

MBR1100

THERMAL CHARACTERISTICS (See Note 4)

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	See Note 3	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_L = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 1\text{ A}$, $T_L = 25^{\circ}\text{C}$) ($i_F = 1\text{ A}$, $T_L = 100^{\circ}\text{C}$)	V_F	0.79 0.69	V
Maximum Instantaneous Reverse Current @ Rated dc Voltage (Note 2) ($T_L = 25^{\circ}\text{C}$) ($T_L = 100^{\circ}\text{C}$)	i_R	0.5 5.0	mA

2. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

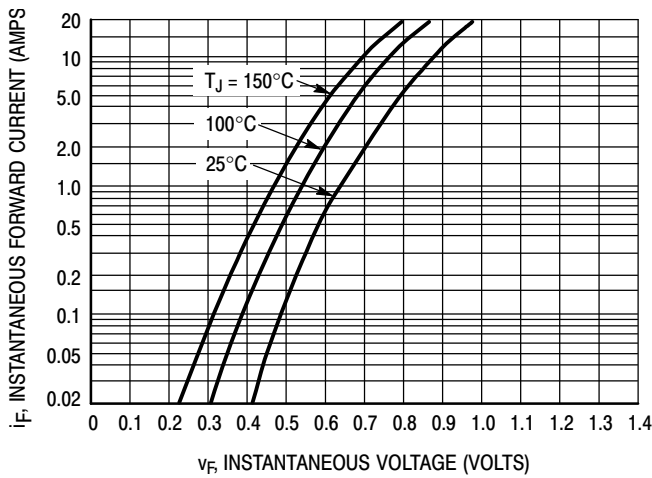


Figure 1. Typical Forward Voltage

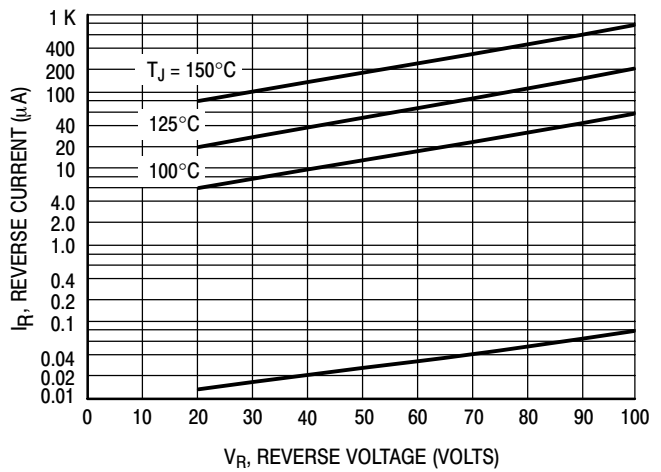


Figure 2. Typical Reverse Current †

† The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if V_R is sufficiently below rated V_R .

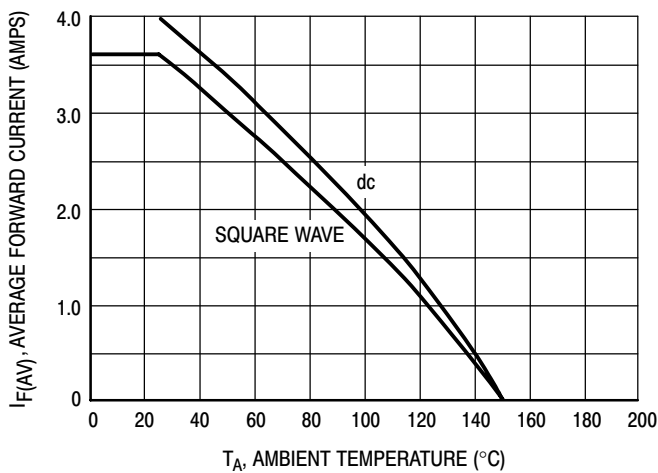


Figure 3. Current Derating
(Mounting Method 3 per Note 3)

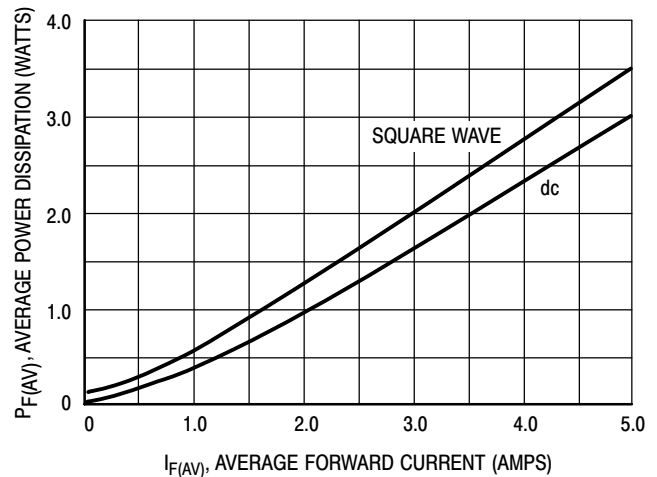


Figure 4. Power Dissipation

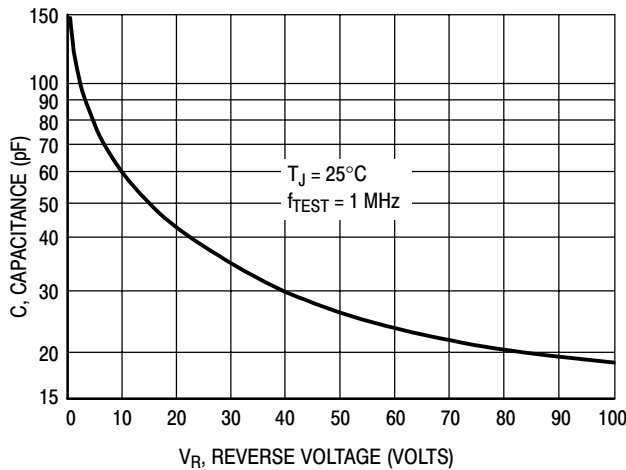


Figure 5. Typical Capacitance

NOTE 3 — MOUNTING DATA:

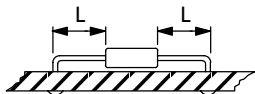
Data shown for thermal resistance junction-to-ambient ($R_{\theta JA}$) for the mounting shown is to be used as a typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

Typical Values for $R_{\theta JA}$ in Still Air

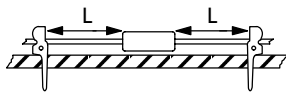
Mounting Method	Lead Length, L (in)				$R_{\theta JA}$
	1/8	1/4	1/2	3/4	
1	52	65	72	85	$^{\circ}\text{C/W}$
2	67	80	87	100	$^{\circ}\text{C/W}$
3	—	50			$^{\circ}\text{C/W}$

Mounting Method 1

P.C. Board with
1-1/2" x 1-1/2"
copper surface.

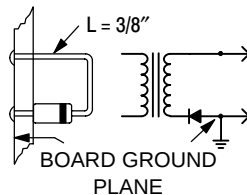


Mounting Method 2



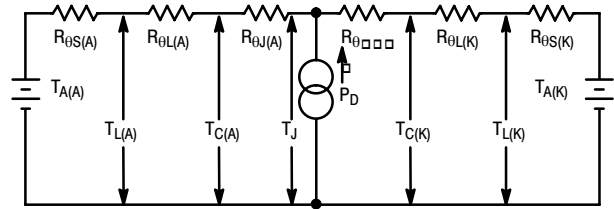
Mounting Method 3

P.C. Board with
1-1/2" x 1-1/2"
copper surface.



NOTE 4 — THERMAL CIRCUIT MODEL:

(For heat conduction through the leads)



Use of the above model permits junction to lead thermal resistance for any mounting configuration to be found. For a given total lead length, lowest values occur when one side of the rectifier is brought as close as possible to the heat sink. Terms in the model signify:

T_A = Ambient Temperature T_C = Case Temperature
 T_L = Lead Temperature T_J = Junction Temperature
 $R_{\theta S}$ = Thermal Resistance, Heat Sink to Ambient
 $R_{\theta L}$ = Thermal Resistance, Lead to Heat Sink
 $R_{\theta J}$ = Thermal Resistance, Junction to Case
 P_D = Power Dissipation

(Subscripts A and K refer to anode and cathode sides, respectively.) Values for thermal resistance components are:
 $R_{\theta L}$ = 100 $^{\circ}\text{C/W/in}$ typically and 120 $^{\circ}\text{C/W/in}$ maximum.
 $R_{\theta J}$ = 36 $^{\circ}\text{C/W}$ typically and 46 $^{\circ}\text{C/W}$ maximum.

NOTE 5 — HIGH FREQUENCY OPERATION:

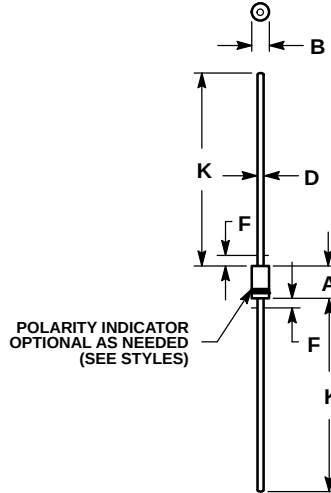
Since current flow in a Schottky rectifier is the result of majority carrier conduction, it is not subject to junction diode forward and reverse recovery transients due to minority carrier injection and stored charge. Satisfactory circuit analysis work may be performed by using a model consisting of an ideal diode in parallel with a variable capacitance. (See Figure 5)

Rectification efficiency measurements show that operation will be satisfactory up to several megahertz. For example, relative waveform rectification efficiency is approximately 70 percent at 2 MHz, e.g., the ratio of dc power to RMS power in the load is 0.28 at this frequency, whereas perfect rectification would yield 0.406 for sine wave inputs. However, in contrast to ordinary junction diodes, the loss in waveform efficiency is not indicative of power loss: it is simply a result of reverse current flow through the diode capacitance, which lowers the dc output voltage.

MBR1100

PACKAGE DIMENSIONS

AXIAL LEAD CASE 59-10 ISSUE U



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.161	0.205	4.10	5.20
B	0.079	0.106	2.00	2.70
D	0.028	0.034	0.71	0.86
F	---	0.050	---	1.27
K	1.000	---	25.40	---

STYLE 1:

- PIN 1. CATHODE (POLARITY BAND)
- ANODE

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