

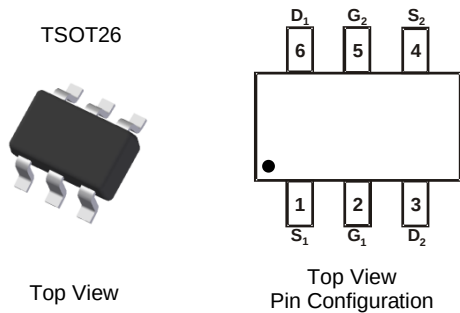
Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
30V	270mΩ @ V _{GS} = 4.5V	1.6A
	350mΩ @ V _{GS} = 2.5V	1.4A
	3000mΩ @ V _{GS} = 1.5V	0.5A

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.

- Battery Management System
- Electric Vehicle

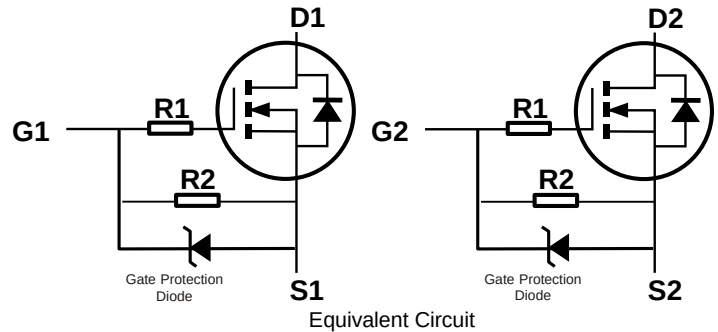


Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- ESD Protected Gate
- 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**

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—Tin Finish Annealed over Copper Leadframe.
Solderable per MIL-STD-202, Method 208 (B3)
- Weight: 0.013 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3270UVT-7	TSOT26	3000/Tape & Reel
DMN3270UVT-13	TSOT26	10,000/Tape & Reel

- Notes:
- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 - 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.
 - 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, see <http://www.diodes.com/products/packages.html>.

Marking Information



70U = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)

Date Code Key

Year	2016	2017	2018	2019	2020	2021	2022	2023
Code	D	E	F	G	H	I	J	K

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°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit	
Drain-Source Voltage			V _{DSS}	30	V	
Gate-Source Voltage			V _{GSS}	+5, -0.5	V	
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C	I _D	1.6	A	
		T _A = +70°C		1.3		
Maximum Continuous Body Diode Forward Current (Note 6)			I _S	1.1	A	
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)			I _{DM}	7	A	

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P _D	0.76	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	R _{ΘJA}	165	°C/W
Total Power Dissipation (Note 6)		P _D	1.08	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	R _{ΘJA}	118	°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 = 1mA
Zero Gate Voltage Drain Current (T _J = +25°C)	I _{DSS}	—	—	1	μA	V _{DS} = 30V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	30	μA	V _{GS} = 4.5V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	0.35	0.6	0.9	V	V _{DS} = V _{GS} , I _D = 40μA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	114	270	mΩ	V _{GS} = 4.5V, I _D = 0.65A
			156	350		V _{GS} = 2.5V, I _D = 0.65A
			185	3000		V _{GS} = 1.5V, I _D = 0.2A
Diode Forward Voltage	V _{SD}	-	0.6	1.0	V	V _{GS} = 0V, I _S = 1.0A
Gate Resistance (R1)	R _g	1	3.1	4	kΩ	f = 1MHz, V _{GS} = 0V, V _{DS} = 0V
Gate-source Resistance (R2)	R _{gs}	200	338	400	kΩ	-
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	161	—	pF	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	26	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	7.5	—	pF	
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	3.07	—	nC	V _{DS} = 15V, I _D = 0.65A
Total Gate Charge (V _{GS} = 4V)	Q _g	—	2.67	—	nC	
Gate-Source Charge	Q _{gs}	—	0.30	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.25	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	163	—	ns	V _{DS} = 15V, V _{GS} = 0 to 4V, I _D = 0.65A
Turn-On Rise Time	t _R	—	205	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	1470	—	ns	
Turn-Off Fall Time	t _F	—	674	—	ns	
Reverse Recovery Time	t _{RR}	—	371	—	ns	I _F = 1A, di/dt = 100A/μs
Reverse Recovery Charge	Q _{RR}	—	426	—	nC	I _F = 1A, 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.

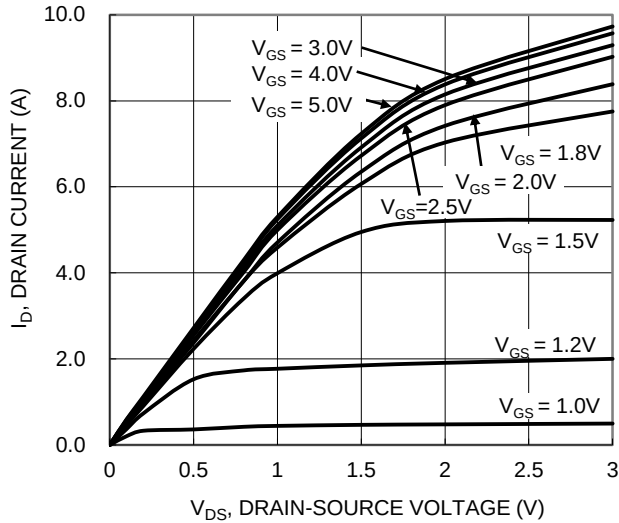


Figure 1. Typical Output Characteristic

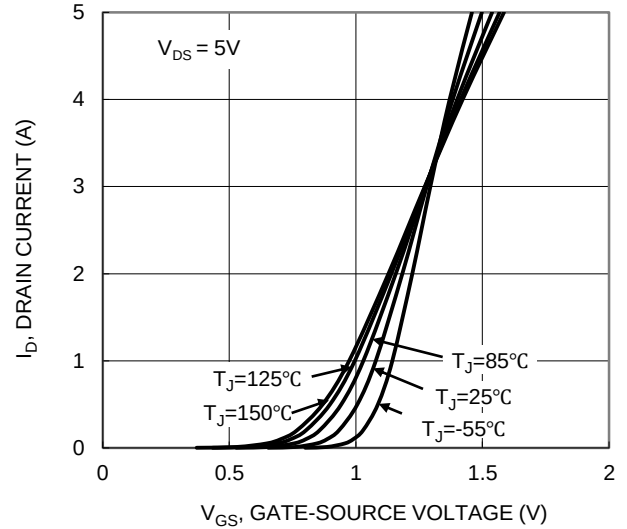


Figure 2. Typical Transfer Characteristic

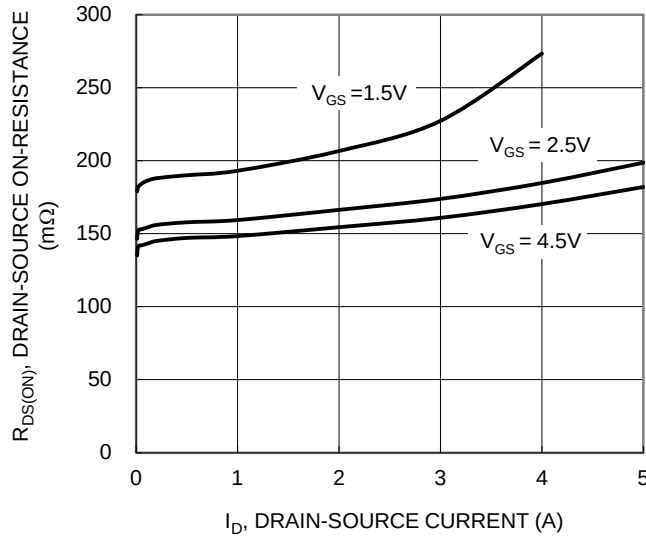


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

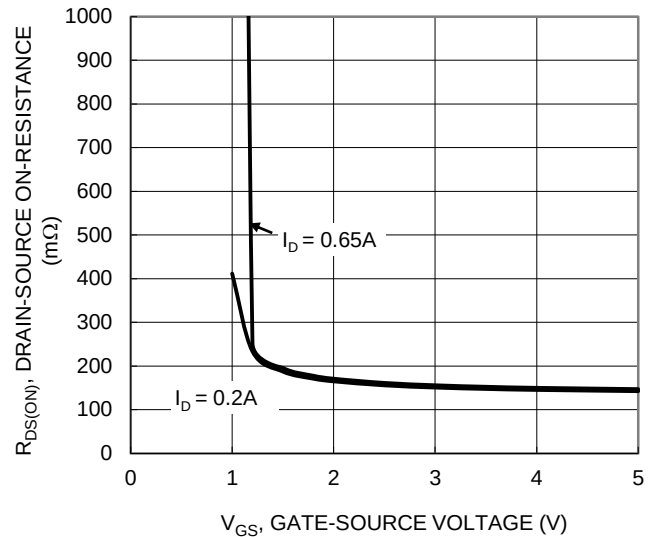


Figure 4. Typical Transfer Characteristic

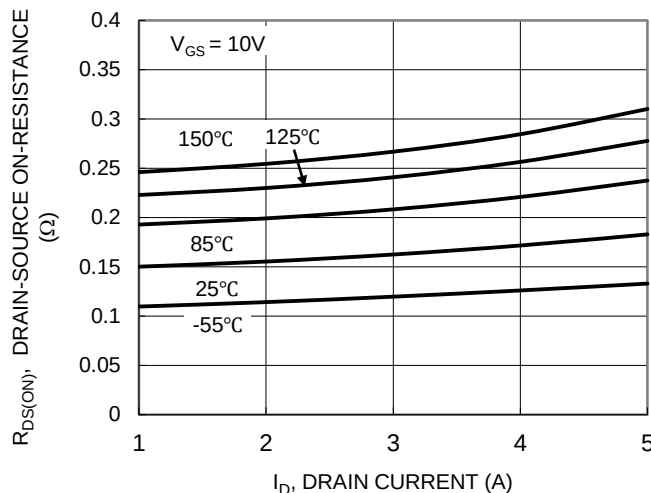


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

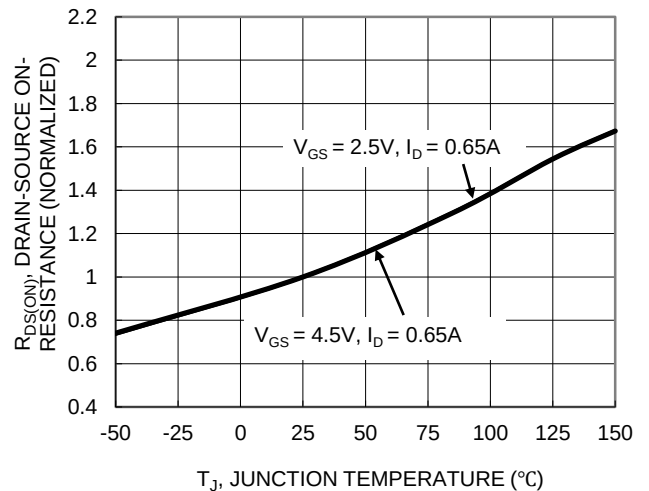


Figure 6. On-Resistance Variation with Temperature

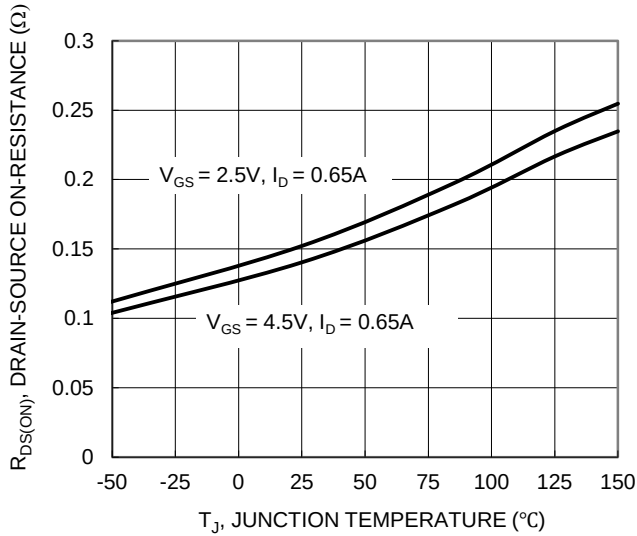


Figure 7. On-Resistance Variation with Temperature

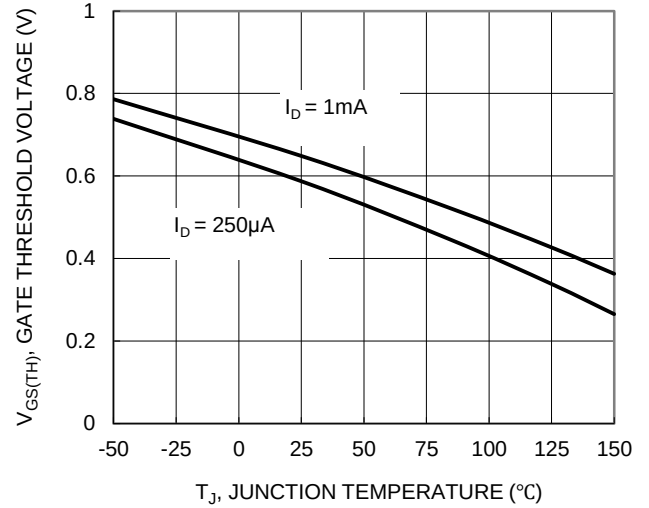


Figure 8. Gate Threshold Variation vs. Junction Temperature

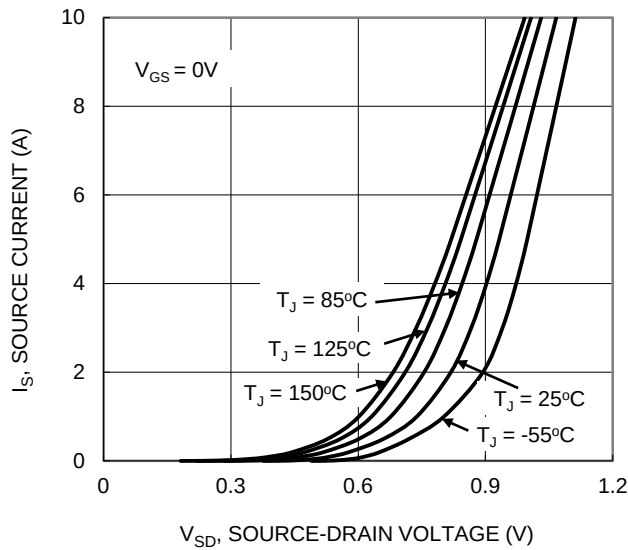


Figure 9. Diode Forward Voltage vs. Current

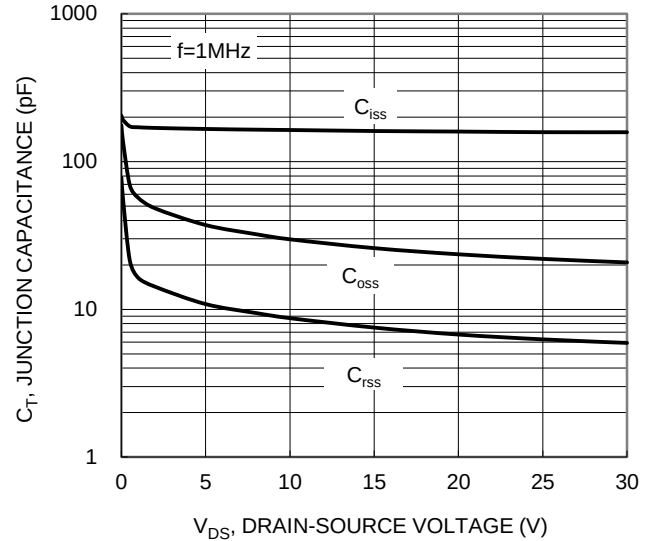


Figure 10. Typical Junction Capacitance

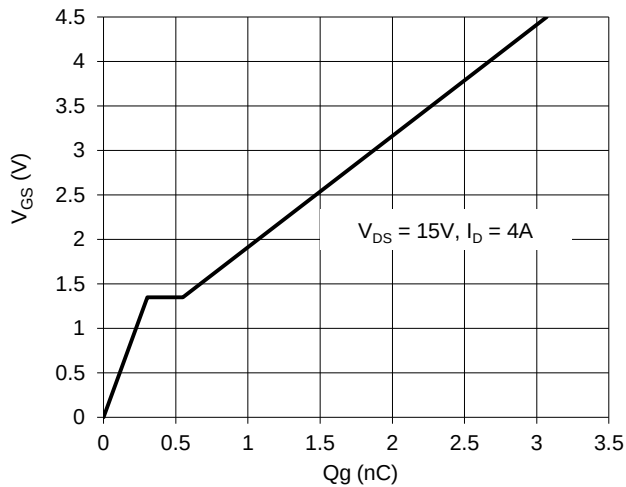


Figure 11. Gate Charge

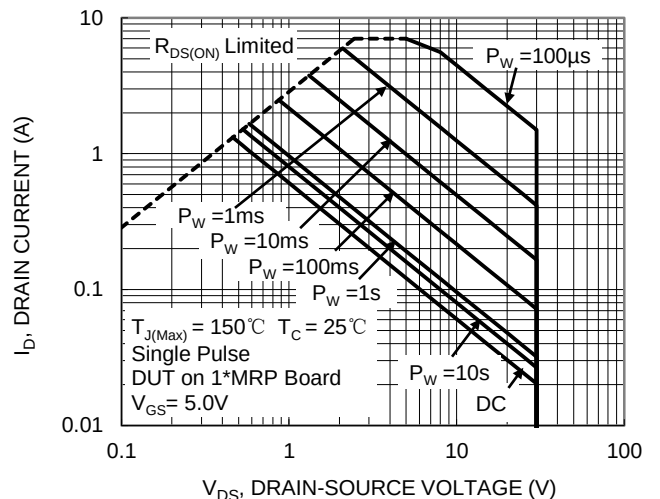


Figure 12. SOA, Safe Operation Area

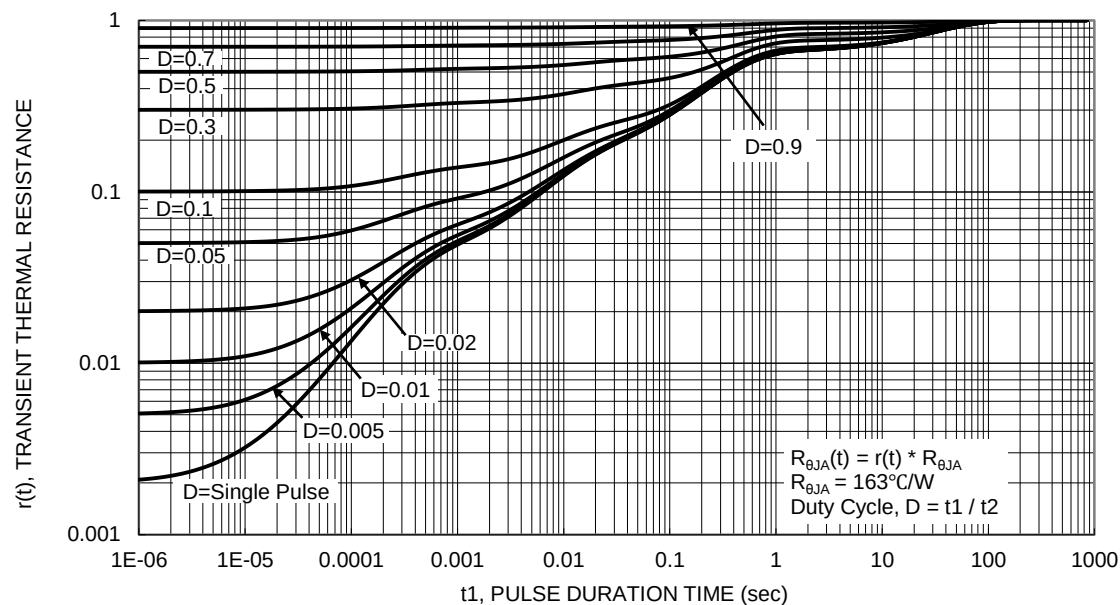
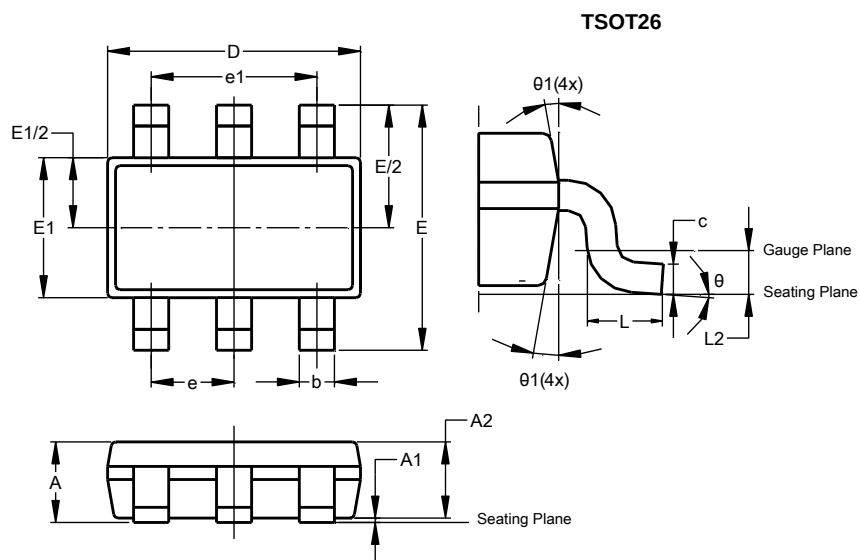


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

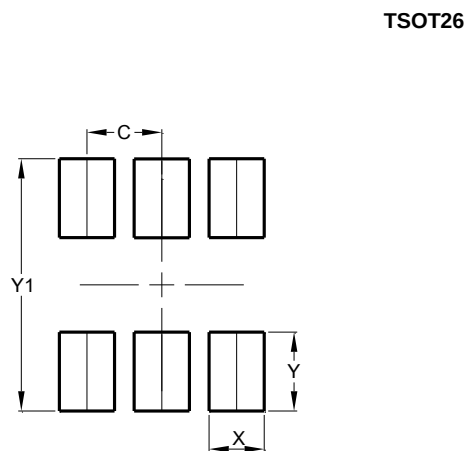
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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°
$\theta 1$	4°	12°	—
All Dimensions in mm			

Suggested Pad Layout

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



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

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