



BYW81P-200 BYW81PI-200

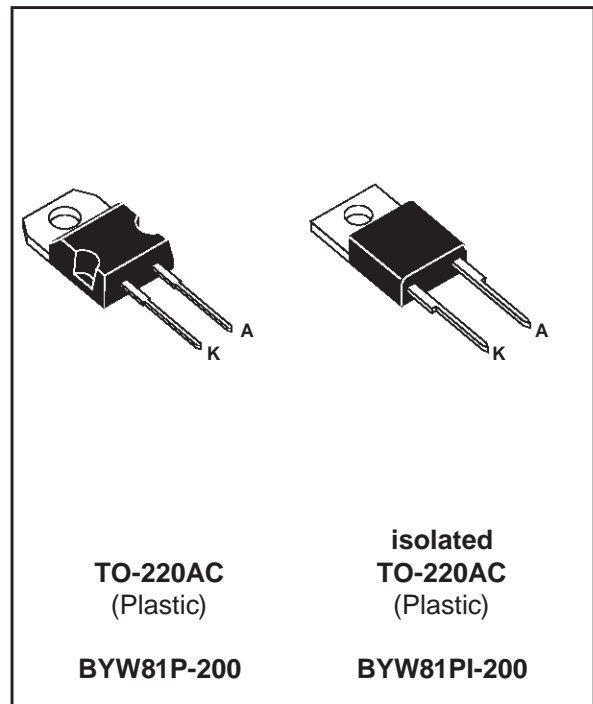
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

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_{RMS}
Capacitance = 7 pF

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO-220AC 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 _{F(RMS)}	RMS forward current		35	A	
I _{F(AV)}	Average forward current $\delta = 0.5$	BYW81P	T _c =115°C	15	A
		BYW81PI	T _c =90°C	15	
I _{FSM}	Surge non repetitive forward current		tp=10ms sinusoidal	200	A
T _{stg} T _j	Storage and junction temperature range		- 40 to + 150 - 40 to + 150	°C °C	

Symbol	Parameter	Value	Unit
V _{RRM}	Repetitive peak reverse voltage	200	V

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THERMAL RESISTANCE

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

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _R RM			20	μA
	T _j = 100°C				1.5	mA
V _F **	T _j = 125°C	I _F = 12 A			0.85	V
	T _j = 125°C	I _F = 25 A			1.05	
	T _j = 25°C	I _F = 25 A			1.15	

Pulse test : * tp = 5 ms, duty cycle < 2 %

** tp = 380 μs, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.016 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _R = 1A			25	ns
		I _F = 1A V _R = 30V			40	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F		15		ns
V _{FP}	T _j = 25°C	I _F = 1A		2		V

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

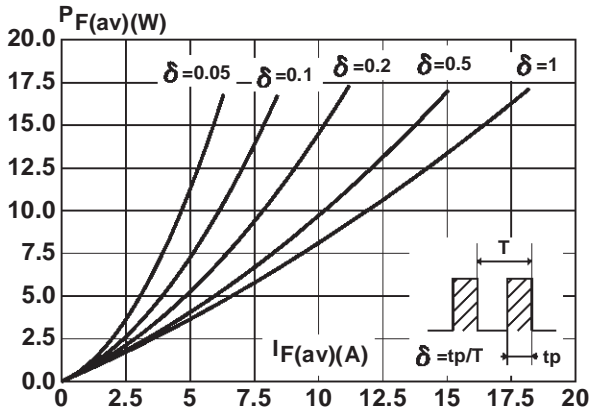


Fig.2 : Peak current versus form factor.

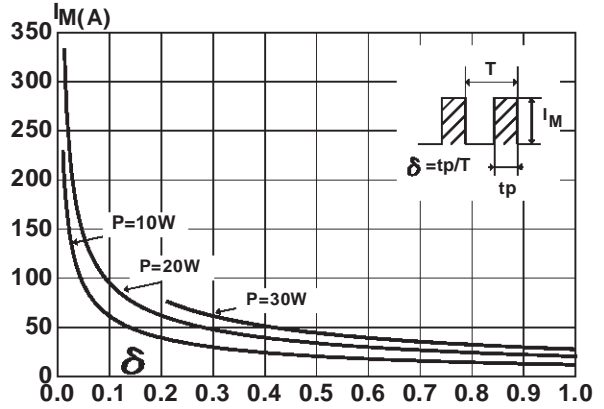


Fig.3 : Forward voltage drop versus forward current (maximum values).

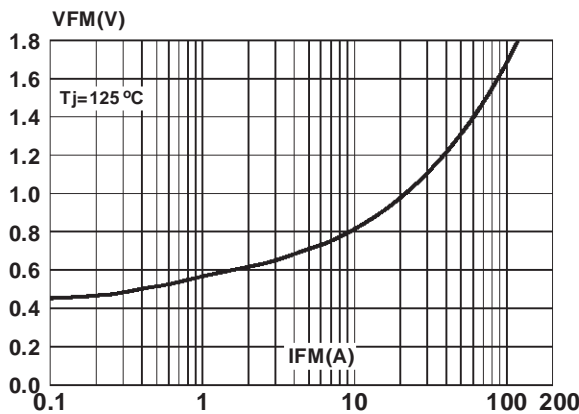


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

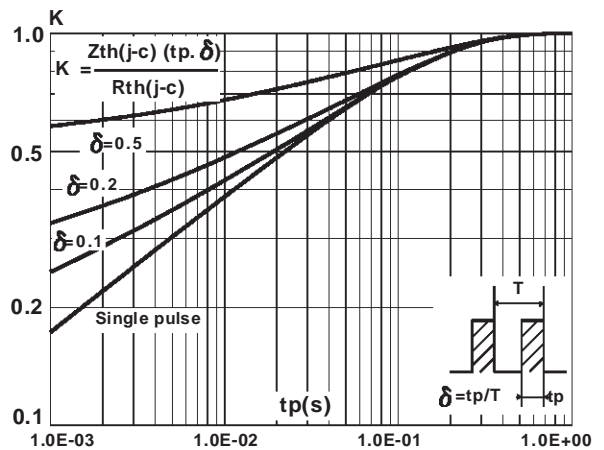


Fig.5 : Non repetitive surge peak forward current versus overload duration. (BYW81P)

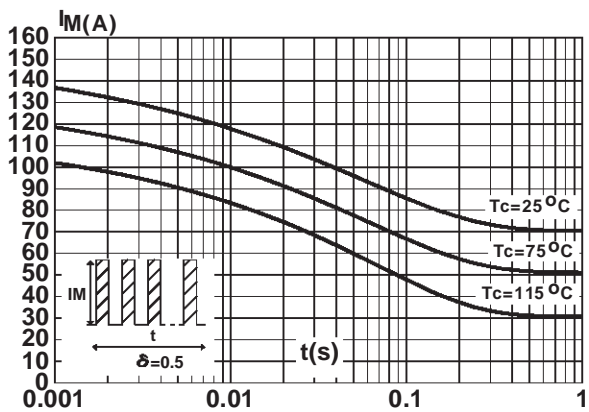


Fig.6 : Non repetitive surge peak forward current versus overload duration. (BYW81PI)

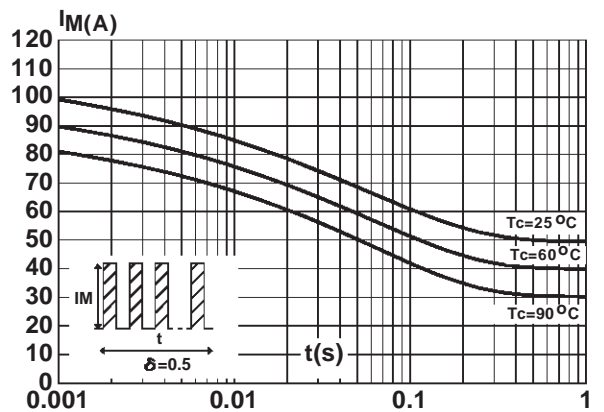


Fig.7 : Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81P)

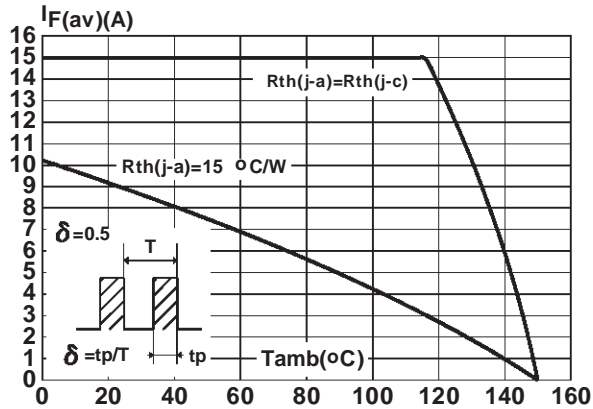


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (BYW81PI)

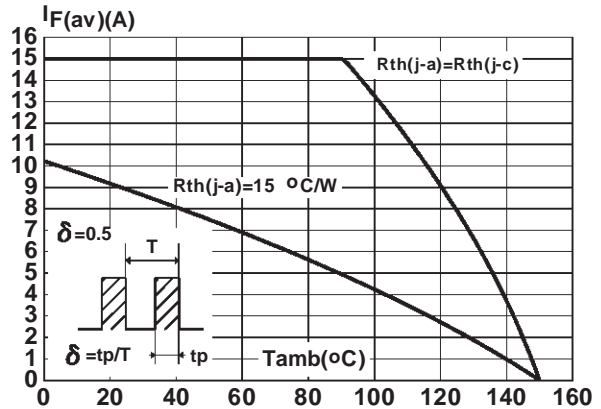


Fig.9 : Junction capacitance versus reverse voltage applied (Typical values).

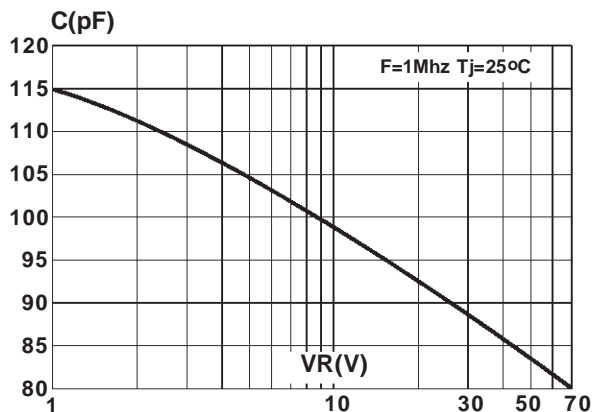


Fig.10 : Recovery charges versus dI/dt.

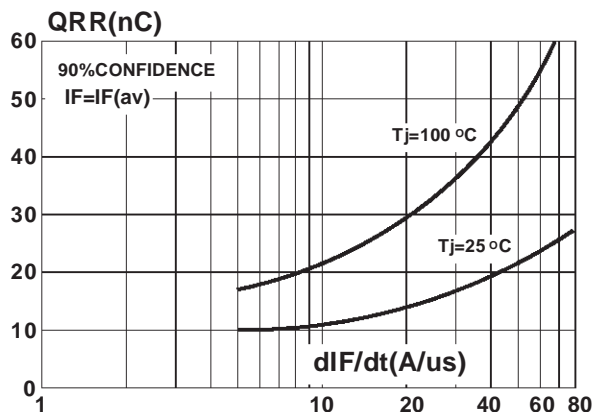


Fig.11 : Peak reverse current versus dI/dt.

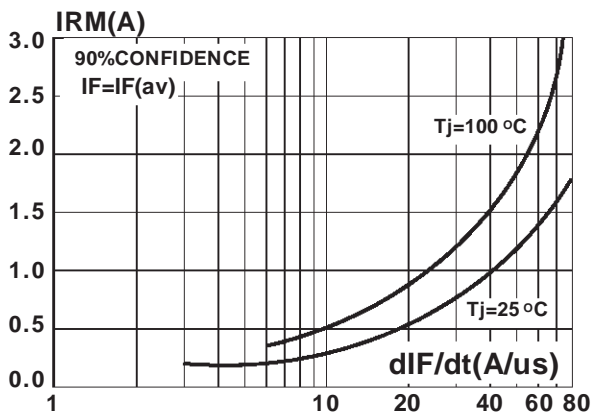
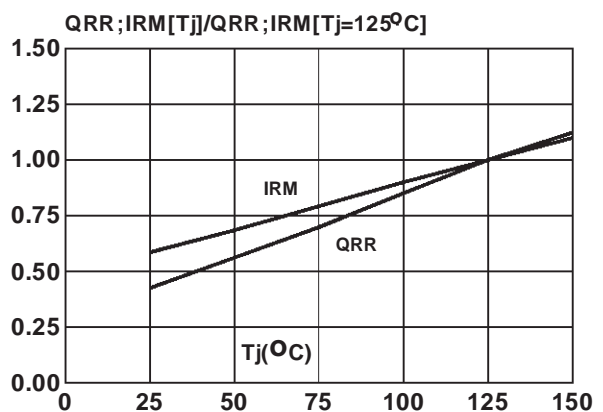
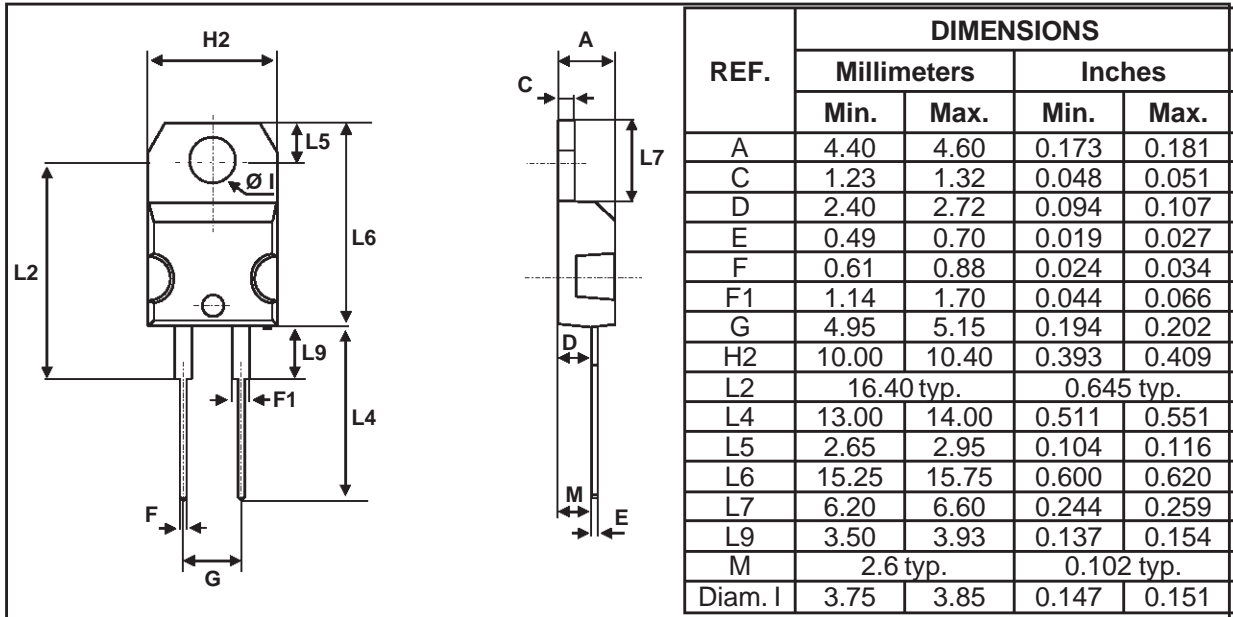


Fig.12 : Dynamic parameters versus junction temperature.

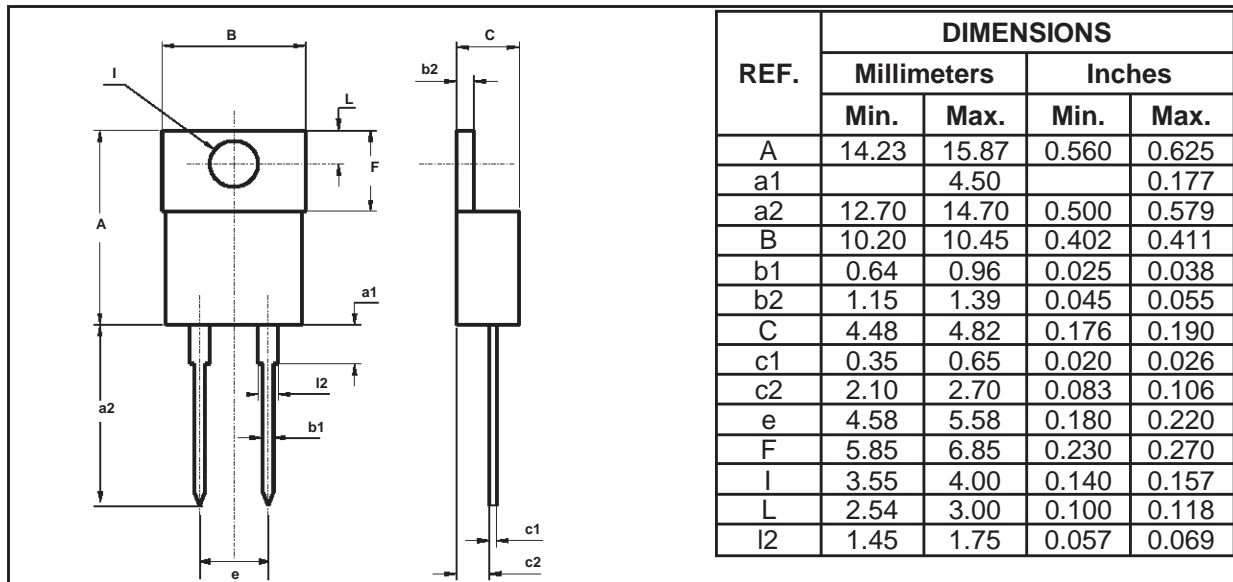


PACKAGE MECHANICAL DATA
TO-220AC (JEDEC outline)



- **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



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