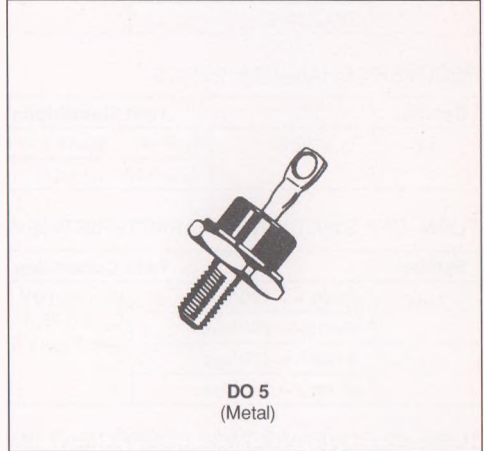


FAST RECOVERY RECTIFIER DIODES

- 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	$t_p \leq 10\mu s$	500	A
$I_{F(RMS)}$	RMS Forward Current		50	A
$I_{F(AV)}$	Average Forward Current	$T_{case} = 90^\circ C$ $\delta = 0.5$	30	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ sinusoidal	500	A
P	Power Dissipation	$T_{case} = 90^\circ C$	50	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150	$^\circ C$

Symbol	Parameter	BYT 30-			Unit
		200	300	400	
V_{RRM}	Repetitive Peak Reverse Voltage	200	300	400	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	220	330	440	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction-case	1.2	$^\circ C/W$

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			35	μA
	$T_j = 100^\circ\text{C}$				6	mA
V_F	$T_j = 25^\circ\text{C}$	$I_F = 30\text{A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.4	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$ $di_F/dt = -15\text{A}/\mu\text{s}$ $V_R = 30\text{V}$			100	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}	$di_F/dt = -120\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 30\text{A}$ $L_p \leq 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$ See Figure 11			75	ns
	$di_F/dt = -240\text{A}/\mu\text{s}$			50		
I_{RM}	$di_F/dt = -120\text{A}/\mu\text{s}$				9	A
	$di_F/dt = -240\text{A}/\mu\text{s}$			12		

TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100^\circ\text{C}$ $di_F/dt = -30\text{A}/\mu\text{s}$	$V_{CC} = 60\text{V}$ $I_F = I_{F(AV)}$ $L_p = 1\mu\text{H}$ See Figure 12		3.3		

To evaluate the conduction losses use the following equations :

$$V_F = 1.1 + 0.0095 I_F$$

$$P = 1.1 \times I_{F(AV)} + 0.0095 I_F^2(\text{RMS})$$

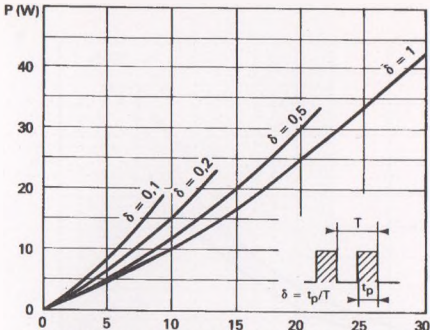


FIGURE 1 : Low frequency power losses versus average current (A)

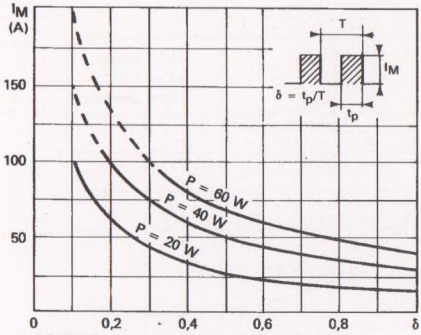


FIGURE 2 : Peak current versus form factor.

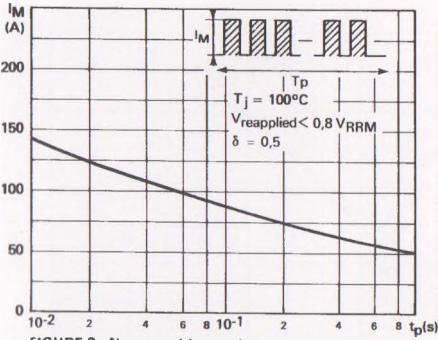


FIGURE 3 : Non repetitive peak surge current versus overload duration.

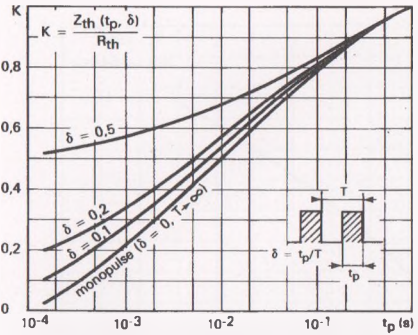


FIGURE 4 : Thermal impedance versus pulse width.

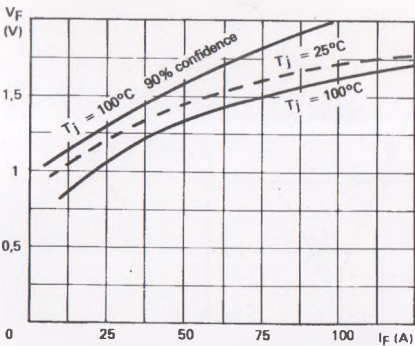


FIGURE 5 : Voltage drop versus forward current.

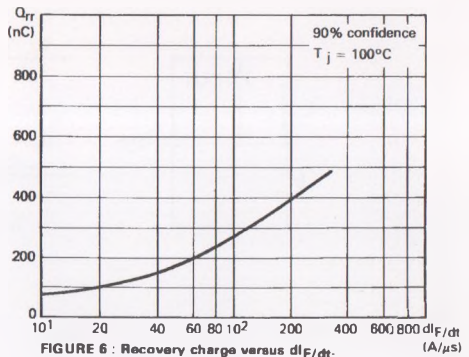


FIGURE 6 : Recovery charge versus di/dt .

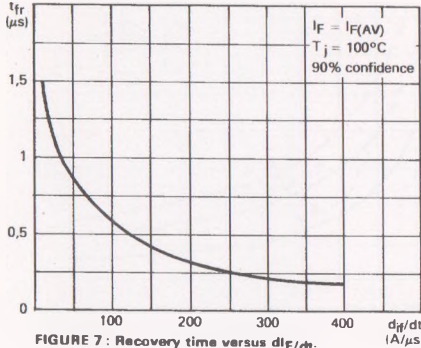


FIGURE 7 : Recovery time versus dI_F/dt .

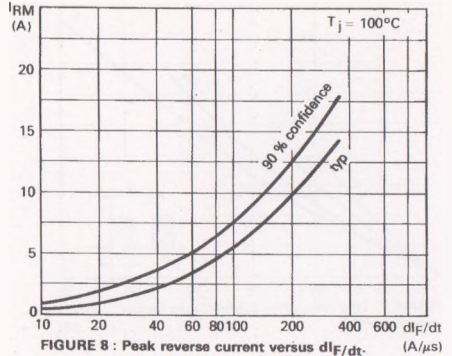


FIGURE 8 : Peak reverse current versus dI_F/dt .

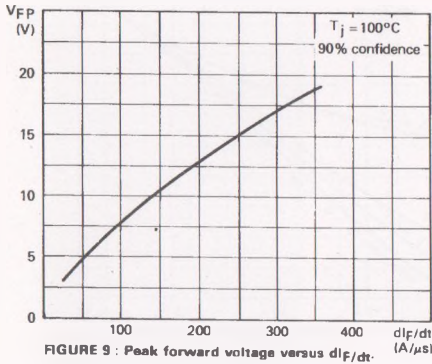


FIGURE 9 : Peak forward voltage versus dI_F/dt .

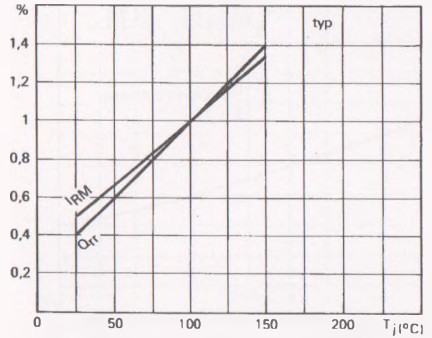


FIGURE 10 : Dynamic parameters versus junction temperature.

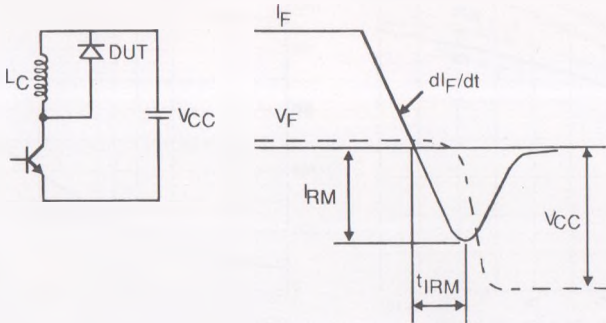


Figure 11 : Turn-off switching characteristics (without series inductance).

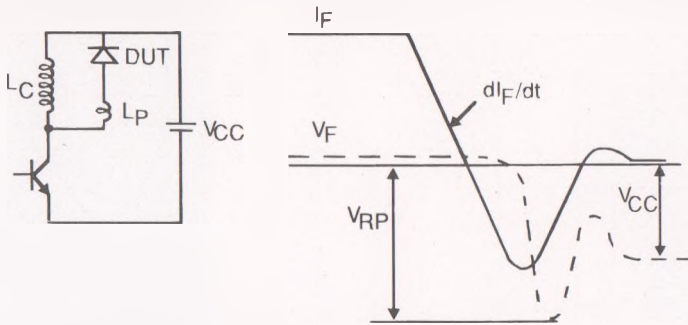


Figure 12 : Turn-off switching characteristics (with series inductance).