

Product Summary

$V_{(BR)DSS}$	Max $R_{DS(on)}$	Max I_D $T_A = +25^\circ\text{C}$
20V	0.1Ω @ $V_{GS} = 4.5\text{V}$	3.2A
	0.125Ω @ $V_{GS} = 2.7\text{V}$	2.8A

Description and Applications

This high-density MOSFET from Zetex 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 such as:

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

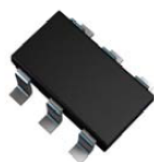
Features and Benefits

- 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**

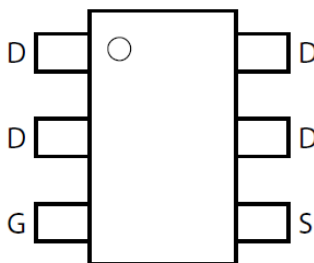
Mechanical Data

- 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 @3
- Weight: 0.015 grams (Approximate)

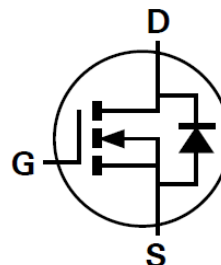
SOT26



Top View



Pin Out Top-view



Device Symbol

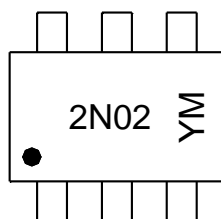
Ordering Information (Note 4)

Part Number	Reel Size (inch)	Tape Width (mm)	Quantity Per Reel
ZXM62N02E6TA	7	8	3,000
ZXM62N02E6TC	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 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

SOT26



2N02 = 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

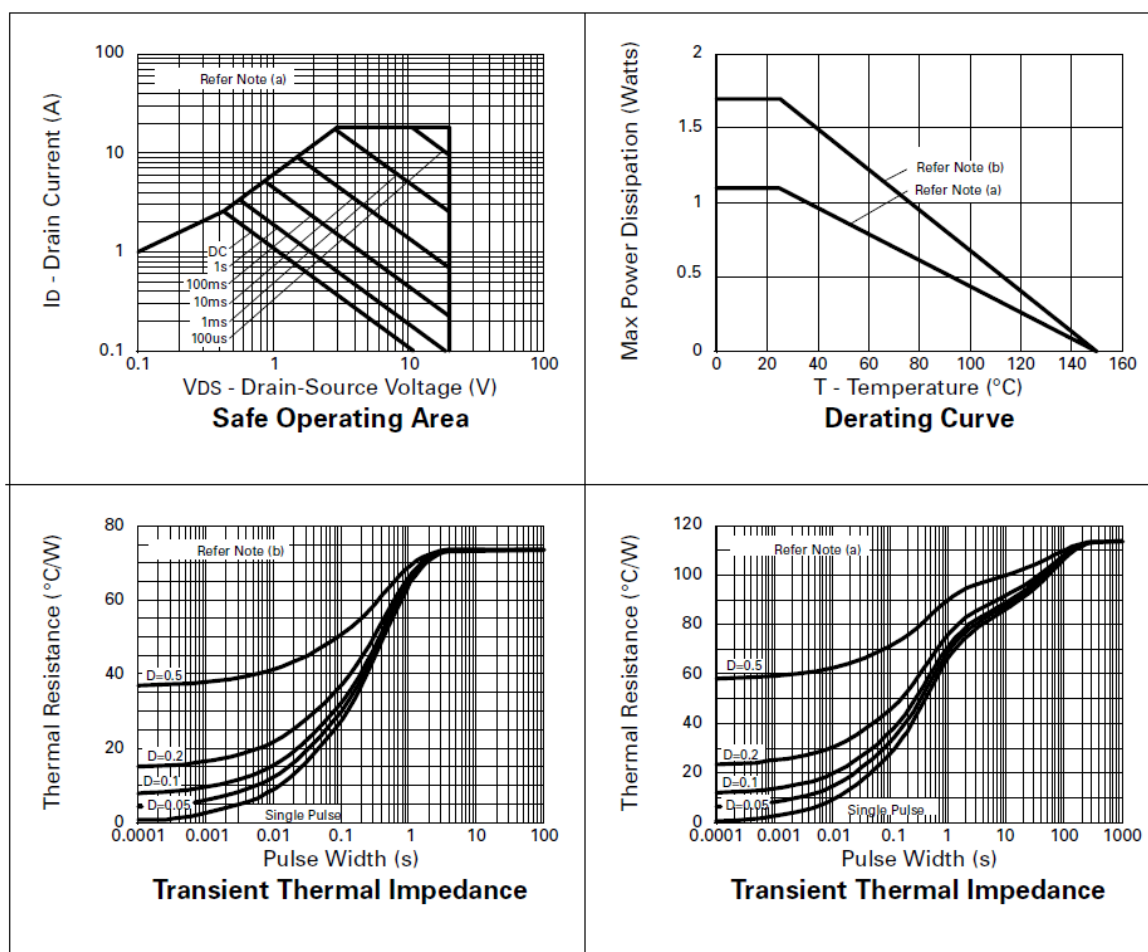
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	20	V
Gate-Source Voltage			V _{GS}	±12	V
Continuous Drain Current	V _{GS} = 4.5V	(Note 6)	I _D	3.2	A
		T _A = +70°C (Note 6)		2.6	
Pulsed Drain Current		(Note 7)	I _{DM}	18	A
Continuous Source Current (Body Diode)		(Note 6)	I _S	2.1	A
Pulsed Source Current (Body Diode)			I _{SM}	18	A

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

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 5)		P _D	1.1	W
Linear Derating Factor			8.8	
Power Dissipation (Note 6)		P _D	1.7	W
Linear Derating Factor			13.6	
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	113	°C/W
	(Note 6)		73	
Operating and Storage Temperature Range		T _J , T _{STG}	-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 seconds.
 7. Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

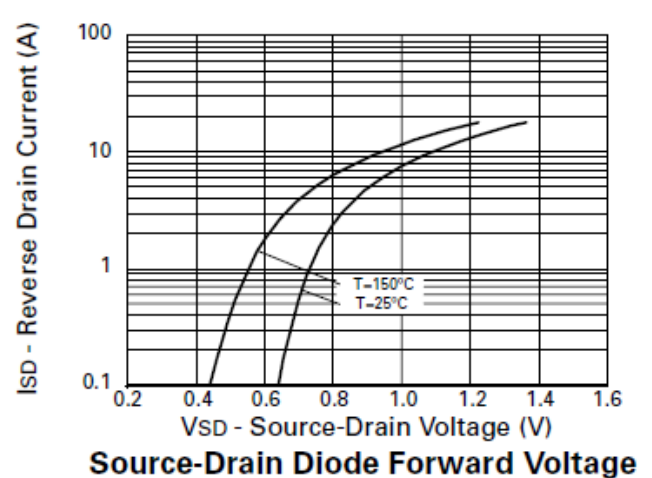
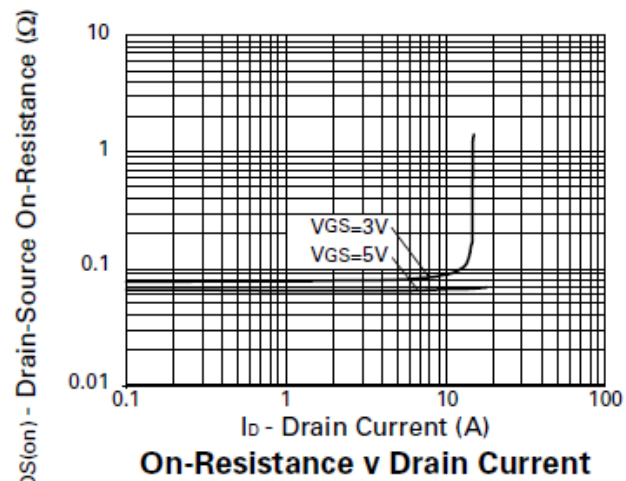
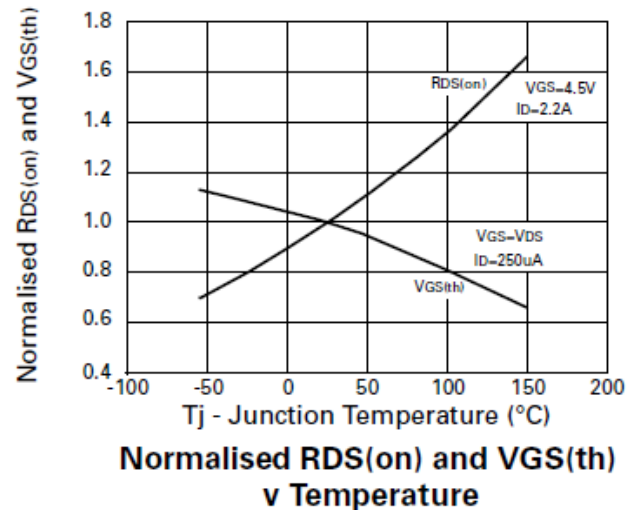
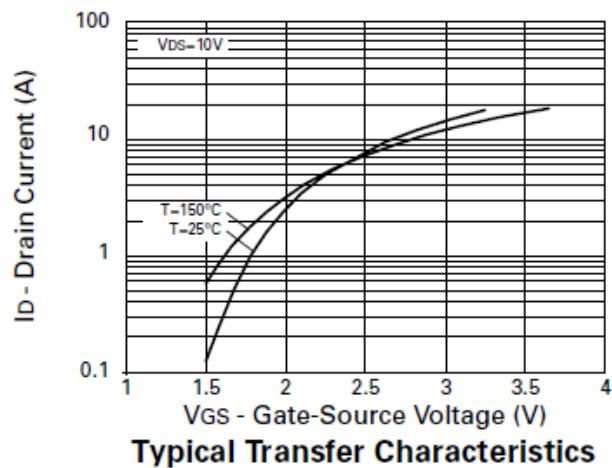
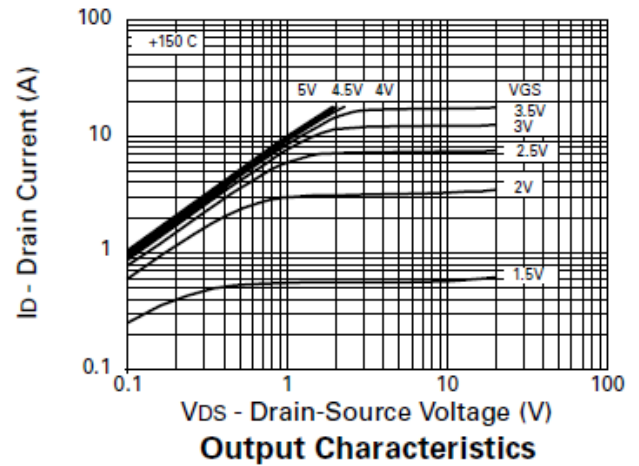
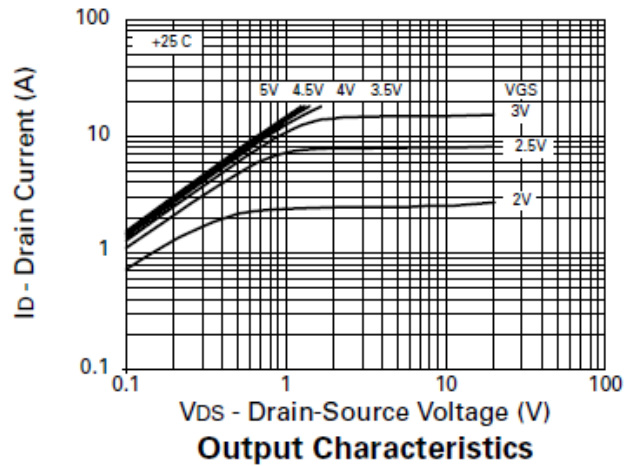
Thermal Characteristics


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

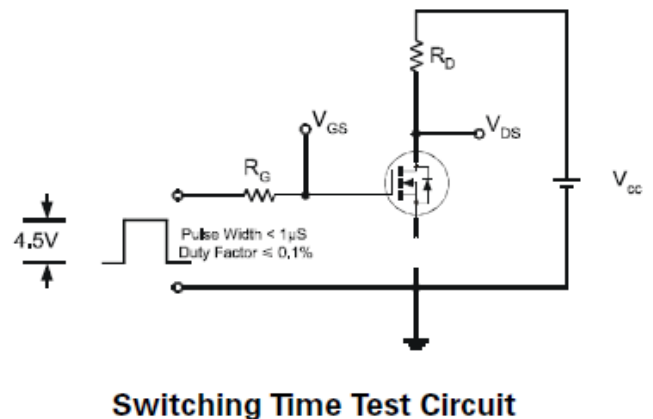
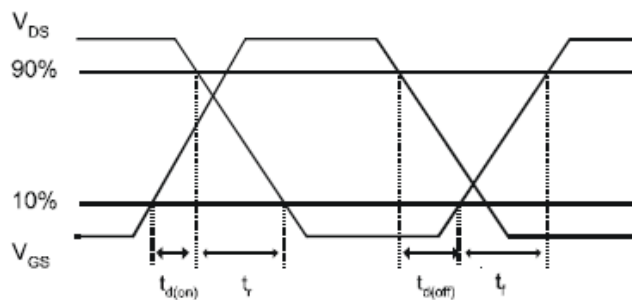
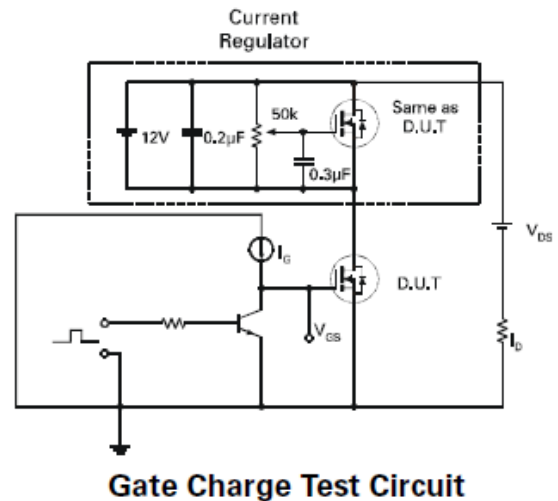
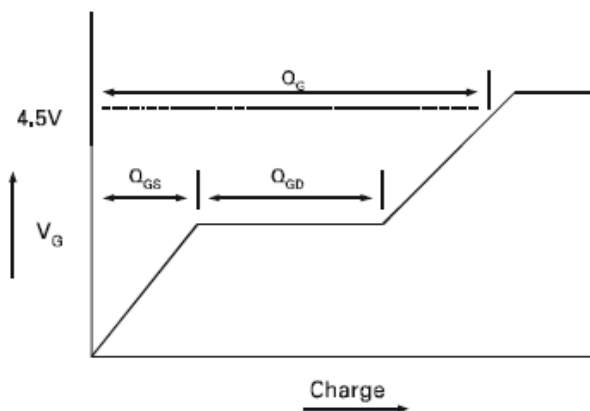
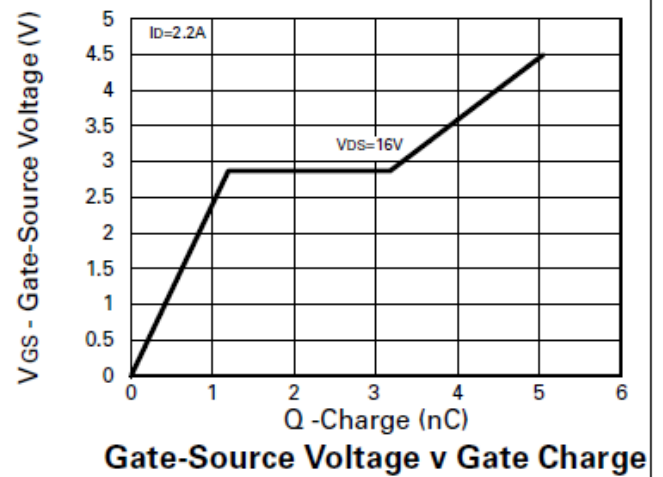
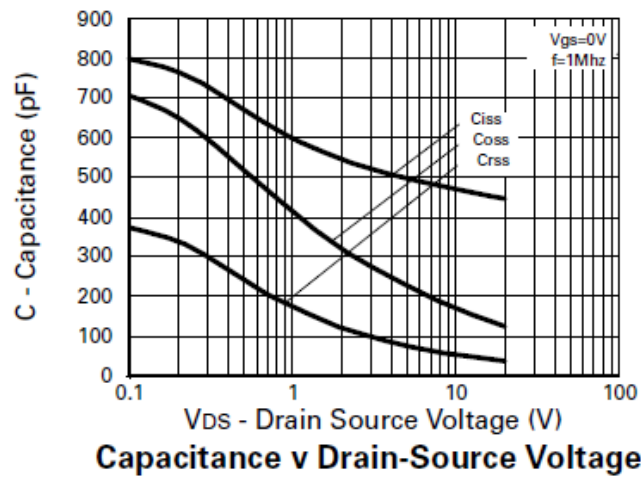
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	20	—	—	V	I _D = 250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	1	μA	V _{DS} = 20V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	100	nA	V _{GS} = ±12V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate-Source Threshold Voltage	V _{GS(th)}	0.7	—	—	V	I _D = 250μA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 8)	R _{DS(ON)}	—	—	0.1	Ω	V _{GS} = 4.5V, I _D = 2.2A
				0.125		V _{GS} = 2.7V, I _D = 1.1A
Forward Transconductance	g _{fs}	3.2	—	—	S	V _{DS} = 10V, I _D = 1.1A
Diode Forward Voltage (Note 8)	V _{SD}	—	—	0.95	V	T _J = +25°C, I _S = 2.2A, V _{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	460	—	pF	V _{DS} = 15V, V _{GS} = 0V f = 1MHz
Output Capacitance	C _{oss}	—	150	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	50	—	pF	
Total Gate Charge (Note 9)	Q _g	—	—	6.3	nC	V _{DS} = 16V, V _{GS} = 4.5V, I _D = 2.2A (refer to test circuit)
Gate-Source Charge (Note 9)	Q _{gs}	—	—	1.5	nC	
Gate-Drain Charge (Note 9)	Q _{gd}	—	—	2.5	nC	
Turn-On Delay Time (Note 9)	t _{d(on)}	—	4.0	—	ns	V _{DD} = 10V, I _D = 2.2A, R _G = 6.0 Ω, R _D = 4.4 Ω (refer to test circuit)
Turn-On Rise Time (Note 9)	t _r	—	10.4	—	ns	
Turn-Off Delay Time (Note 9)	t _{d(off)}	—	16.9	—	ns	
Turn-Off Fall Time (Note 9)	t _f	—	8.0	—	ns	T _J = +25°C, I _F = 2.2A, di/dt = 100A/μs
Reverse Recovery Time	t _{rr}	—	17.5	—	ns	
Reverse Recovery Charge	Q _{rr}	—	8.6	—	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

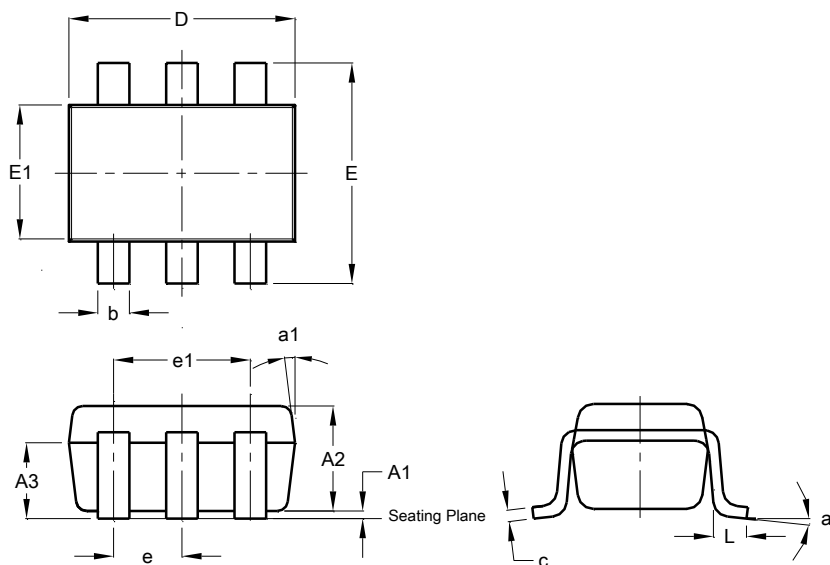


Typical Characteristics (cont.)



Package Outline Dimensions

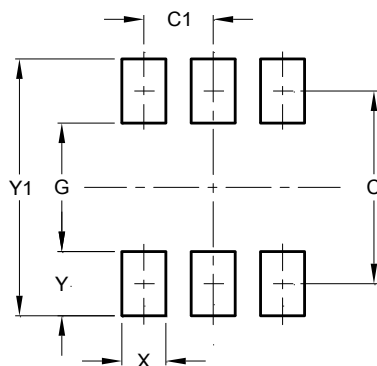
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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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