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

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**

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.

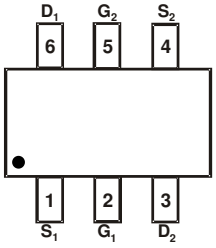
- Battery Management System
- Electric Vehicle

Mechanical Data

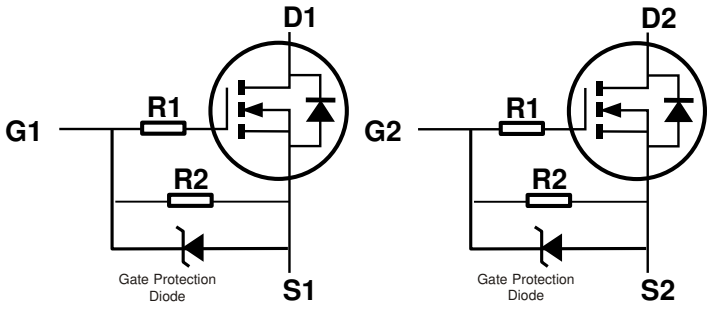
- Case: TSOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish—Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208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

TSOT26

Top View



Top View
Pin Configuration



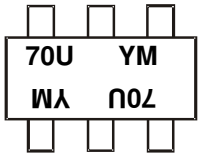
Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN3270UVT-7	TSOT26	3000/Tape & Reel
DMN3270UVT-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, 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 T_A = +70°C	I_D	1.6 1.3	A
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	$R_{\Theta JA}$	165	°C/W
Total Power Dissipation (Note 6)		P_D	1.08	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\Theta JA}$	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)	Rg	1	3.1	4	kΩ	f = 1MHz, V_{GS} = 0V, V_{DS} = 0V
Gate-source Resistance (R2)	Rgs	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.

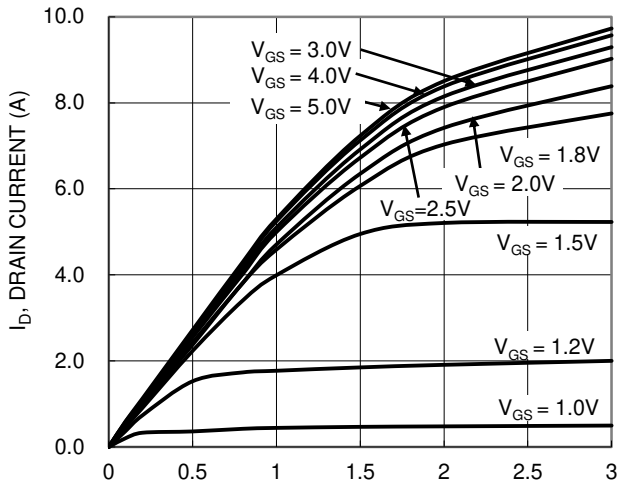


Figure 1. Typical Output Characteristic

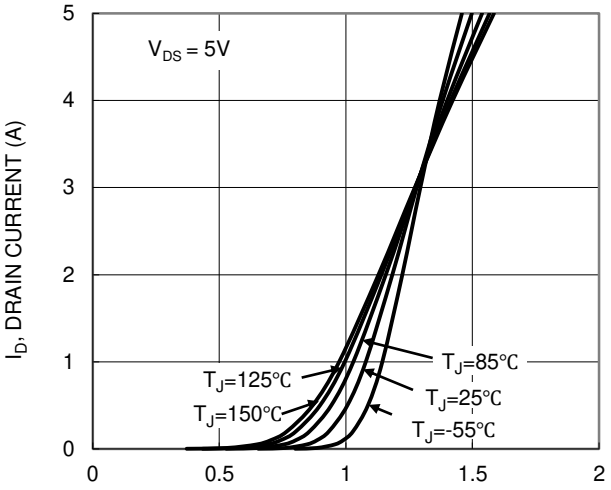


Figure 2. Typical Transfer Characteristic

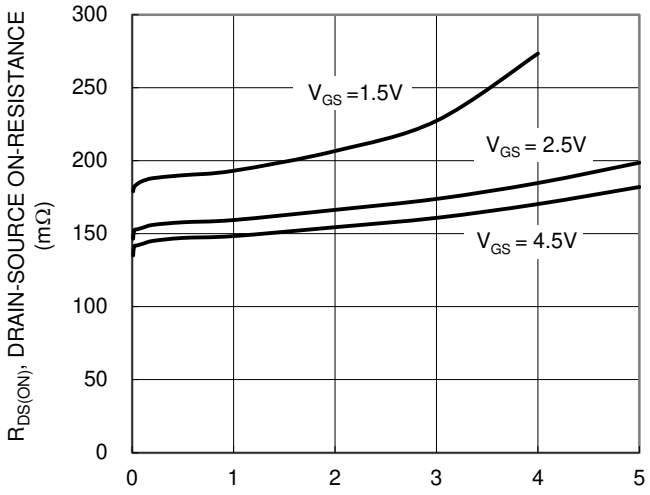


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

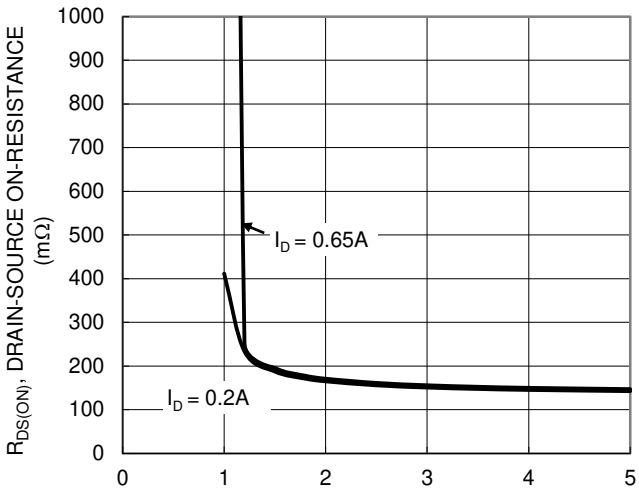


Figure 4. Typical Transfer Characteristic

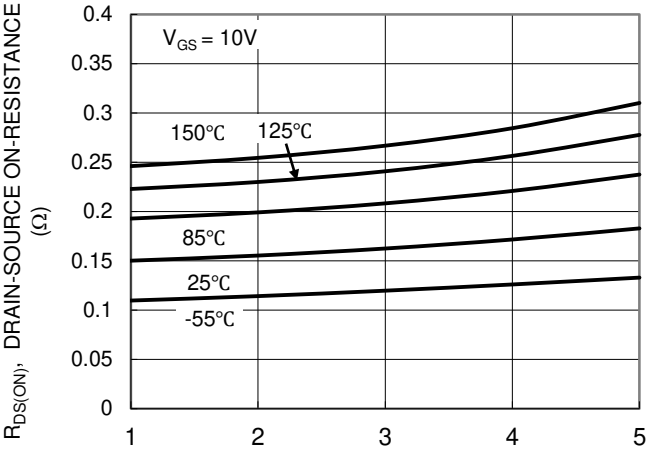


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

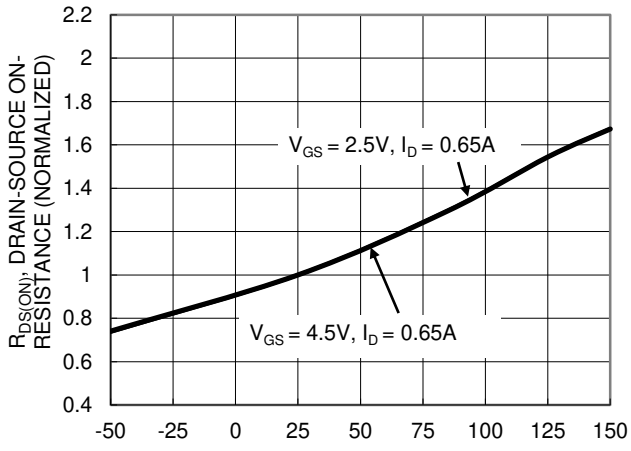


Figure 6. On-Resistance Variation with Temperature

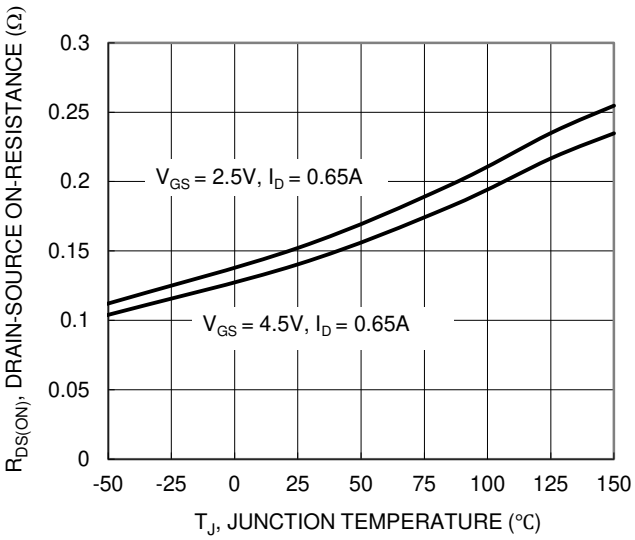


Figure 7. On-Resistance Variation with Temperature

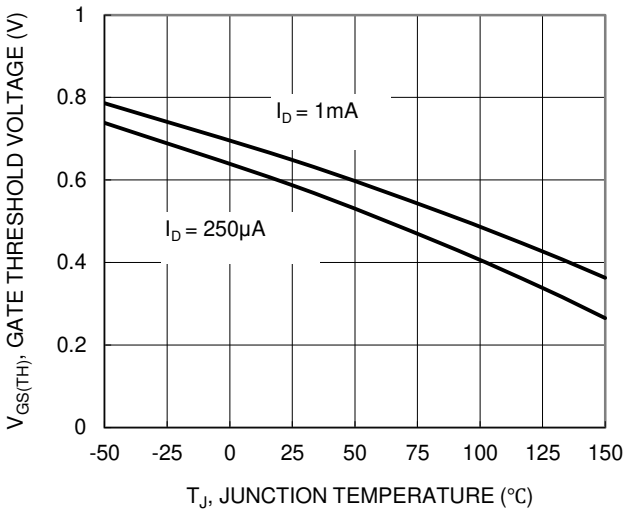


Figure 8. Gate Threshold Variation vs. Junction Temperature

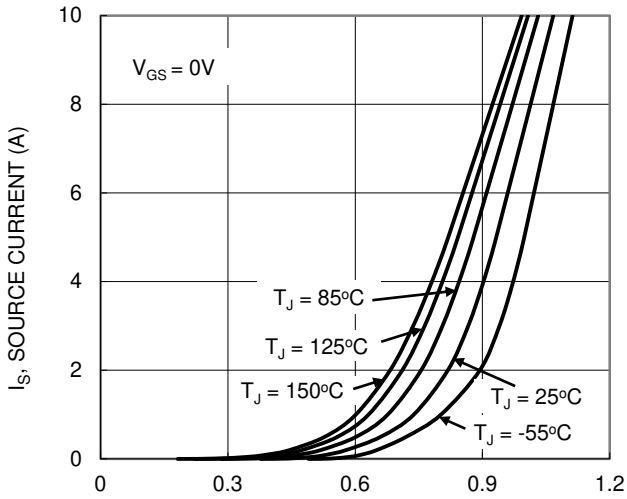


Figure 9. Diode Forward Voltage vs. Current

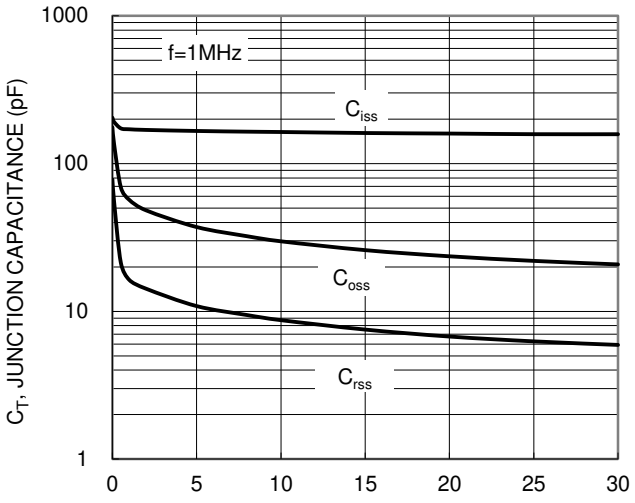


Figure 10. Typical Junction Capacitance

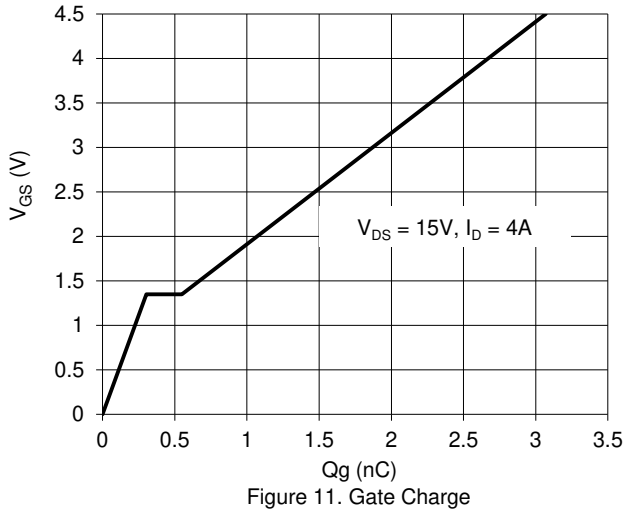


Figure 11. Gate Charge

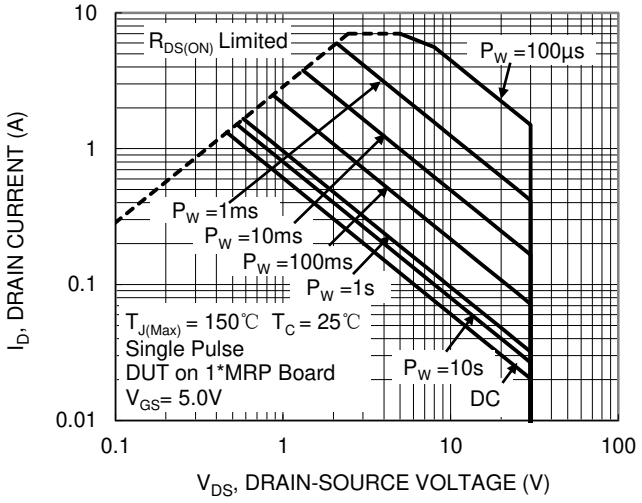


Figure 12. SOA, Safe Operation Area

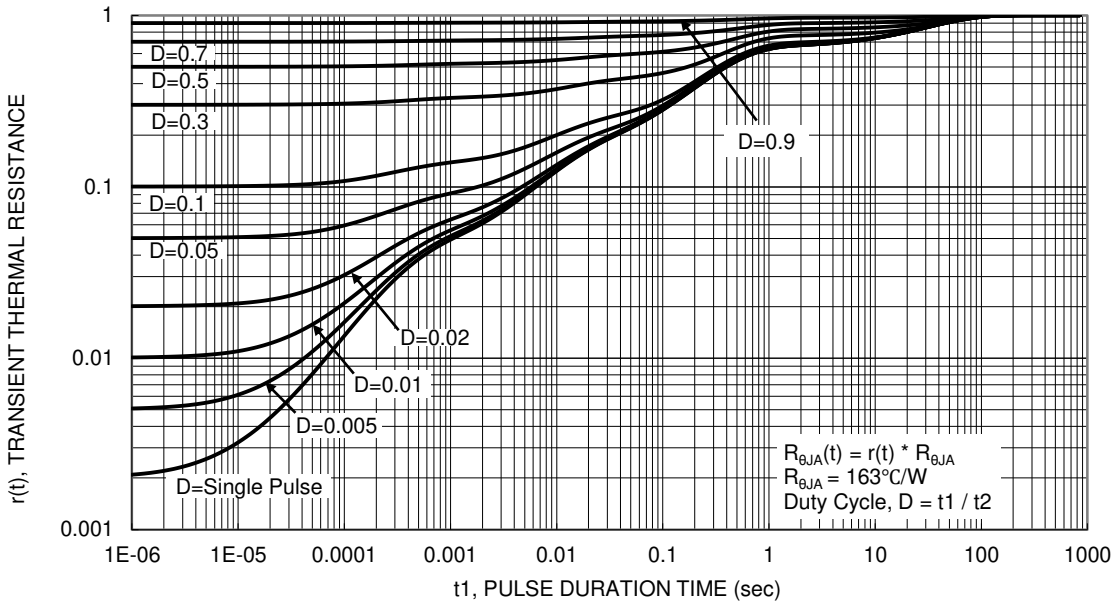
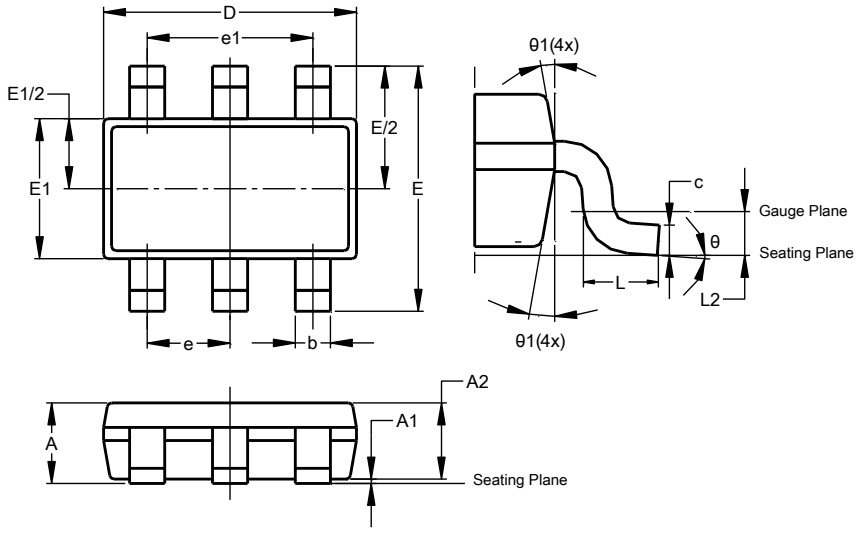


Figure 13. Transient Thermal Resistance

Package Outline Dimensions

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

TSOT26

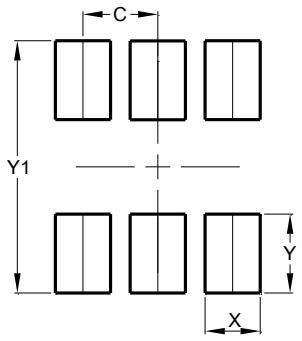


TSOT26			
Dim	**Min**	**Max**	**Typ**
A	—	1.00	—
A1	0.010	0.100	—
A2	0.840	0.900	—
D	2.800	3.000	2.900
E	2.800 BSC		
E1	1.500	1.700	1.600
b	0.300	0.450	—
c	0.120	0.200	—
e	0.950 BSC		
e1	1.900 BSC		
L	0.30	0.50	—
L2	0.250 BSC		
θ	0°	8°	4°
θ1	4°	12°	—
All Dimensions in mm			

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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