



# BYW51G-200

## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

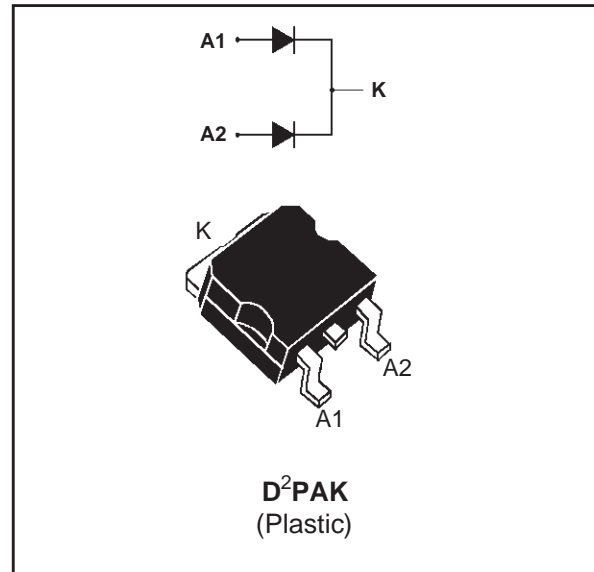
### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- SMD PACKAGE

### DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.

Packaged in D<sup>2</sup>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
$I_{F(RMS)}$	RMS forward current		Per diode 20	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	$T_c = 120^\circ\text{C}$	Per diode 10	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10\text{ms}$ sinusoidal	Per diode 100	A
$T_{stg}$ $T_j$	Storage and junction temperature range		- 65 to + 150 - 65 to + 150	$^\circ\text{C}$ $^\circ\text{C}$

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

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.5	°C/W
		Total	1.4	
$R_{th(c)}$	Coupling		0.25	°C/W

When the diodes 1 and 2 are used simultaneously :  
 $T_j - T_c(\text{diode } 1) = P(\text{diode } 1) \times R_{th(j-c)} (\text{Per diode}) + P(\text{diode } 2) \times R_{th(c)}$

### STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			15	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$				1	mA
$V_F^{**}$	$T_j = 125^\circ\text{C}$	$I_F = 8 \text{ A}$			0.85	V
	$T_j = 125^\circ\text{C}$	$I_F = 16 \text{ A}$			1.05	
	$T_j = 25^\circ\text{C}$	$I_F = 16 \text{ A}$			1.15	

Pulse test: \*  $t_p = 5 \text{ ms}$ ,  $\delta < 2\%$

\*\*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

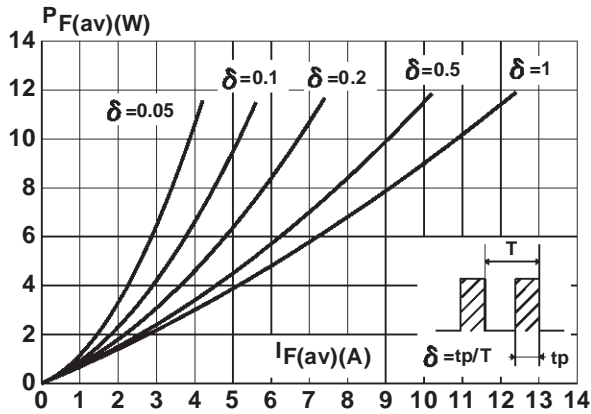
To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.025 \times I_{F(RMS)}^2$$

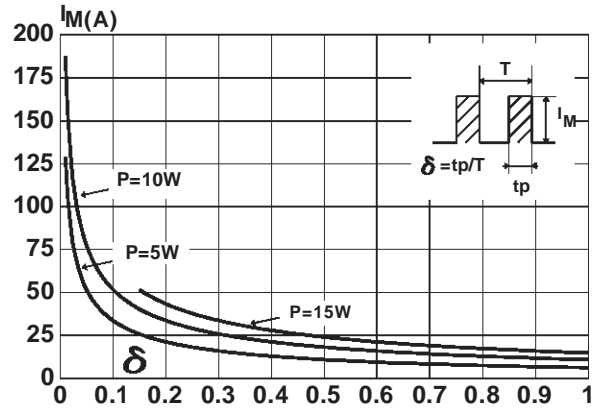
### RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5 \text{ A}$ $I_R = 1 \text{ A}$			25	ns
		$I_F = 1 \text{ A}$ $V_R = 30 \text{ V}$			35	
tfr	$T_j = 25^\circ\text{C}$	$I_F = 1 \text{ A}$ $V_{FR} = 1.1 \times V_F$		15		ns
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 1 \text{ A}$		2		V

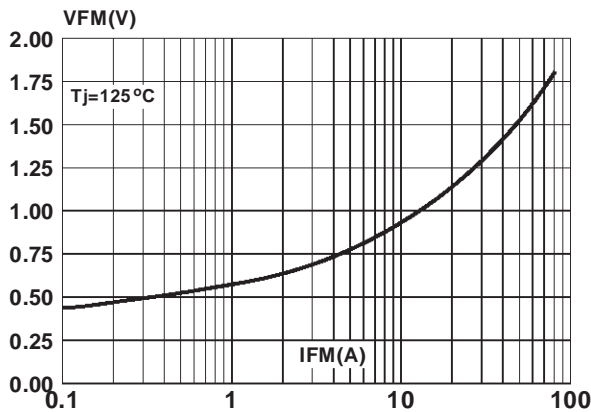
**Fig.1 :** Average forward power dissipation versus average forward current.



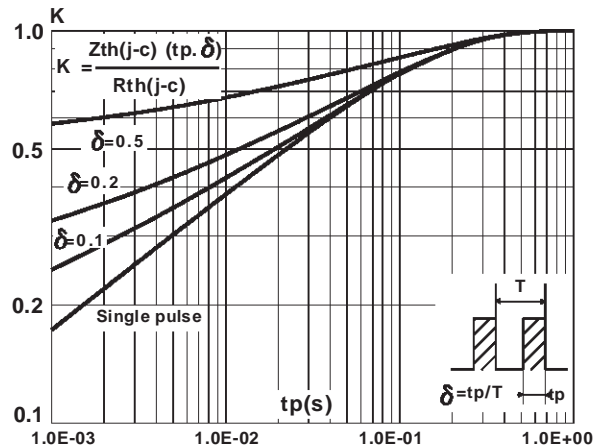
**Fig.2 :** Peak current versus form factor.



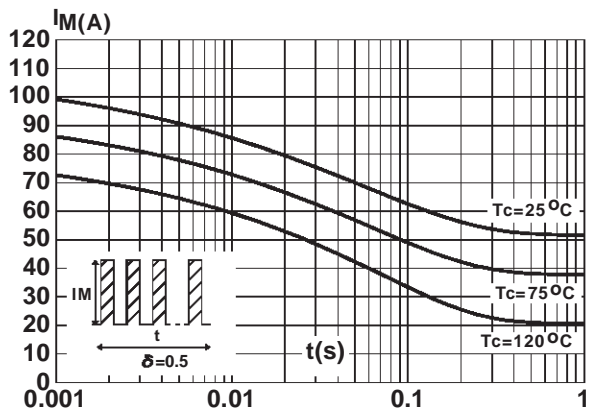
**Fig.3 :** Forward voltage drop versus forward current (maximum values).



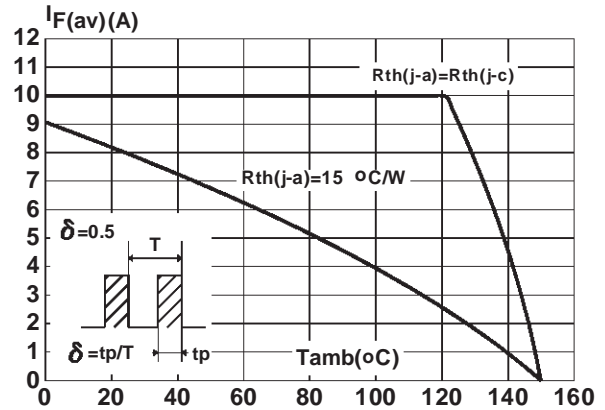
**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.



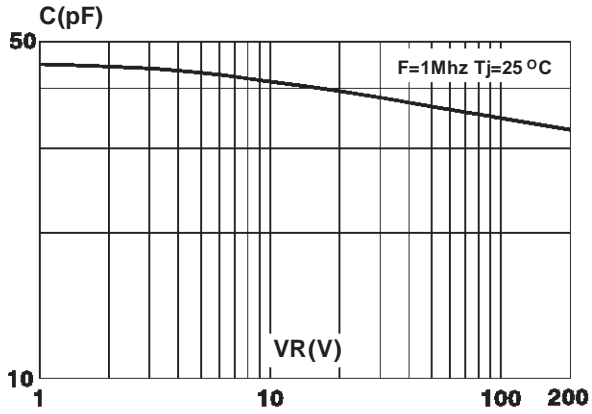
**Fig.5 :** Non repetitive surge peak forward current versus overload duration.



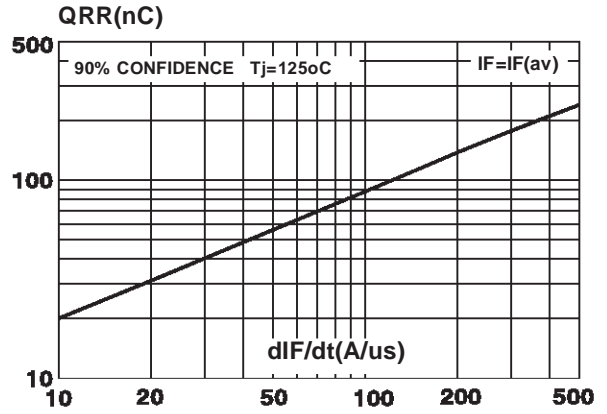
**Fig.6 :** Average current versus ambient temperature. ( $\delta = 0.5$ )



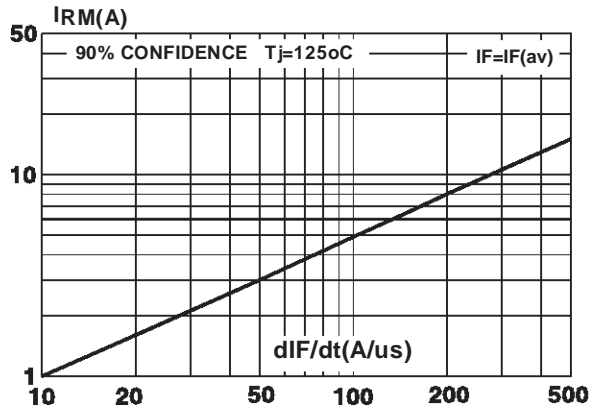
**Fig.7 :** Junction capacitance versus reverse voltage applied (Typical values).



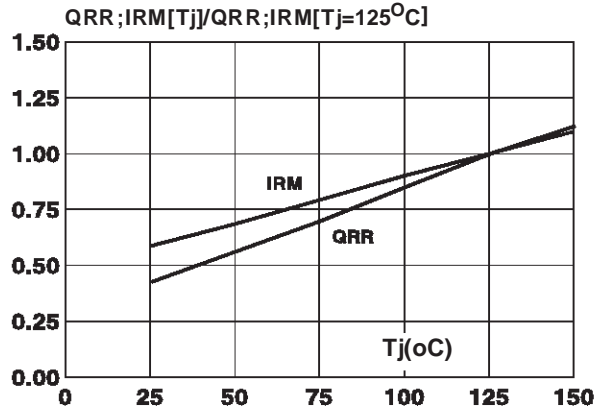
**Fig.8 :** Recovery charges versus  $dI_F/dt$ .



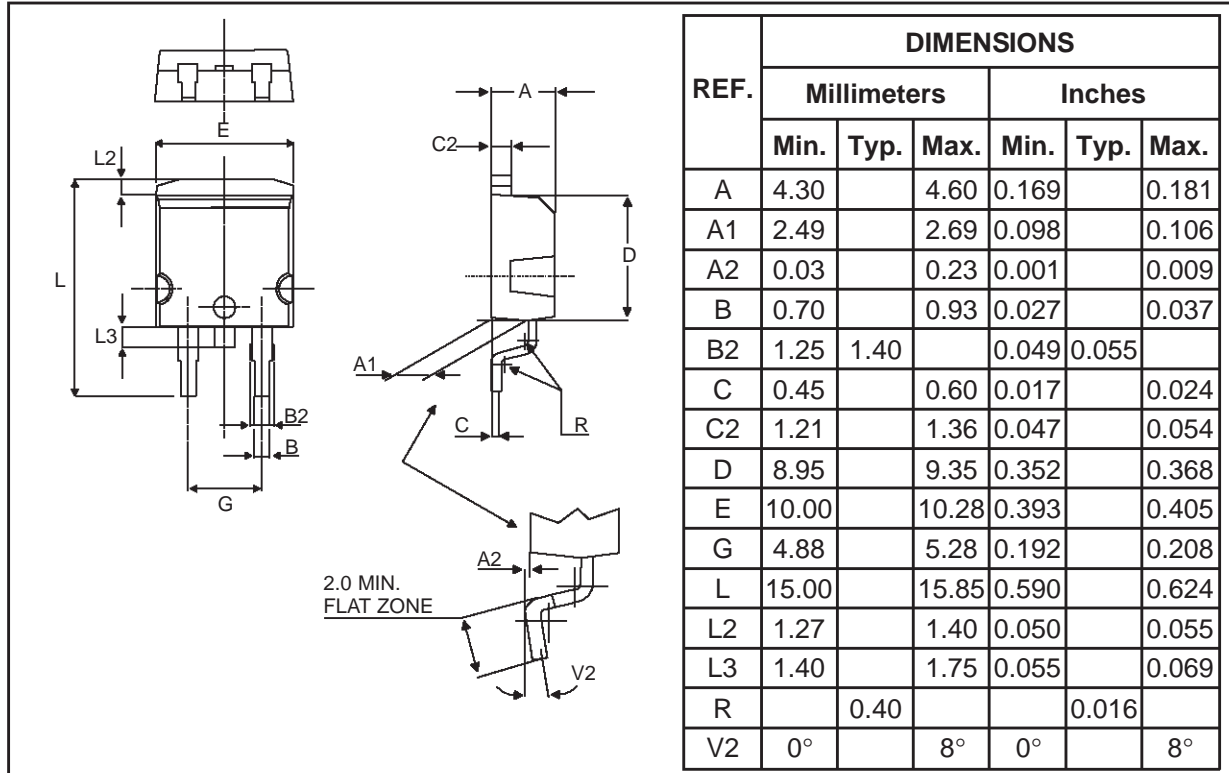
**Fig.9 :** Peak reverse current versus  $dI_F/dt$ .



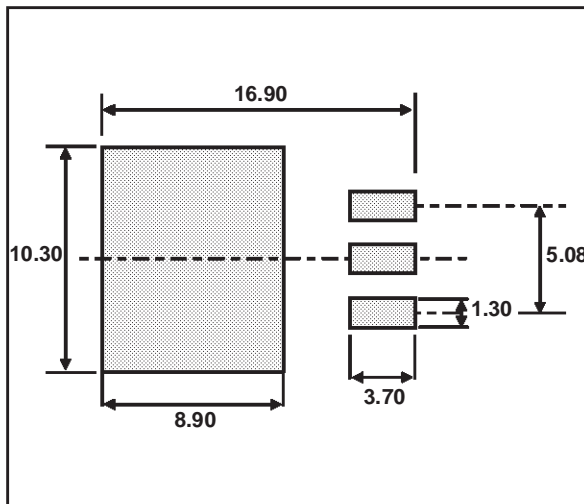
**Fig.10 :** Dynamic parameters versus junction temperature.



**PACKAGE MECHANICAL DATA**  
D<sup>2</sup>PAK (Plastic)



**FOOT PRINT (in millimeters)**



- **Marking** : Type number
- **Cooling method** : C
- **Weight** : 1.8 g

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