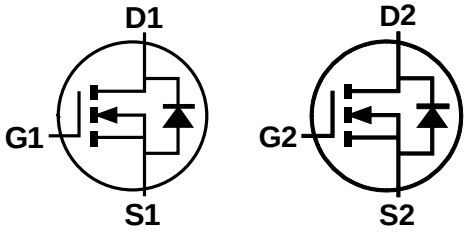
TSOT26



Top View



Top View



Equivalent Circuit

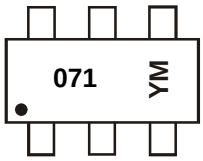
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3071LVT-7	TSOT26	3000 / Tape & Reel
DMN3071LVT-13	TSOT26	10,000 / 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

TSOT26



071 = Product Type Marking Code
YM or $\overline{Y}$M = Date Code Marking
Y or $\overline{Y}$ = Year (ex: F = 2018)
M = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026
Code	F	G	H	I	J	K	L	M	N

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

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 6) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	4.0 3.3	A
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	1.5	A
Pulsed Drain Current (380µs Pulse, Duty Cycle = 1%)			I_{DM}	20	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P_D	0.7	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\Theta JA}$	185	°C/W
Total Power Dissipation (Note 6)		P_D	1.0	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\Theta JA}$	116	°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 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	V_{GS} = 0V, I_D = 250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	1	µA	V_{DS} = 30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	—	—	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	—	2.5	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	35	50	mΩ	V_{GS} = 10V, I_D = 3.5A
			48	90		V_{GS} = 4.5V, I_D = 2A
Diode Forward Voltage	V_{SD}	—	0.8	1.0	V	V_{GS} = 0V, I_S = 1.0A
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	190	—	pF	V_{DS} = 15V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	36	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	26	—	pF	
Gate Resistance	R_g	—	4.2	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Total Gate Charge (V_{GS} = 4.5V)	Q_g	—	2.1	—	nC	V_{DS} = 15V, I_D = 3.5A
Total Gate Charge (V_{GS} = 10V)	Q_g	—	4.5	—	nC	
Gate-Source Charge	Q_{gs}	—	0.5	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.8	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	1.7	—	ns	V_{DS} = 15V, V_{GS} = 10V, R_G = 3Ω, R_L = 4.2Ω
Turn-On Rise Time	t_R	—	5.7	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	6.0	—	ns	
Turn-Off Fall Time	t_F	—	1.6	—	ns	
Reverse Recovery Time	t_{RR}	—	4.2	—	ns	I_F = 3.5A, di/dt = 100A/µs
Reverse Recovery Charge	Q_{RR}	—	0.5	—	nC	I_F = 3.5A, di/dt = 100A/µs

Notes:
5. Device mounted on FR-4 PCB, with minimum recommended pad layout.
6. Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

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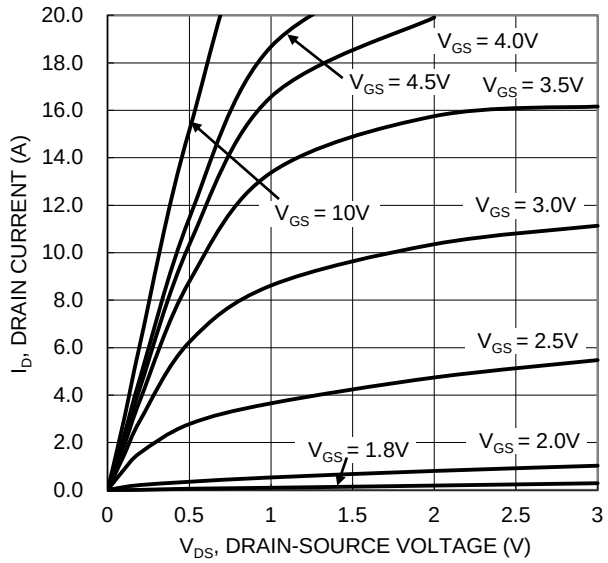


Figure 1. Typical Output Characteristic

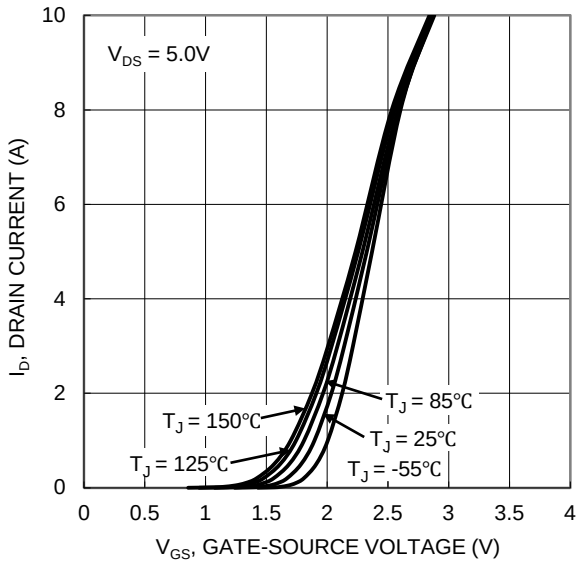


Figure 2. Typical Transfer Characteristic

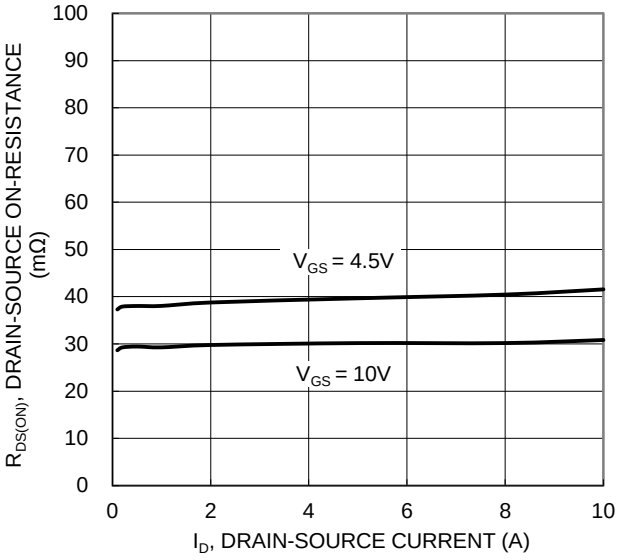


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

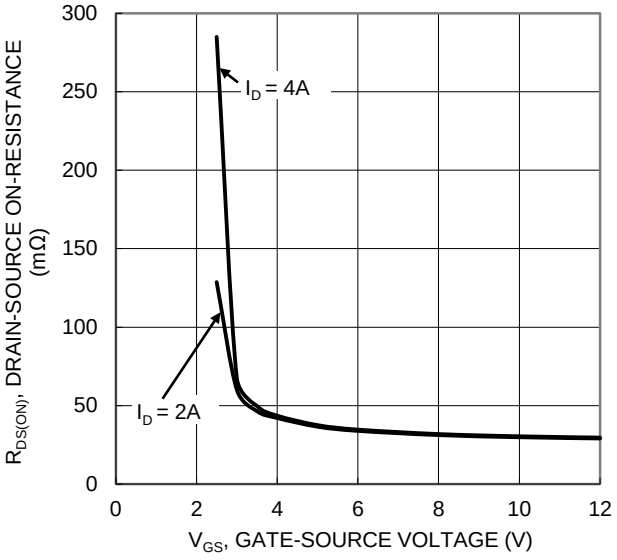


Figure 4. Typical Transfer Characteristic

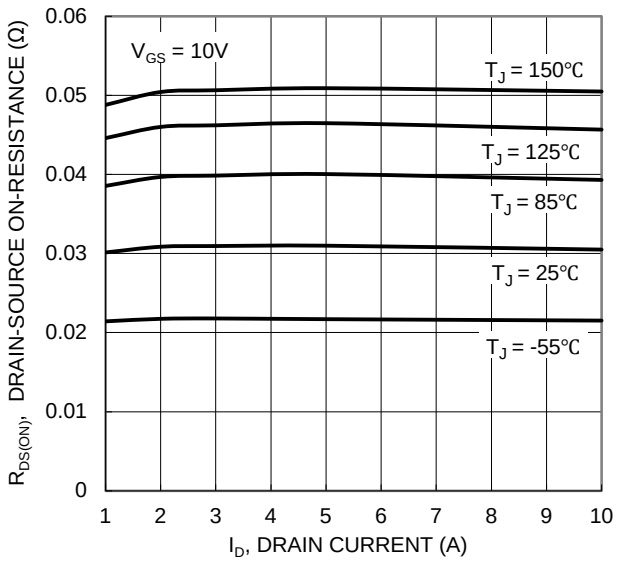


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

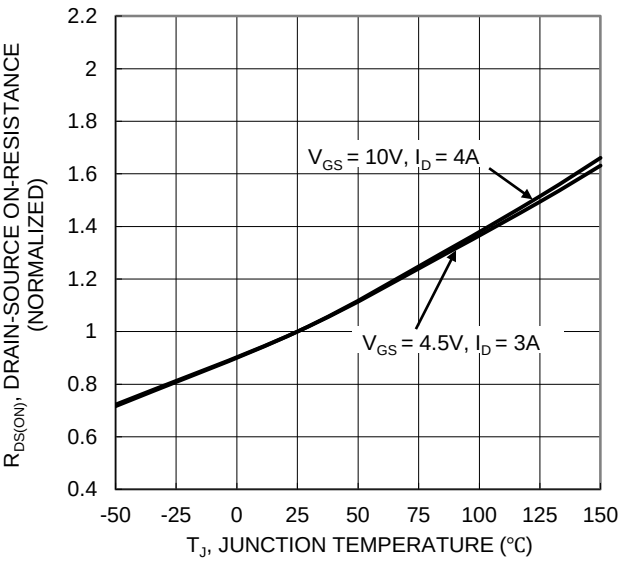


Figure 6. On-Resistance Variation with Temperature

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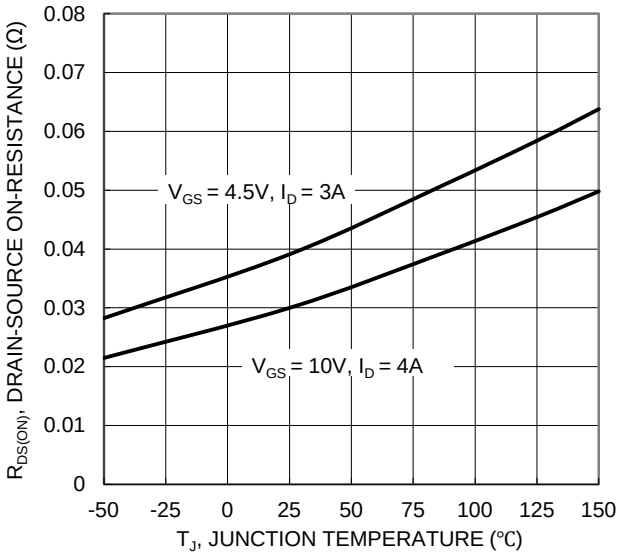


Figure 7. On-Resistance Variation with Temperature

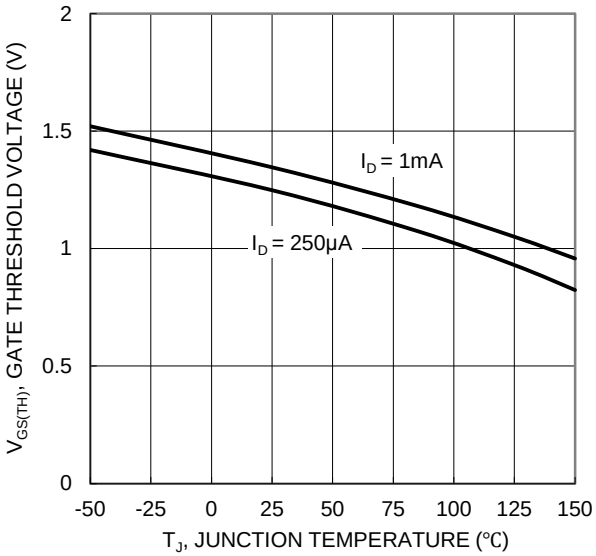


Figure 8. Gate Threshold Variation vs. Junction Temperature

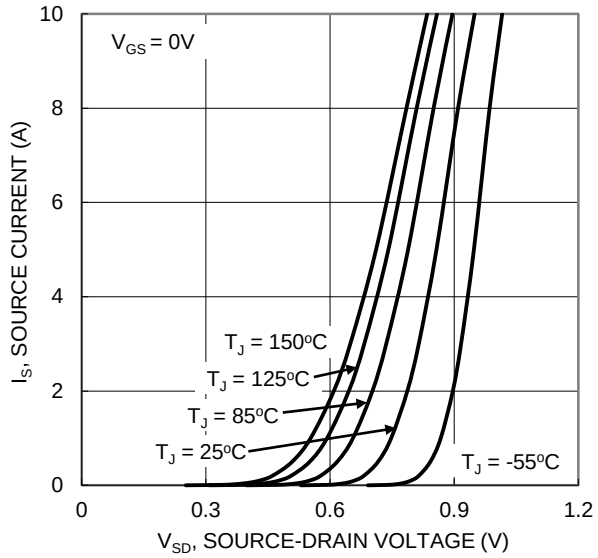


Figure 9. Diode Forward Voltage vs. Current

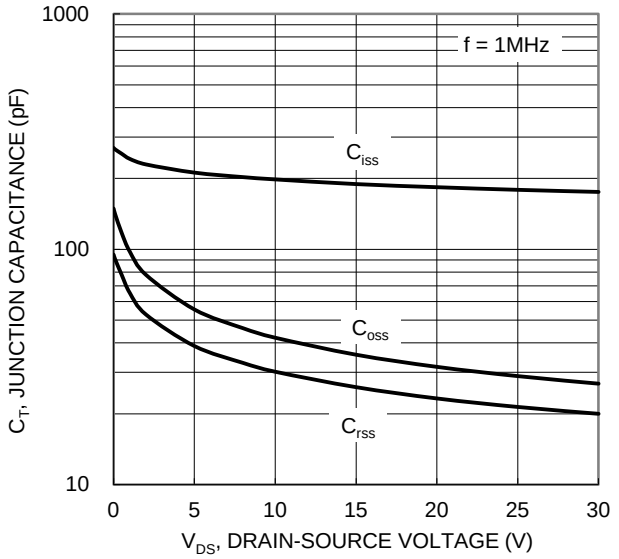


Figure 10. Typical Junction Capacitance

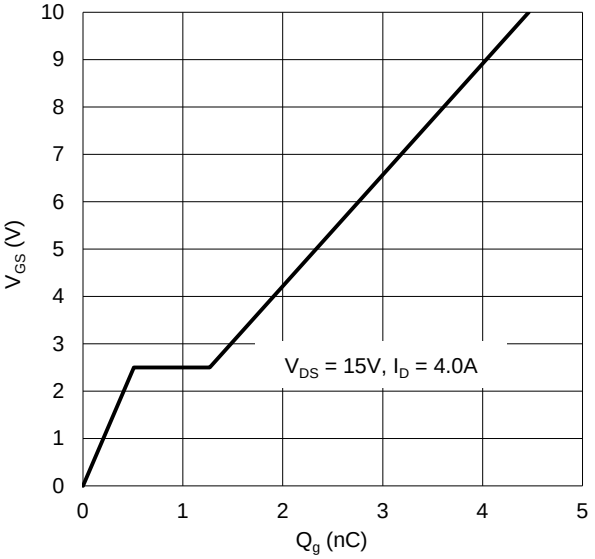


Figure 11. Gate Charge

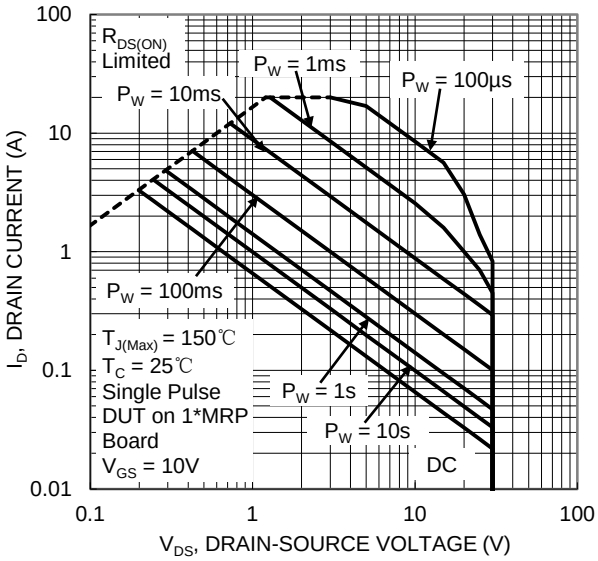


Figure 12. SOA, Safe Operation Area

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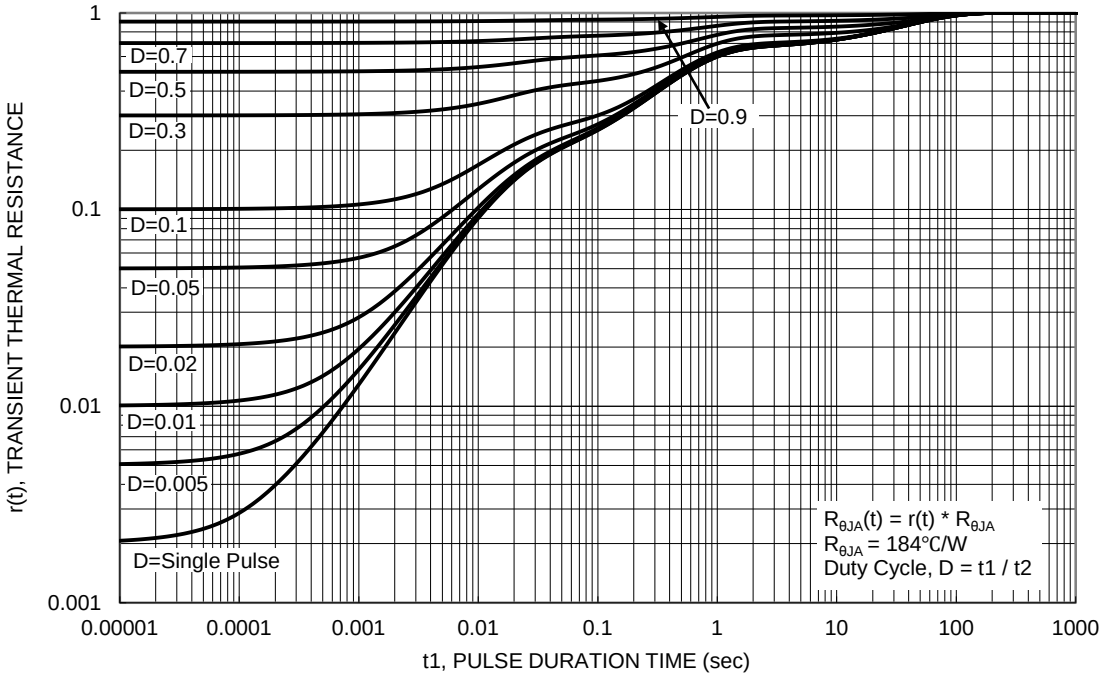


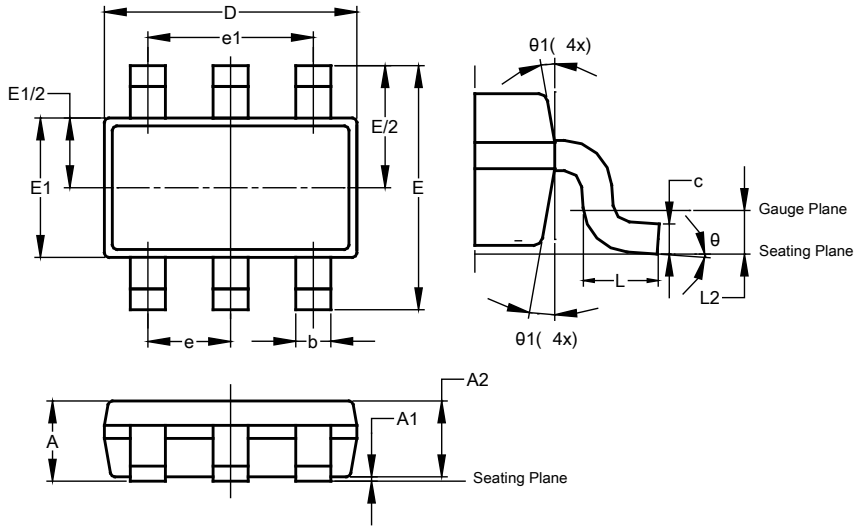
Figure 13. Transient Thermal Resistance

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Package Outline Dimensions

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

TSOT26

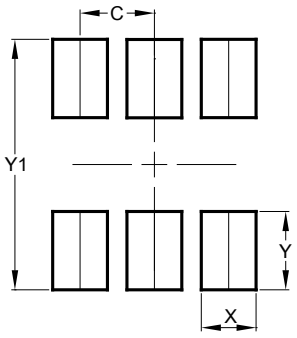


TSOT26			
Dim	**Min**	**Max**	**Typ**
A		1.00	
A1	0.010	0.100	
A2	0.840	0.900	
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	
c	0.120	0.200	
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html 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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