

MBR40250

Product Preview

250 V, 40 A SWITCHMODE™ Schottky Power Rectifier

Features

- 250 V Blocking Voltage
- Low Forward Voltage Drop, $V_F = 0.8$ V
- Soft Recovery Characteristic, $T_{RR} < 35$ ns
- Low Reverse Current, $I_R = 50$ μ A
- Stable at Temperature

Benefits

- Eliminates Reverse Recovery Oscillations
- Minimizes Need for EMI Filtering
- Reduces Switching Losses
- Improved Efficiency

Applications

- Power Supply
- Power Management
- Automotive
- Instrumentation

Mechanical Characteristics

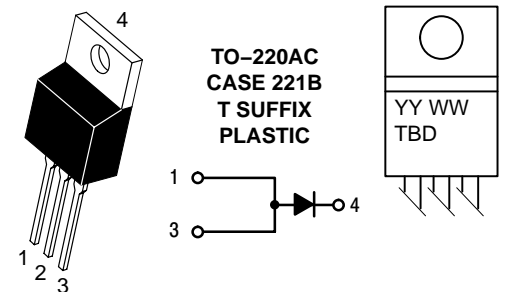
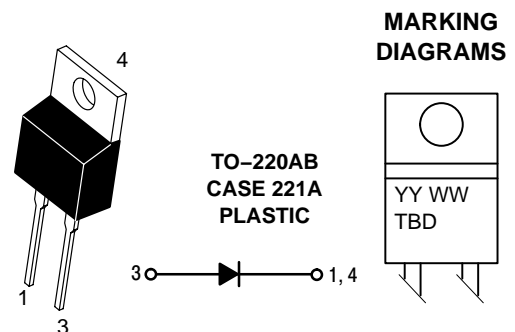
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:
260°C Max. for 10 Seconds
- Epoxy Meets UL 94 V-0 at 0.125 in



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SCHOTTKY RECTIFIER 40 AMPERES 250 VOLTS



TBD = Device Code
YY = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
MBR40250	TO-220AB	50 Units/Rail
MBR40250T	TO-220AC	50 Units/Rail

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	250	V
Average Rectified Forward Current (Rated V_R) $T_C = 125^\circ\text{C}$	$I_{F(AV)}$	45	A
Peak Repetitive Forward Current (Rated V_R , Square Wave, 20 kHz $T_C = 90^\circ\text{C}$)	I_{FRM}	80	A
Storage Temperature	T_{stg}	-65 to +175	$^\circ\text{C}$
Operating Junction Temperature	T_J	-65 to +150	$^\circ\text{C}$
Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/ μs

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Thermal Resistance Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	2.0 60	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Maximum Instantaneous Forward Voltage (Note 1) $I_F = 40\text{ A}, T_C = 25^\circ\text{C}$ $I_F = 40\text{ A}, T_C = 150^\circ\text{C}$	V_F	1.0 0.9	V
Maximum Instantaneous Reverse Current (Note 1) Rated DC Voltage, $T_C = 25^\circ\text{C}$ Rated DC Voltage, $T_C = 150^\circ\text{C}$	I_R	1.0 50	mA

DYNAMIC CHARACTERISTICS

Capacitance $V_F = -5.0\text{ V}, T_C = 25^\circ\text{C}, \text{Frequency} = 1.0\text{ MHz}$	C_T	500	pF
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1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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TYPICAL CHARACTERISTICS

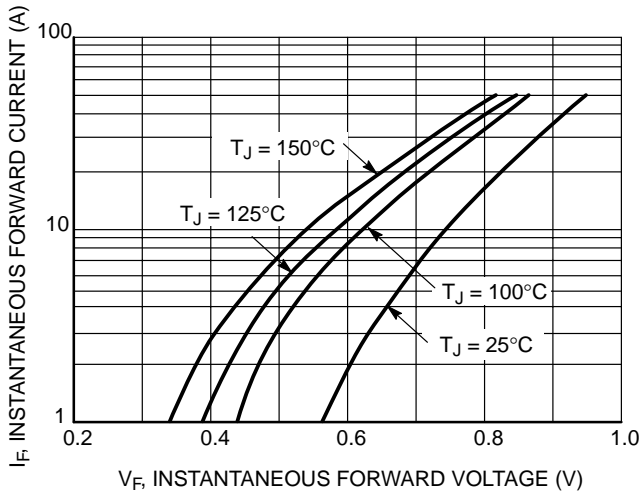


Figure 1. Typical Forward Voltage

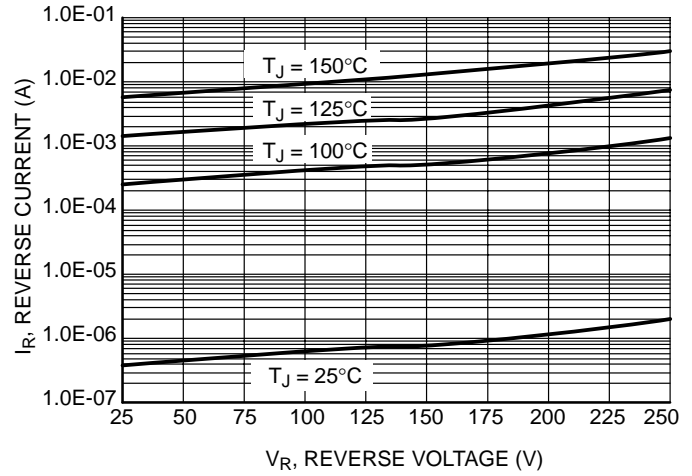


Figure 2. Typical Reverse Current

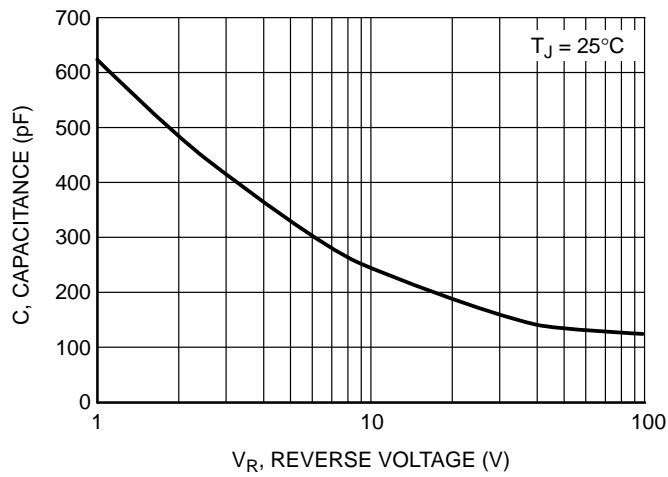
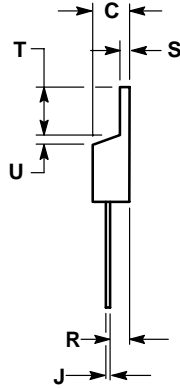
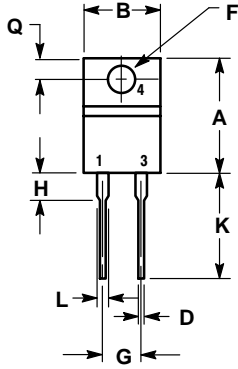


Figure 3. Typical Capacitance

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PACKAGE DIMENSIONS

TO-220AC
CASE 221B-04
ISSUE D



NOTES:

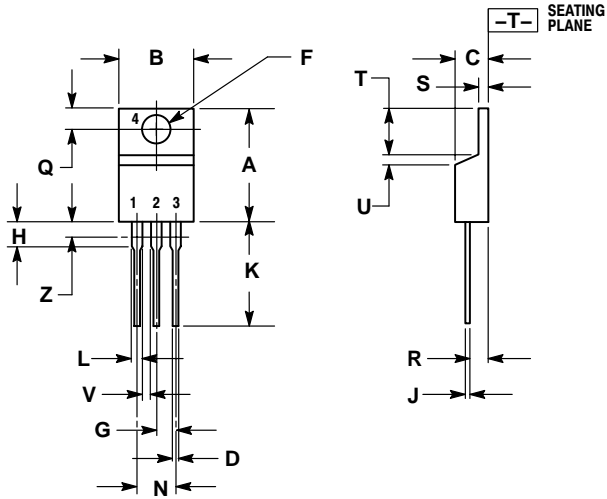
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	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	0.147	3.61	3.73
G	0.190	0.210	4.83	5.33
H	0.110	0.130	2.79	3.30
J	0.018	0.025	0.46	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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PACKAGE DIMENSIONS

TO-220AB
CASE 221A-09
ISSUE AA



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

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