

# MOTOROLA SEMICONDUCTOR TECHNICAL DATA

## MBR030 MBR040

### Advance Information

#### SWITCHMODE RECTIFIERS

... designed for use in switching power supplies, inverters, and as free wheeling diodes, these devices have the following features:

- Low Forward Voltage
- Low Leakage Current
- DO-204AH (DO-35) Glass Package

#### SCHOTTKY RECTIFIERS

0.5 AMPERE  
30-40 VOLTS



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#### MAXIMUM RATINGS

Rating	Symbol	MBR030	MBR040	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	30	40	Volts
Average Rectified Forward Current (Rated $I_F$ ) $T_L = 90^\circ\text{C}$ , $L = 3/8"$ $T_A = 60^\circ\text{C}$ , $L = 3/8"$ , (Mt. Method #1)	$I_F(AV)$	$\longleftrightarrow 0.5 \longleftrightarrow$ $\longleftrightarrow 0.5 \longleftrightarrow$		Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	$\longleftrightarrow 15.0 \longleftrightarrow$		Amps
Operating Junction and Storage Temperature	$T_J, T_{stg}$	- 65 to + 150		

#### THERMAL CHARACTERISTICS

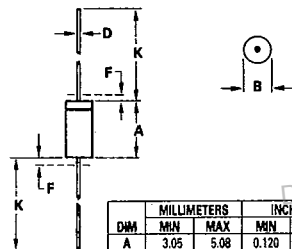
Characteristic	Symbol	Typ	Max	Unit
Thermal Resistance, Junction to Lead = $3/8"$	$R_{\theta JL}$	180	190	$^\circ\text{C}/\text{W}$

#### ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (1) ( $I_F = 0.1\text{ A}$ , $T_J = 25^\circ\text{C}$ ) ( $I_F = 0.5\text{ A}$ , $T_J = 25^\circ\text{C}$ )	$V_F$	0.460 0.610	0.500 0.750	Volts
Reverse Current (Rated dc Voltage, $T_J = 150^\circ\text{C}$ ) (Rated dc Voltage, $T_J = 25^\circ\text{C}$ )	$I_R$	0.6 0.003	1.0 0.001	mA

(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

This document contains information on a new product. Specifications and information herein are subject to change without notice.



All JEDEC dimensions and notes apply.

#### NOTES:

1. PACKAGE CONTOUR OPTIONAL WITHIN A AND B. HEAT SLUGS, IF ANY, SHALL BE INCLUDED WITHIN THIS CYLINDER, BUT NOT SUBJECT TO THE MINIMUM LIMIT OF B.
2. LEAD DIAMETER NOT CONTROLLED IN ZONE F TO ALLOW FOR FLASH, LEAD FINISH BUILDUP AND MINOR IRREGULARITIES OTHER THAN HEAT SLUGS.
3. POLARITY DENOTED BY CATHODE BAND.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5, 1973.

#### MECHANICAL CHARACTERISTICS

**CASE:** Glass

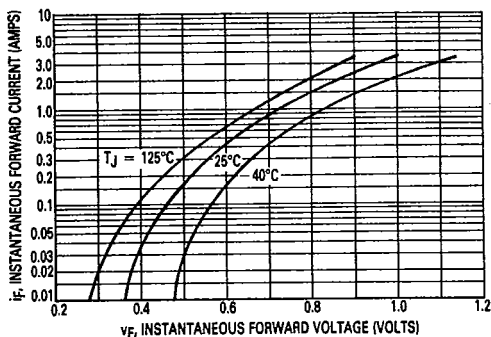
**FINISH:** External leads are plated and are readily solderable

**POLARITY:** Cathode indicated by polarity band.

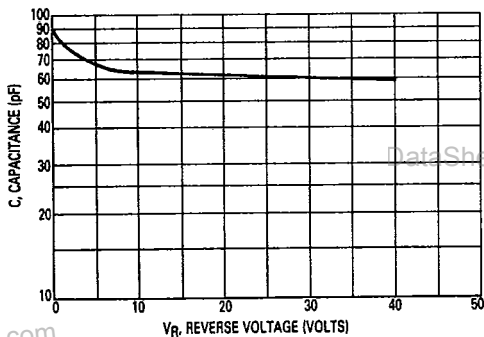
**WEIGHT:** 0.2 Gram (approximately).

**MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES:** 230 $^\circ\text{C}$ ,  $1/8"$  from case for 10 seconds.

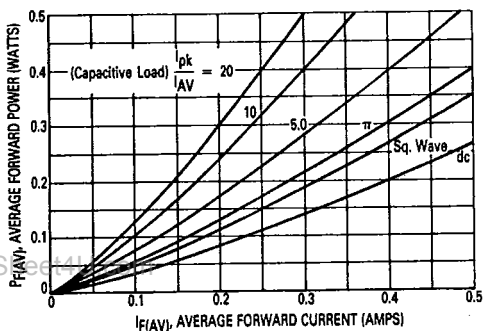
**FIGURE 1 — TYPICAL FORWARD VOLTAGE**



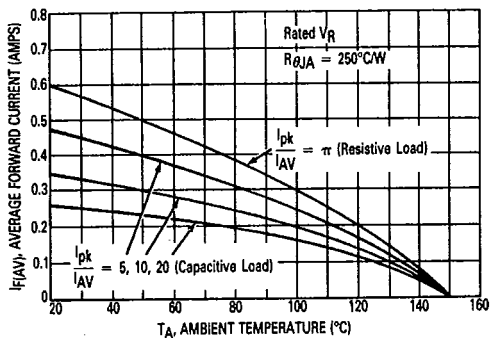
**FIGURE 3 — TYPICAL CAPACITANCE**



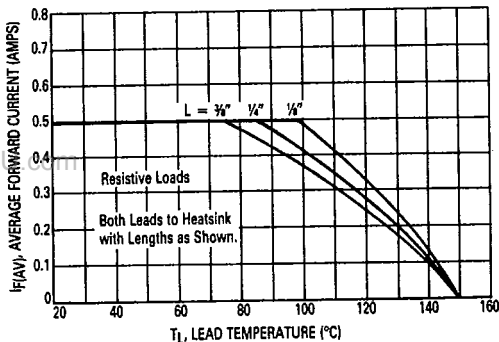
**FIGURE 5 — FORWARD POWER DISSIPATION**



**FIGURE 2 — CURRENT DERATING, PRINTED CIRCUIT BOARD MOUNTING**



**FIGURE 4 — CURRENT DERATING, LEAD TEMPERATURE**



**NOTE 1**

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

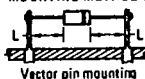
**TYPICAL VALUES FOR  $\theta_{JA}$  IN STILL AIR**

MOUNTING METHOD	1/8"	1/4"	3/8"	$\theta_{JA}$
1	200	325	250	$^\circ\text{C/W}$
2	210	235	260	$^\circ\text{C/W}$
3		150		$^\circ\text{C/W}$

**MOUNTING METHOD 1**



**MOUNTING METHOD 2**



**MOUNTING METHOD 3**

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

$L = 3/8"$

