



# BYW81G-200 BYW81P-200 / BYW81PI-200

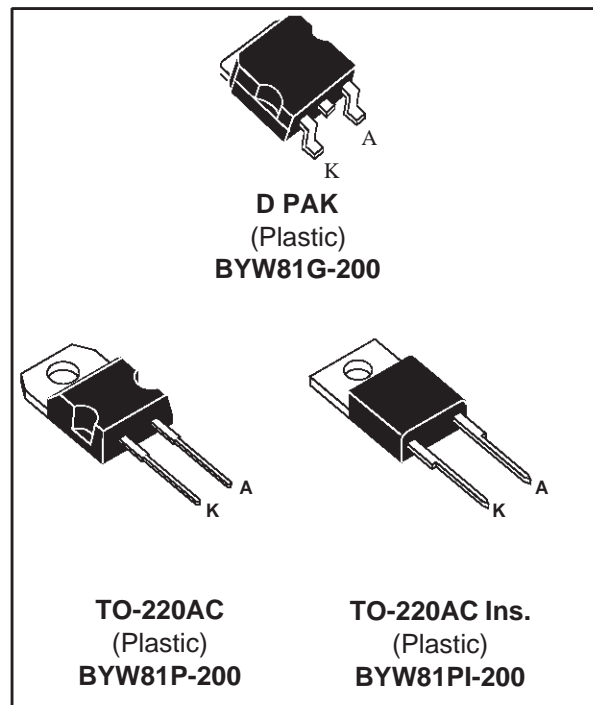
## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION :  
Insulating voltage = 2500 V<sub>RMS</sub>  
Capacitance = 7 pF

### DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO-220AC and D PAK, this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit	
I <sub>F(RMS)</sub>	RMS forward current		35	A	
I <sub>F(AV)</sub>	Average forward current δ = 0.5	BYW81P	T <sub>c</sub> =115°C	15	A
		BYW81PI/G	T <sub>c</sub> =90°C	15	
I <sub>FSM</sub>	Surge non repetitive forward current	tp=10ms sinusoidal	200	A	
T <sub>stg</sub> T <sub>j</sub>	Storage and junction temperature range		- 40 to + 150 - 40 to + 150	°C °C	

Symbol	Parameter	Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage	200	V

**BYW81P-200 / BYW81PI-200 / BYW81G-200****THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	BYW81P	2.0	°C/W
		BYW81PI / G	3.5	

**ELECTRICAL CHARACTERISTICS  
STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			20	μA
	T <sub>j</sub> = 100°C				1.5	mA
V <sub>F</sub> **	T <sub>j</sub> = 125°C	I <sub>F</sub> = 12 A			0.85	V
	T <sub>j</sub> = 125°C	I <sub>F</sub> = 25 A			1.05	
	T <sub>j</sub> = 25°C	I <sub>F</sub> = 25 A			1.15	

Pulse test :

\* tp = 5 ms, duty cycle &lt; 2 %

\*\* tp = 380 μs, duty cycle &lt; 2 %

**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
trr	T <sub>j</sub> = 25°C	I <sub>F</sub> = 0.5A I <sub>R</sub> = 1A	I <sub>rr</sub> = 0.25A			25	ns
		I <sub>F</sub> = 1A V <sub>R</sub> = 30V	dI <sub>F</sub> /dt = -50A/μs			40	
tfr	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A V <sub>FR</sub> = 1.1 x V <sub>F</sub>	tr = 10 ns		15		ns
V <sub>FP</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	tr = 10 ns		2		V

Fig. 1: Average forward power dissipation versus average forward current.

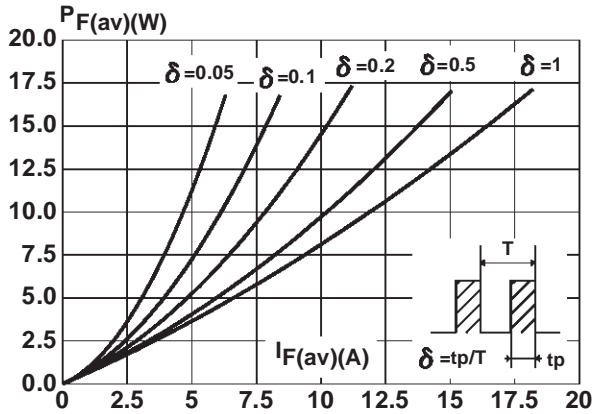


Fig. 2: Peak current versus form factor.



Fig. 3: Forward voltage drop versus forward current (maximum values).

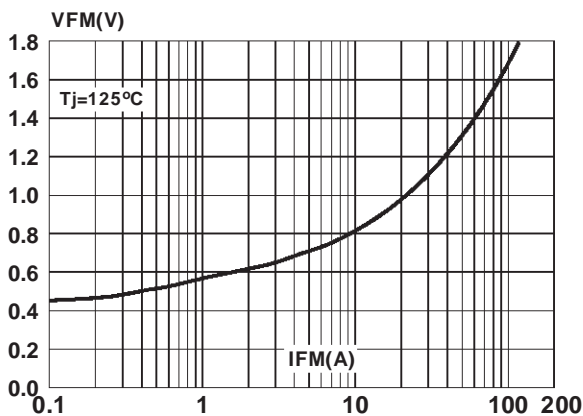


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

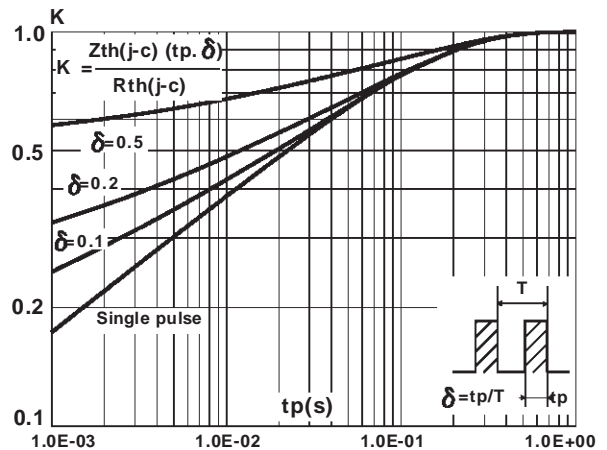


Fig. 5: Non repetitive surge peak forward current versus overload duration. (BYW81P)

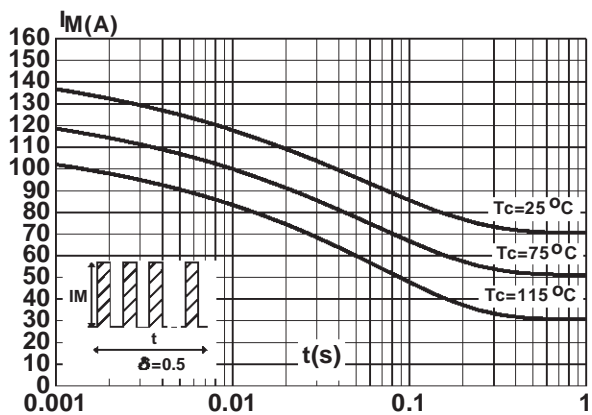
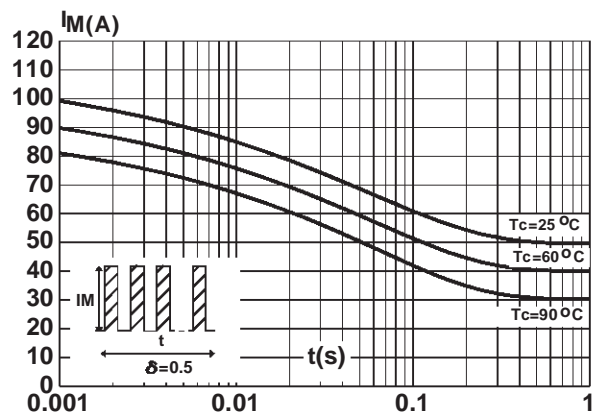
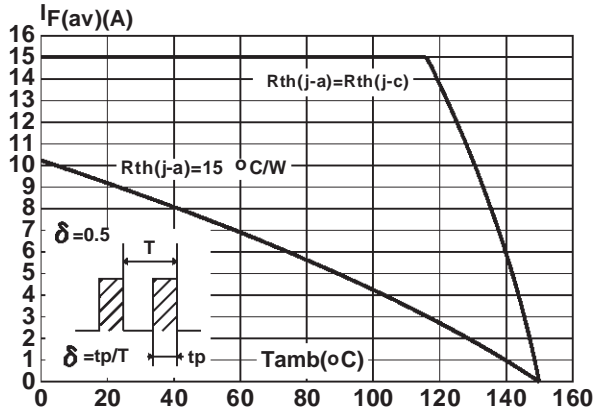


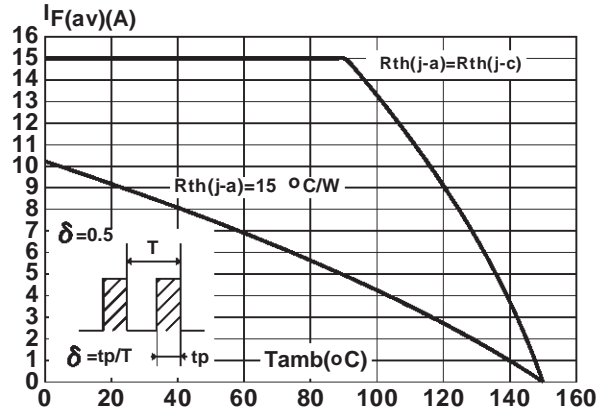
Fig. 6: Non repetitive surge peak forward current versus overload duration. (BYW81PI / BYW81G)



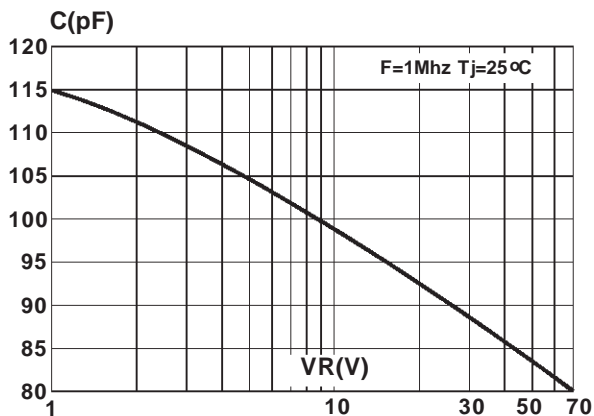
**Fig. 7:** Average current versus ambient temperature.  
(duty cycle : 0.5) (BYW81P)



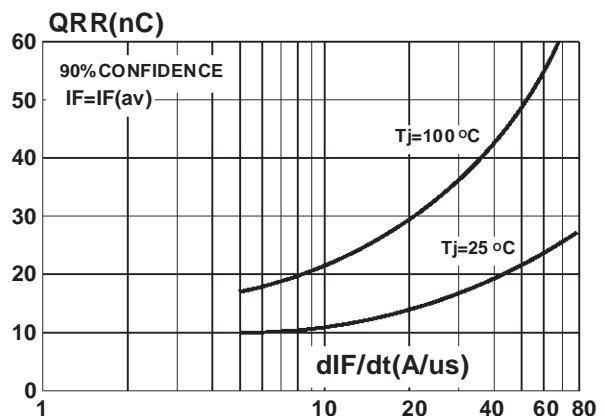
**Fig. 8:** Average current versus ambient temperature.  
(duty cycle : 0.5) (BYW81PI / BYW81G)



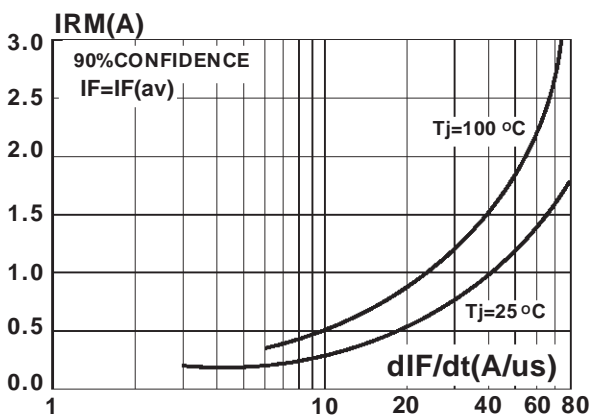
**Fig. 9:** Junction capacitance versus reverse voltage applied (Typical values).



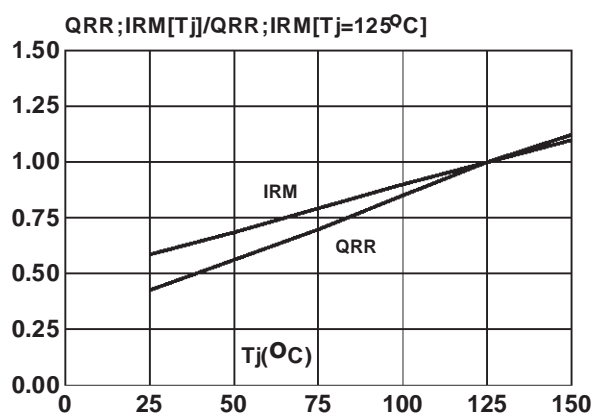
**Fig. 10:** Recovery charges versus  $dI_F/dt$ .



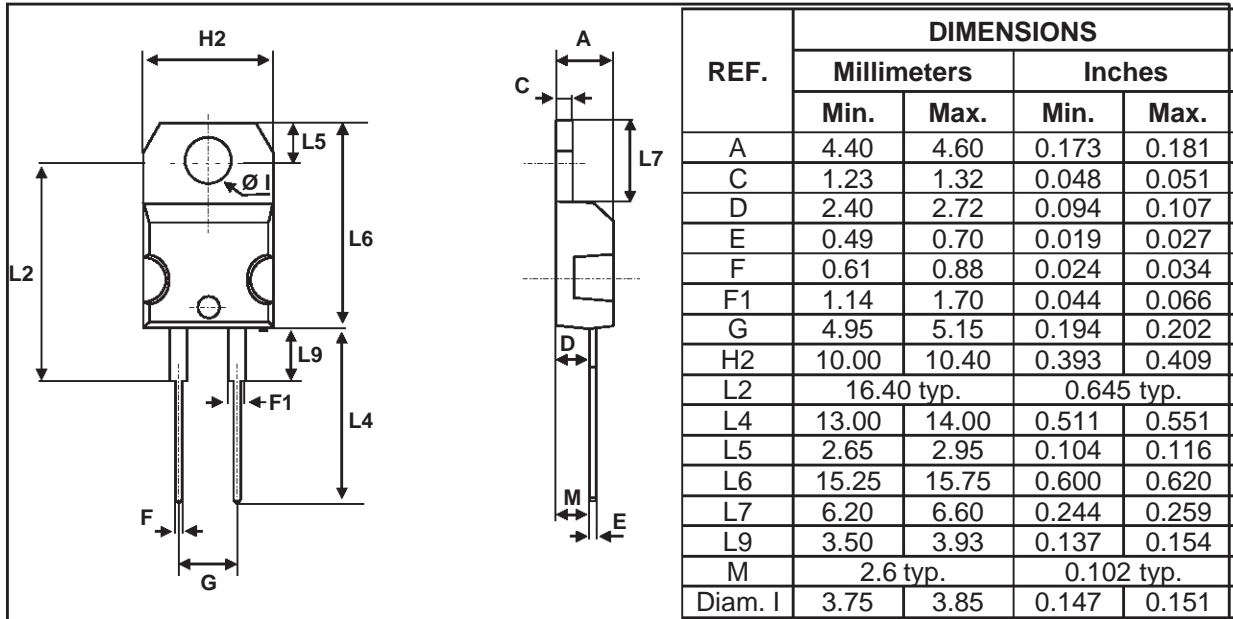
**Fig. 11:** Peak reverse current versus  $dI_F/dt$ .



**Fig. 12:** Dynamic parameters versus junction temperature.

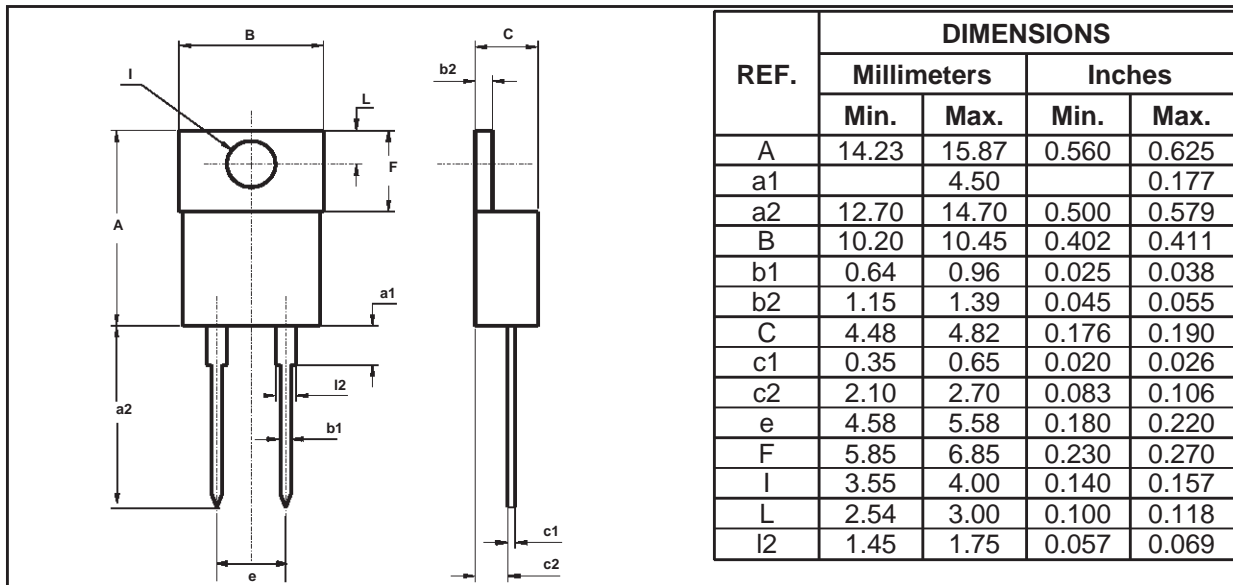


**PACKAGE MECHANICAL DATA**  
TO-220AC (JEDEC outline)



- **Marking** : Type number
- Cooling method : C
- Weight : 1.9 g
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N

**PACKAGE MECHANICAL DATA**  
TO-220AC (isolated)



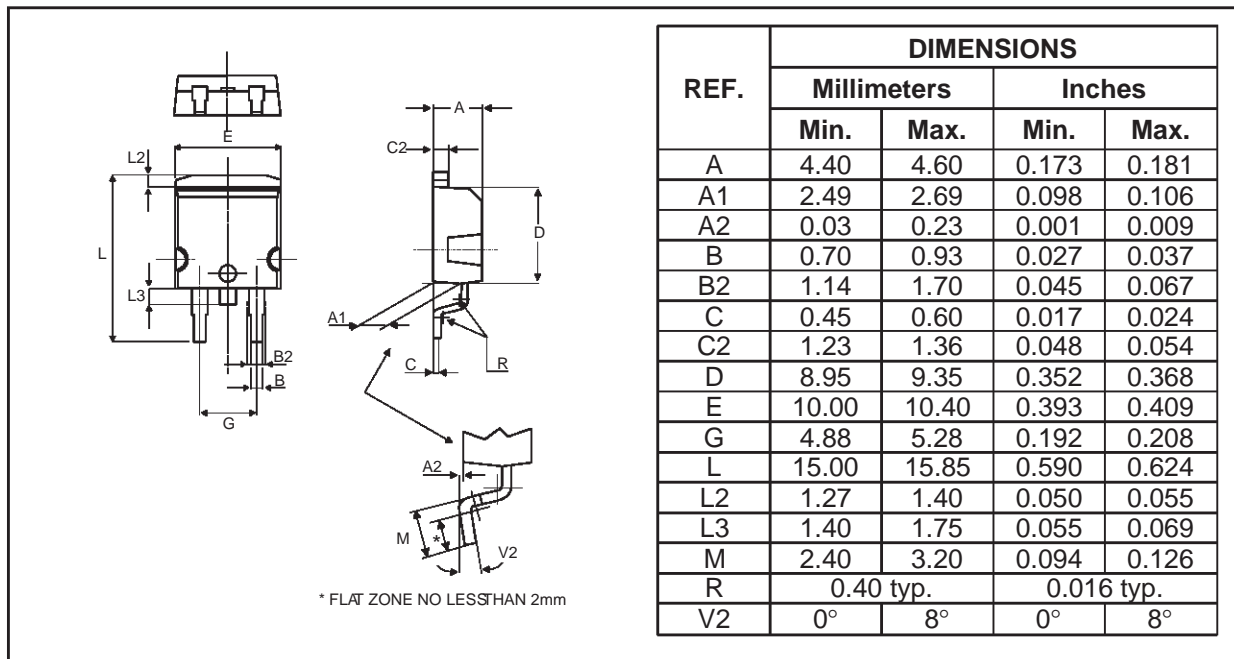
- **Marking** : Type number
- Cooling method : C
- Weight : 2.2 g
- Recommended torque value : 0.8m.N
- Maximum torque value : 1.0m.N



**BYW81P-200 / BYW81PI-200 / BYW81G-200**

**PACKAGE MECHANICAL DATA**

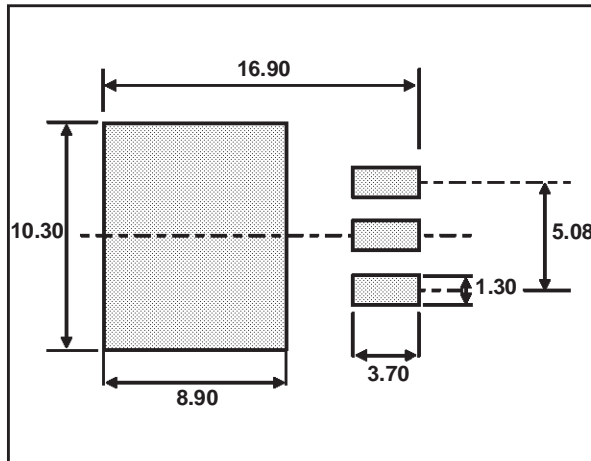
D PAK (Plastic)



- Cooling method: by conduction (method C)

**FOOT PRINT DIMENSIONS (in millimeters)**

D PAK



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