

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
- $V_R = 13.2V_{RMS}$
- $I_F = 0.4A_{AVG}$
- $I_R = 10\mu A$

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**

Description and Applications

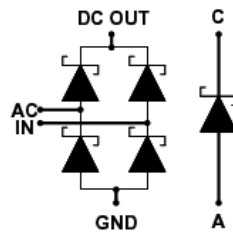
This low leakage Schottky bridge and freewheel diode have been specifically designed for the MR16 LED driver solution alongside ZXLD1350E5 as described in Design Note DN86.

Mechanical Data

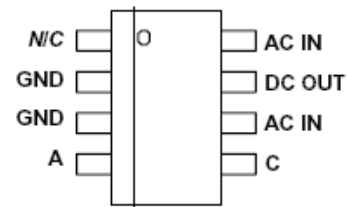
- Case: SM-8
- Case Material: TBD
- Moisture Sensitivity: TBD
- Terminals: TBD
- Weight: TBD grams (approximate)

SM-8

Top View



Device Circuit



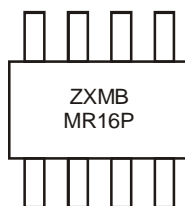
Top View Pin-Out

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

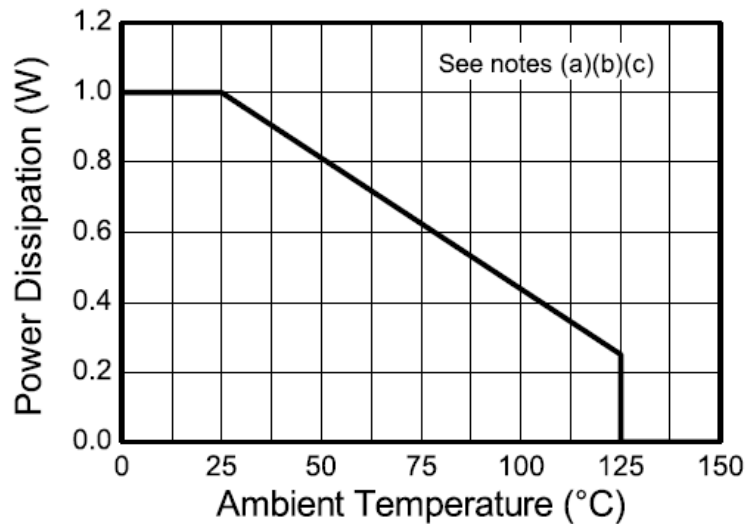
Maximum Ratings @T_A = 25°C unless otherwise specified

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

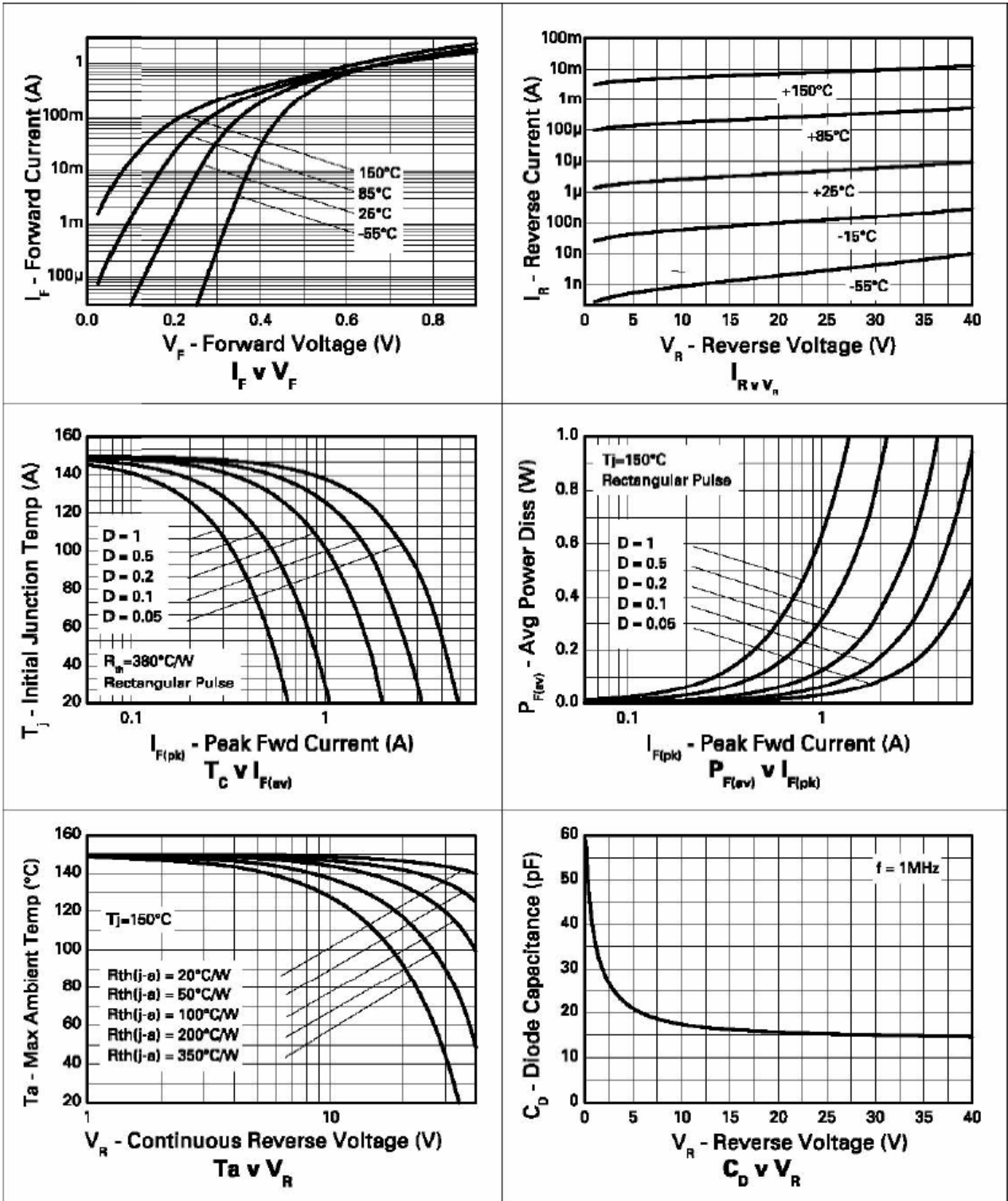


Package Thermal Characteristic

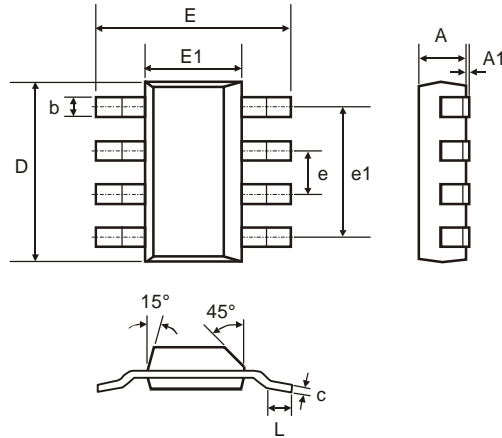
Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

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 $\leq 2\%$.

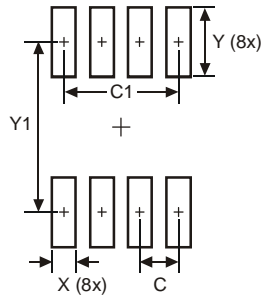


Package Outline Dimensions



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

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