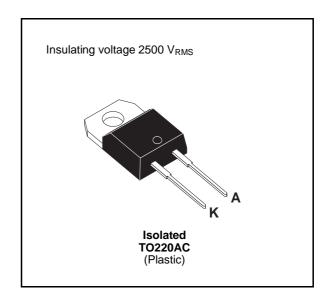


# **BYT 12PI-1000**

## FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED: Capacitance 7pF



#### **SUITABLE APPLICATIONS**

- FREE WHEELING DIODE IN CONVERTERS AND MOTOR CONTROL CIRCUITS
- RECTIFIER IN S.M.P.S.

### **ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{RRM}$	Repetitive Peak Reverse Voltage	1000	V
V <sub>RSM</sub>	Non Repetitive Peak Reverse Voltage	1000	V
I <sub>FRM</sub>	Repetive Peak Forward Current	150	Α
I <sub>F (RMS)</sub>	RMS Forward Current	25	Α
I <sub>F (AV)</sub>	Average Forward Current	12	А
I <sub>FSM</sub>	Surge non Repetitive Forward Current	75	А
Р	Power Dissipation	25	W
T <sub>stg</sub> T <sub>j</sub>	Storage and Junction Temperature Range	- 40 to + 150 - 40 to + 150	°C

### THERMAL RESISTANCE

ĺ	Symbol	Test Conditions	Value	Unit
	R <sub>th (j - c)</sub>	Junction-case	4	°C/W

October 1999 Ed: 1A 1/5

### **ELECTRICAL CHARACTERISTICS**

## STATIC CHARACTERISTICS

Synbol	Tes	Min.	Тур.	Max.	Unit	
I <sub>R</sub>	T <sub>j</sub> = 25°C	$V_R = V_{RRM}$			50	μΑ
	T <sub>j</sub> = 100°C				2.5	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 12A			1.9	V
	T <sub>j</sub> = 100°C				1.8	,

## RECOVERY CHARACTERISTICS

Symbol		Test Conditions					Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	$di_F/dt = -15A/\mu s$	$V_R = 30V$			155	ns
		I <sub>F</sub> = 0.5A	I <sub>R</sub> = 1A	$I_{rr} = 0.25A$			65	

## TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions			Тур.	Max.	Unit
t <sub>IRM</sub>	di <sub>F</sub> /dt = - 50A/μs	V <sub>CC</sub> = 200 V I <sub>F</sub> = 12A			200	ns
	di <sub>F</sub> /dt = - 100A/μs	$L_p \le 0.05 \mu H$ $T_j = 100^{\circ} C$ See figure 11		120		
I <sub>RM</sub>	$di_F/dt = -50A/\mu s$				7.8	Α
	di <sub>F</sub> /dt = - 100A/μs			9		

## TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol		Min.	Тур.	Max.	Unit		
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100^{\circ}C$ $di_F/dt = -12A/\mu s$	$V_{CC} = 200V$ $L_p = 12\mu H$	I <sub>F</sub> = I <sub>F (AV)</sub> See figure 12			4.5	

To evaluate the conduction losses use the following equations:

 $V_F = 1.47 + 0.026 I_F$   $P = 1.47 \times IF_{(AV)} + 0.026 I_F^2_{(RMS)}$ 

Figure 1. Low frequency power losses versus average current

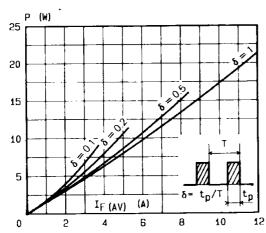


Figure 2. Peak current versus form factor

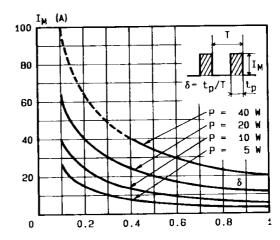


Figure 3. Non repetitive peak surge current versus overload duration

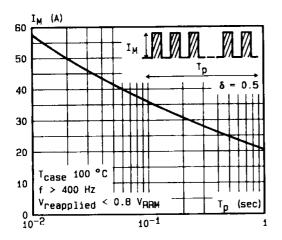


Figure 5. Voltage drop versus forward current

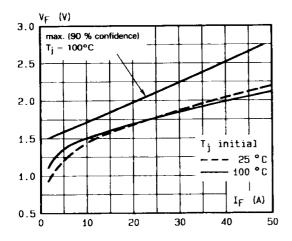


Figure 7. Recovery time versus di<sub>F</sub>/d<sub>t</sub>-

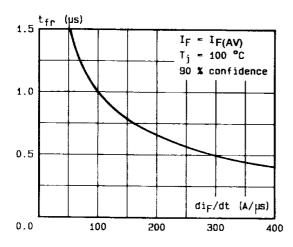


Figure 4. Thermal impedance versus pulse width

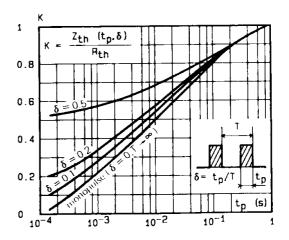


Figure 6. Recovery charge versus di<sub>F</sub>/d<sub>t</sub>-

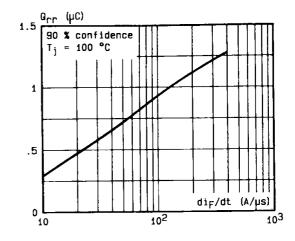
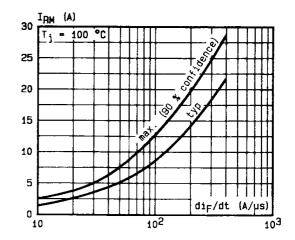


Figure 8. Peak reverse current versus dif/dt-



57

Figure 9. Peak forward voltage versus di<sub>F</sub>/d<sub>t</sub>-

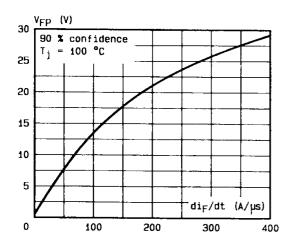


Figure 11. Turn-off switching characteristics (without series inductance).

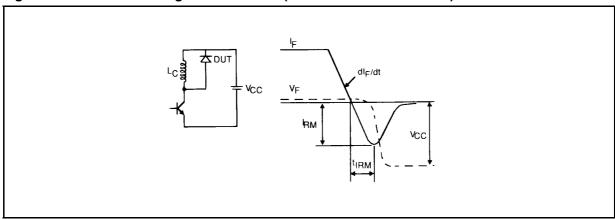
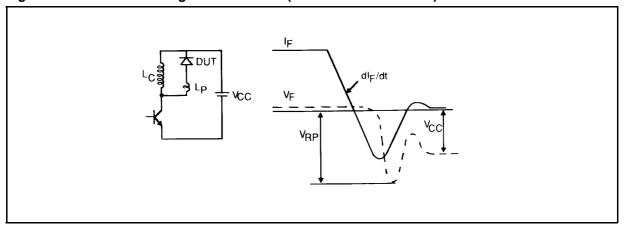


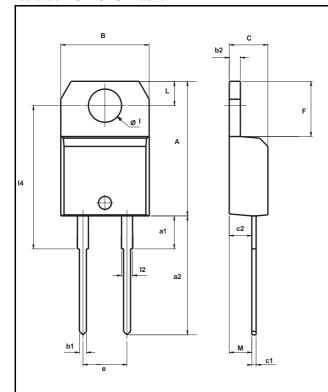
Figure 12. Turn-off switching characteristics (with series inductance)



4/5

#### **PACKAGE MECHANICAL DATA:**

Isolated TO220AC Plastic



REF.	DIMENSIONS						
	Millimeters I			Inches			
	Min.	Тур.	Max.	Min.	Тур.	Max.	
Α	15.20		15.90	0.598		0.625	
a1		3.75			0.147		
a2	13.00		14.00	0.511		0.551	
В	10.00		10.40	0.393		0.409	
b1	0.61		0.88	0.024		0.034	
b2	1.23		1.32	0.048		0.051	
С	4.40		4.60	0.173		0.181	
c1	0.49		0.70	0.019		0.027	
c2	2.40		2.72	0.094		0.107	
е	4.80		5.40	0.189		0.212	
F	6.20		6.60	0.244		0.259	
- 1	3.75		3.85	0.147		0.151	
14	15.80	16.40	16.80	0.622	0.646	0.661	
L	2.65		2.95	0.104		0.116	
12	1.14		1.70	0.044		0.066	
М		2.60			0.102		

■ Marking: type number

■ Cooling method: by conduction (method C)

■ Weight: 1.86g

Recommended torque value : 80cm. NMaximum torque value : 100cm. N

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