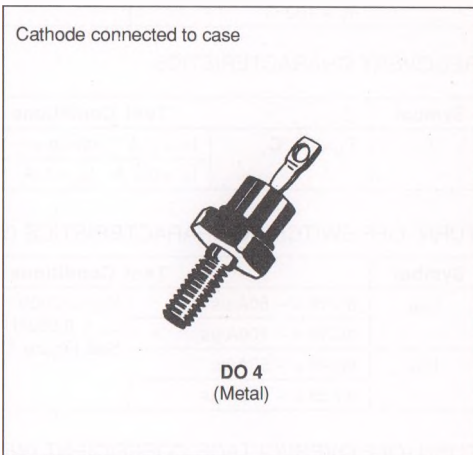


FAST RECOVERY RECTIFIER DIODES

- 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.


ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I _{FRM}	Repetitive Peak Forward Current	tp ≤ 10μs	200	A
I _{F(RMS)}	RMS Forward Current		25	A
I _{F(AV)}	Average forward current	T _c =100°C δ = 0.5	12	A
I _{FSM}	Surge non Repetitive Forward Current	tp=10ms sinusoidal	75	A
P	Power Dissipation	T _c =100°C	20	W
T _{stg} T _j	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	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			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}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			120	ns
		$I_F = 0.5\text{A}$ $I_R = 1\text{A}$ $I_{rr} = 0.25\text{A}$			50	

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			160	ns
	$di_F/dt = -100\text{A}/\mu\text{s}$			100		
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$				6	A
	$di_F/dt = -100\text{A}/\mu\text{s}$			7.5		

TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100^\circ\text{C}$ $di_F/dt = -12\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = I_{F(AV)}$ See note $L_p = 12\mu\text{H}$ See Figure 12			4	

Note : Applicable to BYT 12-800 only

To evaluate the conduction losses use the following equations :

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

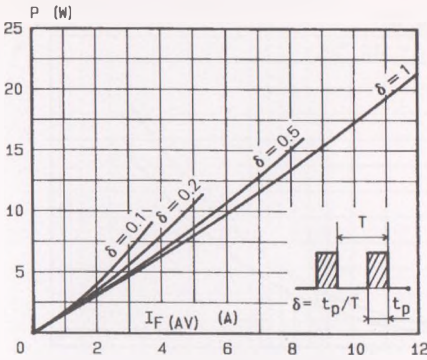


FIGURE 1 : Low frequency power losses versus average current.

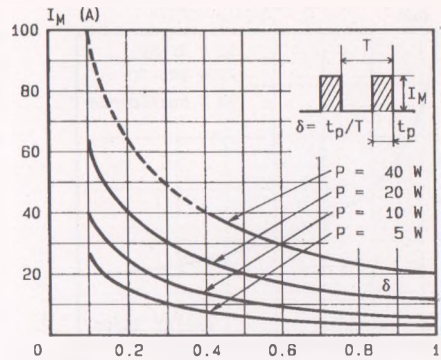


FIGURE 2 : Peak current versus form factor.

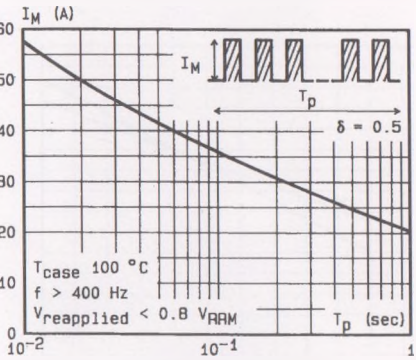


FIGURE 3 : Non repetitive peak surge current versus overloaded duration.

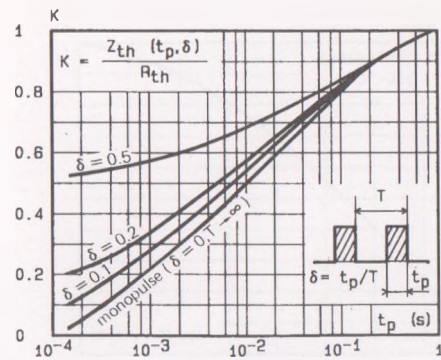


FIGURE 4 : Thermal impedance versus pulse width.

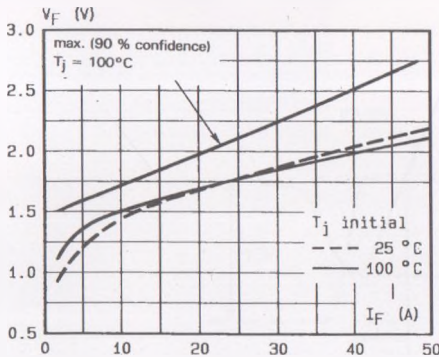


FIGURE 5 : Voltage drop versus forward current.

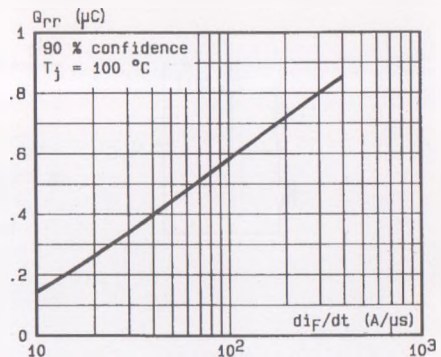


FIGURE 8 : Recovery charge versus di_F/dt .

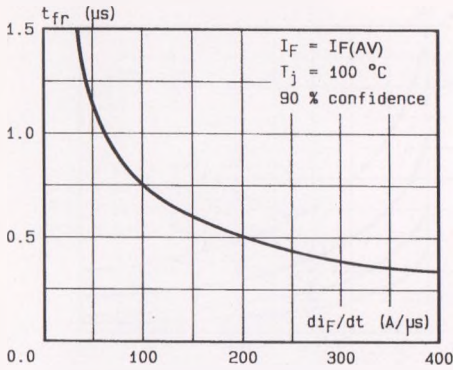


FIGURE 7 : Recovery time versus di_F/dt .

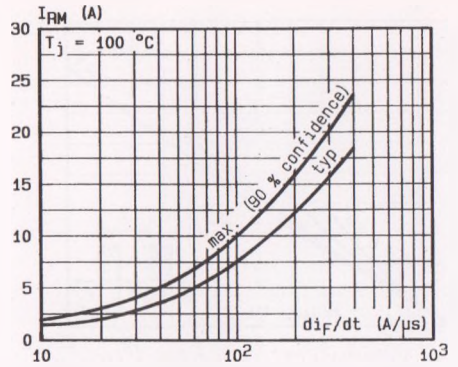


FIGURE 8 : Peak reverse current versus di_F/dt .

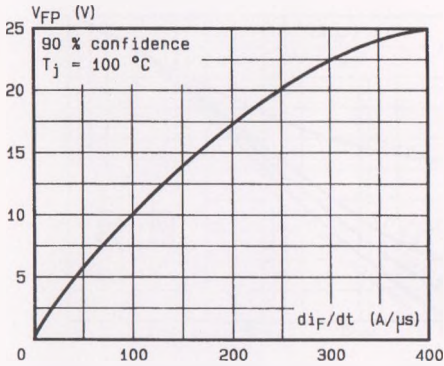


FIGURE 9 : Peak forward voltage versus di_F/dt .

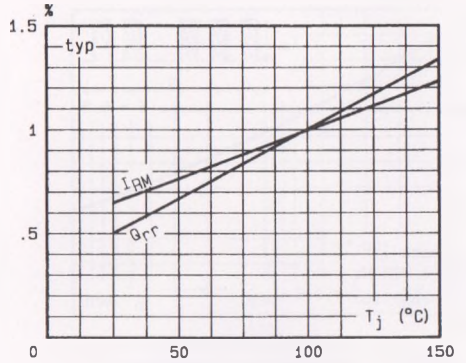


FIGURE 10 : Dynamic parameters versus junction temperature.

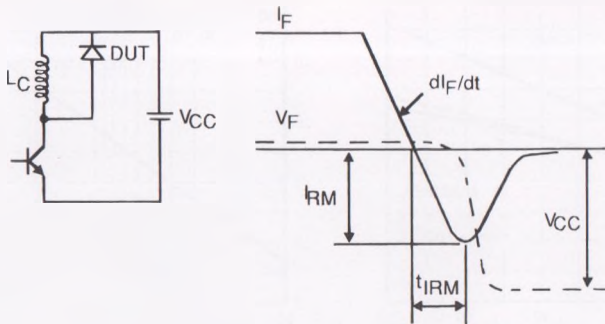


Figure 11 : Turn-off switching characteristics (without series inductance).

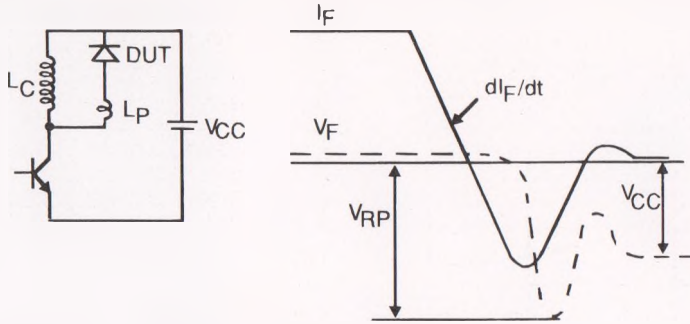


Figure 12 : Turn-off switching characteristics (with series inductance).