

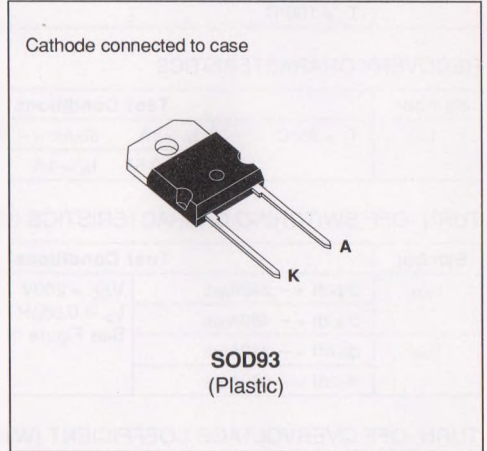


**FAST RECOVERY RECTIFIER DIODES**

- 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	$t_p \leq 10\mu s$	800 A
$I_{F(RMS)}$	RMS Forward Current		100 A
$I_{F(AV)}$	Average Forward Current	$T_{case} = 70^\circ C$ $\delta = 0.5$	60 A
$I_{FSM}$	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	550 A
P	Power Dissipation	$T_{case} = 70^\circ C$	100 W
$T_{stg}$ $T_j$	Storage and Junction Temperature Range		- 40 to + 150 °C

Symbol	Parameter	BYT 60P-			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	Test Conditions	Value	Unit
$R_{th(j-c)}$	Junction-case	0.8	°C/W

**ELECTRICAL CHARACTERISTICS**

**STATIC CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub>	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			60	μA
	T <sub>j</sub> = 100°C				10	mA
V <sub>F</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 60A			1.5	V
	T <sub>j</sub> = 100°C				1.4	

**RECOVERY CHARACTERISTICS**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t <sub>rr</sub>	T <sub>j</sub> = 25°C	I <sub>F</sub> = 1A    di <sub>F</sub> /dt = - 15A/μs    V <sub>R</sub> = 30V			100	ns
		I <sub>F</sub> = 0.5A    I <sub>R</sub> = 1A    I <sub>rr</sub> = 0.25A			50	

**TURN -OFF SWITCHING CHARACTERISTICS (Without Series Inductance)**

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t <sub>IRM</sub>	di <sub>F</sub> /dt = - 240A/μs	V <sub>CC</sub> = 200V    I <sub>F</sub> = 60A L <sub>p</sub> < 0.05μH    T <sub>j</sub> = 100°C See Figure 11			75	ns
	di <sub>F</sub> /dt = - 480A/μs			50		
I <sub>RM</sub>	di <sub>F</sub> /dt = - 240A/μs				18	A
	di <sub>F</sub> /dt = - 480A/μs			24		

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

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T <sub>j</sub> = 100°C di <sub>F</sub> /dt = - 60A/μs	V <sub>CC</sub> = 120V    I <sub>F</sub> = I <sub>F(AV)</sub> See note L <sub>p</sub> = 1.3μH    See Figure 12		3.3		

Note : Applicable to BYT 60P 400 V only

To evaluate the conduction losses use the following equations :

$$V_F = 1.1 + 0.0045 I_F \qquad P = 1.1 \times I_{F(AV)} + 0.0045 I_F^2 (RMS)$$

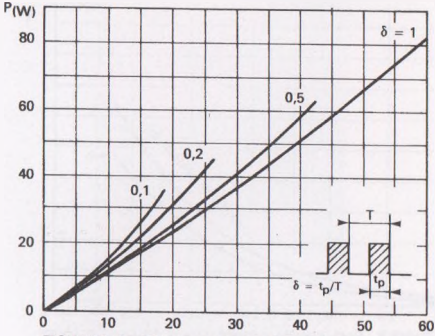


FIGURE 1 : Low frequency power losses versus average current

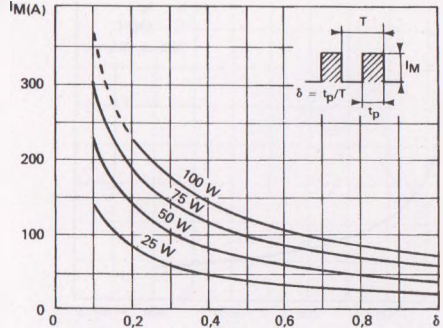


FIGURE 2 : Peak current versus form factor.

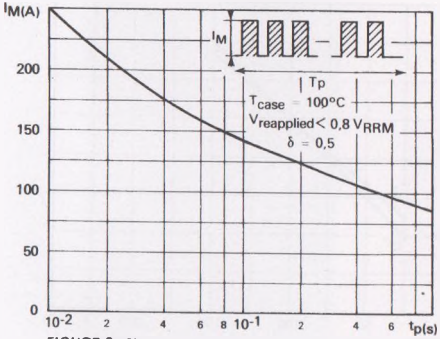


FIGURE 3 : Non repetitive peak surge current versus overload duration.

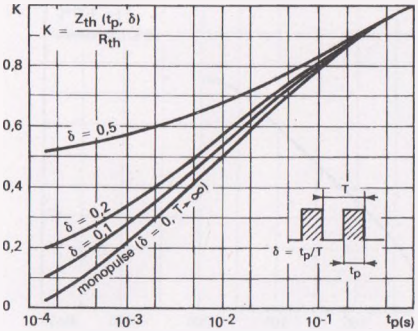


FIGURE 4 : Thermal impedance versus pulse width.

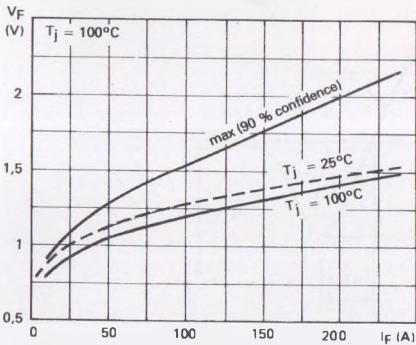


FIGURE 5 : Voltage drop versus forward current.

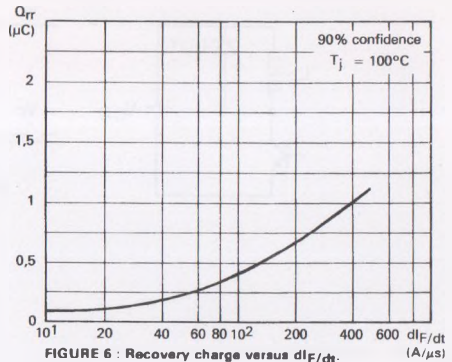


FIGURE 6 : Recovery charge versus  $di_F/dt$ .

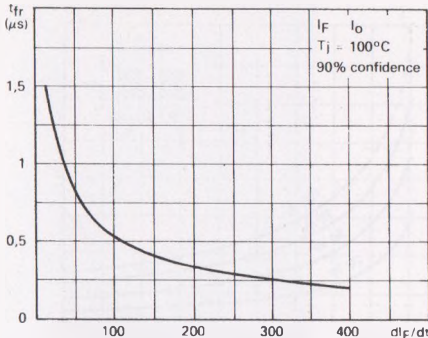


FIGURE 7 : Recovery time versus  $dI_F/dt$ .

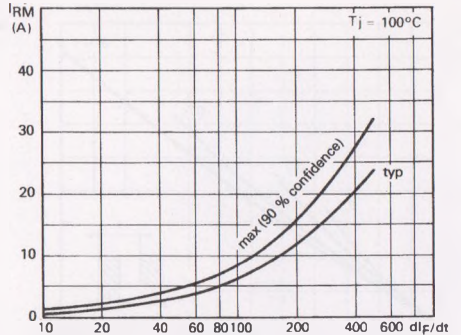


FIGURE 8 : Peak reverse current versus  $dI_F/dt$ .

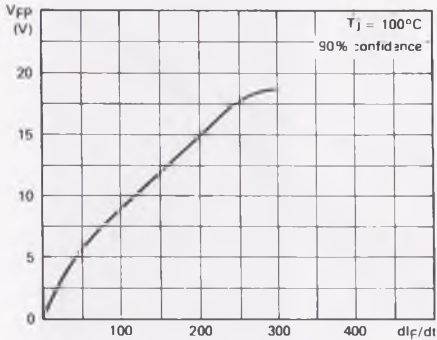


FIGURE 9 : Peak forward voltage versus  $dI_F/dt$ .

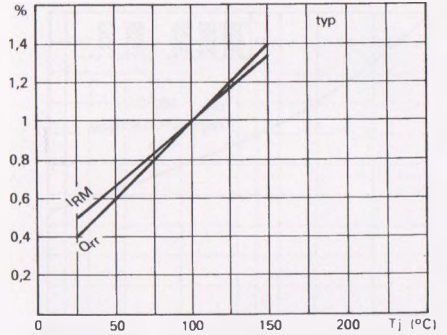


FIGURE 10 : Dynamic parameters versus junction temperature.

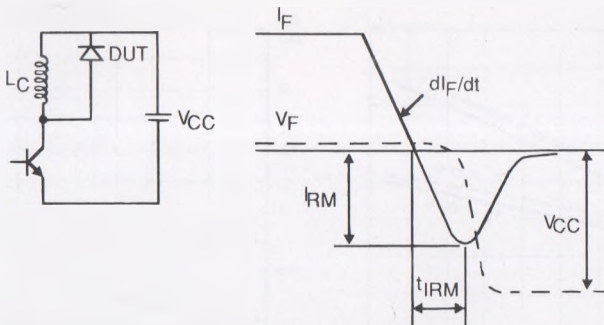


Figure 11 : Turn-off switching characteristics (without series inductance).

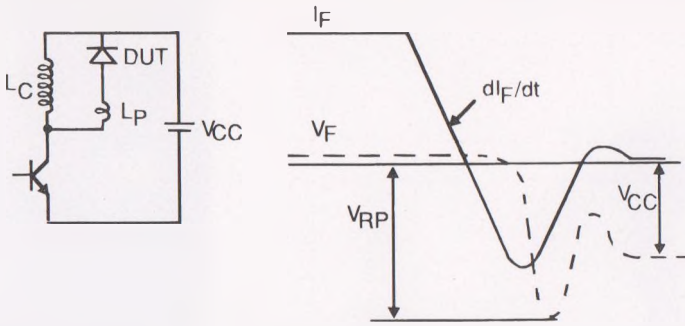


Figure 12 : Turn-off switching characteristics (with series inductance).