

## Product Summary

$V_{(BR)DSS}$	$R_{DS(on) \text{ max}}$	$I_D$ $T_A = +25^\circ\text{C}$
100V	220m $\Omega$ @ $V_{GS} = 10\text{V}$	2.24A
	250m $\Omega$ @ $V_{GS} = 4.5\text{V}$	2.10A

## Description

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

## Applications

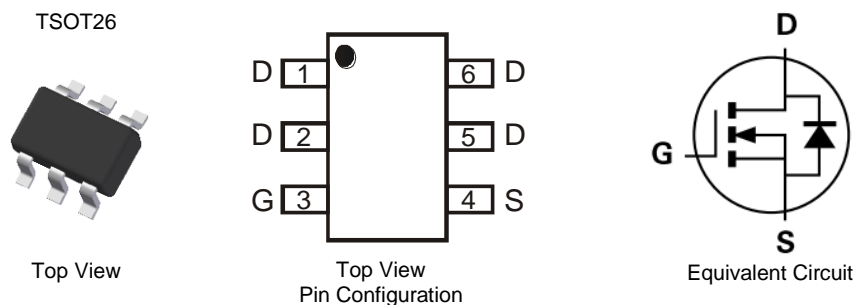
- DC-DC Converters
- Power Management Functions
- Backlighting

## Features and Benefits

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

## 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(3)
- Weight: 0.013 grams (Approximate)

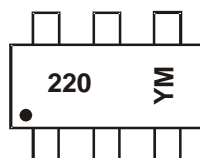


## Ordering Information (Note 4)

Part Number	Case	Packaging
DMN10H220LVT-7	TSOT26	3,000/Tape & Reel
DMN10H220LVT-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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



220 = 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	2015	2016	2017	2018	2019	2020	2021	2022
Code	C	D	E	F	G	H	I	J

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<sub>A</sub> = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Units	
Drain-Source Voltage	V <sub>DSS</sub>	100	V	
Gate-Source Voltage	V <sub>GSS</sub>	±16	V	
Continuous Drain Current (Note 5) V <sub>GS</sub> = 10V	(Note 6) T <sub>A</sub> = +25°C	I <sub>D</sub>	2.24	A
	(Note 6) T <sub>A</sub> = +70°C	I <sub>D</sub>	1.79	A
Maximum Continuous Body Diode Forward Current (Note 6)	(Note 5) T <sub>A</sub> = +25°C	I <sub>D</sub>	1.87	A
	(Note 5) T <sub>A</sub> = +70°C	I <sub>D</sub>	1.50	A
Maximum Continuous Body Diode Forward Current (Note 6)	I <sub>S</sub>	1.50	A	
Pulsed Drain Current (10μs pulse, duty cycle = 1%)	I <sub>DM</sub>	6.60	A	

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

Characteristic	Symbol	Value	Units	
Total Power Dissipation (Note 6)	P <sub>D</sub>	T <sub>A</sub> = +25°C	1.67	W
		T <sub>A</sub> = +70°C	1.07	
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 6)	75	°C/W
		(Note 5)	108	
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C	

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 7)</b>						
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	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	±100	nA	V <sub>GS</sub> = ±16V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 7)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1	1.8	2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	—	172	220	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.6A
			211	250		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1.3A
Diode Forward Voltage	V <sub>SD</sub>	—	0.77	1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1.1A
<b>DYNAMIC CHARACTERISTICS (Note 8)</b>						
Input Capacitance	C <sub>iSS</sub>	—	401	—	pF	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V f = 1MHz
Output Capacitance	C <sub>oss</sub>	—	22	—		
Reverse Transfer Capacitance	C <sub>rSS</sub>	—	17	—		
Gate Resistance	R <sub>g</sub>	—	2.1	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Total Gate Charge (V <sub>GS</sub> = 4.5V)	Q <sub>g</sub>	—	4.1	—	nC	V <sub>DS</sub> = 50V, I <sub>D</sub> = 1.6A
Total Gate Charge (V <sub>GS</sub> = 10V)	Q <sub>g</sub>	—	8.3	—		
Gate-Source Charge	Q <sub>gs</sub>	—	1.5	—		
Gate-Drain Charge	Q <sub>gd</sub>	—	2	—		
Turn-On Delay Time	t <sub>D(on)</sub>	—	6.8	—	ns	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 4.5V, R <sub>G</sub> = 6.8Ω, I <sub>D</sub> = 1A
Turn-On Rise Time	t <sub>r</sub>	—	8.2	—		
Turn-Off Delay Time	t <sub>D(off)</sub>	—	7.9	—		
Turn-Off Fall Time	t <sub>f</sub>	—	3.6	—		
Reverse Recovery Time	t <sub>rr</sub>	—	17	—	ns	I <sub>F</sub> = 1.1A, di/dt = 100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	—	9.8	—	nC	

- Notes:
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
  - Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1-inch square copper plate.
  - Short duration pulse test used to minimize self-heating effect.
  - Guaranteed by design. Not subject to production testing.

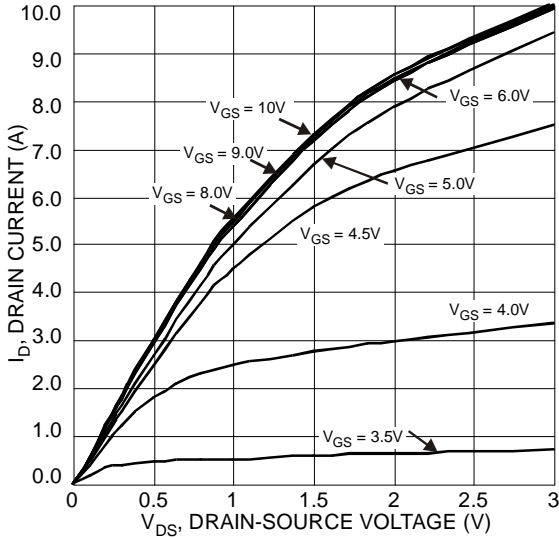


Figure 1 Typical Output Characteristic

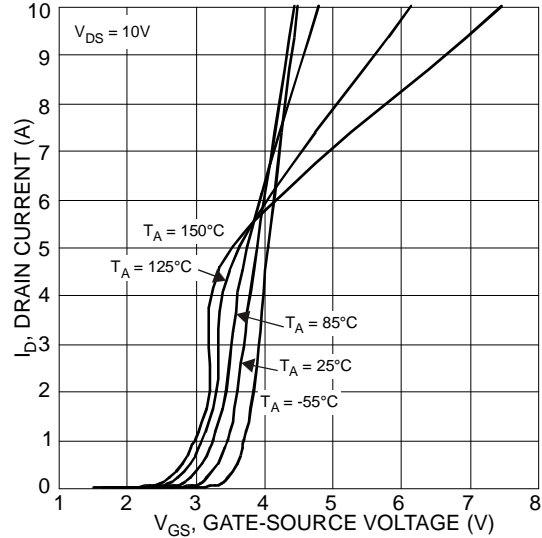


Figure 2 Typical Transfer Characteristics

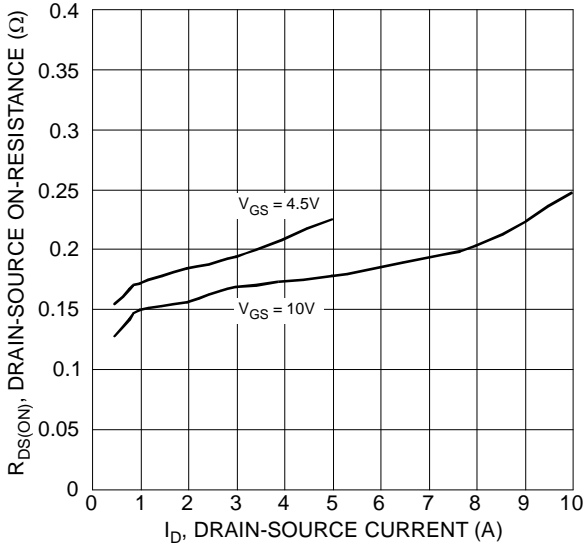


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

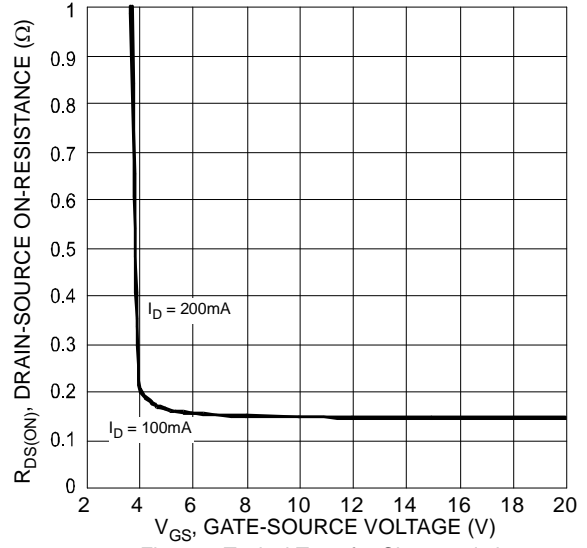


Figure 4 Typical Transfer Characteristic

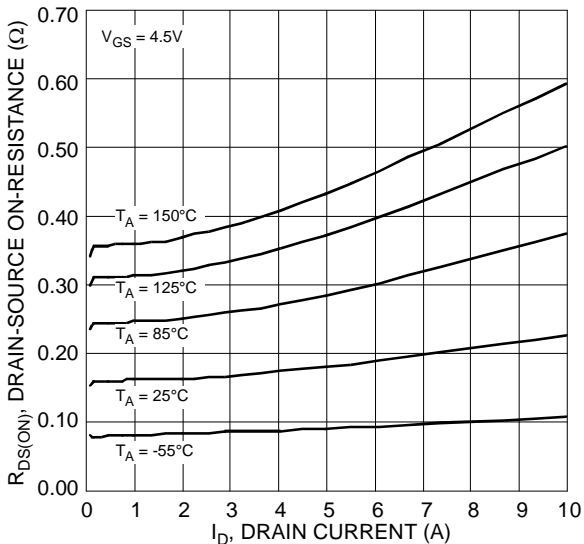


Figure 5 Typical On-Resistance vs. Drain Current and Temperature

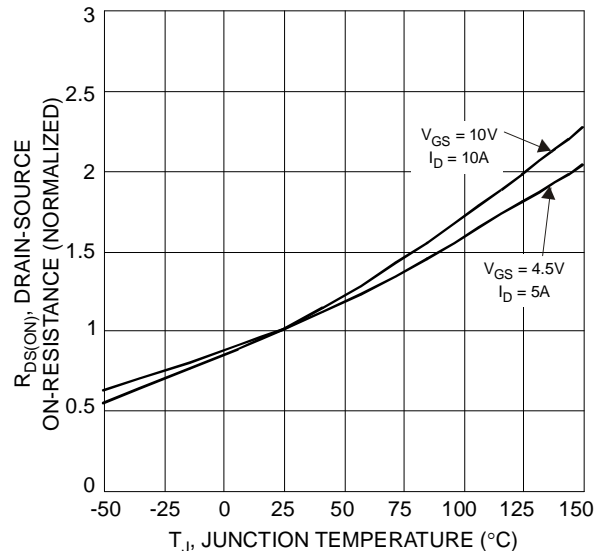


Figure 6 On-Resistance Variation with Temperature

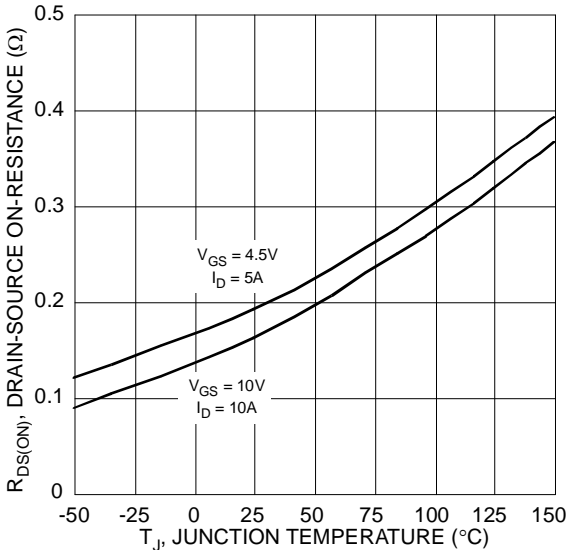


Figure 7 On-Resistance Variation with Temperature

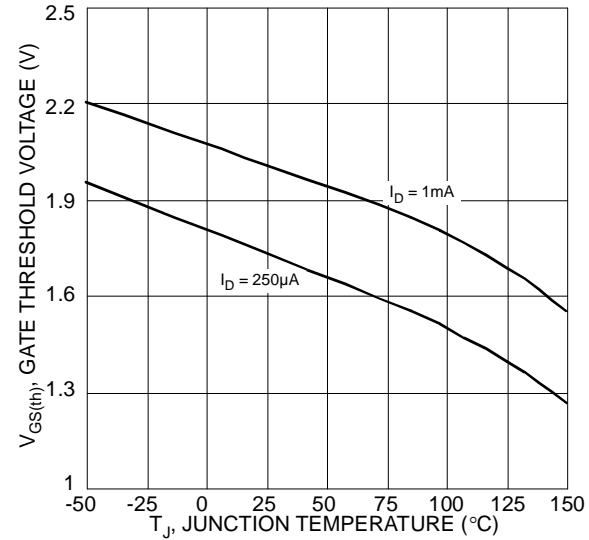


Figure 8 Gate Threshold Variation vs. Ambient Temperature

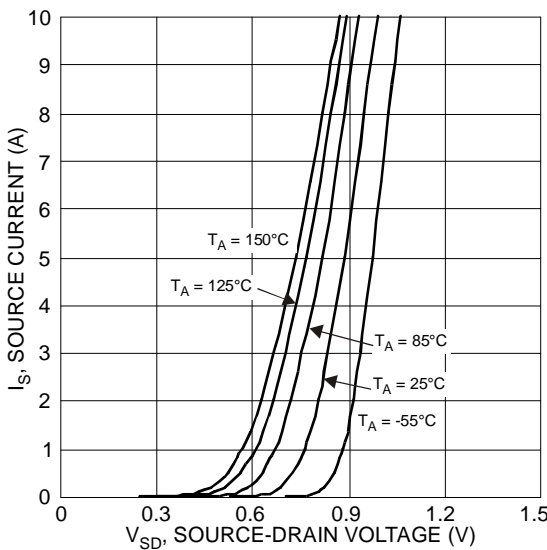


Figure 9 Diode Forward Voltage vs. Current

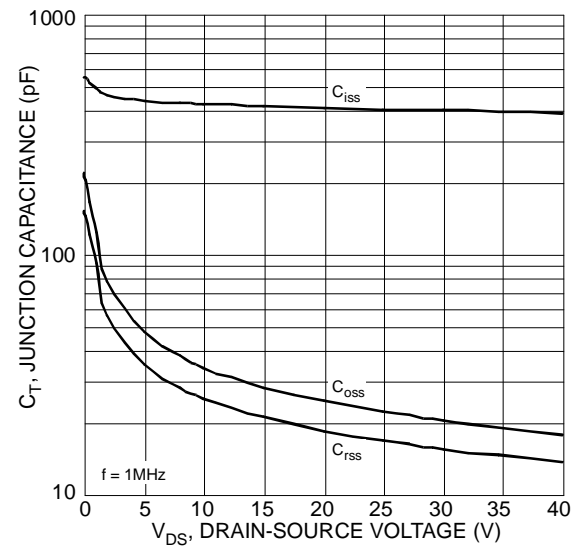


Figure 10 Typical Junction Capacitance

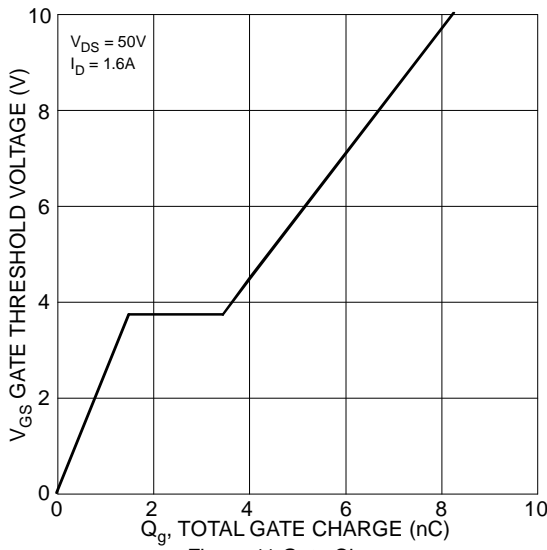


Figure 11 Gate Charge

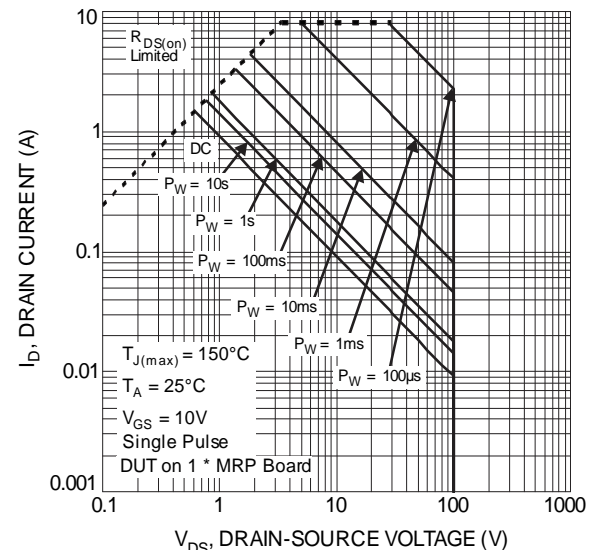
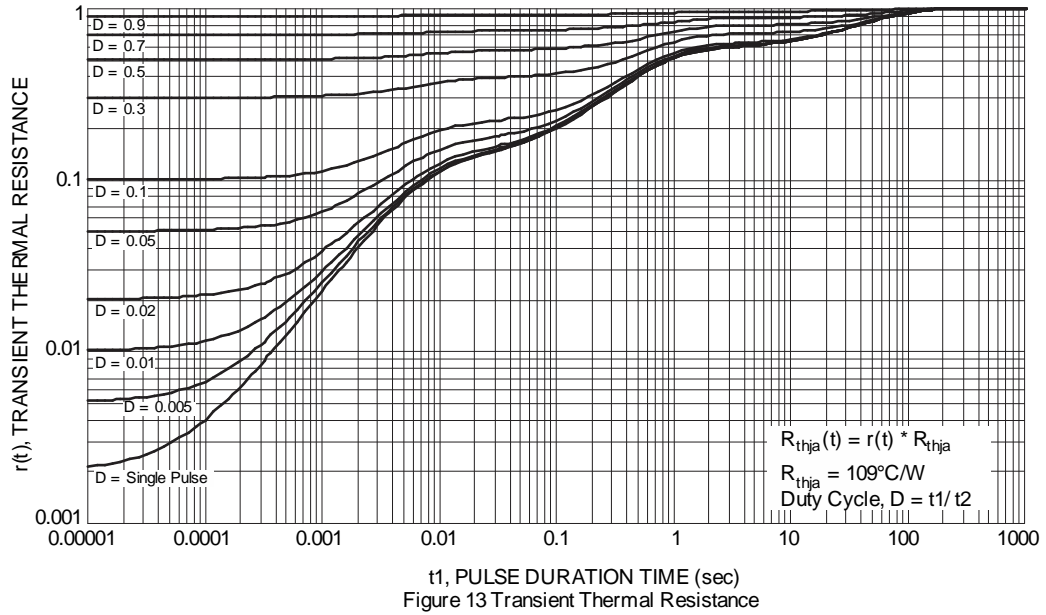
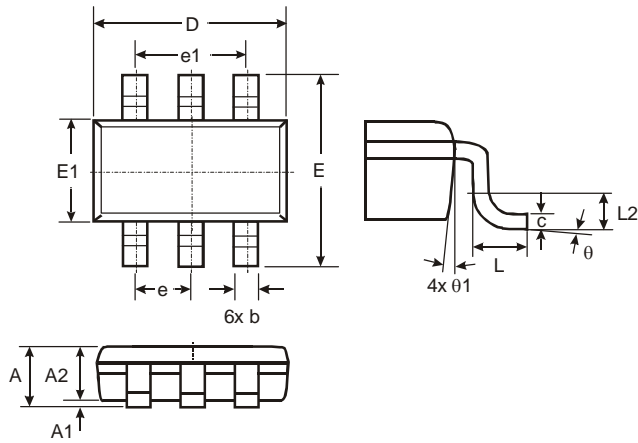


Figure 12 SOA, Safe Operation Area



**Package Outline Dimensions**

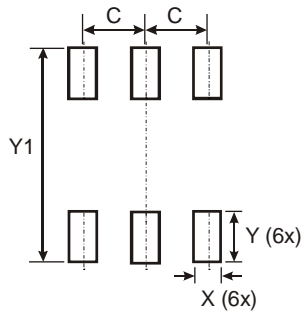
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



TSOT26			
Dim	Min	Max	Typ
A	—	1.00	—
A1	0.01	0.10	—
A2	0.84	0.90	—
D	—	—	2.90
E	—	—	2.80
E1	—	—	1.60
b	0.30	0.45	—
c	0.12	0.20	—
e	—	—	0.95
e1	—	—	1.90
L	0.30	0.50	—
L2	—	—	0.25
$\theta$	0°	8°	4°
$\theta1$	4°	12°	—
All Dimensions in mm			

**Suggested Pad Layout**

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



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

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