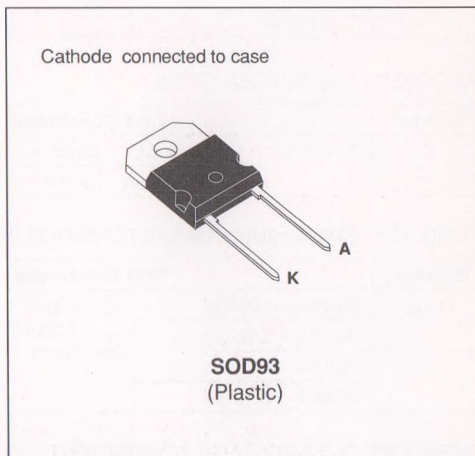


**FAST RECOVERY RECTIFIER DIODES**

- 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	$t_p \leq 10\mu s$	375	A
$I_{F(RMS)}$	RMS Forward Current		70	A
$I_{F(AV)}$	Average Forward Current	$T_{case} = 85^\circ C$ $\delta = 0.5$	30	A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	200	A
P	Power Dissipation	$T_{case} = 85^\circ C$	65	W
$T_{stg}$ $T_j$	Storage and Junction Temperature Range		- 40 to + 150	$^\circ C$

Symbol	Parameter	BYT 30P-		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	1	$^\circ C/W$

## ELECTRICAL CHARACTERISTICS

## STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$I_R$	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			100	$\mu\text{A}$
	$T_j = 100^\circ\text{C}$				5	$\text{mA}$
$V_F$	$T_j = 25^\circ\text{C}$	$I_F = 30\text{A}$			1.9	V
	$T_j = 100^\circ\text{C}$				1.8	

## RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$t_{rr}$	$T_j = 25^\circ\text{C}$	$I_F = 1\text{A}$	$di_F/dt = -15\text{A}/\mu\text{s}$	$V_R = 30\text{V}$		130	ns
		$I_F = 0.5\text{A}$	$I_R = 1\text{A}$	$I_{rr} = 0.25\text{A}$		55	

## 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			160	ns
	$di_F/dt = -240\text{A}/\mu\text{s}$			100		
$I_{RM}$	$di_F/dt = -120\text{A}/\mu\text{s}$				15	A
	$di_F/dt = -240\text{A}/\mu\text{s}$			19		

## TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	$T_j = 100^\circ\text{C}$	$V_{CC} = 200\text{V}$	$I_F = I_{F(AV)}$ See note			4	
	$di_F/dt = -30\text{A}/\mu\text{s}$	$L_p = 5\mu\text{H}$	See Figure 12				

Note : Applicable to BYT 30 P-800 only.

To evaluate the conduction losses use the following equations :

$$V_F = 1.47 + 0.01 I_F \quad P = 1.47 \times I_{F(AV)} + 0.01 I_F^2_{(RMS)}$$

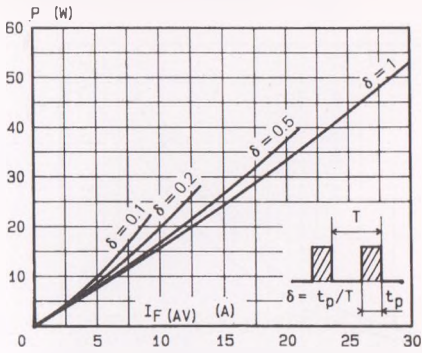


FIGURE 1 : Low frequency power losses versus average current.

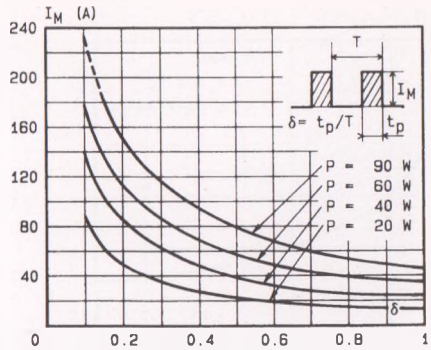


FIGURE 2 : Peak current versus form factor.

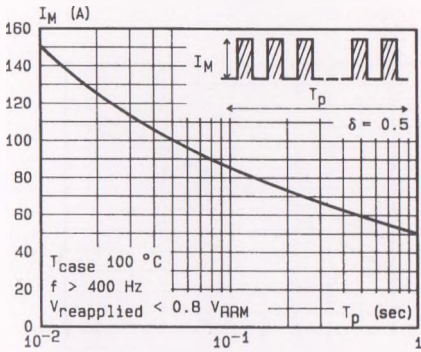


FIGURE 3 : Non repetitive peak surge current versus overload duration.

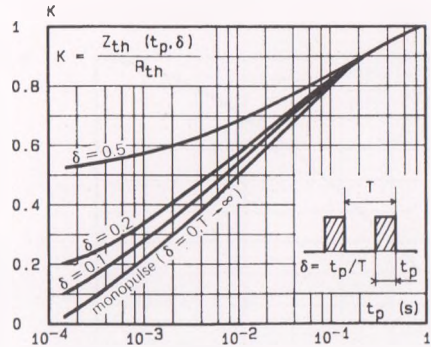


FIGURE 4 : Thermal impedance versus pulse width.

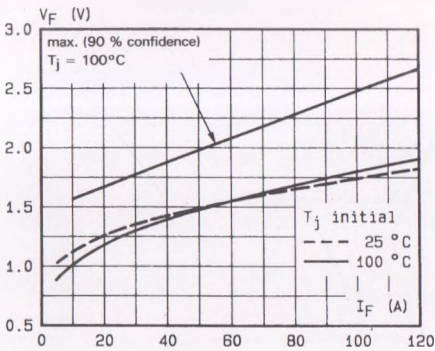


FIGURE 5 : Voltage drop versus forward current.

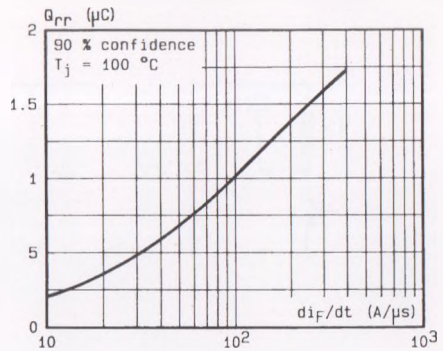


FIGURE 6 : Recovery charge versus di/dt.

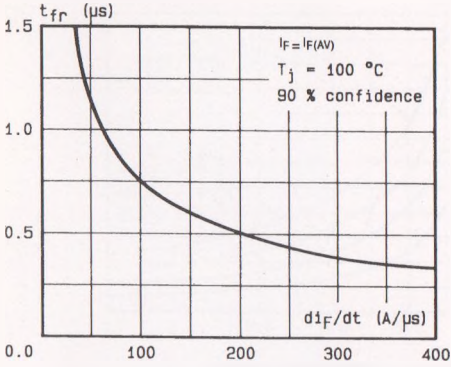


FIGURE 7 : Recovery time versus  $di_F/dt$ .

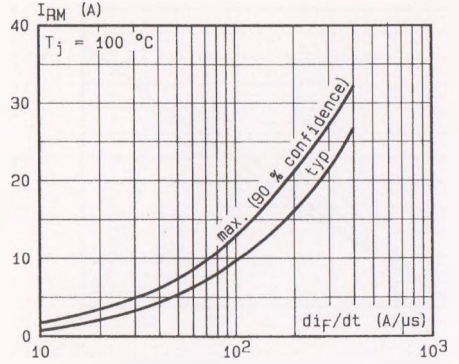


FIGURE 8 : Peak reverse current versus  $di_F/dt$ .

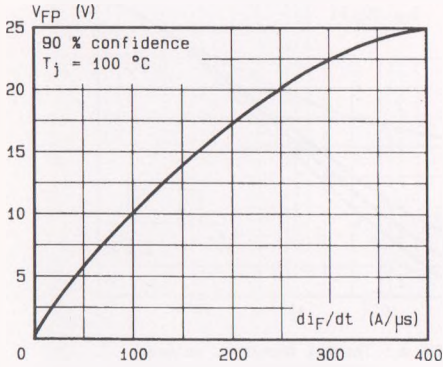


FIGURE 9 : Peak forward voltage versus  $di_F/dt$ .

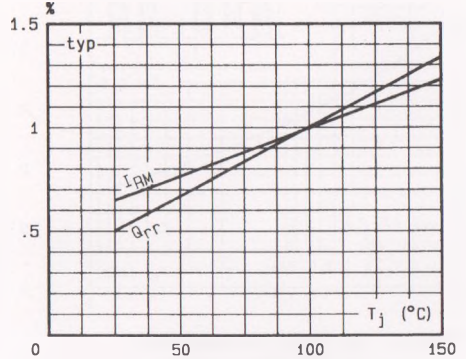


FIGURE 10 : Dynamic parameters versus junction temperature.

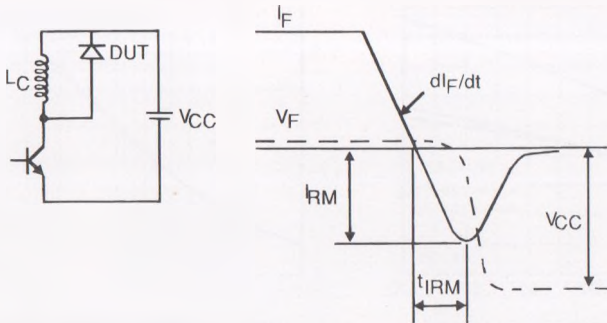
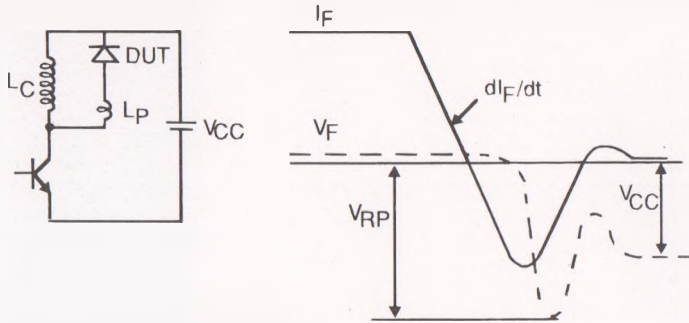


Figure 11 : Turn-off switching (without series inductance).



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