

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D $T_A = +25^\circ\text{C}$
250V	8.5Ω @ $V_{GS} = 10\text{V}$	240mA

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

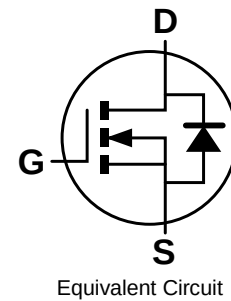
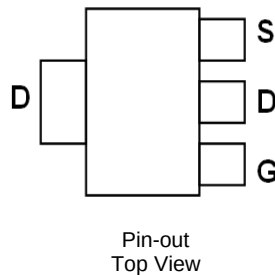
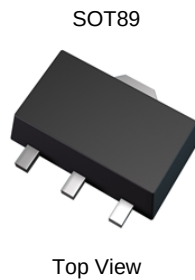
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories, Transistors, etc

Features

- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOT89
- 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 Finish Annealed over Copper Lead frame. Solderable per MIL-STD-202, Method 208 (G3)
- Weight: 0.052 grams (Approximate)



Ordering Information (Note 4)

Part Number	Compliance	Case	Quantity per Reel
ZVN4525ZTA	Standard	SOT89	1,000

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 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/products/packages.html>.

Marking Information



N52 = Marking Code

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	250	V
Gate-Source Voltage			V _{GSS}	±40	V
Continuous Drain Current, V _{GS} = 10V	Steady State	T _A = +25°C (Note 5) T _A = +70°C (Note 5)	I _D	240 192	mA
Maximum Body Diode Forward Current			I _S	1.1	A
Pulsed Drain Current (Note 7)			I _{DM}	1.44	A
Pulsed Source Current (Note 7)			I _{SM}	1.44	A

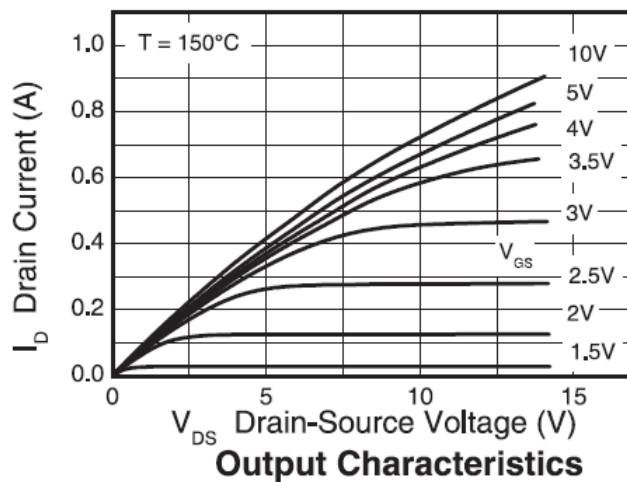
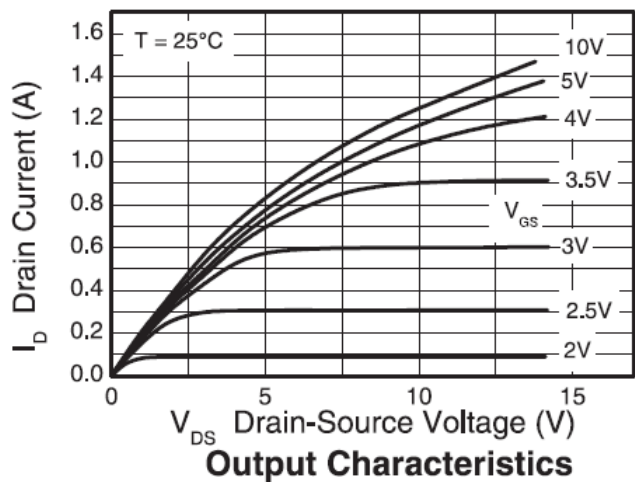
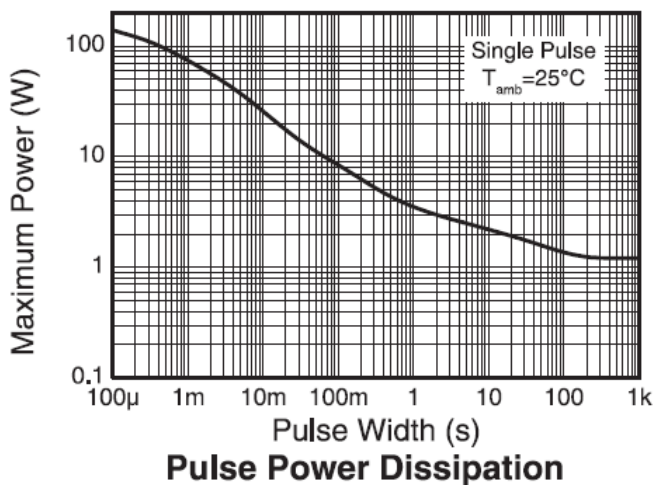
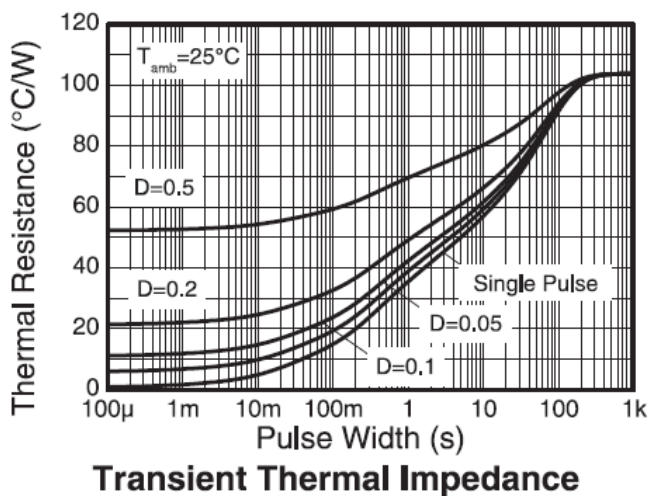
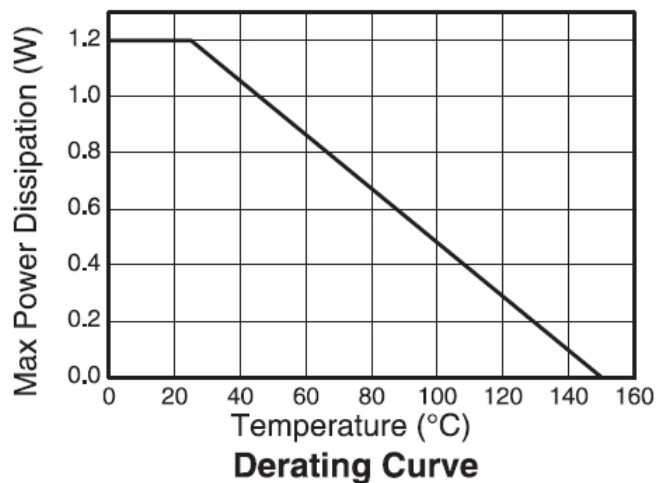
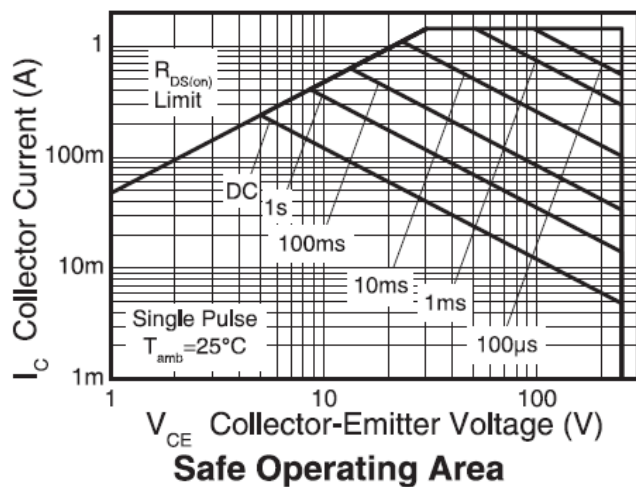
Thermal Characteristics

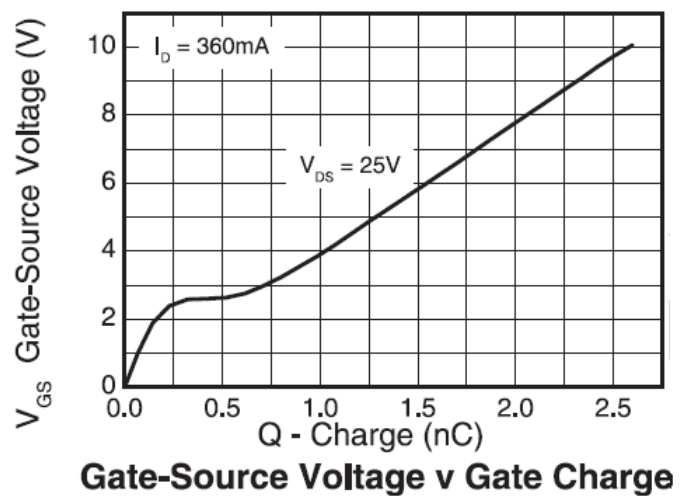
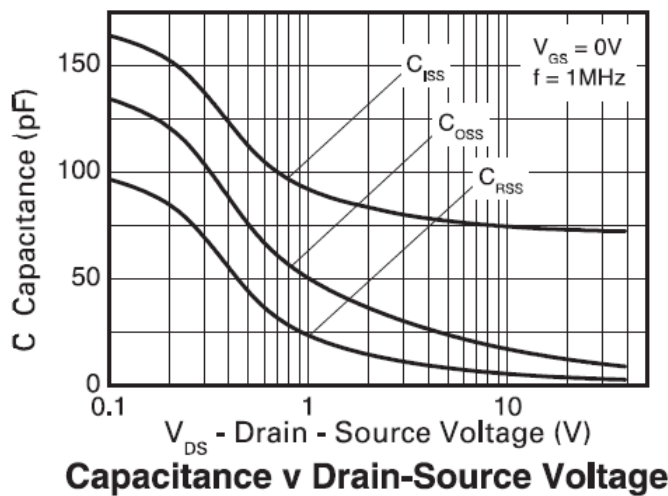
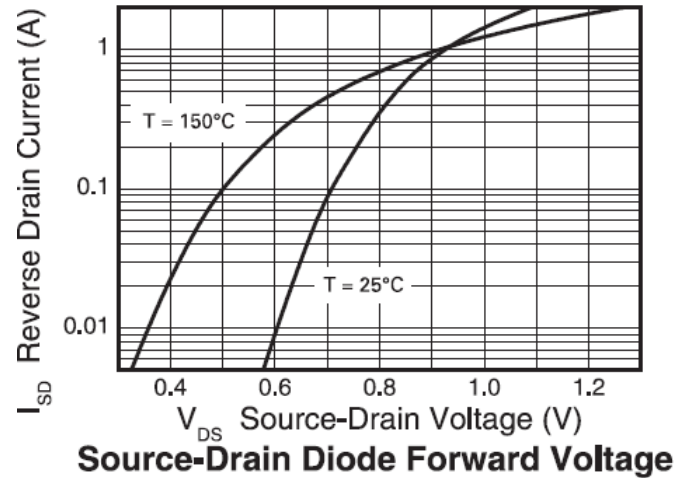
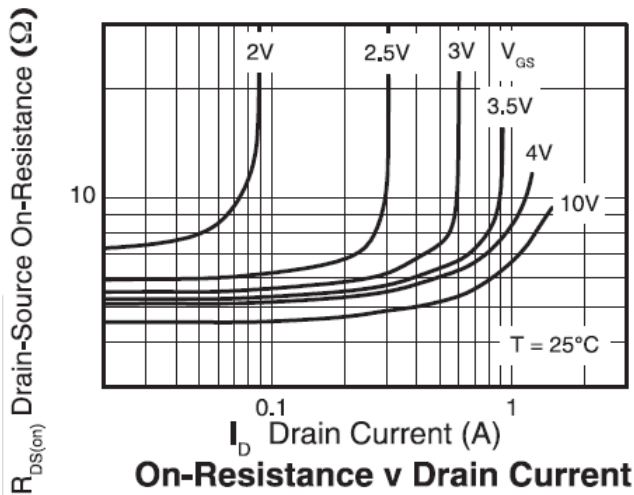
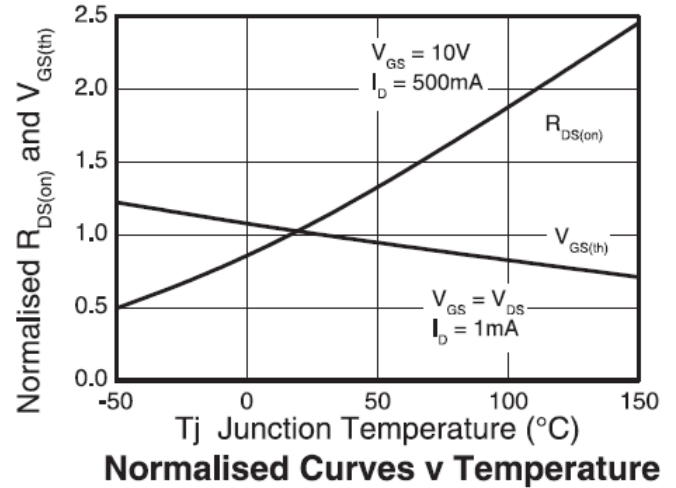
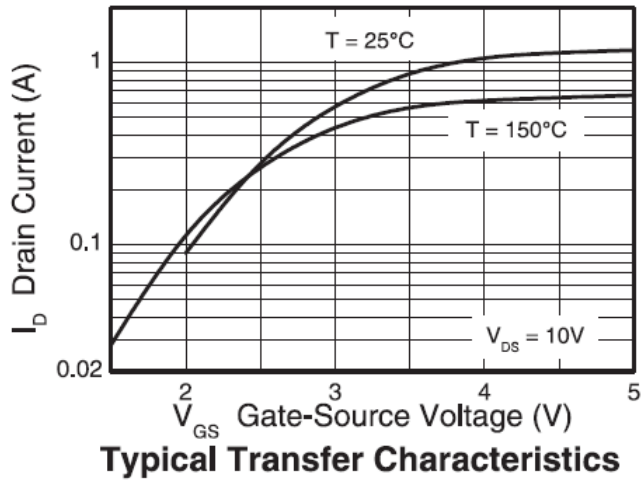
Characteristic		Symbol	Value	Unit
Total Power Dissipation	T _A = +25°C (Note 5)	P _D	1.2	W
Linear Derating Factor			9.6	mW/°C
Thermal Resistance, Junction to Ambient	Steady State (Note 5)	R _{θJA}	103	°C/W
	Steady State (Note 6)		50	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

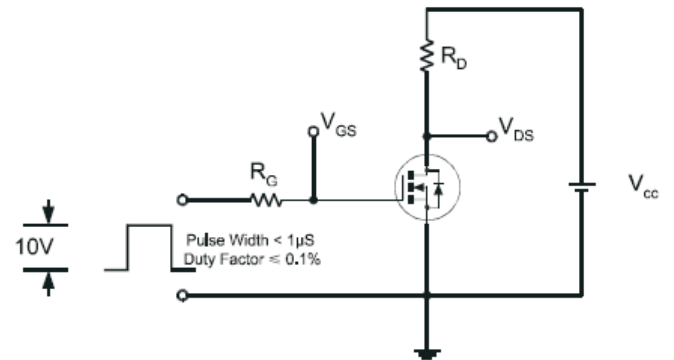
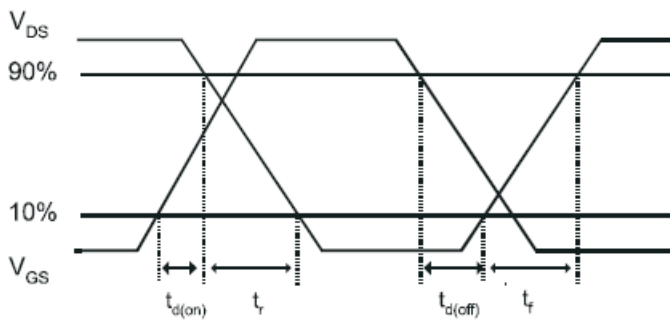
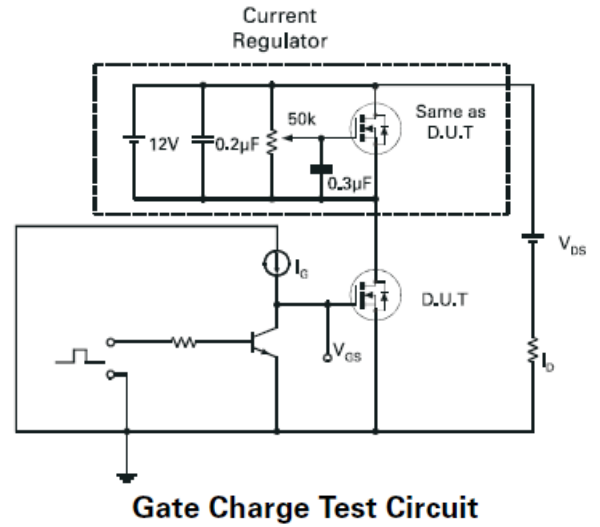
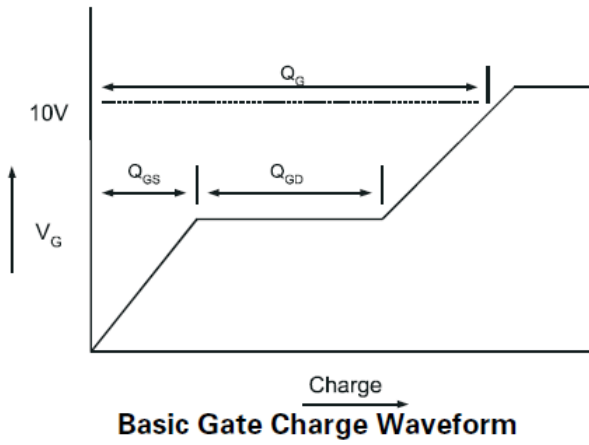
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 9)						
Drain-Source Breakdown Voltage	BV _{DSS}	250	285	—	V	V _{GS} = 0V, I _D = 1mA
Zero Gate Voltage Drain Current	I _{DSS}	—	35	500	nA	V _{DS} = 250V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	±1	±100	nA	V _{GS} = ±40V, V _{DS} = 0V
ON CHARACTERISTICS (Note 9)						
Gate Threshold Voltage	V _{GS(TH)}	0.8	1.4	1.8	V	V _{DS} = V _{GS} , I _D = 1mA
Static Drain-Source On-Resistance (Note 8)	R _{DS(ON)}	—	5.6	8.5	Ω	V _{GS} = 10V, I _D = 500mA
		—	5.9	9.0		V _{GS} = 4.5V, I _D = 360mA
		—	6.4	9.5		V _{GS} = 2.4V, I _D = 20mA
		—	—	—		V _{GS} = 0V, I _S = 360mA
Diode Forward Voltage (Note 8)	V _{SD}	—	—	0.97	V	V _{GS} = 0V, I _S = 360mA
Forward Transconductance (Note 10)	g _{fs}	0.3	475	—	S	V _{DS} = 10V, I _D = 0.3A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	72	—	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	11	—		
Reverse Transfer Capacitance	C _{rss}	—	3.6	—		
Total Gate Charge	Q _g	—	2.6	3.65	nC	V _{DS} = 25V, I _D = 360mA, V _{GS} = 10V
Gate-Source Charge	Q _{gs}	—	0.2	0.28		
Gate-Drain Charge	Q _{gd}	—	0.5	0.70		
Turn-On Delay Time	t _{D(ON)}	—	1.25	—	ns	V _{DD} = 50V, R _G = 6.0Ω, I _D = 200mA, R _D = 4.4Ω
Turn-On Rise Time	t _r	—	1.70	—		
Turn-Off Delay Time	t _{D(OFF)}	—	11.40	—		
Turn-Off Fall Time	t _f	—	3.50	—		
Body Diode Reverse Recovery Time	t _{RR}	—	186	260	ns	I _F = 360mA, dI/dt = 100A/μs
Body Diode Reverse Recovery Charge	Q _{RR}	—	34	48	nC	

- Notes:
5. For a device surface mounted on 25mm X 25mm FR-4 PCB with high coverage of single sided 1oz copper, in still air condition.
 6. For a device surface mounted on FR4 PCB measured at t ≤ 5 secs.
 7. Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal.
 8. Measured under pulsed conditions. Width=300μs. Duty cycle ≤ 2%.
 9. Short duration pulse test used to minimize self-heating effect.
 10. Guaranteed by design. Not subject to product testing.

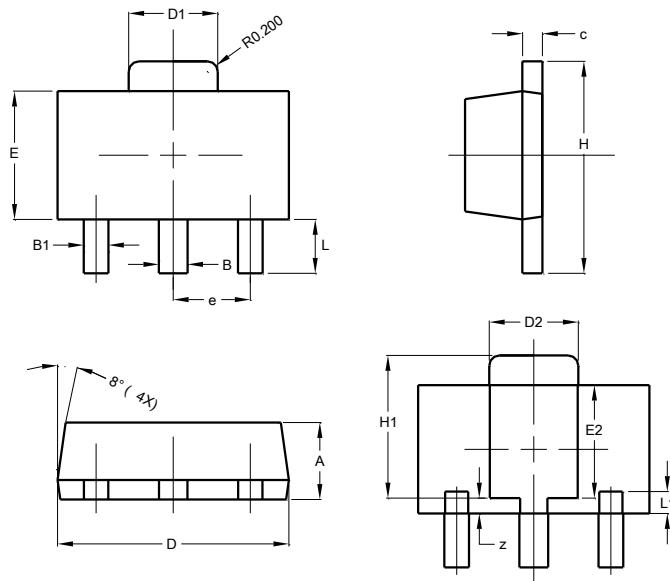






Package Outline Dimensions

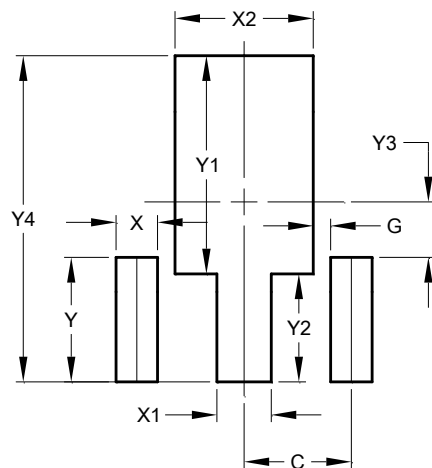
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT89			
Dim	Min	Max	Typ
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.427 REF		
Z	0.30 REF		
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	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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