

**100V N-CHANNEL ENHANCEMENT MODE MOSFET**

**Product Summary**

BV <sub>DSS</sub>	Max R <sub>DS(on)</sub>	Max I <sub>D</sub> T <sub>A</sub> = +25°C (Note 6)
100V	230mΩ @ V <sub>GS</sub> = 10V	1.9A
	300mΩ @ V <sub>GS</sub> = 4.5V	1.68A

**Description and Applications**

This MOSFET utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes it ideal for high-efficiency, low voltage, power management applications.

- DC - DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

**Features and Benefits**

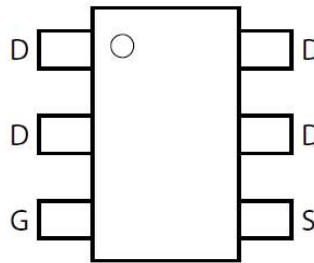
- Low On-Resistance
- Fast Switching Speed
- Low Threshold
- Low Gate Drive
- SOT26 Package
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

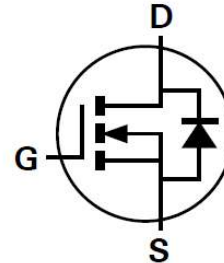
- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.015 grams (Approximate)



Top View



Pinout Top-view



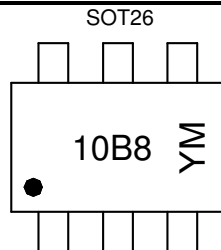
Device Symbol

**Ordering Information** (Note 4)

Part Number	Reel Size (inch)	Tape Width (mm)	Quantity Per Reel
ZXMN10B08E6TA	7	8	3,000
ZXMN10B08E6TC	13	8	10,000

- 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>.

**Marking Information**



10B8 = Product Type Marking Code  
 YM = Date Code Marking  
 Y or  $\bar{Y}$  = Year (ex: C = 2015)  
 M or  $\bar{M}$  = 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.)

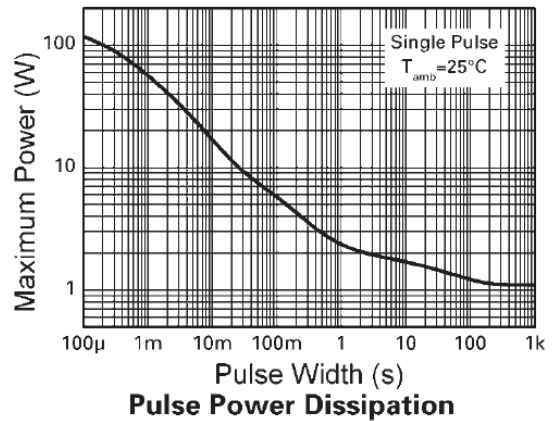
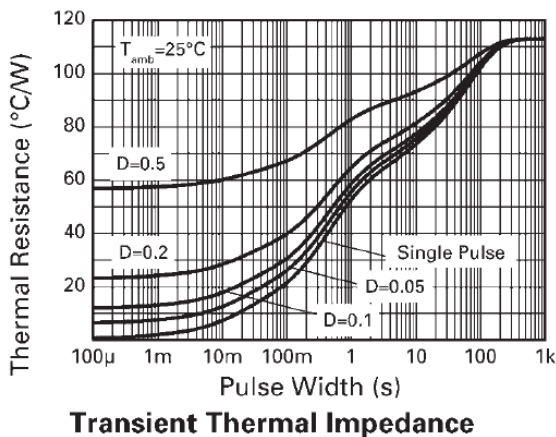
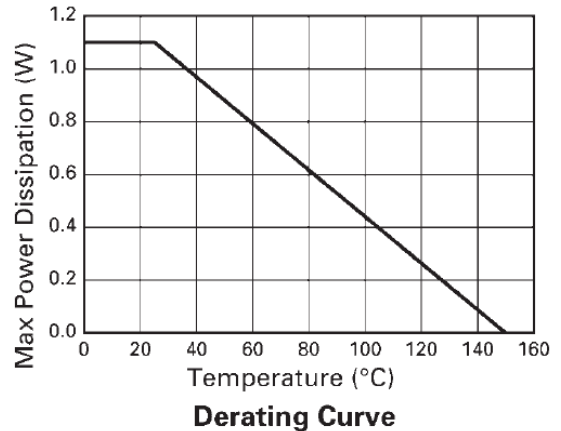
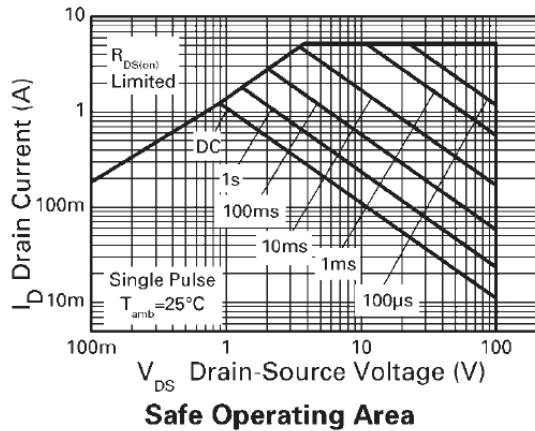
Characteristic		Symbol	Value	Unit	
Drain-Source Voltage		V <sub>DSS</sub>	100	V	
Gate-Source Voltage		V <sub>GSS</sub>	±20	V	
Continuous Drain Current	V <sub>GS</sub> = 10V	I <sub>D</sub>	(Note 6)	1.9	A
			T <sub>A</sub> = +70°C (Note 6)	1.5	
			(Note 5)	1.6	
Pulsed Drain Current		I <sub>DM</sub>	9	A	
Continuous Source Current (Body Diode)		I <sub>S</sub>	2.5	A	
Pulsed Source Current (Body Diode)		I <sub>SM</sub>	9	A	

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

Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P <sub>D</sub>	1.1	W mW/°C
			8.8	
Power Dissipation Linear Derating Factor	(Note 6)	P <sub>D</sub>	1.7	W mW/°C
			13.6	
Thermal Resistance, Junction to Ambient	(Note 5)	R <sub>θJA</sub>	113	°C/W
	(Note 6)		73	
Operating and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes: 5. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.  
 6. For a device surface mounted on FR4 PCB measured at t ≤ 5 secs.  
 7. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

**Thermal Characteristics**

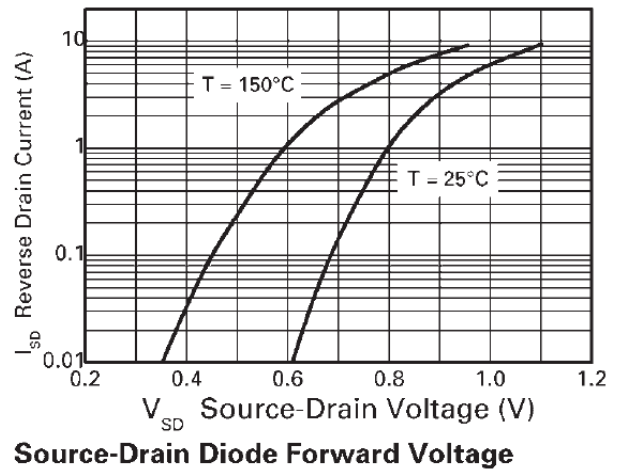
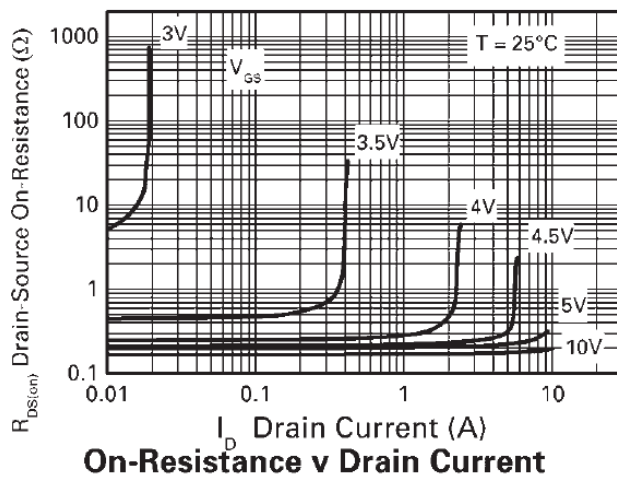
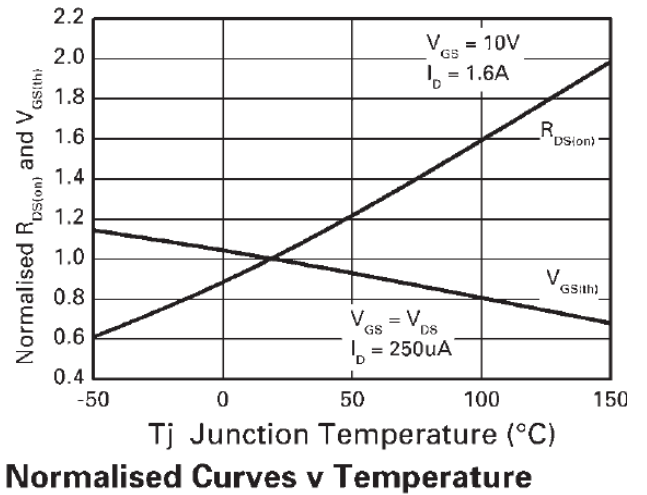
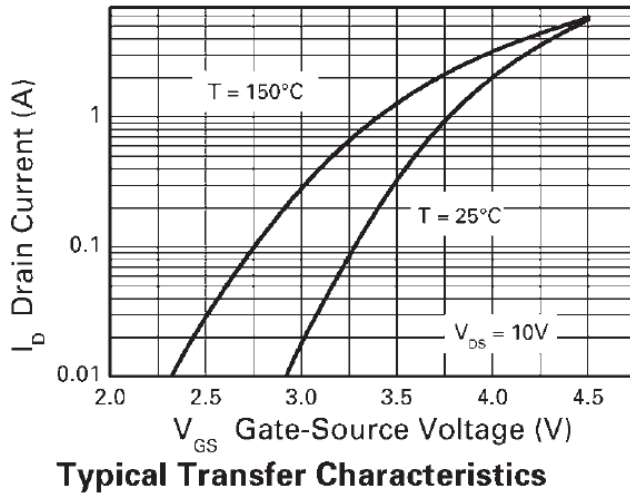
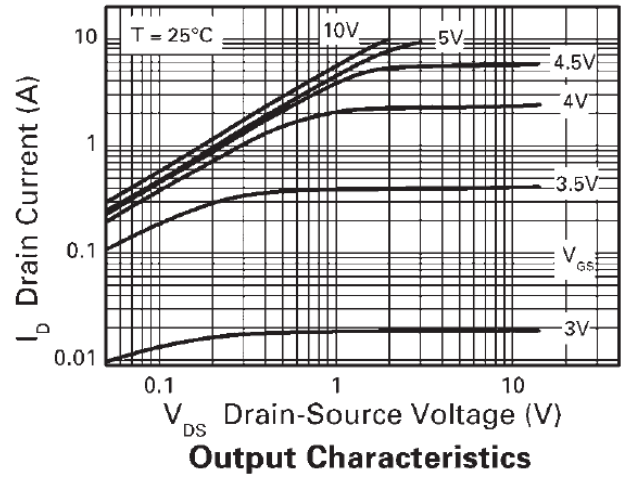
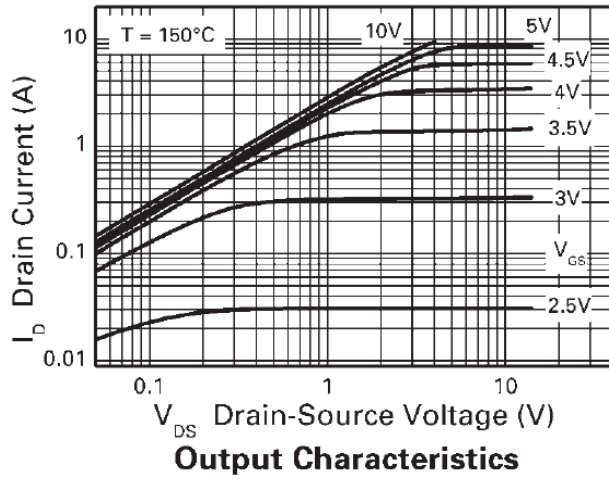


**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

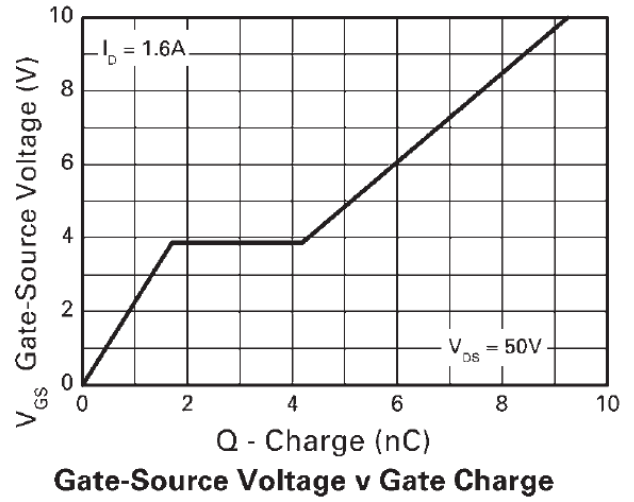
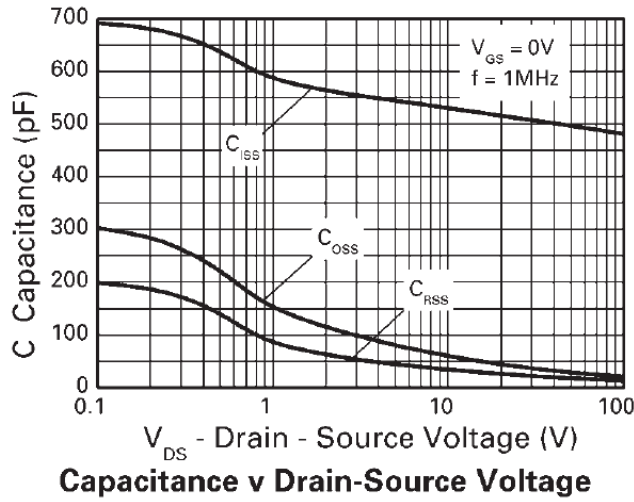
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	100	—	—	V	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	0.5	μA	V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	—	—	100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	—	3.0	V	I <sub>D</sub> = 250μA, V <sub>DS</sub> = V <sub>GS</sub>
Static Drain-Source On-Resistance (Note 8)	R <sub>DS(on)</sub>	—	—	0.23	Ω	V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.6A
				0.30		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 1.4A
				0.50		V <sub>GS</sub> = 4.3V, I <sub>D</sub> = 1.1A
Forward Transconductance (Notes 8 & 10)	g <sub>fs</sub>	—	4.8	—	S	V <sub>DS</sub> = 15V, I <sub>D</sub> = 1.6A
Diode Forward Voltage (Note 8)	V <sub>SD</sub>	—	0.85	0.95	V	T <sub>J</sub> = +25°C, I <sub>S</sub> = 2.0A, V <sub>GS</sub> = 0V
<b>DYNAMIC CHARACTERISTICS (Note 10)</b>						
Input Capacitance	C <sub>iss</sub>	—	497	—	pF	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	29	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	18	—	pF	
Gate Charge (Note 9)	Q <sub>g</sub>	—	5.0	—	nC	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 5V, I <sub>D</sub> = 1.6A
Total Gate Charge (Note 9)	Q <sub>g</sub>	—	9.2	—	nC	V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 1.6A
Gate-Source Charge (Note 9)	Q <sub>gs</sub>	—	1.7	—	nC	
Gate-Drain Charge (Note 9)	Q <sub>gd</sub>	—	2.5	—	nC	
Turn-On Delay Time (Note 9)	t <sub>d(on)</sub>	—	2.9	—	ns	V <sub>DD</sub> = 50V, I <sub>D</sub> = 1.0A, R <sub>G</sub> ≅ 6.0Ω, V <sub>GS</sub> = 10V
Turn-On Rise Time (Note 9)	t <sub>r</sub>	—	2.1	—	ns	
Turn-Off Delay Time (Note 9)	t <sub>d(off)</sub>	—	12.1	—	ns	
Turn-Off Fall Time (Note 9)	t <sub>f</sub>	—	5.0	—	ns	
Reverse Recovery Time	t <sub>rr</sub>	—	32	—	ns	T <sub>J</sub> = +25°C, I <sub>F</sub> = 1.7A, di/dt = 100A/μs
Reverse Recovery Charge	Q <sub>rr</sub>	—	40	—	nC	

- Notes:
8. Measured under pulsed conditions. Width ≤ 300μs. Duty cycle ≤ 2%.
  9. Switching characteristics are independent of operating junction temperature.
  10. For design aid only, not subject to production testing.

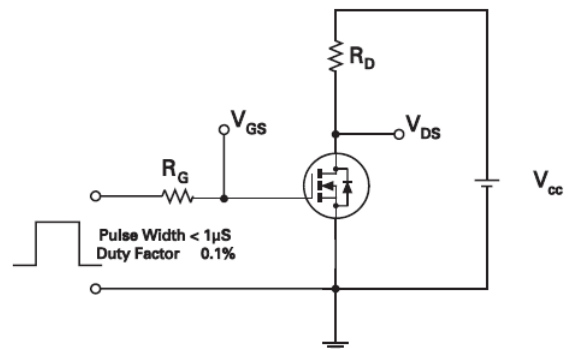
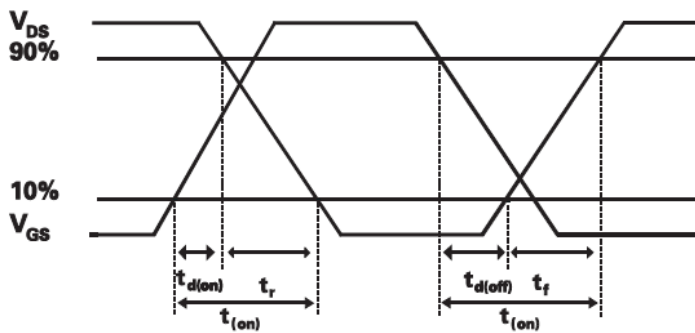
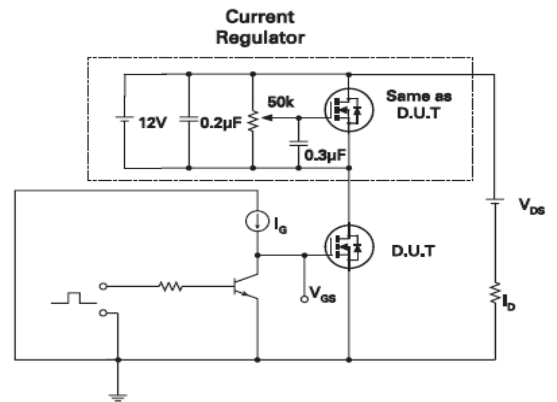
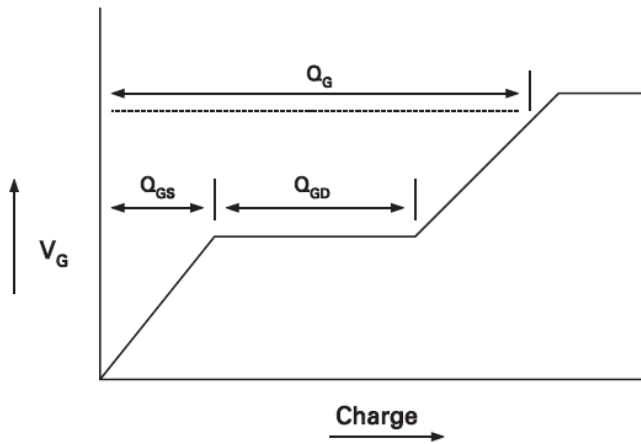
**Typical Characteristics**



**Typical Characteristics** (continued)

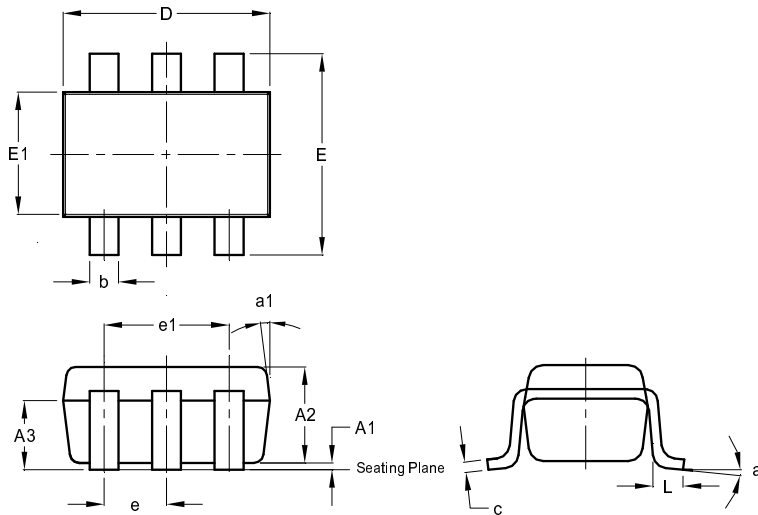


**Test Circuits**



**Package Outline Dimensions**

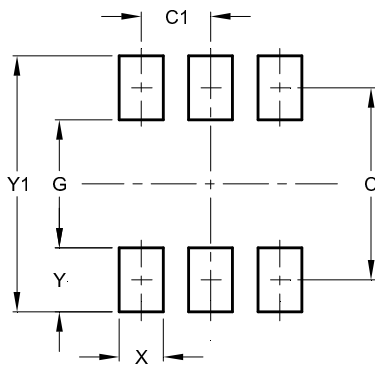
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT26			
Dim	Min	Max	Typ
A1	0.013	0.10	0.05
A2	1.00	1.30	1.10
A3	0.70	0.80	0.75
b	0.35	0.50	0.38
c	0.10	0.20	0.15
D	2.90	3.10	3.00
e	-	-	0.95
e1	-	-	1.90
E	2.70	3.00	2.80
E1	1.50	1.70	1.60
L	0.35	0.55	0.40
a	-	-	8°
a1	-	-	7°
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	2.40
C1	0.95
G	1.60
X	0.55
Y	0.80
Y1	3.20

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