

## ULTRAFAST POWER RECTIFIER DIODE

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 100 A
$V_{RRM}$	400 V
$V_F$ (max)	1.4 V

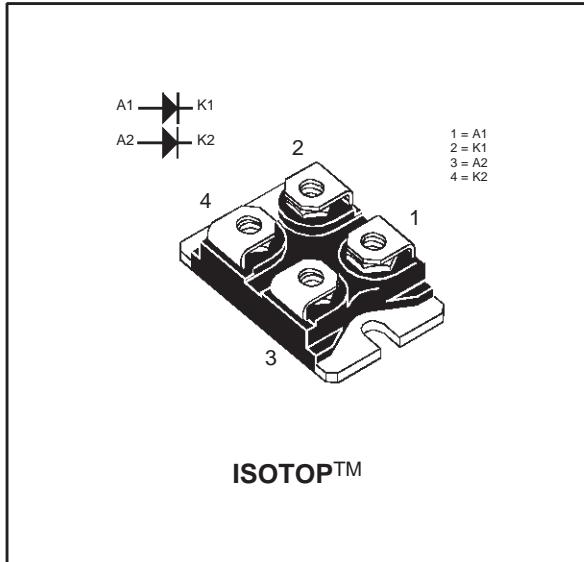
### FEATURES AND BENEFITS

- LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH AVALANCHE CAPABILITY
- ISOLATED PACKAGE :  
2500 V<sub>DC</sub>  
CAPACITANCE 42pF

### DESCRIPTION

High current power rectifier diode suited for Switched Mode Power Supply and high frequency DC to DC converters.

Packaged in ISOTOP, this device is intended for use in a medium voltage high current applications such as **welding equipment and Telecom supplies**.



### ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage	400	V
$I_{F(RMS)}$	RMS forward current	150	A
$I_{F(AV)}$	Average forward current	100	A
$I_{FSM}$	Surge non repetitive forward current	600	A
$I_{FRM}$	Repetitive peak forward current	800	A
$T_{stg}$	Storage temperature range	- 40 to + 150	°C
$T_j$	Maximum junction temperature	150	°C

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## BYT200PIV-400

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### THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th}(j-c)$	Junction to case	Per leg	0.55
		Total	0.33
$R_{th}(c)$	Coupling	0.1	

### STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$T_j = 25^\circ C$	$V_R = V_{RRM}$			120	$\mu A$
		$T_j = 100^\circ C$			4	12	$mA$
$V_F$ **	Forward voltage drop	$T_j = 25^\circ C$	$I_F = 100 A$			1.6	$V$
		$T_j = 125^\circ C$	$I_F = 100 A$		0.95	1.4	

Pulse test : \*  $t_p = 5$  ms, duty cycle < 2 %

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

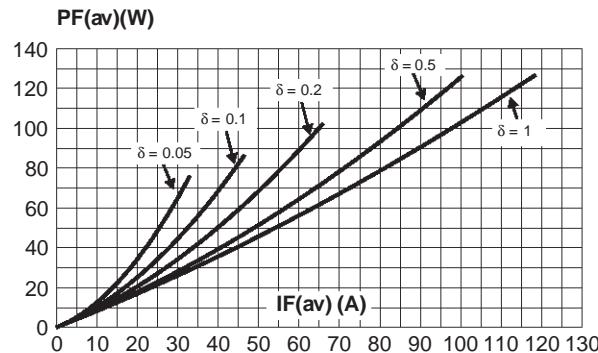
### RECOVERY CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$t_{rr}$	Reverse recovery time	$I_F=0.5A$	$I_R=1A$	$I_{rr}=0.25A$		55	ns
		$I_F=1A$	$dI/dt=-50A/\mu s$			100	
		$V_r=30V$					
$I_{RM}$	Reverse recovery current	$dI_F/dt=-200A/\mu s$	$T_j=125^\circ C$			40	A
		$V_R=400V$	$I_F=100A$				
S factor	Softness factor	$dI_F/dt=-200A/\mu s$	$T_j=125^\circ C$		0.25		
		$V_R=400V$	$I_F=100A$				
$t_{fr}$	Forward recovery time	$I_F=100A$	$dI_F/dt=500A/\mu s$			500	ns
$V_{FP}$	Peak forward voltage	Measured at $1.1 \times V_F$ max. $T_j=25^\circ C$				12	V

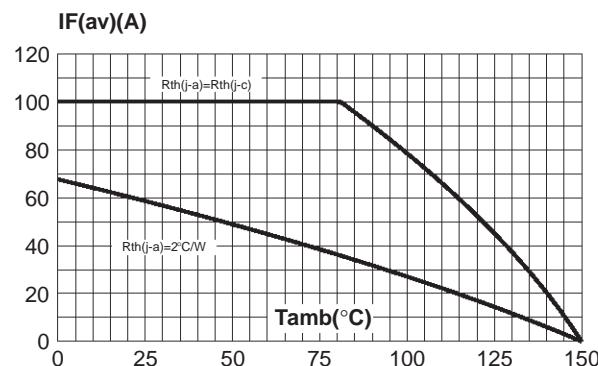
To evaluate the conduction losses use the following equation :

$$P = 0.8 \times I_{F(AV)} + 0.00228 \times I_F^2(\text{RMS})$$

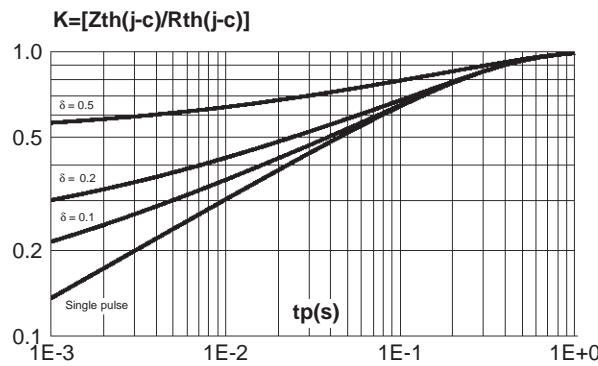
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



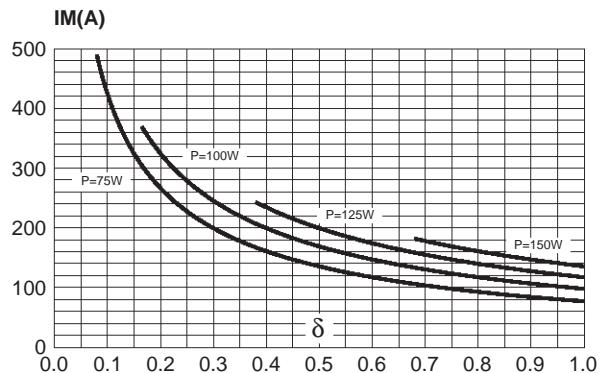
**Fig. 3:** Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode).



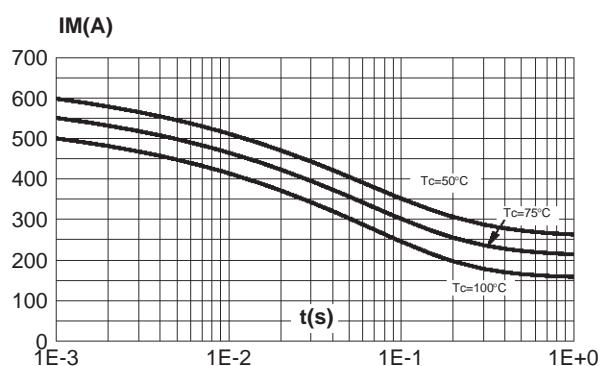
**Fig. 5:** Relative variation of thermal impedance junction to case versus pulse duration (per diode).



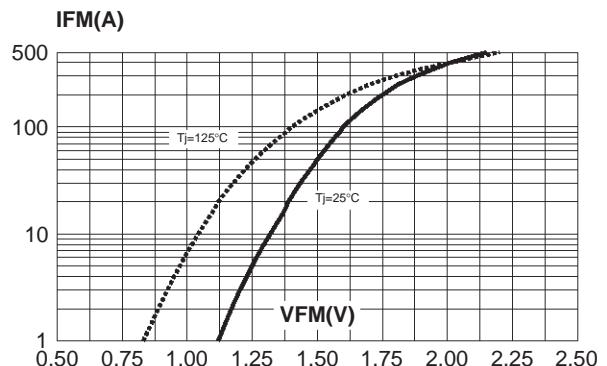
**Fig. 2:** Peak current versus form factor (per diode).



**Fig. 4:** Non repetitive surge peak forward current versus overload duration (per diode).

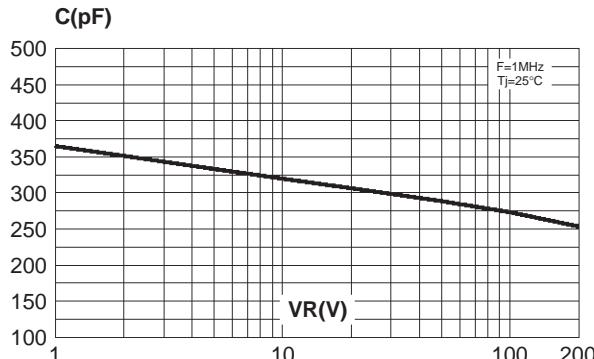


**Fig. 6:** Forward voltage drop versus forward current (maximum values, per diode).

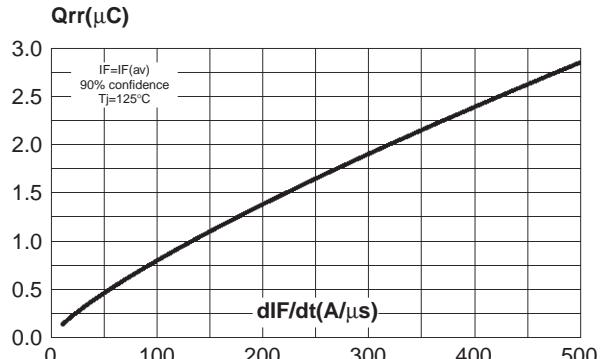


## BYT200PIV-400

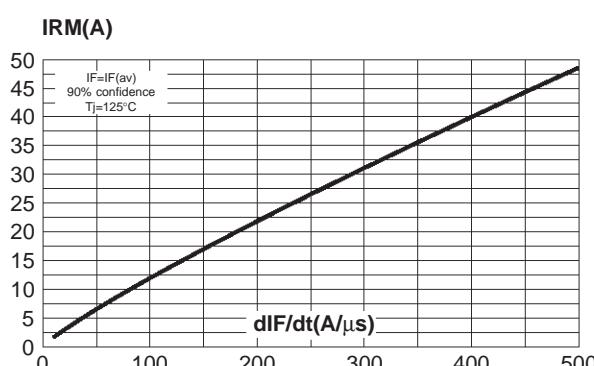
**Fig. 7:** Junction capacitance versus reverse voltage applied (typical values, per diode).



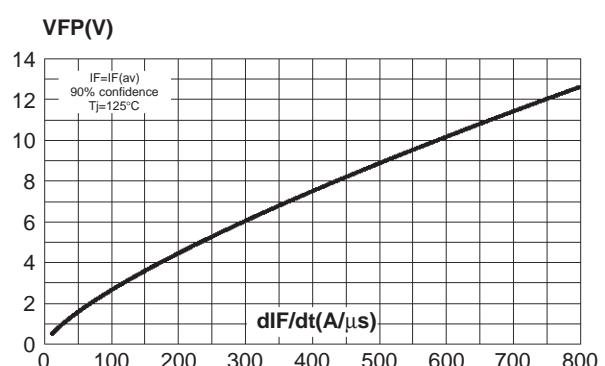
**Fig. 8:** Recovery charges versus  $dI/F/dt$  (per diode).



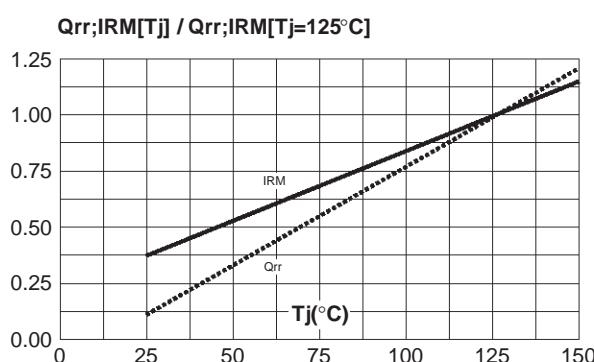
**Fig. 9:** Recovery current versus  $dI/F/dt$  (per diode).



**Fig. 10:** Transient peak forward voltage versus  $dI/F/dt$  (per diode).



**Fig. 11:** 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

■ Epoxy meets UL94, V0

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