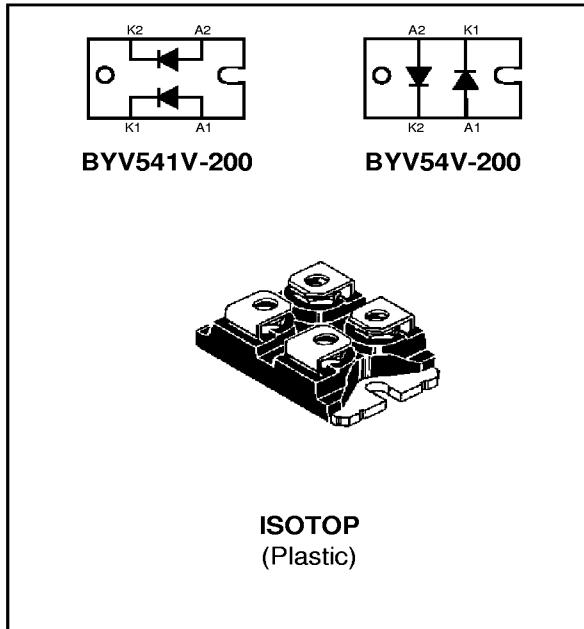


HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED :
Insulating voltage = 2500 V_{RMS}
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 _{F(RMS)}	RMS forward current		Per diode	100	A	
I _{F(AV)}	Average forward current $\delta = 0.5$		T _C =90°C	Per diode	50	A
I _{FSM}	Surge non repetitive forward current		t _p =10ms sinusoidal	Per diode	1000	A
T _{stg} T _J	Storage and junction temperature range		- 40 to + 150	- 40 to + 150	°C °C	

Symbol	Parameter	BYV54V / BYV541V	Unit
V _{RRM}	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
		Total	0.85
Rth (c)	Coupling	0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$T_j - T_c (\text{diode 1}) = P(\text{diode 1}) \times R_{\text{th(j-c)}} (\text{Per diode}) + P(\text{diode 2}) \times R_{\text{th(c)}}$$

ELECTRICAL CHARACTERISTICS (Per diode)

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R *	T _j = 25°C	V _R = V _{RRM}			50	µA
	T _j = 100°C				5	mA
V _F **	T _j = 125°C	I _F = 50 A			0.85	V
	T _j = 125°C	I _F = 100 A			1.00	
	T _j = 25°C	I _F = 100 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 :
 $P = 0.7 \times I_F(\text{AV}) + 0.003 \times I_F^2(\text{RMS})$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A	I _{rr} = 0.25A		40	ns
		I _R = 1A			60	
tfr	T _j = 25°C	I _F = 1A V _{FR} = 1.1 x V _F	dI _F /dt = -50A/µs		10	ns
V _{FP}	T _j = 25°C	I _F = 1A	tr = 5 ns		1.5	V

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

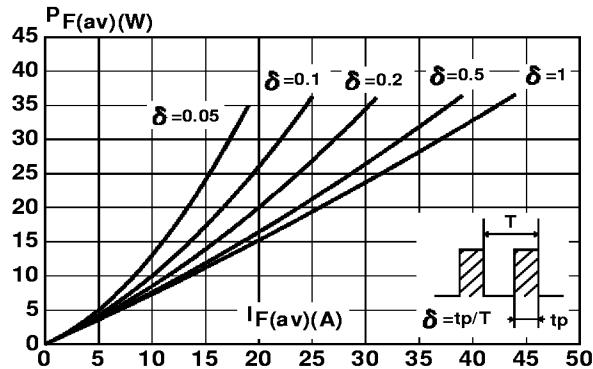


Fig.3 : Forward voltage drop versus forward current (maximum values).

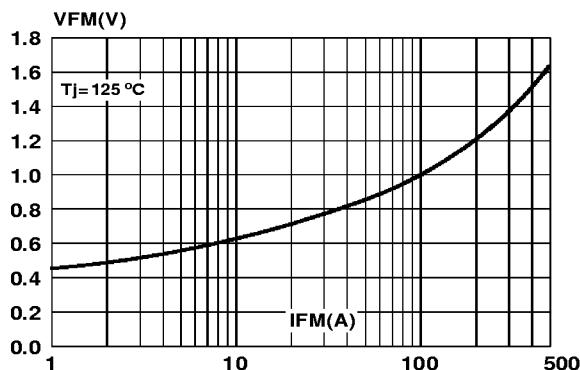


Fig.5 : Non repetitive surge peak forward current versus overload duration.

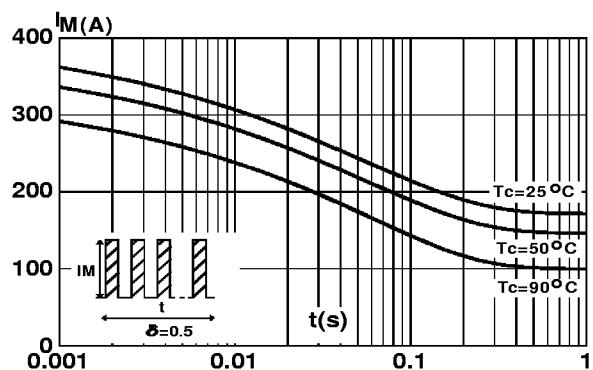


Fig.2 : Peak current versus form factor.

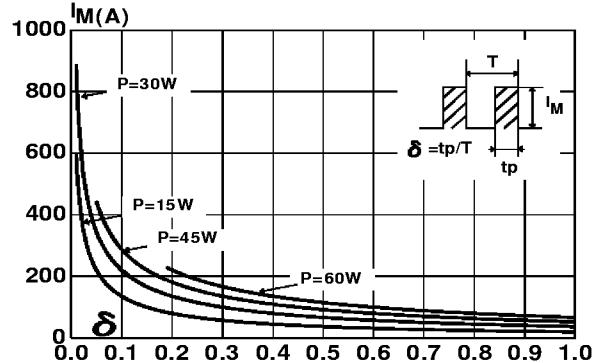


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

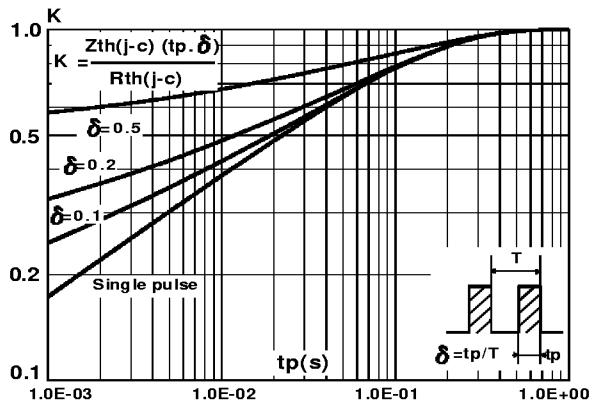
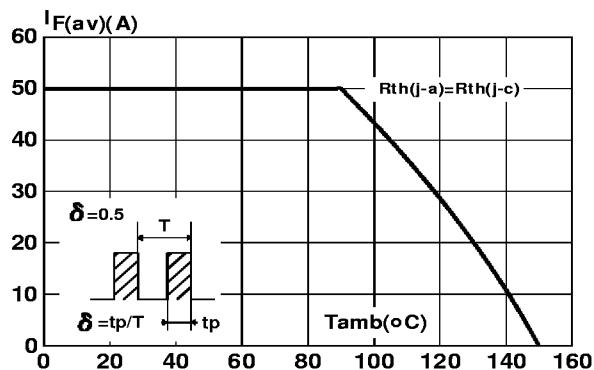


Fig.6 : Average current versus ambient temperature. (duty cycle : 0.5)



BYV54V / BYV541V

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

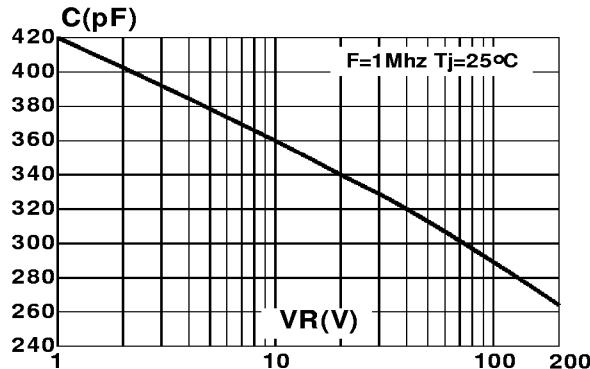


Fig.9 : Peak reverse current versus dIF/dt.

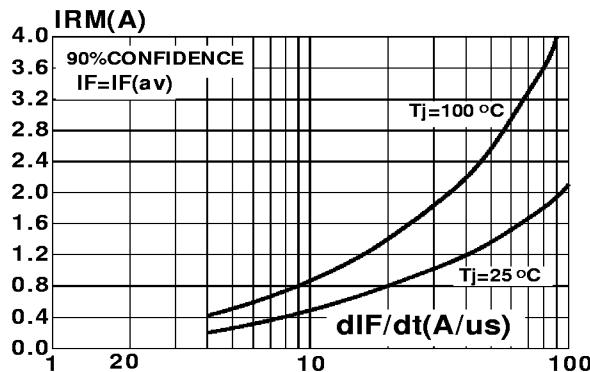


Fig.8 : Recovery charges versus dIF/dt.

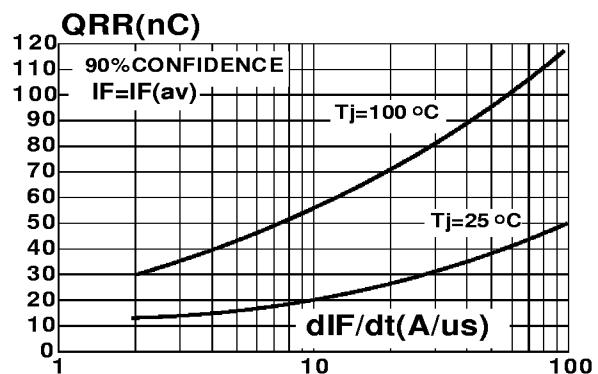
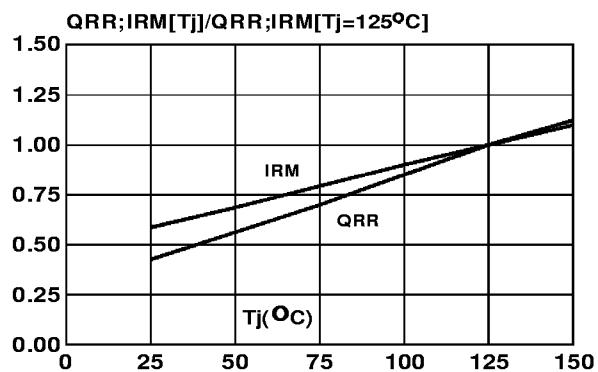
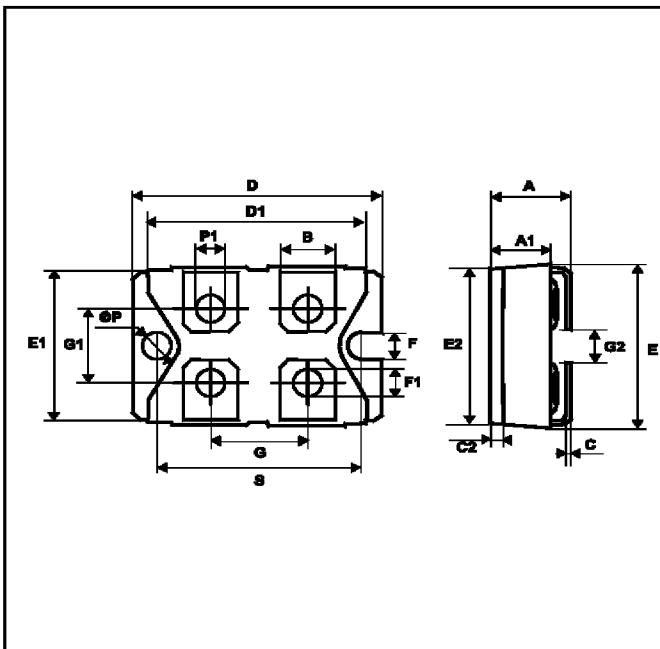


Fig.10 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA
ISOTOP


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
A1	8.90	9.10	0.350	0.358
B	7.8	8.20	0.307	0.323
C	0.75	0.85	0.030	0.033
C2	1.95	2.05	0.077	0.081
D	37.80	38.20	1.488	1.504
D1	31.50	31.70	1.240	1.248
E	25.15	25.50	0.990	1.004
E1	23.85	24.15	0.939	0.951
E2	24.80 typ.		0.976 typ.	
G	14.90	15.10	0.587	0.594
G1	12.60	12.80	0.496	0.504
G2	3.50	4.30	0.138	0.169
F	4.10	4.30	0.161	0.169
F1	4.60	5.00	0.181	0.197
P	4.00	4.30	0.157	0.69
P1	4.00	4.40	0.157	0.173
S	30.10	30.30	1.185	1.193

■ **Marking** : Type number■ **Cooling method** : C■ **Weight** : 27 g

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