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MBR1035, MBR1045

SWITCHMODE™ Power Rectifiers

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 10 A Total
- Pb−Free Packages are Available*

Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets UL 94, V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperatures for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B
  Machine Model C

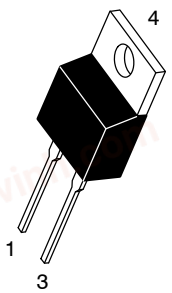
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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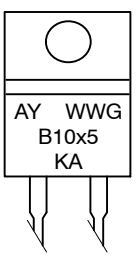
SCHOTTKY BARRIER RECTIFIERS 10 AMPERES 35 to 45 VOLTS





TO−220AC CASE 221B PLASTIC

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package
B10x5	= Device Code
x	= 3 or 4
KA	= Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
MBR1035	TO−220	50 Units/Rail
MBR1035G	TO−220 (Pb−Free)	50 Units/Rail
MBR1045	TO−220	50 Units/Rail
MBR1045G	TO−220 (Pb−Free)	50 Units/Rail

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage MBR1035 MBR1045	V_{RRM} V_{RWM} V_R	 35 45	V
Average Rectified Forward Current (T_C = 135°C, Per Device)	$I_{F(AV)}$	10	A
Peak Repetitive Forward Current, (Square Wave, 20 kHz, T_C = 135°C)	I_{FRM}	10	A
Non−Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	I_{FSM}	150	A
Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz)	I_{RRM}	1.0	A
Storage Temperature Range	T_{stg}	−65 to +175	°C
Operating Junction Temperature (Note 1)	T_J	−65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/μs

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

THERMAL CHARACTERISTICS

Characteristic	Conditions	Symbol	Max	Unit
Maximum Thermal Resistance, Junction−to−Case	Min. Pad	$R_{\theta JC}$	2.0	°C/W
Maximum Thermal Resistance, Junction−to−Ambient	Min. Pad	$R_{\theta JA}$	60	

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typical	Max	Unit
Instantaneous Forward Voltage (Note 2) (i_F = 10 Amps, T_j = 125°C) (i_F = 20 Amps, Tj = 125°C) (i_F = 20 Amps, Tj = 25°C)	v_F	 − − −	 0.55 0.67 0.78	 0.57 0.72 0.84	V
Instantaneous Reverse Current (Note 2) (Rated dc Voltage, Tj = 125°C) (Rated dc Voltage, Tj = 25°C)	i_R	 − −	 5.3 0.008	 15 0.1	mA

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

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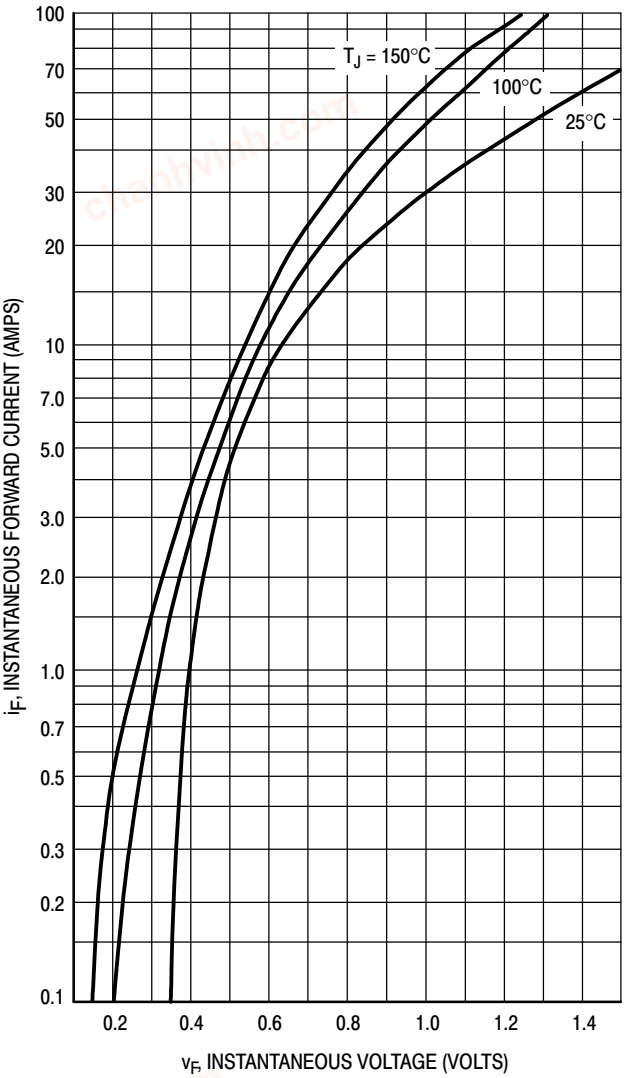


Figure 1. Maximum Forward Voltage

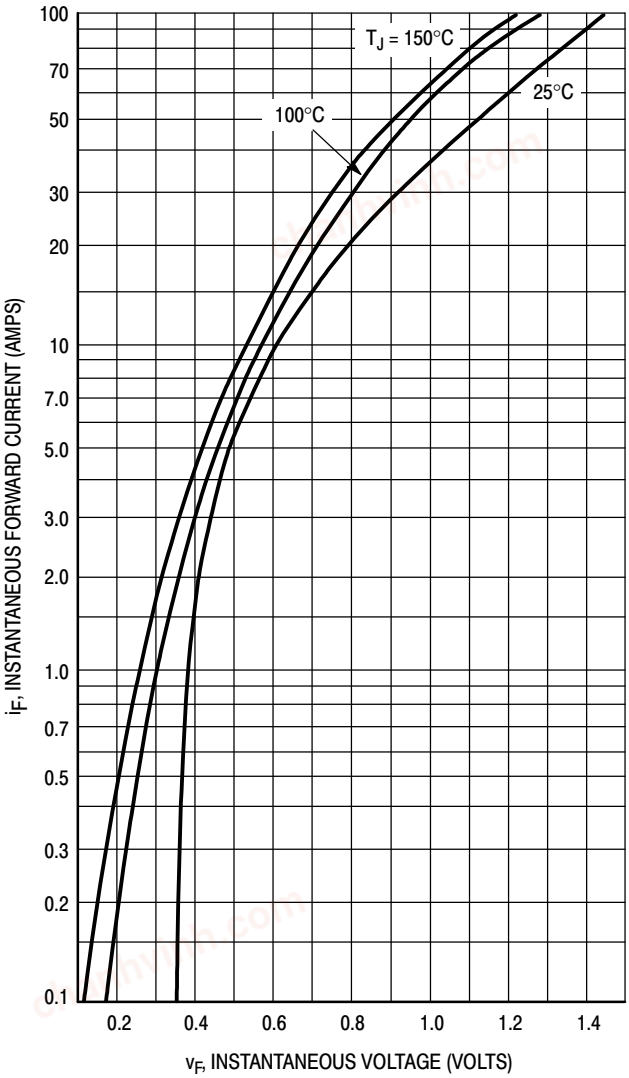


Figure 2. Typical Forward Voltage

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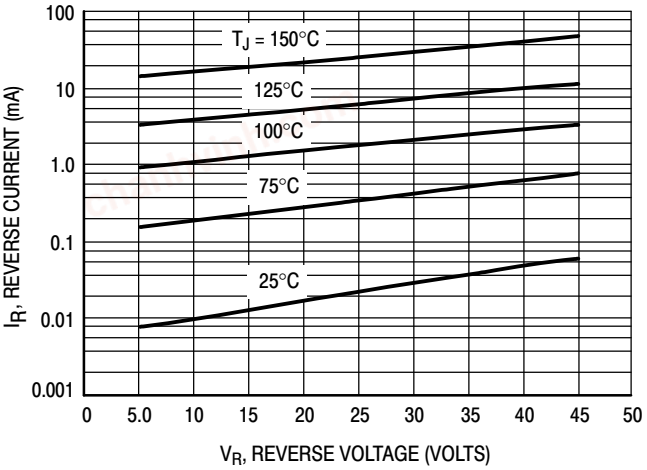


Figure 3. Maximum Reverse Current

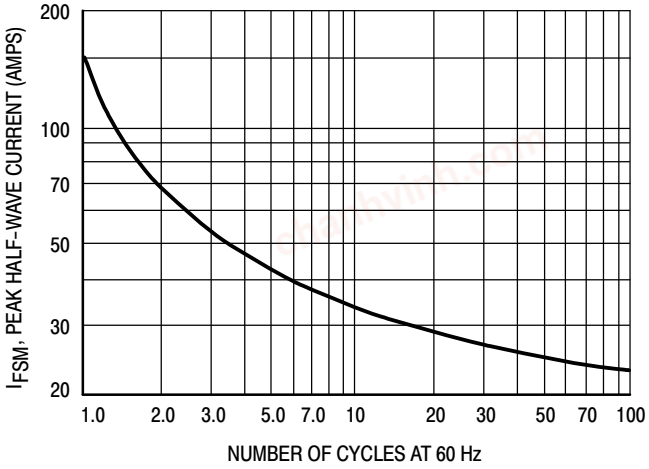


Figure 4. Maximum Surge Capability

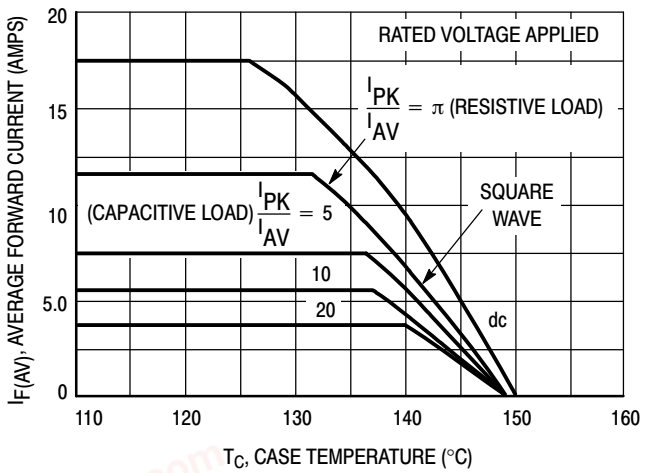


Figure 5. Current Derating, Infinite Heatsink

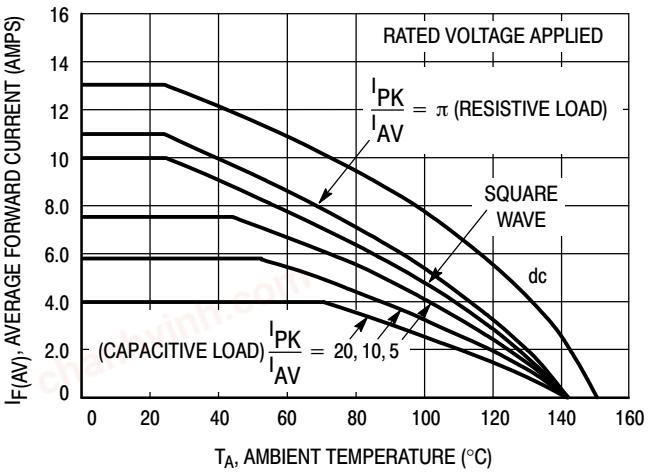


Figure 6. Current Derating, $R_{\theta JA}$ = 16°C/W

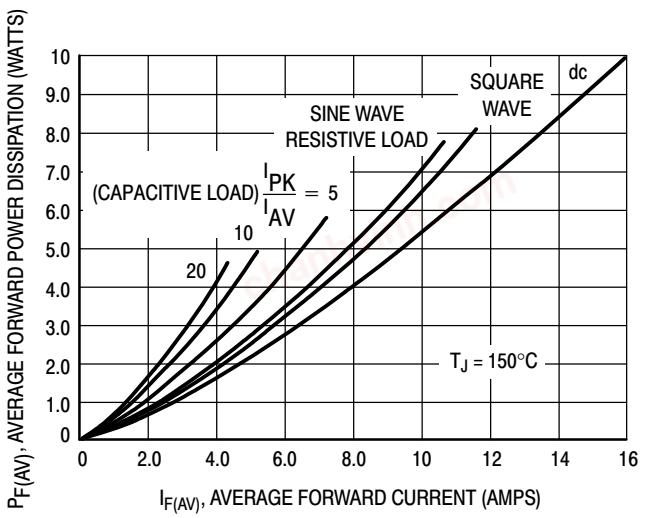


Figure 7. Forward Power Dissipation

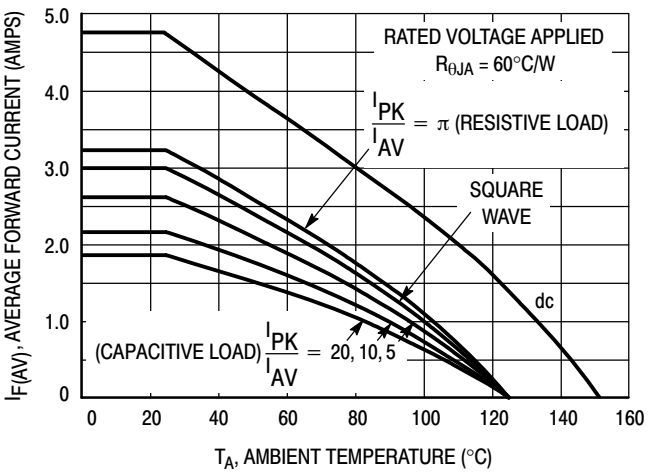


Figure 8. Current Derating, Free Air

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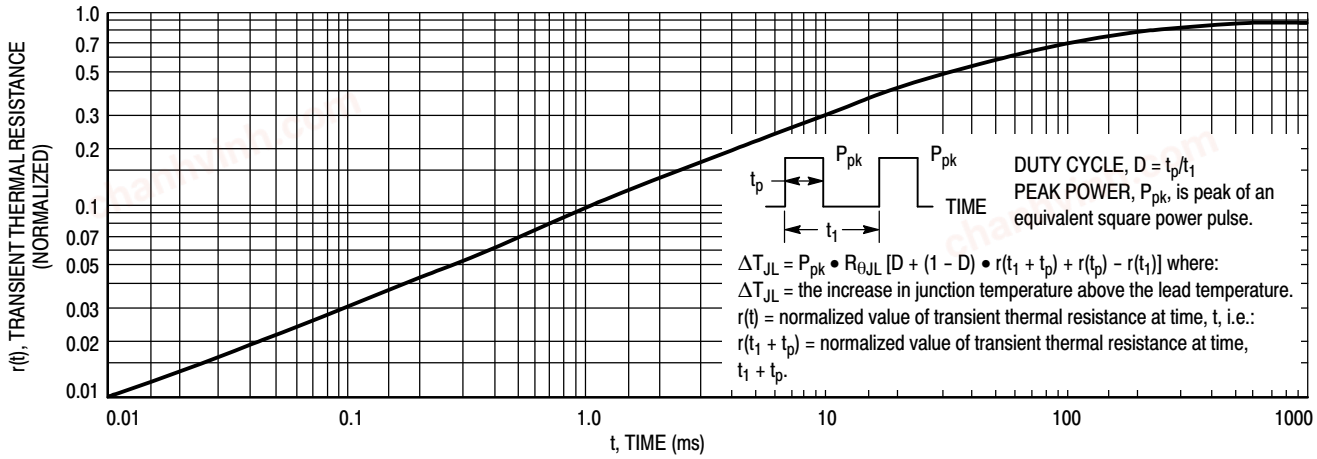


Figure 9. Thermal Response

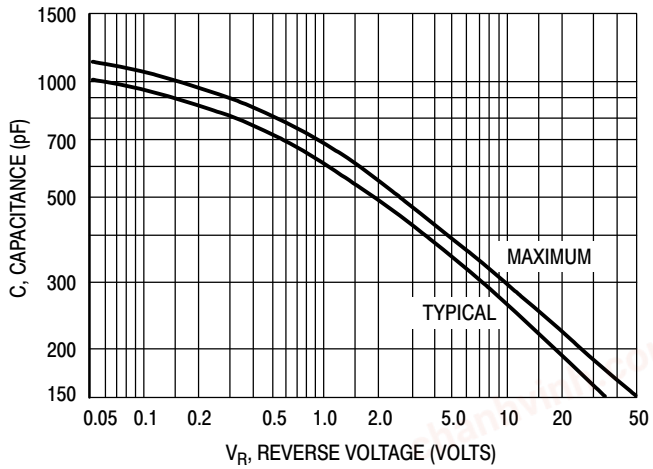


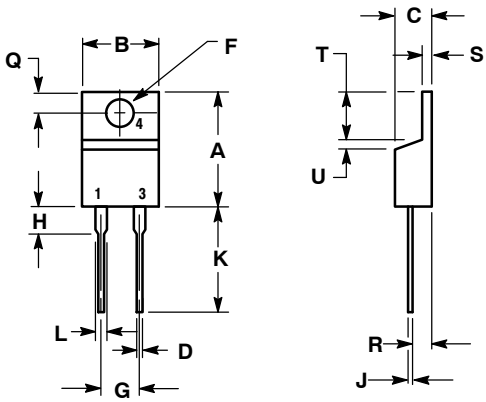
Figure 10. Capacitance

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MBR1035, MBR1045

PACKAGE DIMENSIONS

TO−220
CASE 221B−04
ISSUE E



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.595	0.620	15.11	15.75
B	0.380	0.405	9.65	10.29
C	0.160	0.190	4.06	4.82
D	0.025	0.035	0.64	0.89
F	0.142	0.161	3.61	4.09
G	0.190	0.210	4.83	5.33
H	0.110	0.130	2.79	3.30
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.14	1.52
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.14	1.39
T	0.235	0.255	5.97	6.48
U	0.000	0.050	0.000	1.27

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