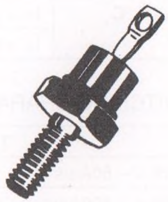
FAST RECOVERY RECTIFIER DIODES

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

Cathode connected to case



DO 4
(Metal)

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_{FRM}	Repetitive Peak Forward Current	$tp \leq 10\mu s$	200	A
$I_{F(RMS)}$	RMS Forward Current		25	A
$I_{F(AV)}$	Average forward current	Tc=100°C $\delta = 0.5$	12	A
I_{FSM}	Surge non Repetitive Forward Current	tp=10ms sinusoidal	75	A
P	Power Dissipation	Tc=100°C	20	W
Tstg Tj	Storage and junction temperature range		- 40 to + 150	°C

Symbol	Parameter	BYT 12-		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	2.5	°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 = 1 A di_F/dt = – 15 A/µs V_R = 30 V			120	ns
		I_F = 0.5 A I_R = 1 A I_{rr} = 0.25 A			50	

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 $L_p \leq 0.05\mu H$ T_j = 100°C See Figure 11			160	ns
	di_F/dt = – 100A/µs			100		
I_{RM}	di_F/dt = – 50A/µs				6	A
	di_F/dt = – 100A/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 V_{CC} = 200V $I_F = I_{F(AV)}$ See note di_F/dt = – 12A/µs L_p = 12µH See Figure 12			4	

Note : Applicable to BYT 12-800 only

To evaluate the conduction losses use the following equations :

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

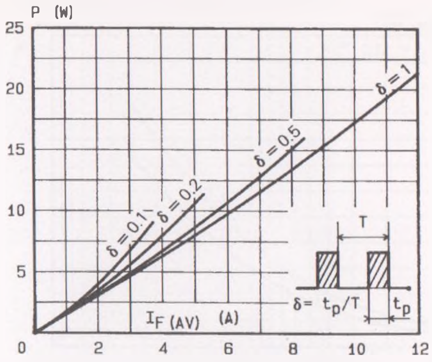


FIGURE 1 : Low frequency power losses versus average current.

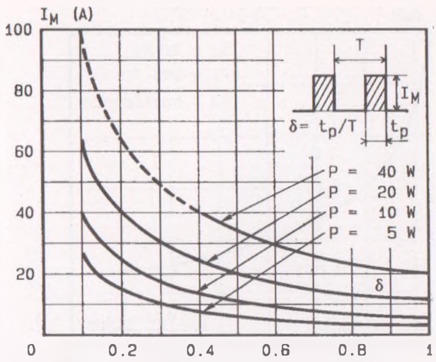


FIGURE 2 : Peak current versus form factor.

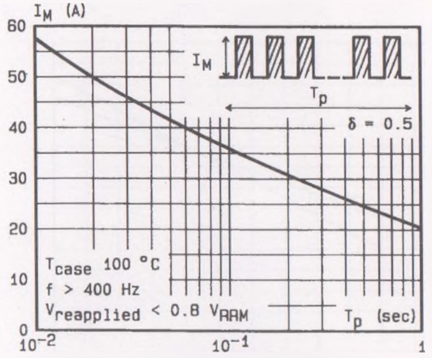


FIGURE 3 : Non repetitive peak surge current versus overload duration.

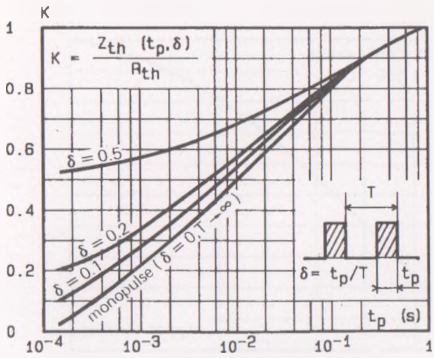


FIGURE 4 : Thermal impedance versus pulse width.

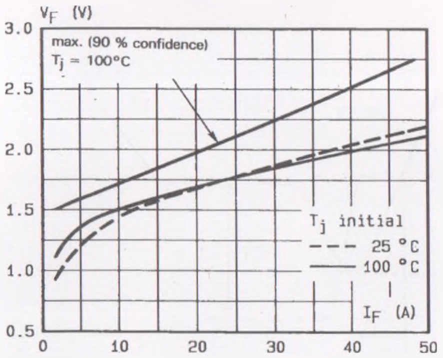


FIGURE 5 : Voltage drop versus forward current.

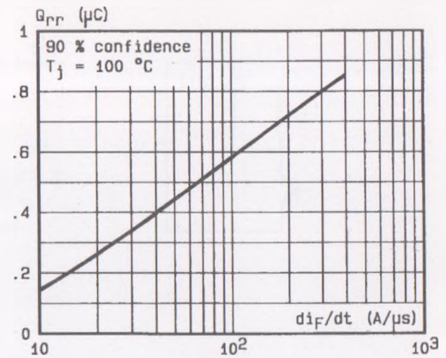


FIGURE 6 : Recovery charge versus di_F/dt.

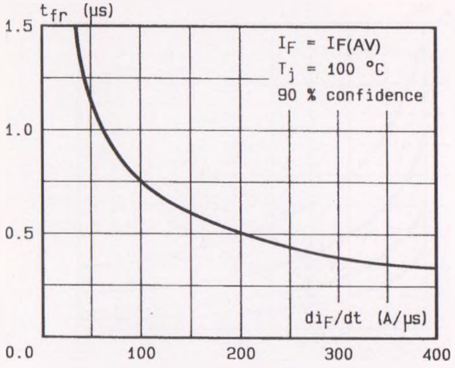


FIGURE 7 : Recovery time versus di_F/dt.

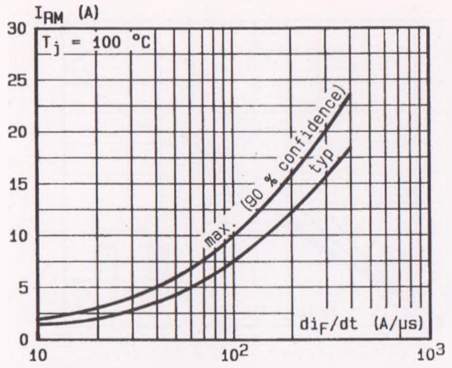


FIGURE 8 : Peak reverse current versus di_F/dt.

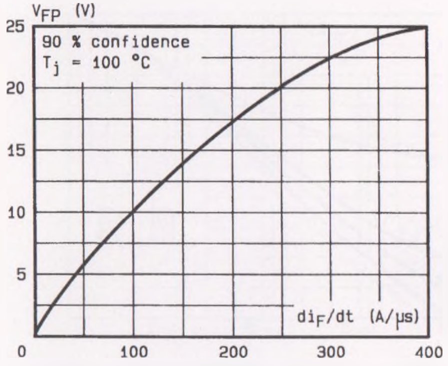


FIGURE 9 : Peak forward voltage versus di_F/dt.

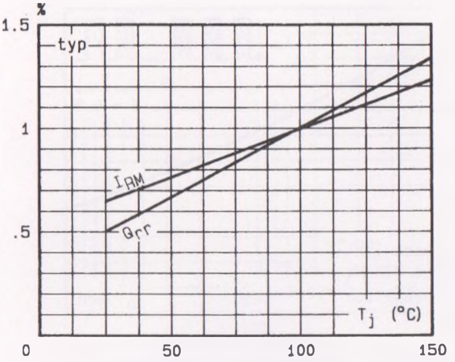


FIGURE 10 : Dynamic parameters versus junction temperature.

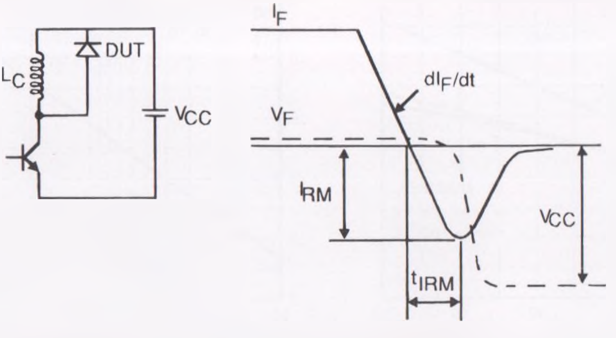


Figure 11 : Turn-off switching characteristics (without series inductance).

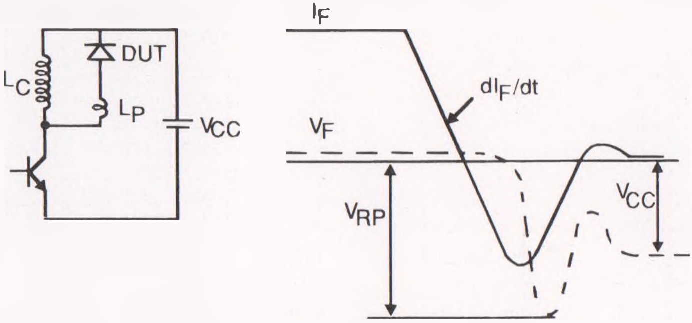


Figure 12 : Turn-off switching characteristics (with series inductance).