SWITCHMODE TM **Power Rectifier**

Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 16 A Total (8 A Per Diode Leg)
- Pb-Free Packages are Available*

Applications

- Power Supply Output Rectification
- Power Management
- Instrumentation

Mechanical Characteristics

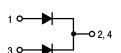
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Human Body Model 3B • ESD Rating: Machine Model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



ON Semiconductor®

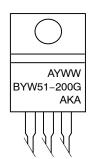
http://onsemi.com

ULTRAFAST RECTIFIER 16 AMPERES, 200 VOLTS $t_{rr} = 35 \text{ ns}$





MARKING DIAGRAM



= Assembly Location

TO-220AB

PLASTIC

= Year ww = Work Week BYW51-200 = Device Code = Pb-Free Package **AKA** = Diode Polarity

ORDERING INFORMATION

Device	Package	Shipping
BYW51-200	TO-220	50 Units/Rail
BYW51-200G	TO-220 (Pb-Free)	50 Units/Rail

1

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

MAXIMUM RATINGS

Rating	Symbol	Value	Unit	
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _R	200	V	
Average Rectified Forward Current T _C = 156°C Per Leg Total Device	I _{F(AV)}	8.0 16	A	
Peak Rectified Forward Current (Square Wave, 20 kHz), T _C = 153°C – Per Diode Leg	I _{FM}	16	А	
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I _{FSM}	100	А	
Operating Junction Temperature and Storage Temperature	T _J , T _{stg}	-65 to +175	°C	

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.

THERMAL CHARACTERISTICS

Characteristic		Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-Case	Min. Pad	$R_{\theta JC}$	3.0	°C/W
Maximum Thermal Resistance, Junction-to-Ambient	Min. Pad	$R_{\theta JA}$	60.0	

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Min	Typical	Max	Unit
Instantaneous Forward Voltage (Note 1) (iF = 8.0 A, T_j = 100°C) (iF = 8.0 A, T_j = 25°C)	VF		0.8 0.89	0.89 0.97	V
Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_j = 100°C) (Rated dc Voltage, T_j = 25°C)	İR	- -	21 3.8	1000 10	μΑ
Maximum Reverse Recovery Time $(I_F = 1.0 \text{ A}, \text{ di/dt} = 50 \text{ A/s})$ $(I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{REC} = 0.25 \text{ A})$	t _{rr}	-	-	35 25	ns

^{1.} Pulse Test: Pulse Width = 300 s, Duty Cycle ≤ 2.0%

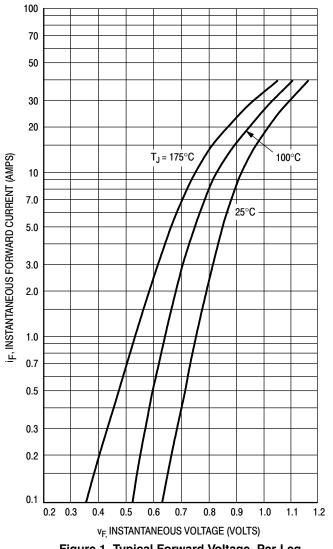


Figure 1. Typical Forward Voltage, Per Leg

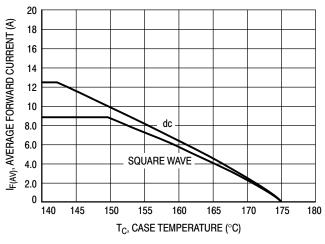


Figure 4. Current Derating, Case, Per Leg

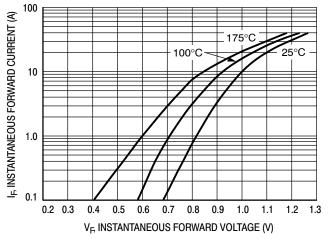


Figure 2. Maximum Forward Voltage

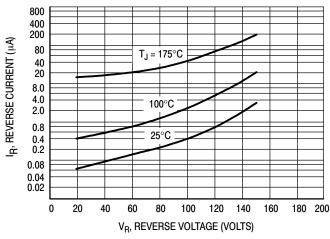


Figure 3. Typical Reverse Current, Per Leg*

^{*} 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 .

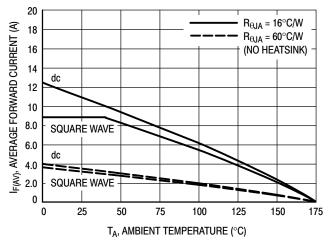


Figure 5. Current Derating, Ambient, Per Leg

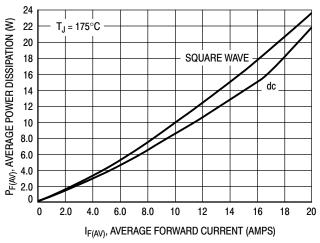


Figure 6. Power Dissipation, Per Leg

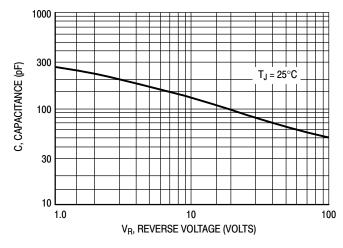
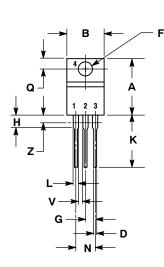
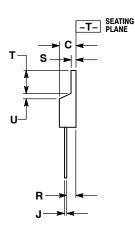


Figure 7. Typical Capacitance, Per Leg

PACKAGE DIMENSIONS

TO-220 CASE 221A-09 **ISSUE AF**





- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- 114.3M, 1982.
 CONTROLLING DIMENSION: INCH.
 DIMENSION Z DEFINES A ZONE WHERE ALL
 BODY AND LEAD IRREGULARITIES ARE
 ALLOWED.

	INCHES		MILLIN	IETERS
DIM	MIN	MAX	MIN	MAX
Α	0.570	0.620	14.48	15.75
В	0.380	0.405	9.66	10.28
С	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
Н	0.110	0.155	2.80	3.93
J	0.014	0.025	0.36	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
٧	0.045		1.15	
Z		0.080		2.04

STYLE 6:

ANODE PIN 1.

- 2. CATHODE
- 3.
- ANODE CATHODE

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