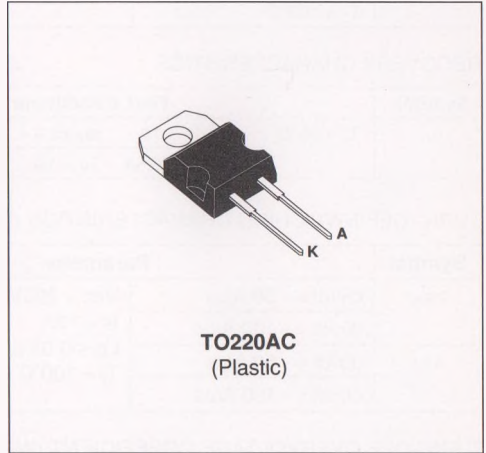


FAST RECOVERY RECTIFIER DIODES

- 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

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
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		75	A
P	Power Dissipation	$T_{case} = 100^\circ C$	25	W
T_{sig} T_j	Storage and Junction Temperature Range		- 40 to + 150	$^\circ C$

Symbol	Parameter	BYT 12 P-		Unit
		600	800	
V_{RRM}	Repetitive Peak Reverse Voltage	600	800	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	640	850	V

THERMAL RESISTANCE

Symbol	Parameter	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°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			120	ns
		I _F = 0.5A I _R = 1A I _{rr} = 0.25A			50	

TURN -OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Parameter		Min.	Typ.	Max.	Unit
t _{IRM}	di _F /dt = - 50 A/μs	V _{CC} = 200V I _F = 12A			160	ns
	di _F /dt = - 100 A/μs			100		
I _{RM}	di _F /dt = - 50 A/μs	L _p ≤ 0.05 μH T _j = 100°C See figure 11			6	A
	di _F /dt = - 100 A/μs			7.5		

TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C di _F /dt = - 12A/μs	V _{CC} = 150V I _F = I _{F(AV)} L _p = 4μH See Figure 12			4	

Note : Applicable to BYT 12 P-800 only.

To evaluate the conduction losses use the following equation :

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

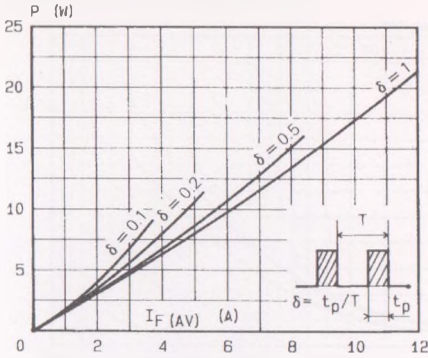


FIGURE 1 : Low frequency power losses versus average current.

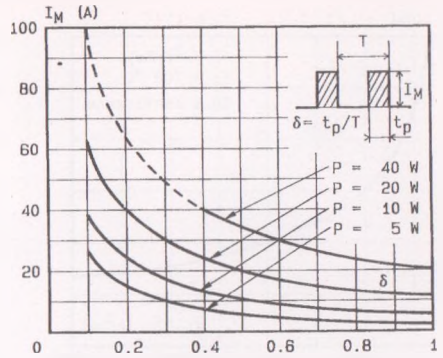


FIGURE 2 : Peak current versus form factor.

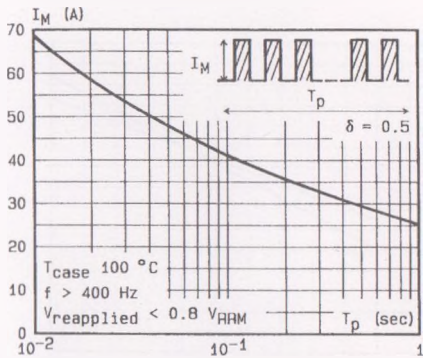


FIGURE 3 : Non repetitive peak surge current versus overload duration.

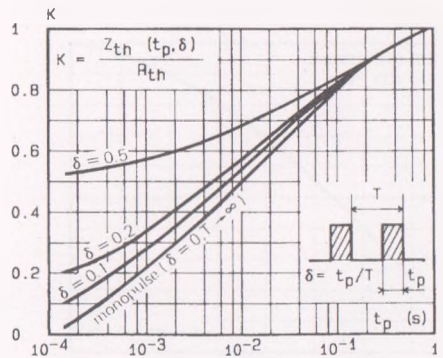


FIGURE 4 : Thermal impedance versus pulse width.

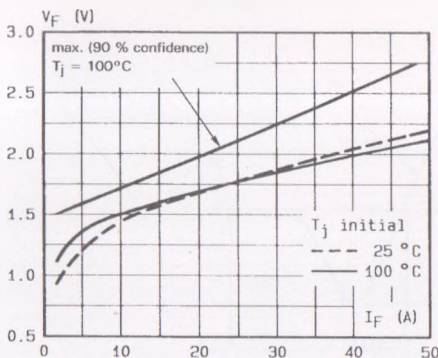


FIGURE 5 : Voltage drop versus forward current.

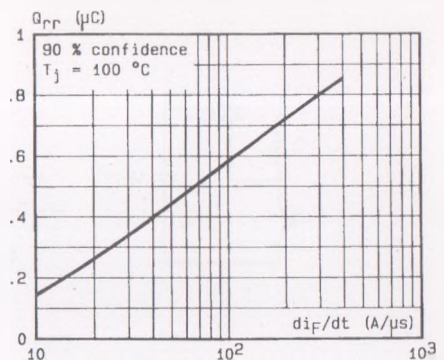


FIGURE 6 : Recovery charge versus di_F/dt .

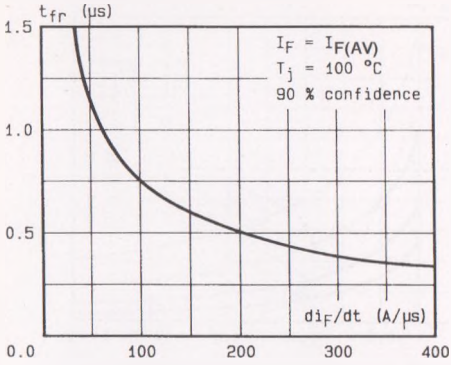


FIGURE 7 : Recovery time versus dI_F/dt .

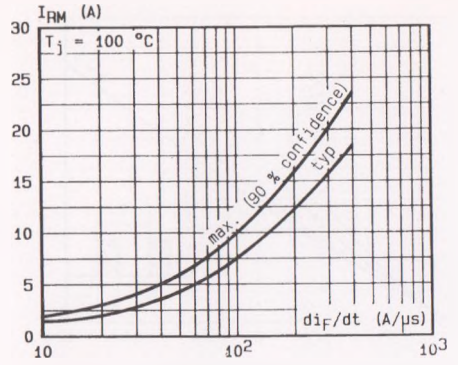


FIGURE 8 : Peak reverse current versus dI_F/dt .

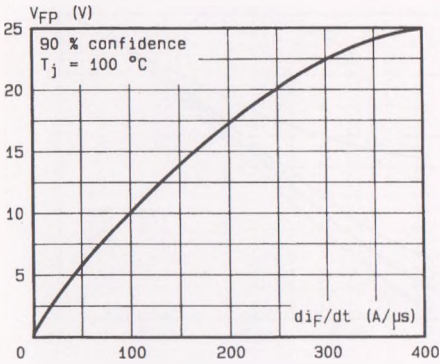


FIGURE 9 : Peak forward voltage versus dI_F/dt .

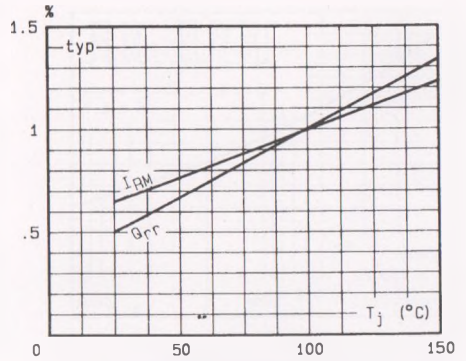


FIGURE 10 : Dynamic parameters versus junction temperature.

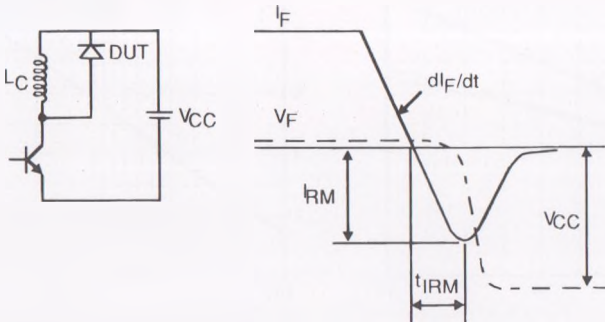


Figure 11 : Turn-off switching characteristics (without series inductance).

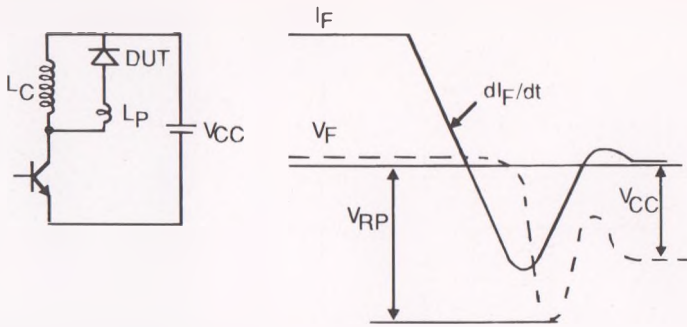


Figure 12 : Turn-off switching characteristics (with series inductance).