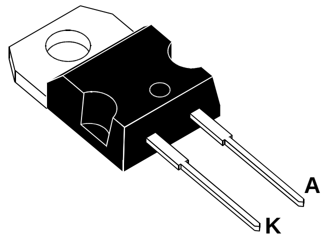
BYT 12P-1000

FAST RECOVERY RECTIFIER DIODE

- VERY HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

Cathode connected to case



TO220AC
(Plastic)

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_{RSM}	Non Repetitive Peak Reverse Voltage		1000	V
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	150	A
$I_{F\ (RMS)}$	RMS Forward Current		25	A
$I_{F\ (AV)}$	Average Forward Current	$T_{case} = 100°C$ $\delta = 0.5$	12	A
I_{FSM}	Surge Non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	75	A
P	Power Dissipation	$T_{case} = 100°C$	25	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	°C

THERMAL RESISTANCE

Symbol	Test Conditions	Value	Unit
$R_{th\ (j-c)}$	Junction-case	2	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_j = 25°C$	$V_R = V_{RRM}$			50	µA
	$T_j = 100°C$				2.5	mA
V_F	$T_j = 25°C$	$I_F = 12A$			1.9	V
	$T_j = 100°C$				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25°C$	$I_F = 1A$ $dI_F/dt = -15A/µs$ $V_R = 30V$			155	ns
		$I_F = 0.5A$ $I_R = 1A$ $I_{rr} = 0.25A$			65	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$dI_F/dt = -50A/µs$	$V_{CC} = 200V$ $I_F = 12A$ $L_p \leq 0.05µH$ $T_j = 100°C$ See figure 11			200	ns
	$dI_F/dt = -100A/µs$			120		
I_{RM}	$dI_F/dt = -50A/µs$				7.8	A
	$dI_F/dt = -100A/µs$			9		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100°C$ $V_{CC} = 200V$ $I_F = I_{F(AV)}$ $dI_F/dt = -12A/µs$ $L_p = 12µH$ See figure 12			4.5	

To evaluate the conduction losses use the following equations:

$V_F = 1.47 + 0.026\ I_F$ $P = 1.47 \times I_{F(AV)} + 0.026\ I_{F\,(RMS)}^2$

Figure 1. Low frequency power losses versus average current

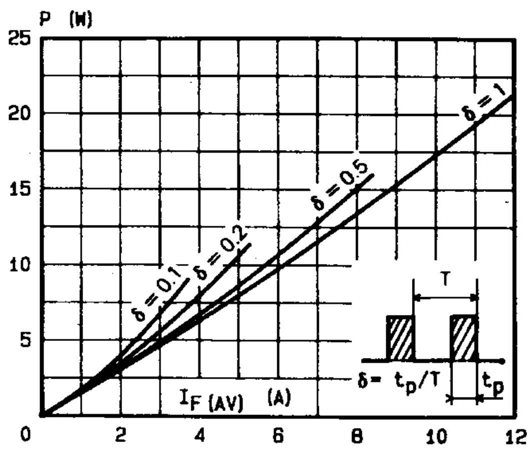


Figure 2. Peak current versus form factor

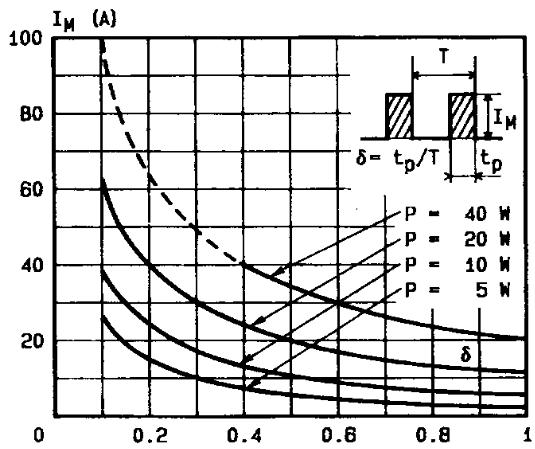


Figure 3. Non repetitive peak surge current versus overload duration

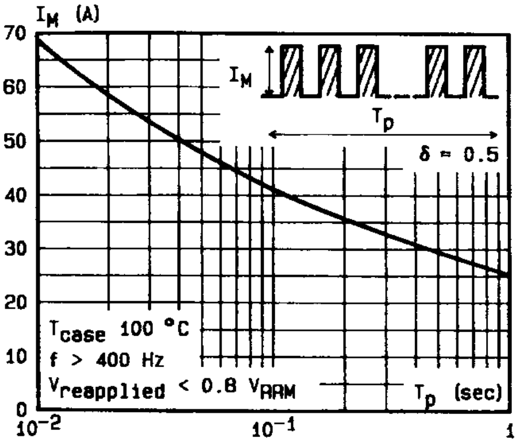


Figure 4. Thermal impedance versus pulse width

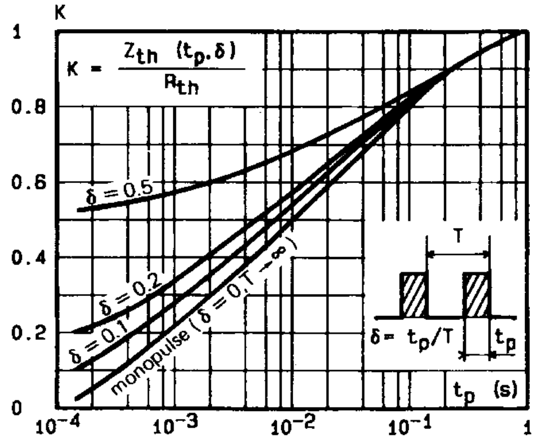


Figure 5. Voltage drop versus forward current

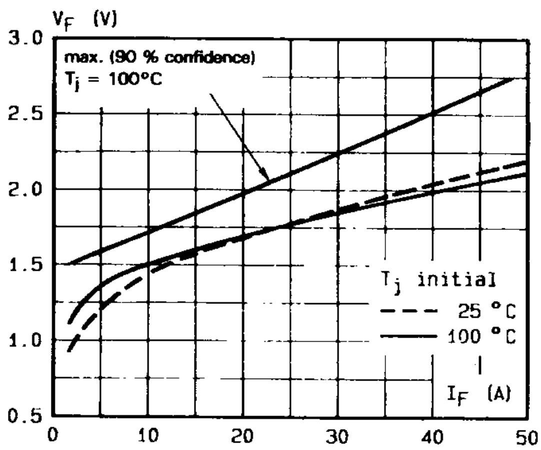


Figure 6. Recovery charge versus diF/dt

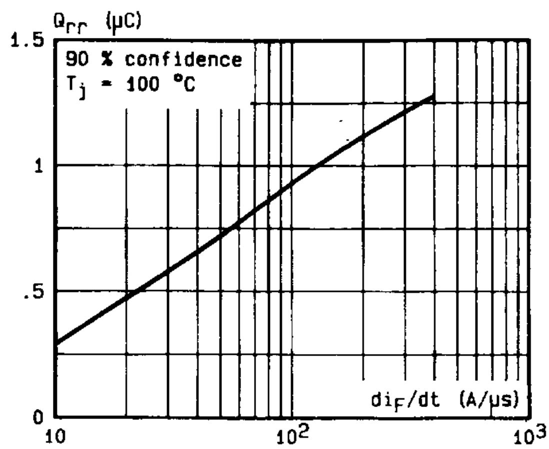


Figure 7. Recovery time versus diF/dt.

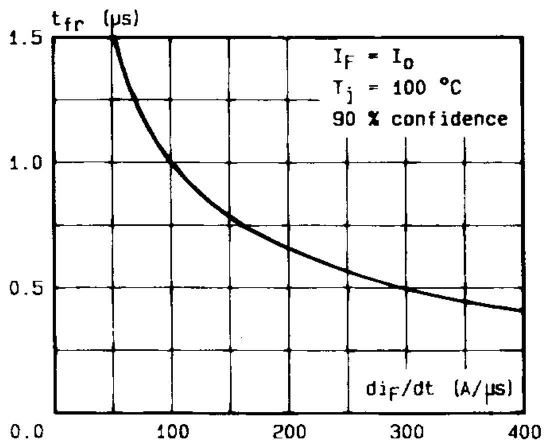


Figure 8. Peak reverse current versus diF/dt.

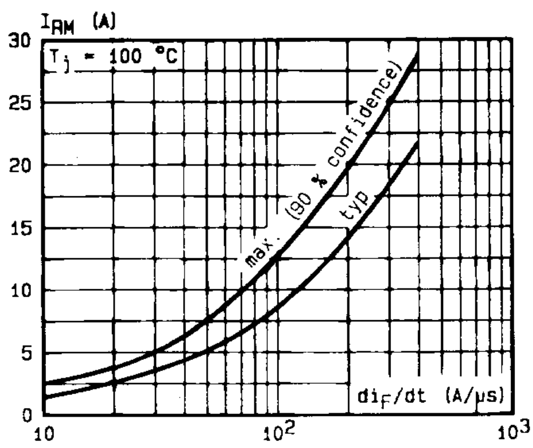


Figure 9. Peak forward voltage versus di_F/dt

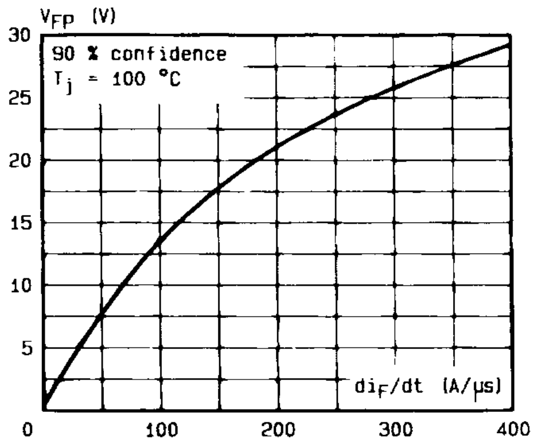


Figure 10. Dynamic parameters versus junction temperature.

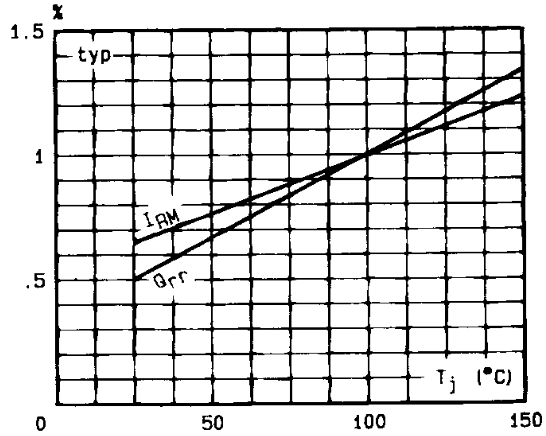


Figure 11. Turn-off switching characteristics (without series inductance).

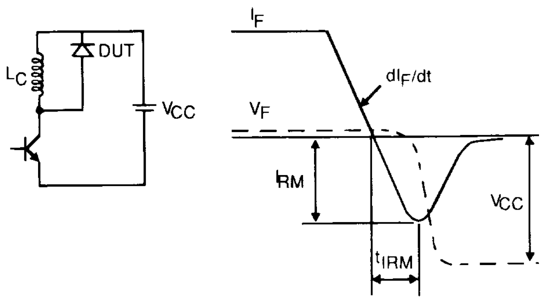
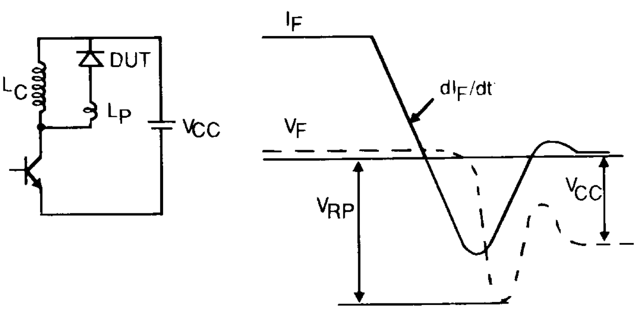
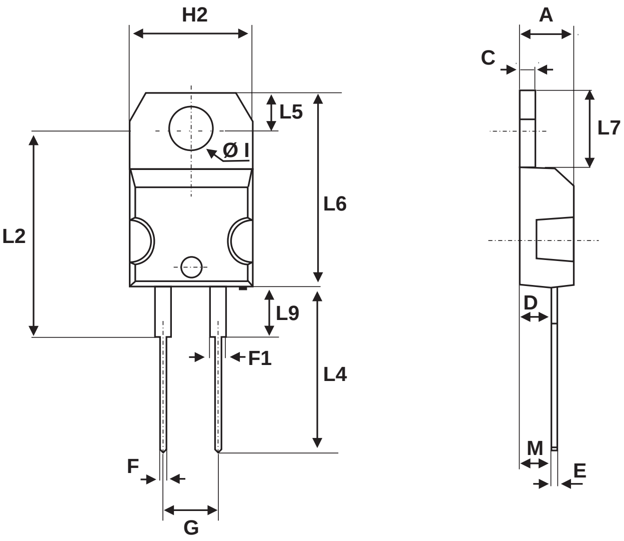


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA :
TO220AC Plastic



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

- **Marking:** type number
- Cooling method: by conduction (method C)
- Weight : 1.86g
- Recommended torque value : 80cm. N
- Maximum torque value : 100cm. N