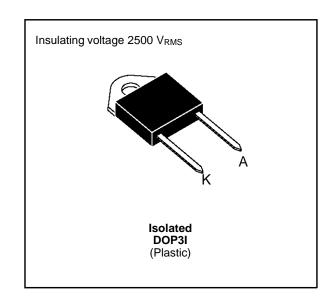


# **BYT 30PI-200** → **400**

# FAST RECOVERY RECTIFIER DIODES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED: Capacitance 15pF



#### **SUITABLE APPLICATIONS**

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

### **ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter	Value	Unit	
I <sub>FRM</sub>	Repetive Peak Forward Current	t <sub>p</sub> ≤ 10μs	500	Α
I <sub>F (RMS)</sub>	RMS Forward Current	50	Α	
I <sub>F (AV)</sub>	Average Forward Current	$T_c = 60^{\circ}C$ $\delta = 0.5$	30	А
I <sub>FSM</sub>	Surge non Repetitive Forward Current	t <sub>p</sub> = 10ms Sinusoidal	350	А
Р	Power Dissipation	T <sub>c</sub> = 60°C	50	W
T <sub>stg</sub> T <sub>j</sub>	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

Symbol	Parameter		BYT 30PI-		
Symbol	Talameter	200	300	400	Unit
V <sub>RRM</sub>	Repetitive Peak Reverse Voltage	200	300	400	V
V <sub>RSM</sub>	Non Repetitive Peak Reverse Voltage	220	330	440	V

#### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R <sub>th (j-c)</sub>	Junction-case	1.8	°C/W

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### **ELECTRICAL CHARACTERISTICS**

### STATIC CHARACTERISTICS

Synbol	Test Conditions			Тур.	Max.	Unit
I <sub>R</sub>	T <sub>j</sub> = 25°C	$V_R = V_{RRM}$			35	μΑ
	T <sub>j</sub> = 100°C				6	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 30A			1.5	V
	T <sub>j</sub> = 100°C				1.4	

### RECOVERY CHARACTERISTICS

Symbol		Test Conditions					Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A	$di_F/dt = - 15A/\mu s$	$V_R = 30V$			100	ns
		I <sub>F</sub> = 0.5A	$I_R = 1A$	$I_{rr} = 0.25A$			50	

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

Symbol	Test Conditions			Тур.	Max.	Unit
t <sub>IRM</sub>	di <sub>F</sub> /dt = - 120A/μs	V <sub>CC</sub> = 200 V I <sub>F</sub> = 30A			75	ns
	di <sub>F</sub> /dt = - 240A/μs	L <sub>p</sub> ≤ 0.05μH    T <sub>j</sub> = 100°C See figure 11		50		
I <sub>RM</sub>	di <sub>F</sub> /dt = -120A/μs				9	А
	di <sub>F</sub> /dt = - 240A/μs			12		

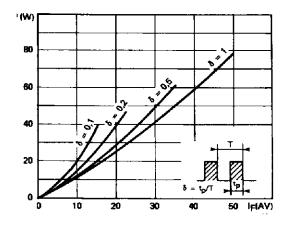
# TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
$C = \frac{V_{RP}}{V_{CC}}$	$ \begin{aligned} T_j &= 100^{\circ}\text{C} & \text{$V_{\text{CC}} = 60$V} & \text{$I_{\text{F}} = I_{\text{F}}$ (AV) } \\ di_{\text{F}}/dt &= -30\text{A}/\mu\text{s} & \text{$L_{\text{p}} = 1\mu$H} & \text{See figure} \end{aligned} $			3.3		

To evaluate the conduction losses use the following equations:

$$V_F = 1.1 + 0.0095 I_F$$
  $P = 1.1 \times I_{F(AV)} + 0.0095 I_{F^2(RMS)}$ 

Figure 1. Low frequency power losses versus average current



 $\label{eq:Figure 2. Peak current versus form factor } \textbf{Figure 2. Peak current versus form factor }$ 

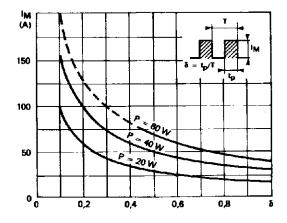


Figure 3. Non repetitive peak surge current versus overload duration

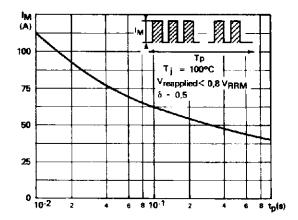


Figure 4. Thermal impedance versus pulse width

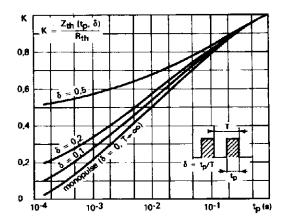


Figure 5. Voltage drop versus forward current

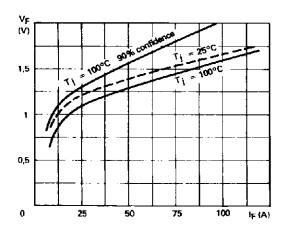


Figure 6. Recovery charge versus di<sub>F</sub>/d<sub>t</sub>-

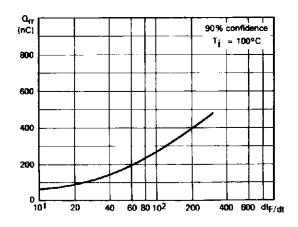


Figure 7. Recovery time versus di<sub>F</sub>/d<sub>t-</sub>

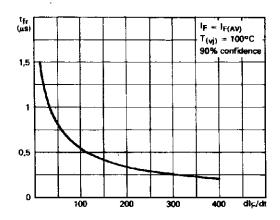


Figure 8. Peak reverse current versus dir/dt-

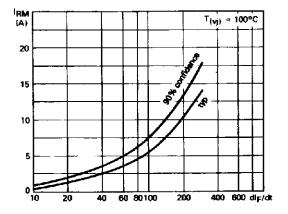


Figure 9. Peak forward voltage versus di<sub>F</sub>/d<sub>t-</sub>

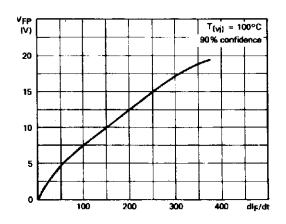


Figure 10. Dynamic parameters versus junction temperature.

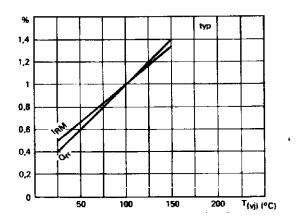


Figure 11. Turn-off switching characteristics (without series inductance).

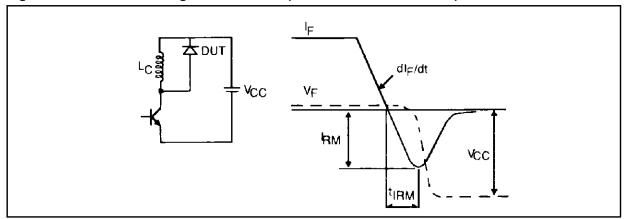
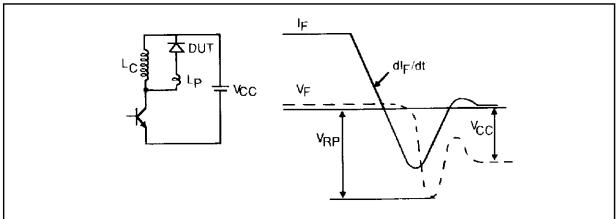
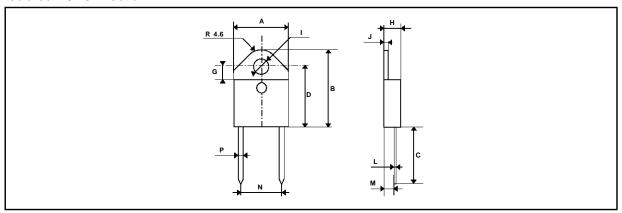


Figure 12. Turn-off switching characteristics (with series inductance)



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

Isolated DOP3I Plastic



	DIMENSIONS					
REF.	Millimeters		Inc	hes		
	Min.	Max.	Min.	Max.		
Α	15.10	15.50	0.594	0.611		
В	20.70	21.10	0.814	0.831		
С	14.30	15.60	0.561	0.615		
D	16.10	16.50	0.632	0.650		
G	3.40	-	0.133	-		
Н	4.40	4.60	O.173	0.182		
I	4.08	4.17	0.161	0.164		
J	1.45	1.55	0.057	0.062		
L	0.50	0.70	0.019	0.028		
M	2.70	2.90	0.106	0.115		
N	10.80	11.30	0.42	0.45		
Р	1.20	1.40	0.047	0.056		

Cooling method: by conduction (method C) Marking: type number Weight: 2.42g Recommended torque value: 80cm. N Maximum torque value: 100cm. N

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