

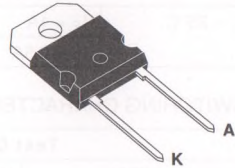
FAST RECOVERY RECTIFIER DIODES

- 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.

Cathode connected to case


SOD93
 (Plastic)

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	$T_{case} = 100^\circ C$ $\delta = 0.5$	30 A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	350 A
P	Power Dissipation	$T_{case} = 100^\circ C$	50 W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150 °C

Symbol	Parameter	BYT 30P-			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	1	°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}	$di_F/dt = -120\text{A}/\mu\text{s}$	$V_{CC} = 200\text{V}$ $I_F = 30\text{A}$ $L_p < 0.05\mu\text{H}$ $T_j = 100^\circ\text{C}$ 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		

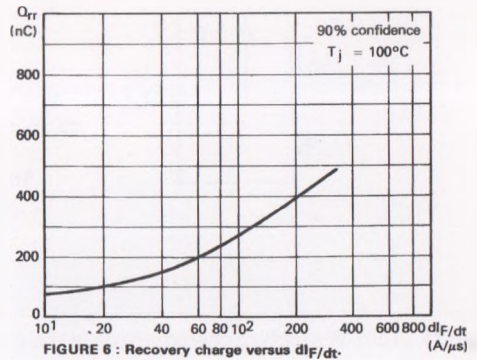
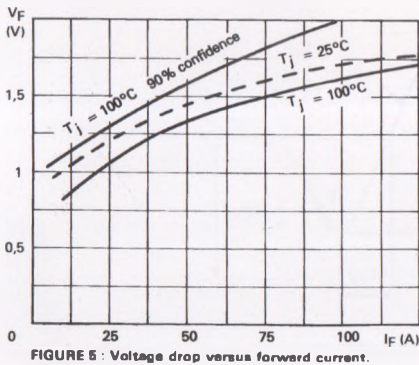
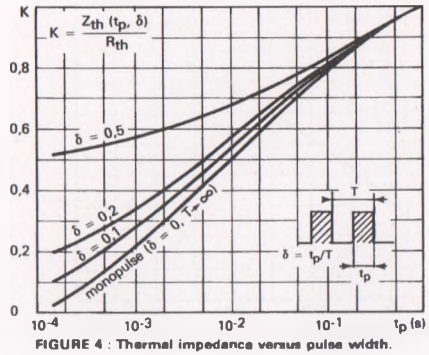
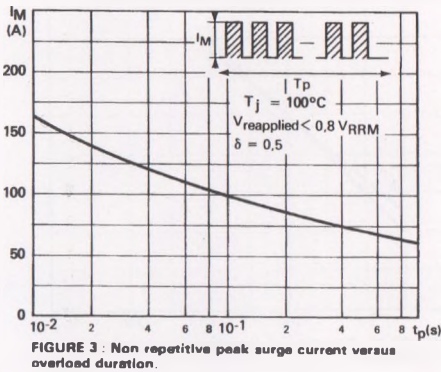
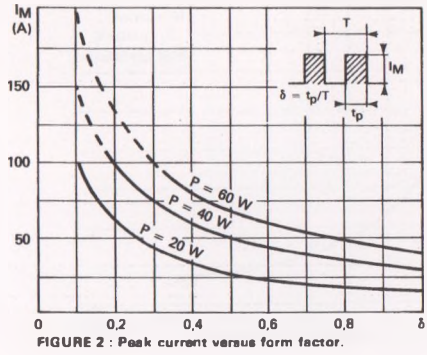
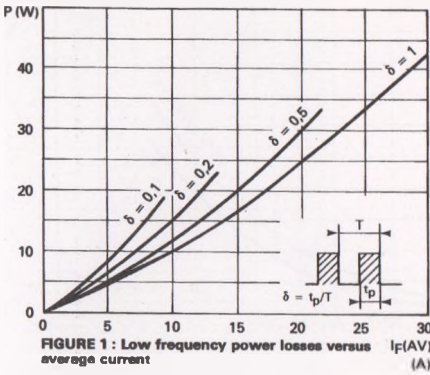
TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

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

To evaluate the conduction losses use the following equations :

$$V_F = 1.1 + 0.0095I_F$$

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



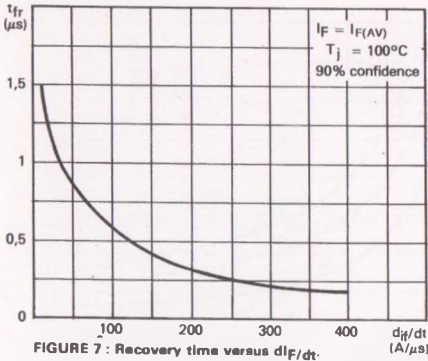


FIGURE 7 : Recovery time versus dI_F/dt .

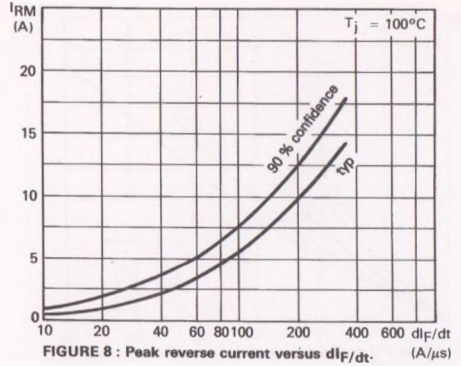


FIGURE 8 : Peak reverse current versus dI_F/dt .

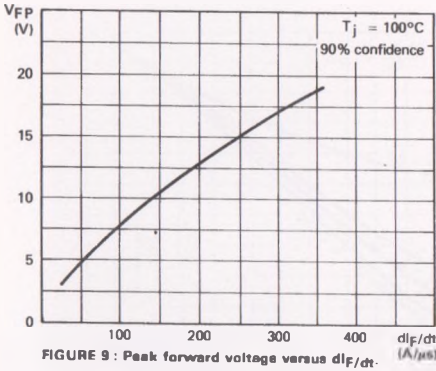


FIGURE 9 : Peak forward voltage versus dI_F/dt .

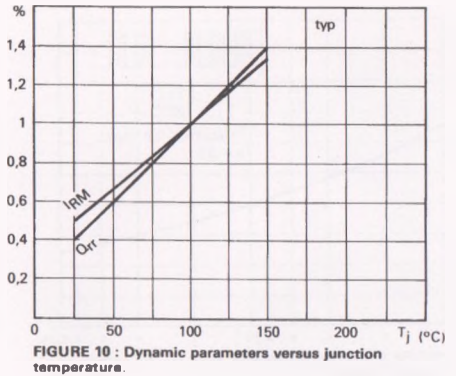


FIGURE 10 : Dynamic parameters versus junction temperature.

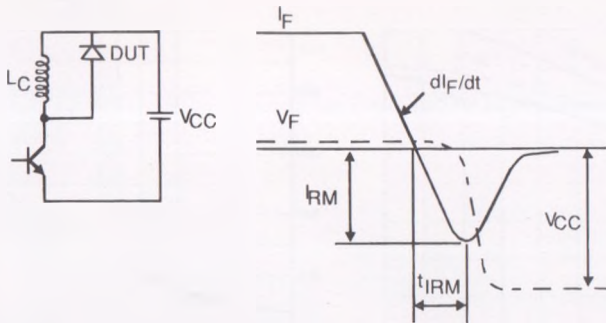


Figure 11 : Turn-off switching characteristics (without series inductance).

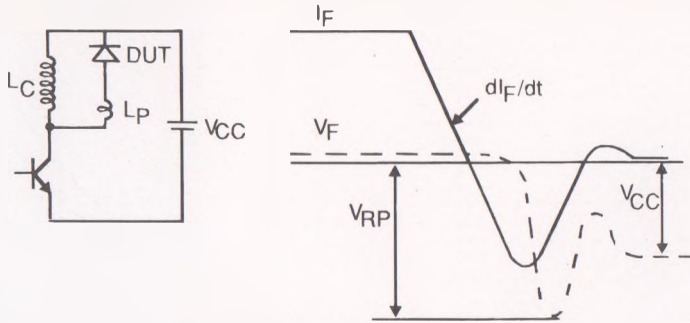


Figure 12 : Turn-off switching characteristics (with series inductance).