

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)}$	I_D $T_A = 25^\circ\text{C}$
100V	250m Ω @ $V_{GS} = 10\text{V}$	2.9A
	300m Ω @ $V_{GS} = 6\text{V}$	2.6A

Features and Benefits

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

Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish (63)
- Weight: 0.112 grams (Approximate)

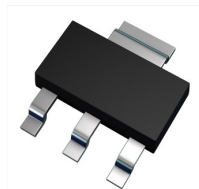
Description

This new generation trench MOSFET from Zetex features a unique structure, combining the benefits of low on-resistance and fast switching, making it ideal for high-efficiency, power management applications.

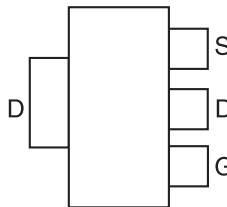
Applications

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

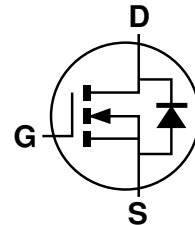
SOT223



Top View



Pin Out - Top



Equivalent Circuit

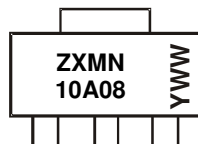
Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN10A08GTA	ZXMN10A08	7	12	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

SOT223



ZXMN10A08 = Product Type Marking Code
YWW = Date Code Marking
Y or \bar{Y} = Last Digit of Year (ex: 5= 2015)
WW or WW = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	100	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (V _{GS} =10V; T _A = +25°C) (Note 6)	I _D	2.9	A
(V _{GS} =10V; T _A = +70°C) (Note 6)		2.3	
(V _{GS} =10V; T _A = +25°C) (Note 5)		2.0	
Pulsed Drain Current (Note 7)	I _{DM}	11	A
Continuous Source Current (Body Diode) (Note 6)	I _S	5	A
Pulsed Source Current (Body Diode) (Note 7)	I _{SM}	11	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation at T _A = +25°C (Note 5)	P _D	2.0	W
Linear Derating Factor		16	mW/°C
Power Dissipation at T _A = +25°C (Note 6)	P _D	3.9	W
Linear Derating Factor		31	mW/°C
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	62.5	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	32	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

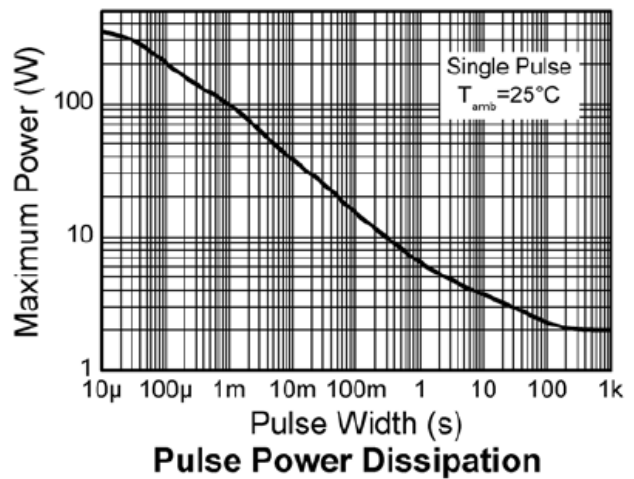
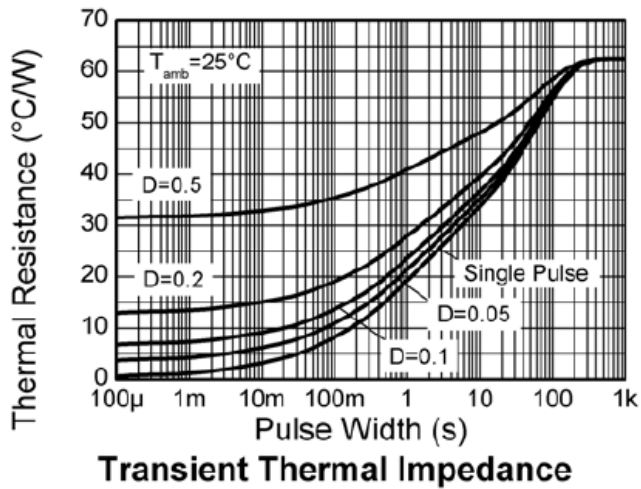
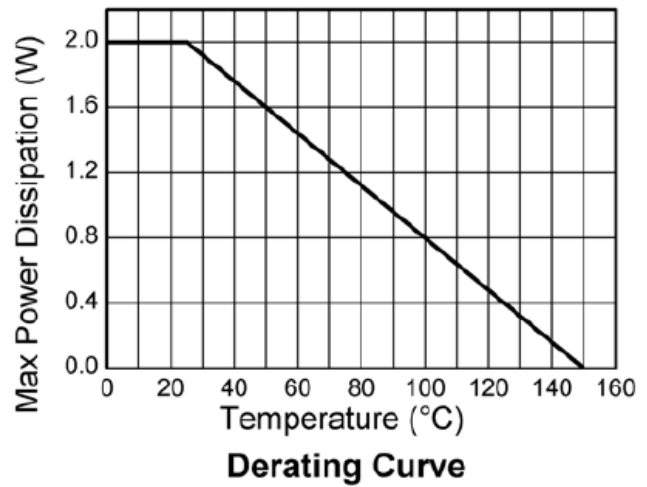
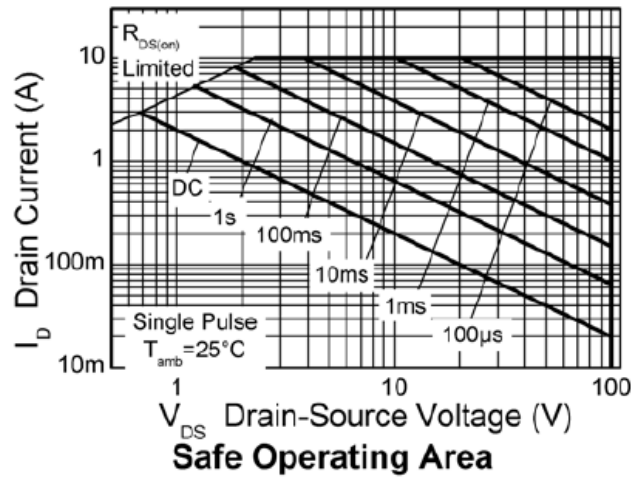
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	100	-	-	V	V _{GS} = 0V, I _D = 250μA
Zero Gate Voltage Drain Current	I _{DSS}	-	-	0.5	μA	V _{DS} = 100V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	-	-	100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	2	-	-	V	V _{DS} = V _{GS} , I _D = 250μA
Static Drain-Source On-Resistance (Note 8)	R _{DS(ON)}	-	-	0.25 0.30	Ω	V _{GS} = 10V, I _D = 3.2A V _{GS} = 6V, I _D = 2.6A
Forward Transconductance (Notes 8 & 10)	g _{fs}	-	5	-	S	V _{DS} = 15V, I _D = 3.2A
Diode Forward Voltage (Note 8)	V _{SD}	-	0.87	0.95	V	T _J = 25°C, I _S = 3.2A, V _{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	-	405	-	pF	V _{DS} = 50V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	-	28.2	-	pF	
Reverse Transfer Capacitance	C _{rss}	-	14.2	-	pF	
Turn-On Delay Time (Note 9)	t _{D(ON)}	-	3.4	-	ns	V _{DD} = 30V, I _D = 1.2A, V _{GS} = 10V, R _G = 6Ω
Turn-On Rise Time (Note 9)	t _R	-	2.2	-	ns	
Turn-Off Delay Time (Note 9)	t _{D(OFF)}	-	8	-	ns	
Turn-Off Fall Time (Note 9)	t _F	-	3.2	-	ns	V _{DS} = 50V, V _{GS} = 5V, I _D = 1.2A
Gate Charge (Note 9)	Q _g	-	4.2	-	nC	
Total Gate Charge (Note 9)	Q _g	-	7.7	-	nC	
Gate-Source Charge (Note 9)	Q _{gs}	-	1.8	-	nC	V _{DS} = 50V, V _{GS} = 10V, I _D = 1.2A
Gate-Drain Charge (Note 9)	Q _{gd}	-	2.1	-	nC	
Reverse Recovery Time	t _{rr}	-	27	-	ns	
Reverse Recovery Charge	Q _{rr}	-	32	-	nC	T _J = 25°C, I _S = 1.2A, di/dt = 100A/μs

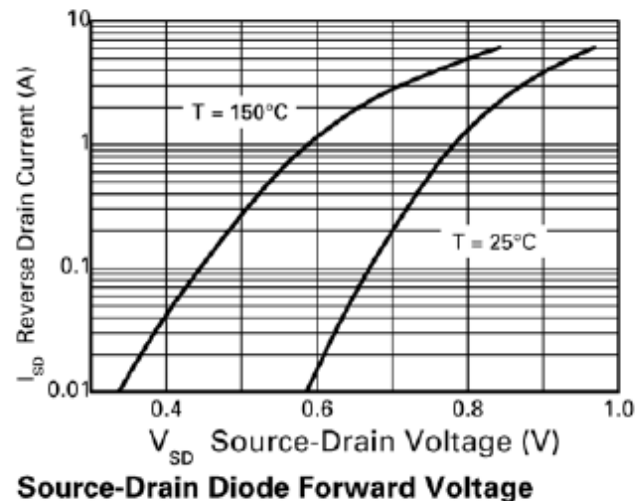
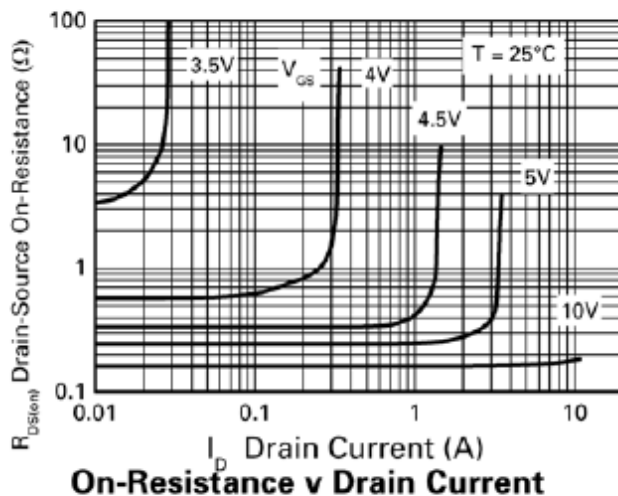
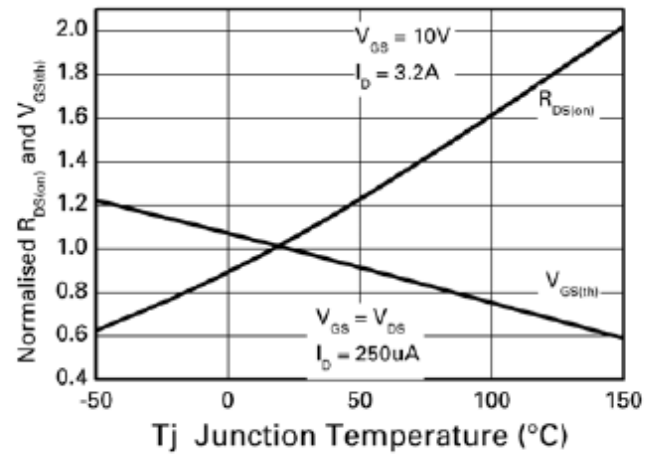
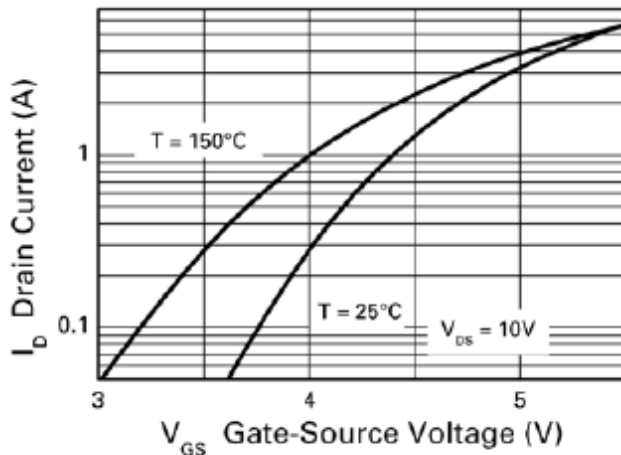
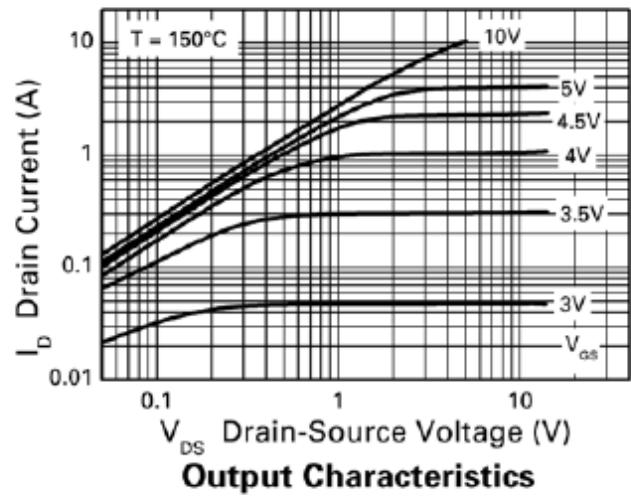
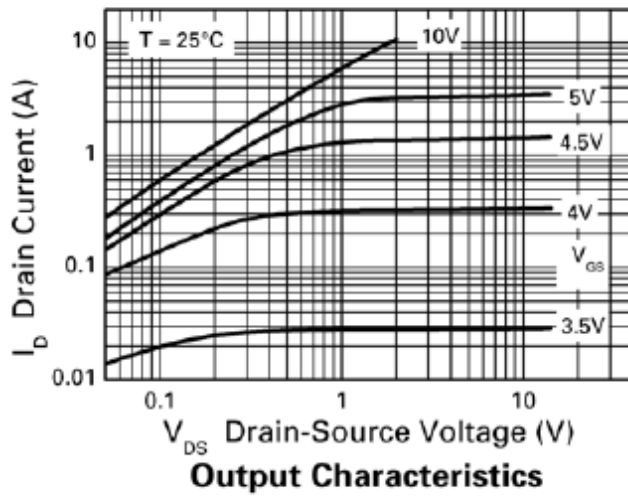
Notes:

- For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- For a device surface mounted on FR4 PCB measured at t ≤ 10 secs.
- Repetitive rating - 25mm x 25mm FR4 PCB, D=0.02, pulse width 300μs - pulse width limited by maximum junction temperature.
- Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.
- Switching characteristics are independent of operating junction temperature.
- For design aid only, not subject to production testing.

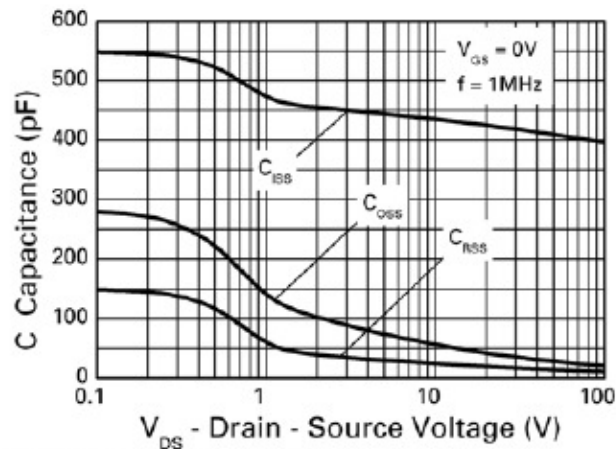
Thermal Characteristics



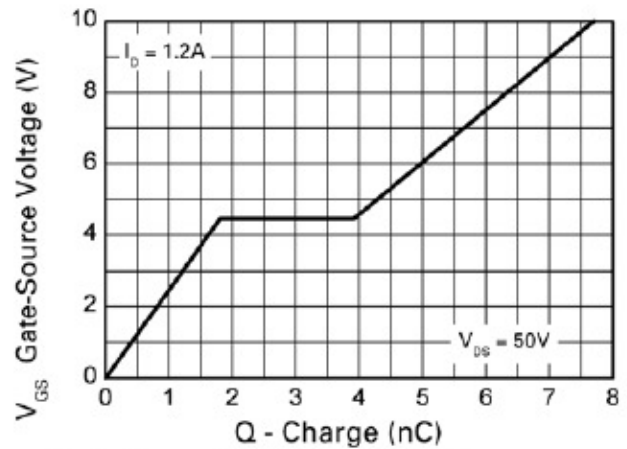
Typical Characteristics



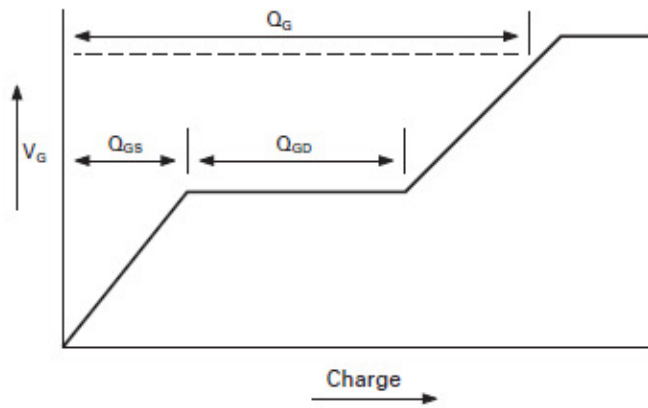
Typical Characteristics (continued)



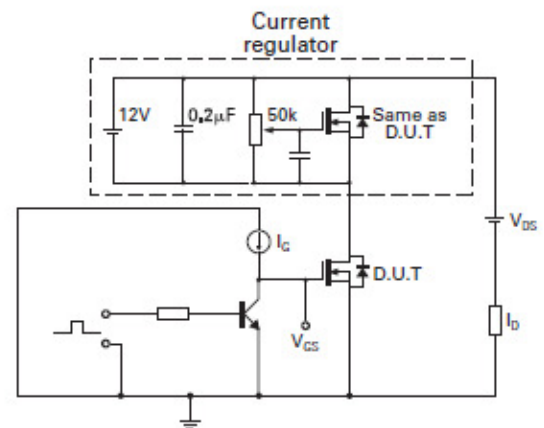
Capacitance v Drain-Source Voltage



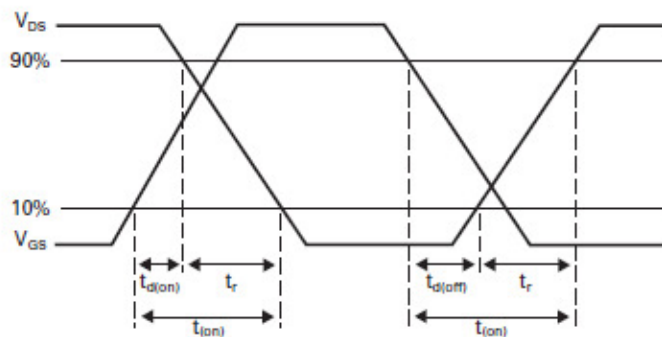
Gate-Source Voltage v Gate Charge



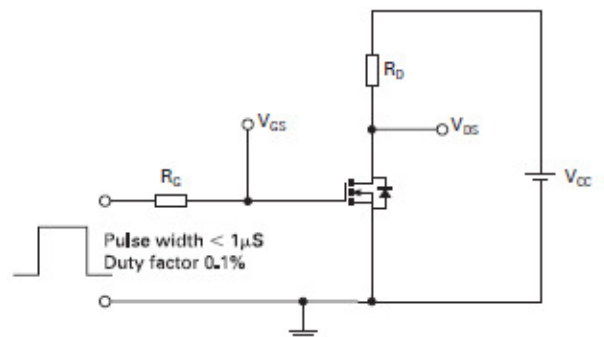
Basic gate charge waveform



Gate charge test circuit



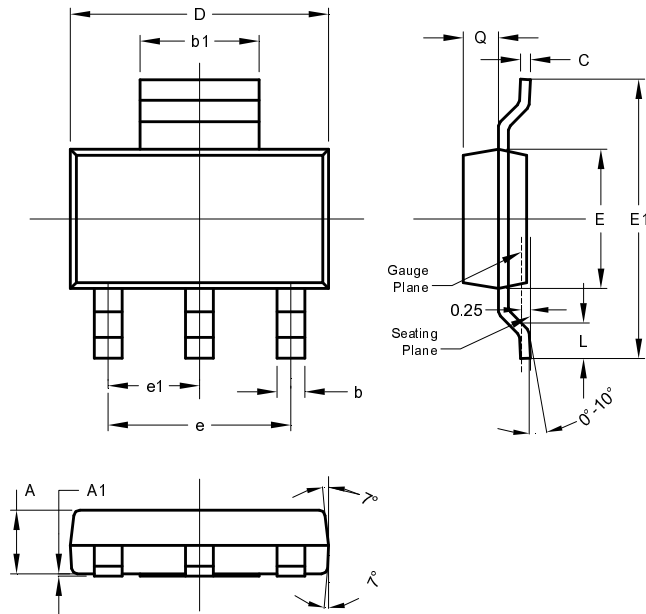
Switching time waveforms



Switching time test circuit

Package Outline Dimensions

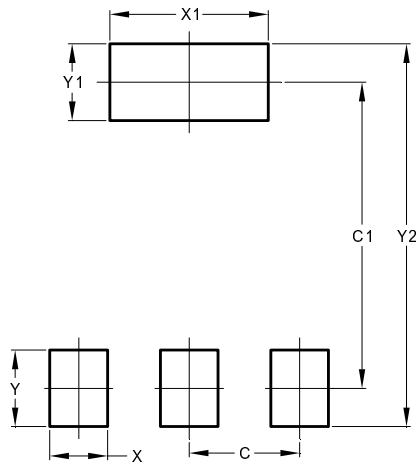
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
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	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

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