



BYT 12P-1000

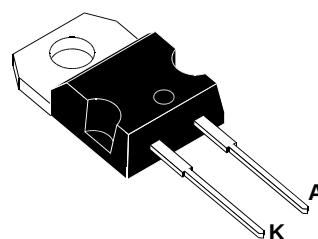
FAST RECOVERY RECTIFIER DIODE

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

SUITABLE APPLICATIONS

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

Cathode connected to case



TO220AC
(Plastic)

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	$T_{case} = 100^\circ C$ $\delta = 0.5$	12	A
I_{FSM}	Surge Non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	75	A
P	Power Dissipation	$T_{case} = 100^\circ C$	25	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 - 40 to + 150	$^\circ C$

THERMAL RESISTANCE

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

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

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

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$			155	ns
		$I_F = 0.5\text{A}$	$I_R = 1\text{A}$			65	

TURN-OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 12\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$ See figure 11			200	ns
	$di_F/dt = -100\text{A}/\mu\text{s}$			120		
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$				7.8	A
	$di_F/dt = -100\text{A}/\mu\text{s}$			9		

TURN-OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100^\circ\text{C}$ $di_F/dt = -12\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = I_{F(AV)}$ $L_p = 12\mu\text{H}$ See figure 12			4.5	

To evaluate the conduction losses use the following equations:

$$V_F = 1.47 + 0.026 I_F$$

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

Figure 1. Low frequency power losses versus average current

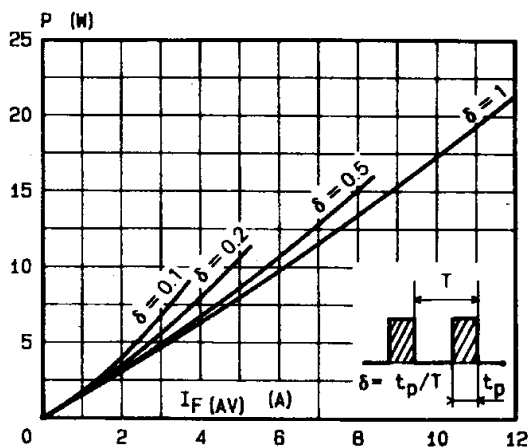


Figure 2. Peak current versus form factor

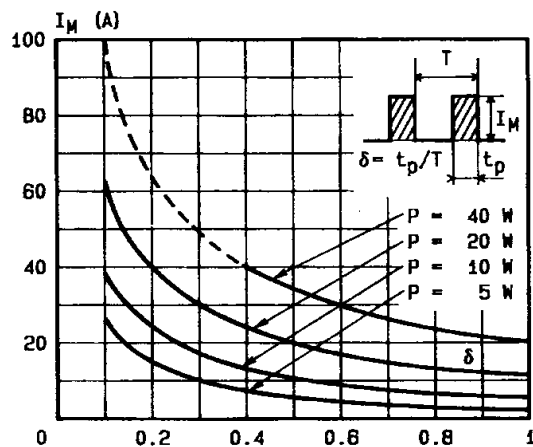


Figure 3. Non repetitive peak surge current versus overload duration

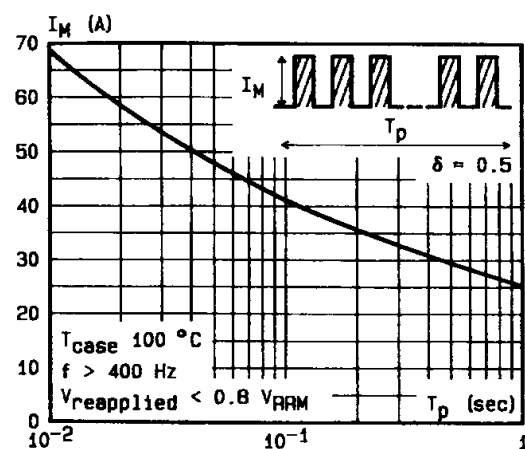


Figure 4. Thermal impedance versus pulse width

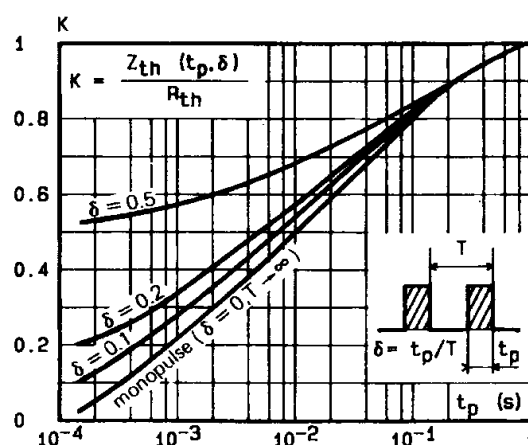


Figure 5. Voltage drop versus forward current

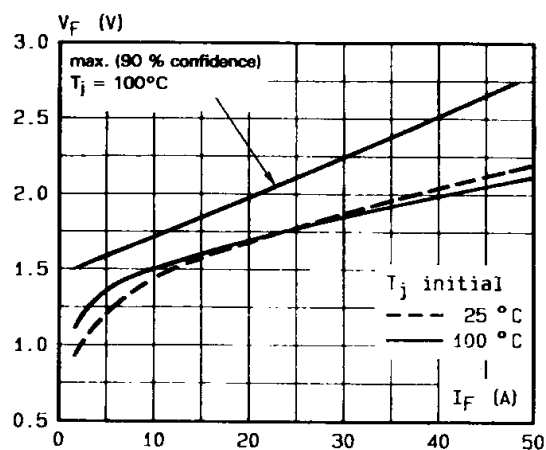


Figure 6. Recovery charge versus di_F/dt

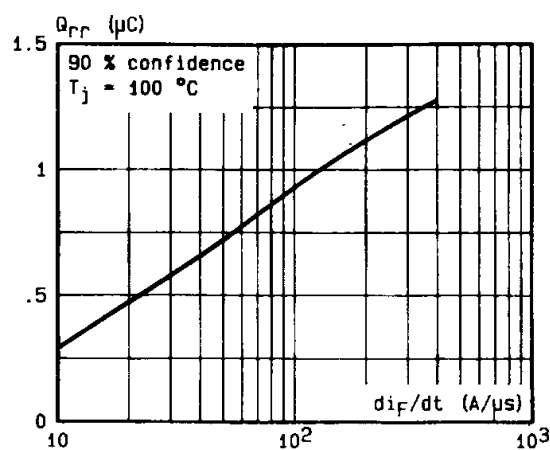


Figure 7. Recovery time versus di_F/dt

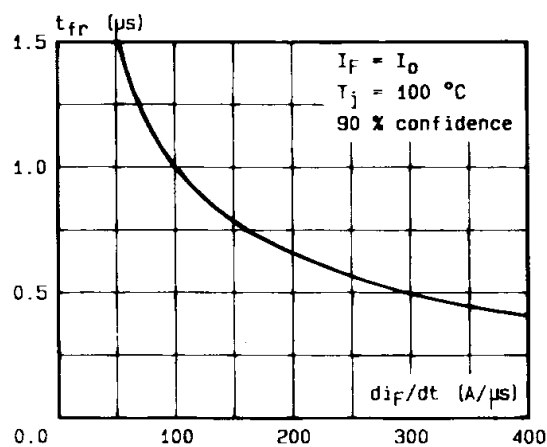


Figure 8. Peak reverse current versus di_F/dt

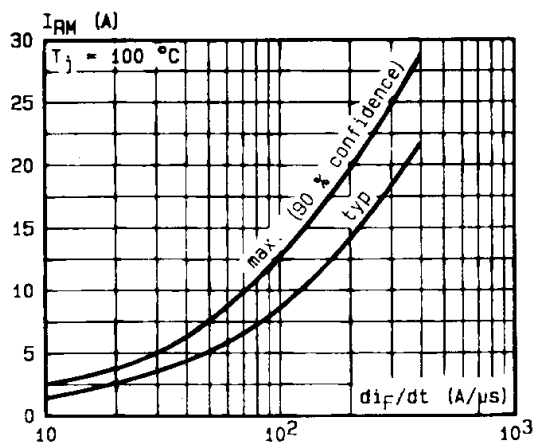


Figure 9. Peak forward voltage versus di_F/dt

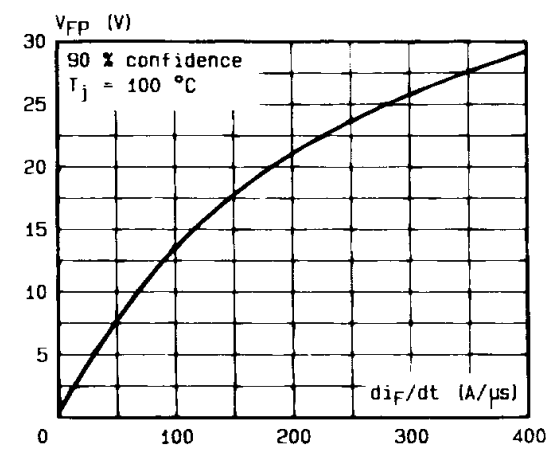


Figure 10. Dynamic parameters versus junction temperature.

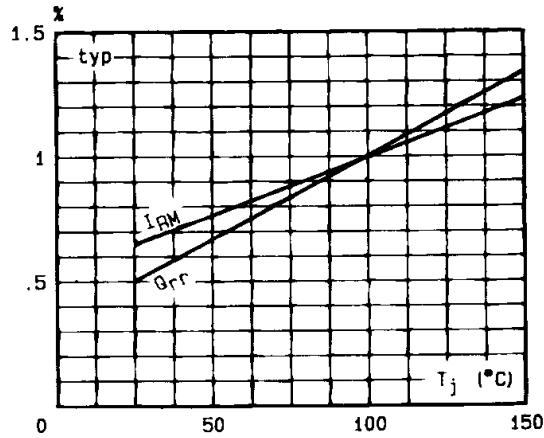


Figure 11. Turn-off switching characteristics (without series inductance).

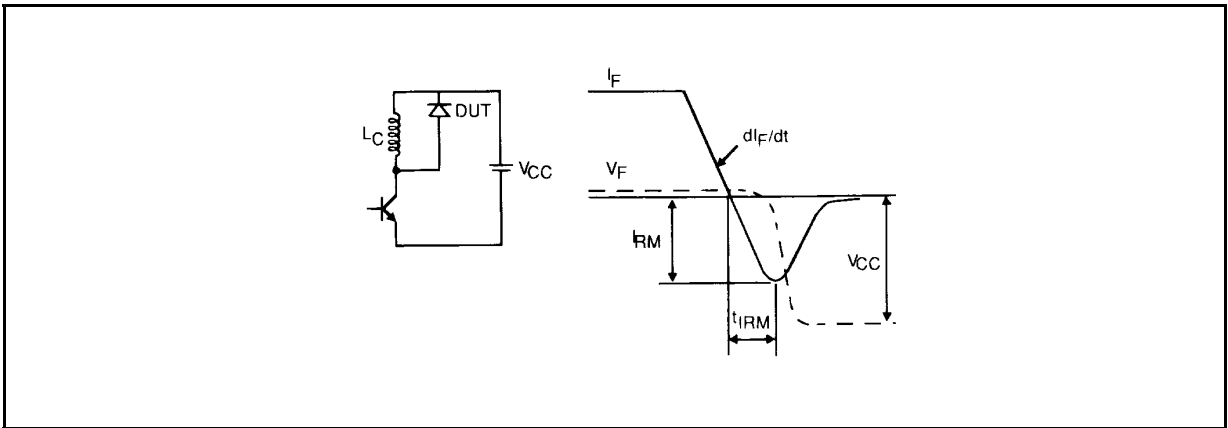
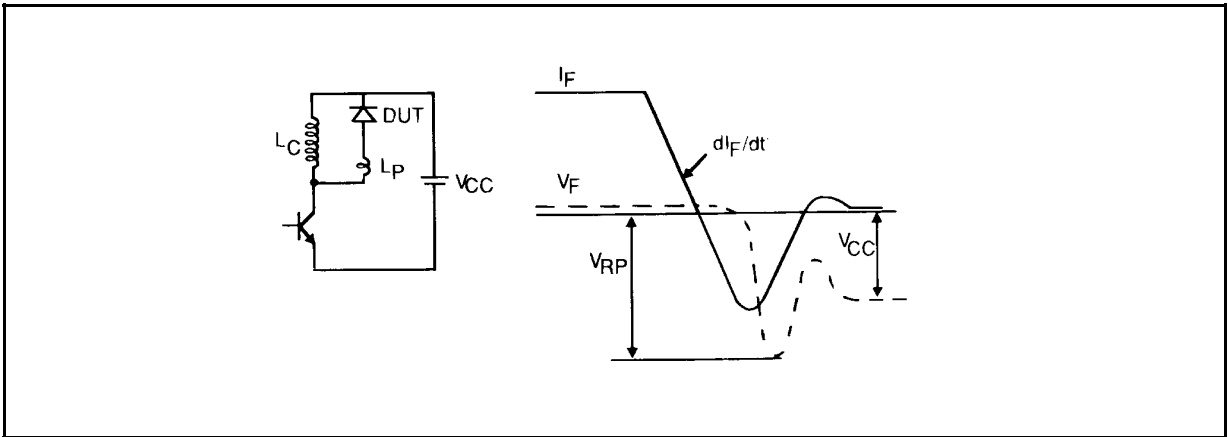
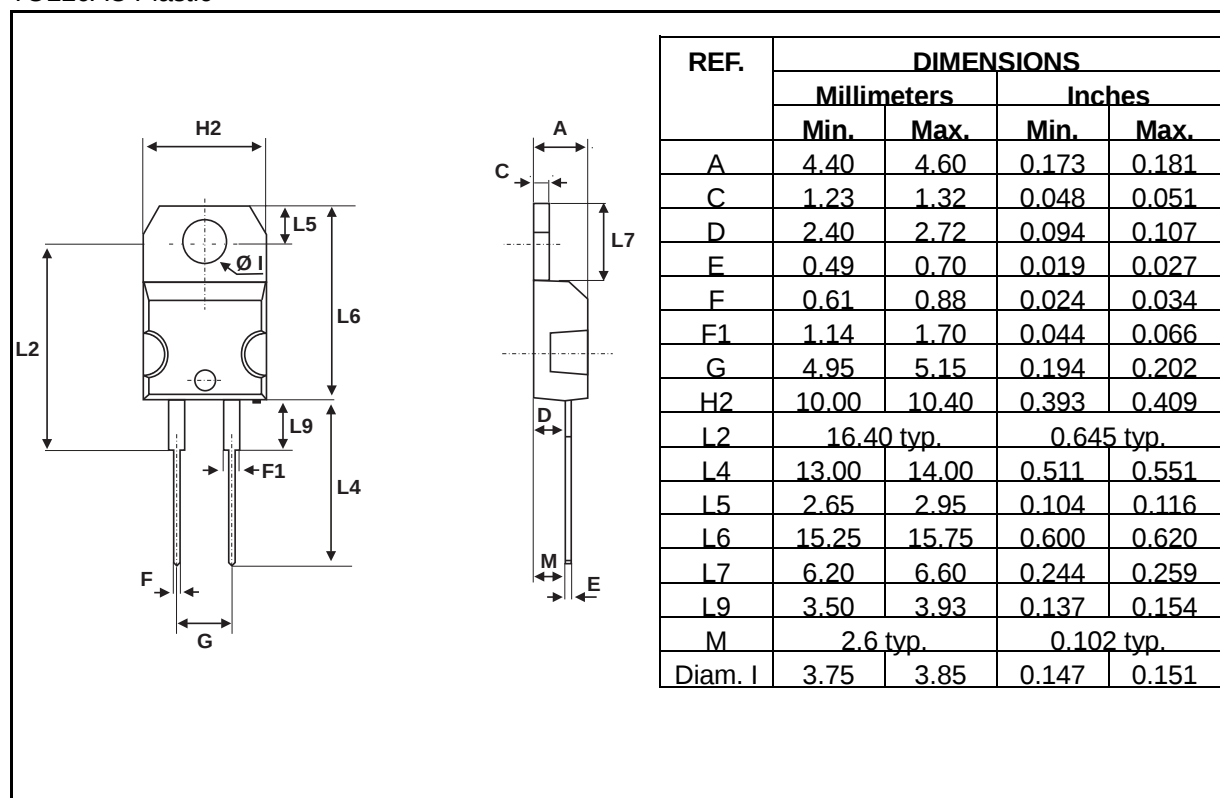


Figure 12. Turn-off switching characteristics (with series inductance)



PACKAGE MECHANICAL DATA :
 TO220AC Plastic


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

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