

SCHOTTKY BRIDGE RECTIFIER PLUS FREEWHEEL DIODE
Product Summary

- Schottky Bridge and Freewheel diode for use in MR16 LED Drive
- Internal Ambient Temperature = 90°C MAX within MR16 circuit enclosure
- $V_R = 13.2V_{RMS}$
- $I_F = 0.4A_{AVG}$
- $I_R = 10\mu A$

Description and Applications

This low leakage Schottky bridge and freewheel diode have been specifically designed for the MR16 LED driver solution alongside ZXLD1350E5 as described in Design Note DN86.

Features and Benefits

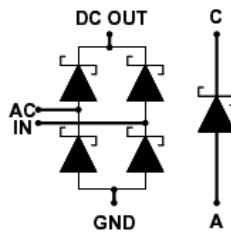
- Compact surface mount solution and reduced component count in MR16 LED drive circuit
- Optimized bridge and freewheel diode for use in MR16 LED diode circuitry
- Low V_F and low reverse leakage current
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

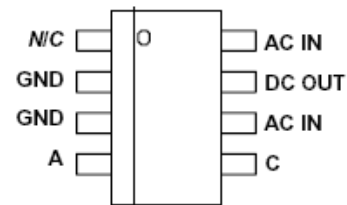
- Case: SM-8
- Case Material: TBD
- Moisture Sensitivity: TBD
- Terminals: TBD
- Weight: TBD grams (approximate)



Top View



Device Circuit

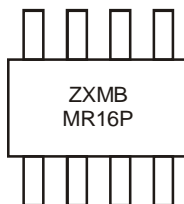


Top View Pin-Out

Ordering Information (Note 1)

Device	Packaging	Shipping
ZXSBMR16PT8TA	SM-8	1000/Tape & Reel

Notes: 1. For Packaging Details, go to our website at <http://www.diodes.com>.

Marking Information


ZXSBMR16P = Product Type Marking Code

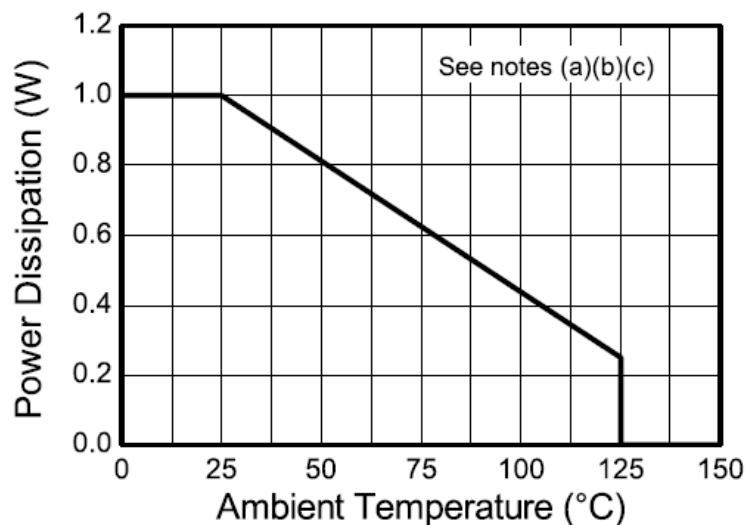
Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Maximum Repetitive Reverse Voltage	V _R RM	40	V
Maximum RMS Bridge Input Voltage	V _R RMS	13.2	V
Average Rectified Forward Current (Notes 2 & 3)	I _{F(AV)}	0.4	A
Peak Repetitive Forward Current	I _F PK	3.5	A
Non Repetitive Forward Current	I _F SM	t ≤ 100μs	13
		t ≤ 10ms	3.5

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation, T _A = 25°C (Note 2)	P _D	1	W
Thermal Resistance, Junction to Ambient (Note 2)	R _θ JA	125	°C/W
Junction Temperature, Forward Dissipation Only	T _J	150	°C
Junction Temperature, Reverse Dissipation (Notes 2, 3, & 4)	T _J	125	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
MR16 LED Internal Ambient Temperature (Note 4)	T _A	90	°C

- Notes:
2. For a bridge mounted on 1.6mm FR4 PCB with minimum copper pads and track dimensions in still air.
 3. Supply 12V RMS with capacitive bridge load.
 4. Maximum bridge operating junction temperature must be reduced with increased reverse bias voltage to maintain unconditional thermal stability.
 5. Refer to Design Note DN86

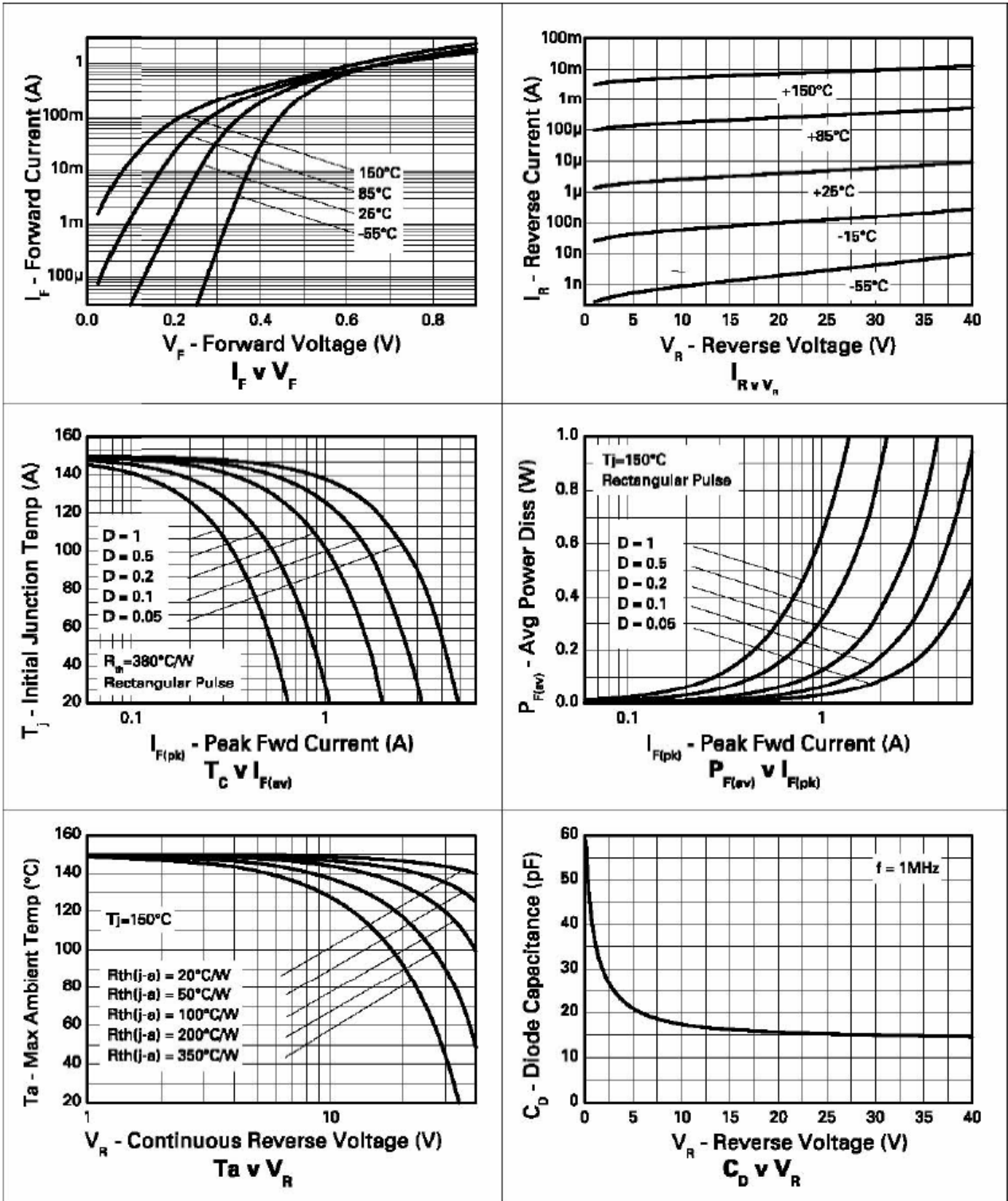


Package Thermal Characteristic

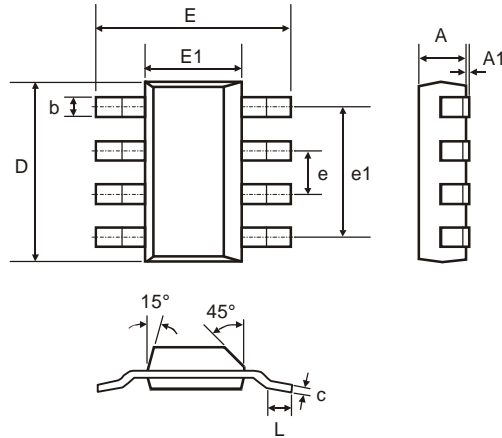
Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	$V_{(BR)R}$	40	-	-	V	$I_R = 200\mu\text{A}$
Forward Voltage (Note 4)	V_F	-	305	360	mV	$I_F = 50\text{mA}$
		-	355	410		$I_F = 100\text{mA}$
		-	405	470		$I_F = 250\text{mA}$
		-	485	550		$I_F = 500\text{mA}$
		-	570	660		$I_F = 750\text{mA}$
		-	640	750		$I_F = 1\text{A}$
		-	415	-		$I_F = 500\text{mA}, T_A = 100^\circ\text{C}$
Reverse Current	I_R	-	6	10	μA	$V_R = 30\text{V}$
		-	370	-		$V_R = 30\text{V}, T_A = 85^\circ\text{C}$
Diode Capacitance	C_D	-	16	-	pF	$f = 1\text{MHz}, V_R = 30\text{V}$
Reverse Recovery Time	t_{rr}	-	3	-	ns	Switched from $I_F = 100\text{mA}$ to $I_R = 100\text{mA}$
Reverse Recovery Charge	Q_{rr}	-	210	-	pC	Measured @ $I_R = 10\text{mA}$ $di/dt = 500\text{mA/ns}$. $R_{source} = 6\Omega; R_{load} = 10\Omega$

Notes: 4. Measured under pulsed conditions. Pulse width = $300\mu\text{s}$. Duty cycle $\leq 2\%$.

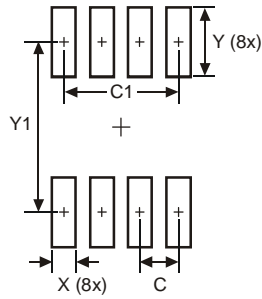


Package Outline Dimensions



SM-8			
Dim	Min	Max	Typ
A	-	1.7	-
A1	0.02	0.1	-
b	-	0.7	-
c	0.24	0.32	-
D	6.3	6.7	-
e	-	-	1.53
e1	-	-	4.59
E	6.7	7.3	-
E1	3.3	3.7	-
L	0.9	-	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
C	1.52
C1	4.6
X	0.95
Y	2.80
Y1	6.80

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.

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.

Copyright © 2011, Diodes Incorporated

www.diodes.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Diodes Inc.:](#)

[ZXSBMR16PT8TA](#)