Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

Diodes Incorporated
ZXMN6A08GTA

For any questions, you can email us directly:
sales@integrated-circuit.com

DIODES INCORPORATED

Lead-free Green

ZXMN6A08G

60V SOT223 N-channel enhancement mode MOSFET

Product Summary

BV_{DSS}	$R_{DS(on)}$ (Ω)	I_D (A)
60V	0.08 @ V_{GS} = 10V	5.3
	0.15 @ V_{GS} = 4.5V	2.8

Description and Applications

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

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

Features and Benefits

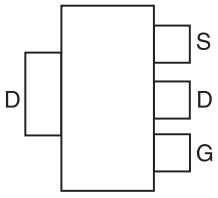
- Low On-Resistance
- Fast Switching Speed
- Low Threshold
- Low Gate Drive
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

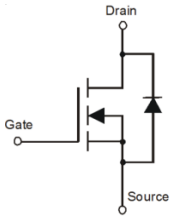
- Case: SOT223
- Case Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

SOT223

Top View



Pin Out - Top View



Equivalent Circuit

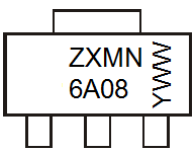
Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXMN6A08GTA	ZXMN6A08	7	12	1,000
ZXMN6A08GTC	ZXMN6A08	13	12	4,000

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/products/packages.html.

Marking Information

SOT223



ZXMN6A08 =Product Type Marking Code
YWW = Date Code Marking
Y or Y= Last Digit of Year (ex: 5 = 2015)
WW or WW = Week Code (01 - 53)

Absolute Maximum Ratings

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Continuous Drain Current V_{GS} = 10V	T_A = +25°C (Note 6)	I_D	5.3	A
	T_A = +70°C (Note 6)		4.2	A
	T_A = +25°C (Note 5)		3.8	A
Pulsed Drain Current (Note 7)		I_{DM}	20	A
Continuous Source Current (body diode)(Note 6)		I_S	2.1	A
Pulsed Source Current (body diode)(Note 7)		I_{SM}	20	A
Power Dissipation at T_A = +25°C (Note 5) Linear Derating Factor		P_D	2 16	W mW/°C
Power Dissipation at T_A = +25°C (Note 6) Linear Derating Factor		P_D	3.9 31	W mW/°C
Linear Derating Factor		T_J, T_{STG}	-55 to +150	°C

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

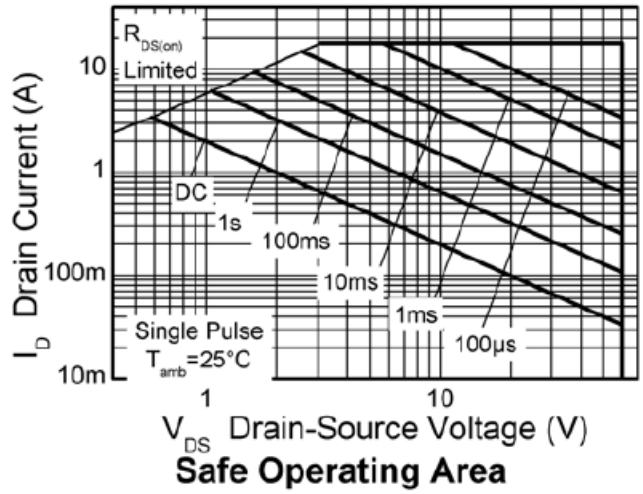
Characteristic	Symbol	Value	Units
Junction to Ambient (Note 5)	$R_{\theta JA}$	62.5	°C/W
Junction to Ambient (Note 6)	$R_{\theta JA}$	32	°C/W

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

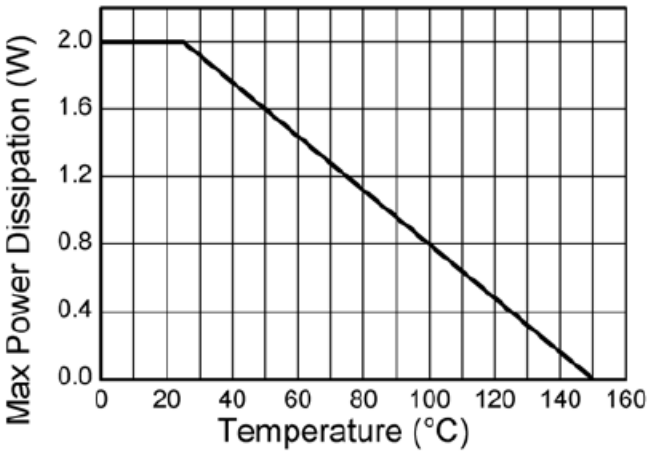
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	60	–	–	V	V_{GS} = 0V, I_D =250µA
Zero Gate Voltage Drain Current	I_{DSS}	–	–	0.5	µA	V_{DS} = 60V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	–	–	100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(th)}$	1	–	-	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-State Resistance (Note 8)	$R_{DS\ (ON)}$	–	–	0.08	Ω	V_{GS} = 10V, I_D = 4.8A
		–	–	0.15	Ω	V_{GS} = 4.5V, I_D = 4.2A
Forward Transconductance (Notes 8 &10)	g_{fs}	–	6.6	–	S	V_{DS} =15V,I_D =4.8A
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C_{iss}	–	459	–	pF	V_{DS} = 40V, V_{GS} = 0V, f = 1MHz
Output Capacitance	C_{oss}	–	44.2	–	pF	
Reverse Transfer Capacitance	C_{rss}	–	24.1	–	pF	
Turn-On Delay Time (Note 9)	$t_{D(on)}$	–	2.6	–	ns	V_{DD} = 30V, I_D=1.5A RG ≅ 6.0Ω, V_{GS}= 10V
Turn-On Rise Time (Note 9)	t_r	–	2.1	–	ns	
Turn-Off Delay Time (Note 9)	$t_{D(off)}$	–	12.3	–	ns	
Turn-Off Fall Time (Note 9)	t_f	–	4.6	–	ns	
Gate Charge (Note 9)	Qg	–	4.0	–	nC	V_{DS}= 30V, V_{GS}= 5V I_D= 1.4A
Total Gate Charge (Note 9)	Qg	–	5.8	–	nC	V_{DS}= 30V, V_{GS}= 10V I_D= 1.4A
Gate-Source Charge (Note 9)	Qgs	–	1.4	–	nC	
Gate Drain Charge (Note 9)	Qgd	–	1.9	–	nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage (Note 8)	V_{SD}	–	0.88	1.2	V	Tj=+25°C, I_S= 4A, V_{GS}=0V
Reverse Recovery Time (Note 10)	trr	–	19.2	–	ns	Tj=+25°C, I_S= 1.4A, di/dt=100A/µs
Reverse Recovery Charge (Note 10)	Qrr	–	30.3	–	nC	

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 <= 10 sec.
7. Repetitive rating - 25mm x 25mm FR4 PCB, D=0.02, pulse width 300_s - pulse width limited by maximum junction temperature.
8. Measured under pulsed conditions. Pulse width <= 300_s; duty cycle <=2%.
9. Switching characteristics are independent of operating junction temperature.
10. For design aid only, not subject to production testing.

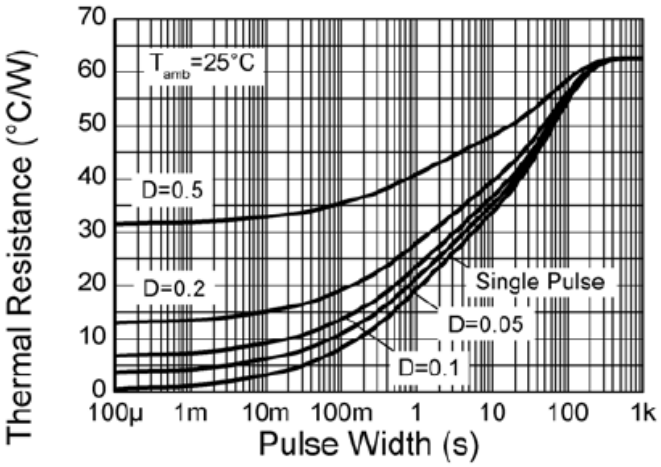
Typical Characteristics



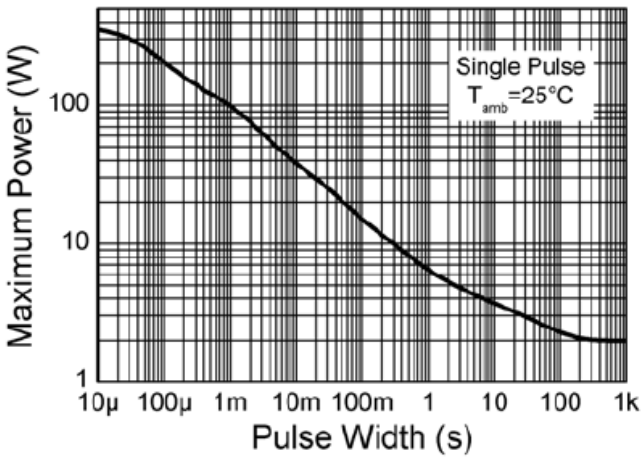
Safe Operating Area



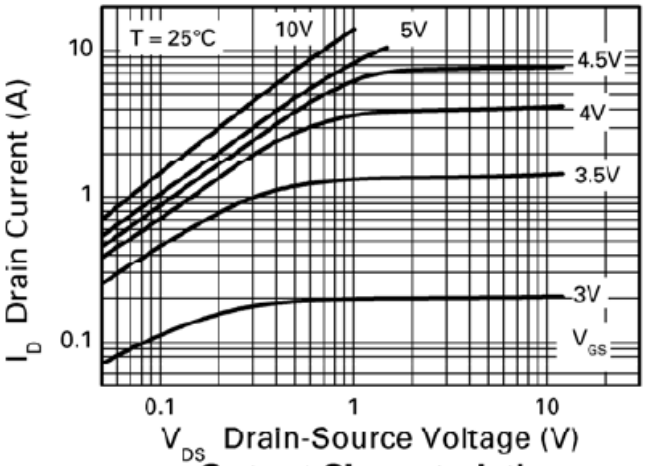
Derating Curve



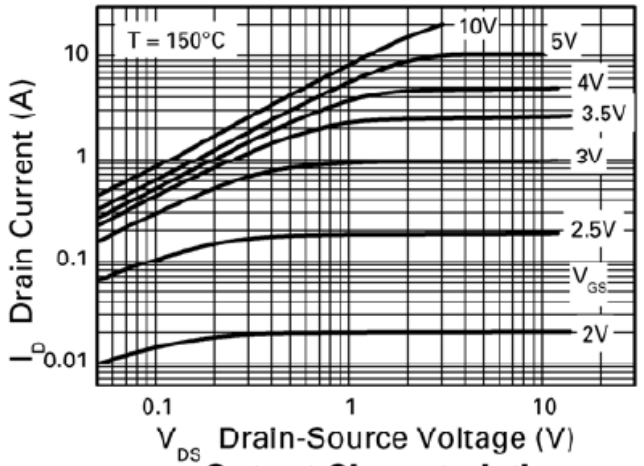
Transient Thermal Impedance



Pulse Power Dissipation

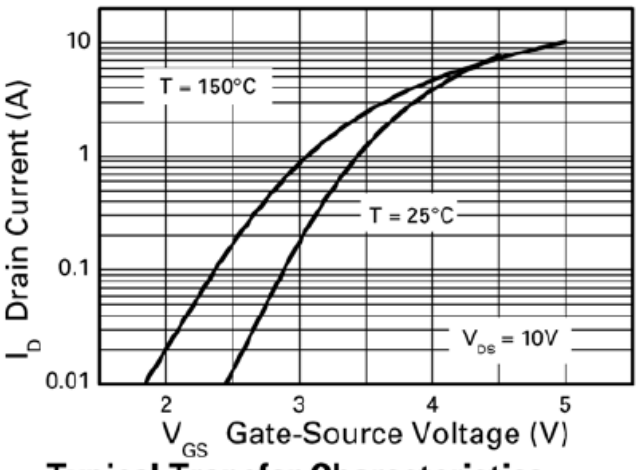


Output Characteristics

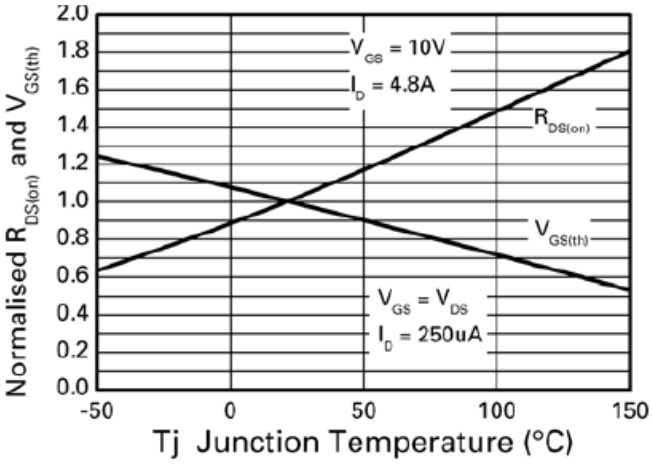


Output Characteristics

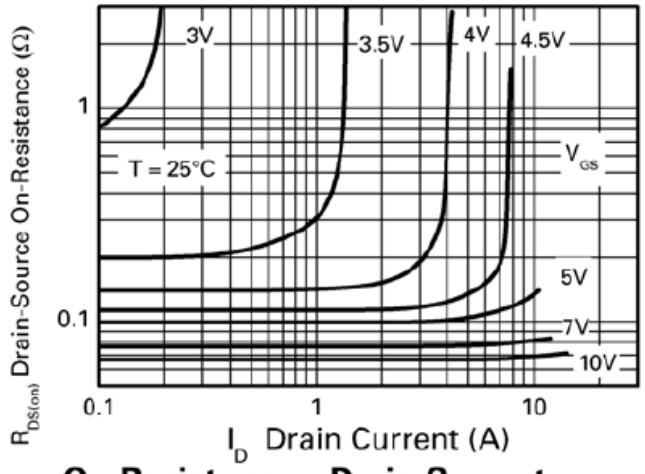
Typical Characteristics (continued)



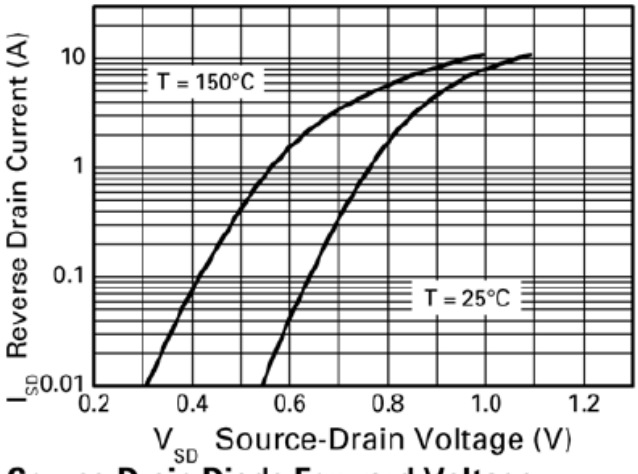
Typical Transfer Characteristics



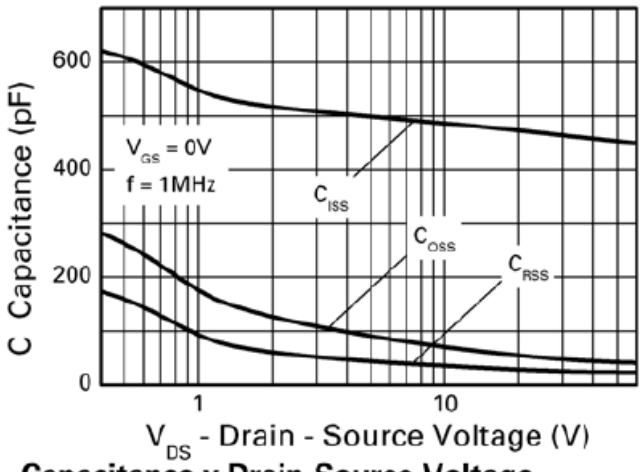
Normalised Curves v Temperature



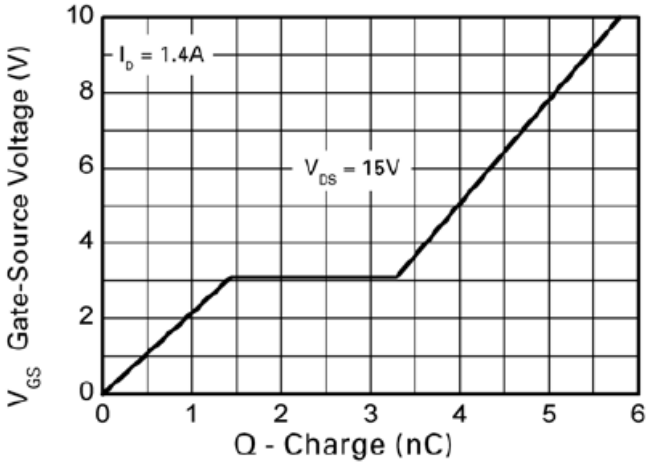
On-Resistance v Drain Current



Source-Drain Diode Forward Voltage

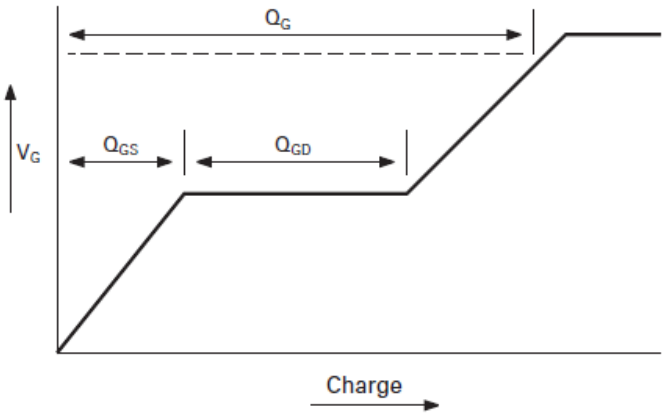


Capacitance v Drain-Source Voltage

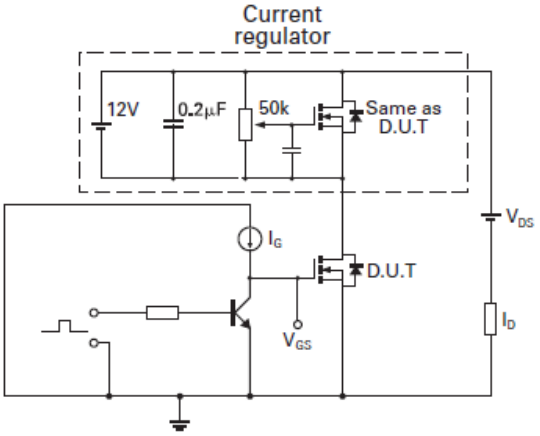


Gate-Source Voltage v Gate Charge

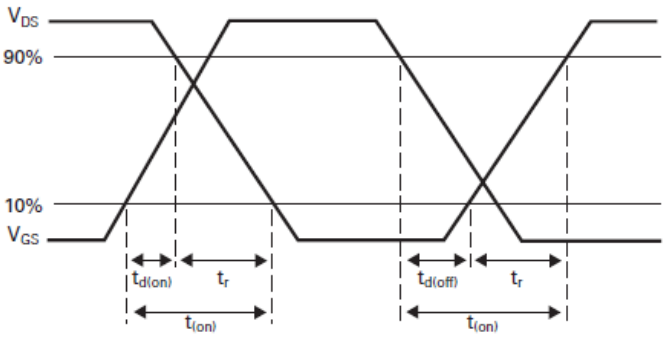
Test Circuits



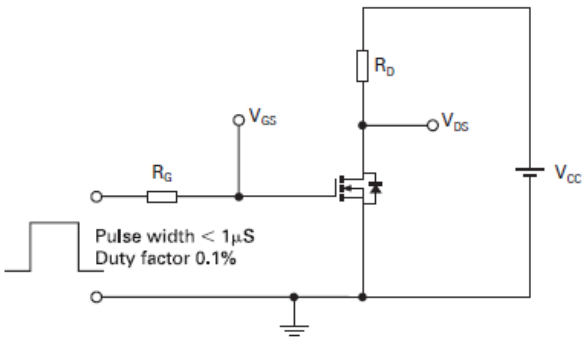
Basic gate charge waveform



Gate charge test circuit



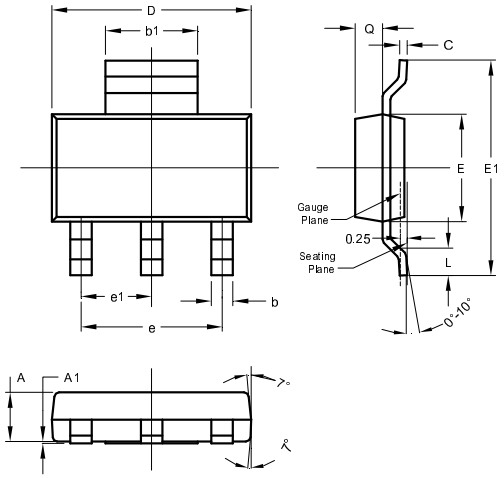
Switching time waveforms



Switching time test circuit

Package Outline Dimensions

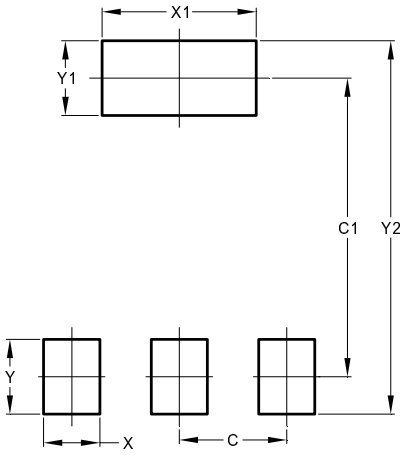
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes Incorporated.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or
2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com