

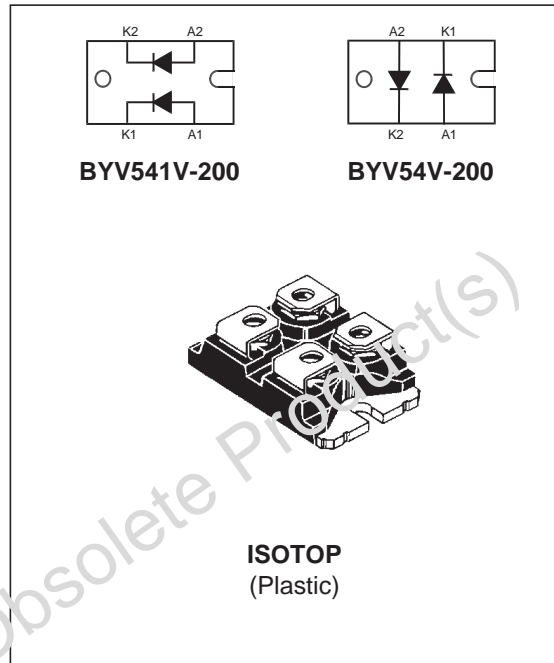
## HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

### FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :  
Insulating voltage = 2500 V<sub>RMS</sub>  
Capacitance = 45 pF

### DESCRIPTION

Dual rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in ISOTOP™ 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		Per diode	100	A
I <sub>F(AV)</sub>	Average forward current $\delta = 0.5$	T <sub>c</sub> =90°C	Per diode	50	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> =10ms sinusoidal	Per diode	1000	A
T <sub>stg</sub> T <sub>j</sub>	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	BYV54V / BYV541V	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage	200	V

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**BYV54V / BYV541V****THERMAL RESISTANCE**

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.2	°C/W
		Total	0.85	
Rth (c)	Coupling		0.1	°C/W

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

**ELECTRICAL CHARACTERISTICS (Per diode)  
STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			50	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$				5	mA
$V_F^{**}$	$T_j = 125^\circ\text{C}$	$I_F = 50 \text{ A}$			0.85	V
	$T_j = 125^\circ\text{C}$	$I_F = 100 \text{ A}$			1.00	
	$T_j = 25^\circ\text{C}$	$I_F = 100 \text{ A}$			1.15	

Pulse test :

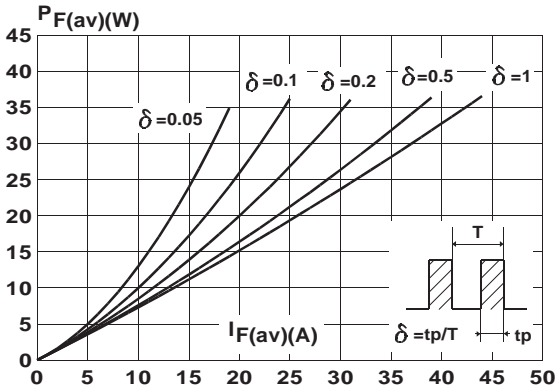
\*  $t_p = 5 \text{ ms}$ , duty cycle < 2 %

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

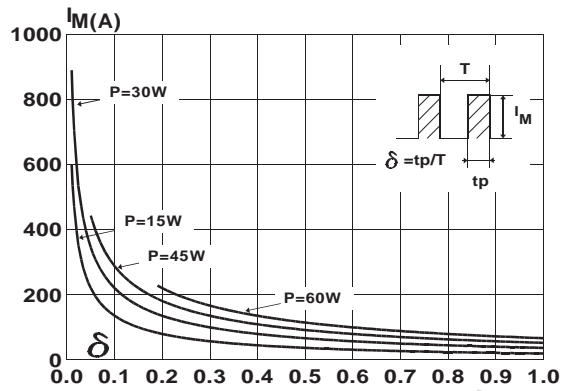
**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ\text{C}$	$I_F = 0.5 \text{ A}$ $I_R = 1 \text{ A}$	$I_{rr} = 0.25 \text{ A}$			40	ns
		$I_F = 1 \text{ A}$ $V_R = 30 \text{ V}$	$dI_F/dt = -50 \text{ A}/\mu\text{s}$			60	
tfr	$T_j = 25^\circ\text{C}$	$I_F = 1 \text{ A}$ $V_{FR} = 1.1 \times V_F$	$t_r = 5 \text{ ns}$		10		ns
$V_{FP}$	$T_j = 25^\circ\text{C}$	$I_F = 1 \text{ A}$	$t_r = 5 \text{ ns}$		1.5		V

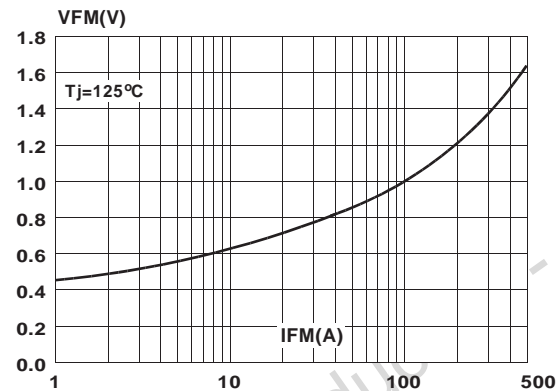
**Fig.1 :** Average forward power dissipation versus average forward current.



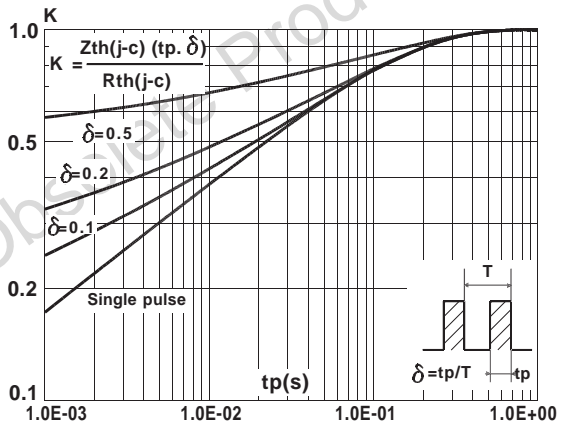
**Fig.2 :** Peak current versus form factor.



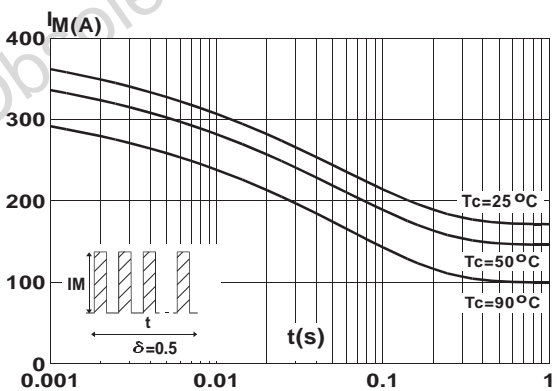
**Fig.3 :** Forward voltage drop versus forward current (maximum values).



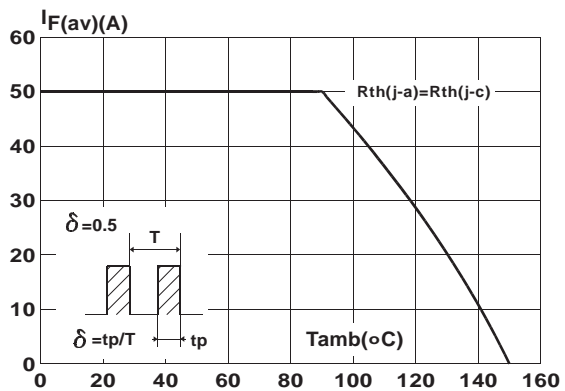
**Fig.4 :** Relative variation of thermal impedance junction to case versus pulse duration.



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

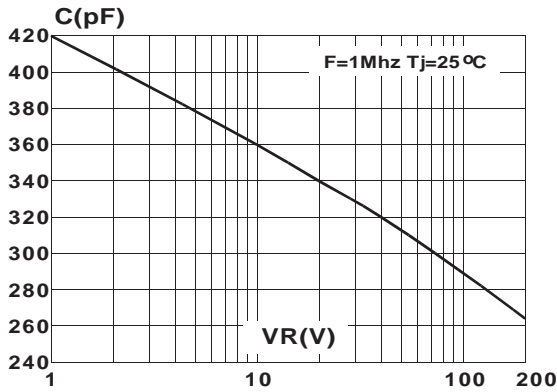


**Fig.6 :** Average current versus ambient temperature. (duty cycle : 0.5)

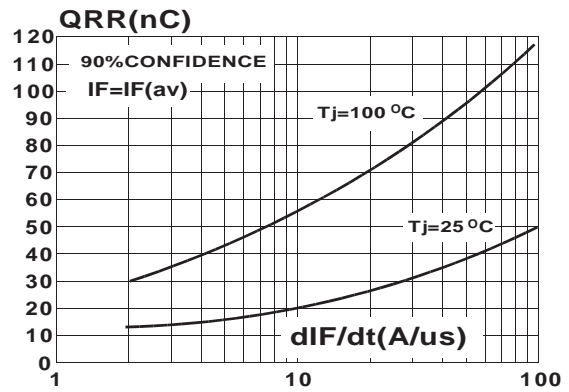


## BYV54V / BYV541V

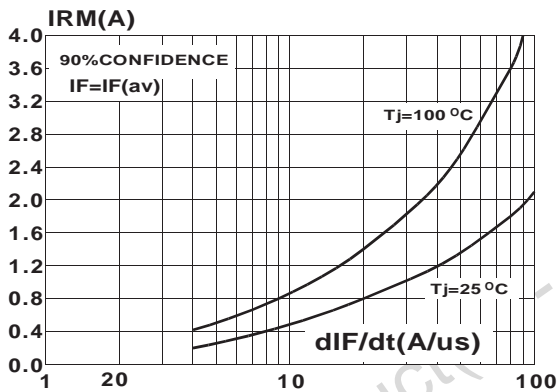
**Fig.7** : Junction capacitance versus reverse voltage applied (Typical values).



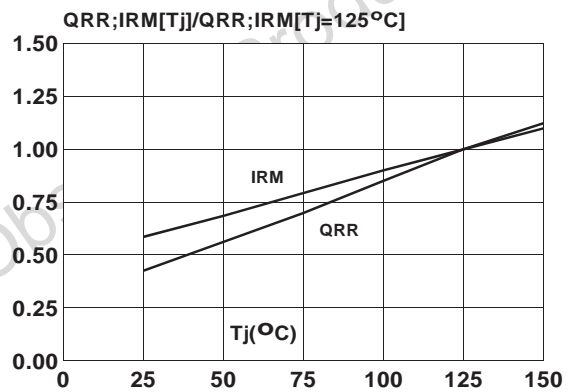
**Fig.8** : Recovery charges versus  $dI_F/dt$ .



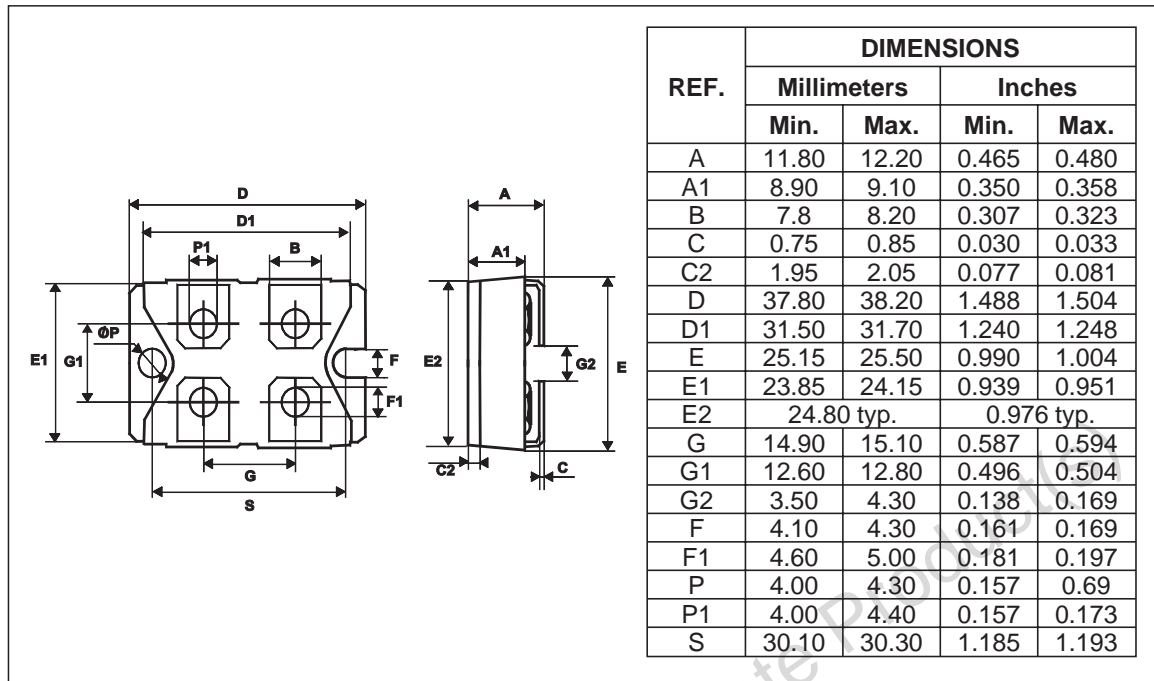
**Fig.9** : Peak reverse current versus  $dI_F/dt$ .



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



**PACKAGE MECHANICAL DATA**  
ISOTOP



- **Marking** : Type number
- Cooling method : C
- Weight : 27 g
- Epoxy meets UL94, V0

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