

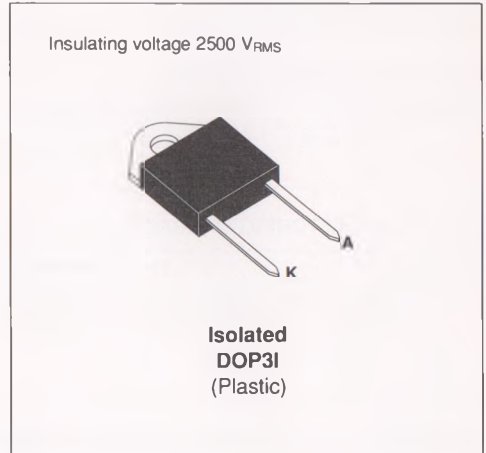


FAST RECOVERY RECTIFIER DIODES

- HIGH REVERSE VOLTAGE CAPABILITY
- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED : Capacitance 15pF

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 ≤ 10μs	375	A
I _{F(RMS)}	RMS Forward Current		70	A
I _{F(AV)}	Average Forward Current	T _{case} = 50°C δ = 0.5	30	A
I _{FSM}	Surge non Repetitive Forward Current	t _p = 10ms Sinusoidal	200	A
P	Power Dissipation	T _{case} = 50°C	62	W
T _{stg} T _j	Storage and Junction Temperature Range		- 40 to + 150	°C

Symbol	Parameter	BYT 30PI-		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	1.6	°C/W

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I _R	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				5	mA
V _F	T _j = 25°C	I _F = 30A			1.9	V
	T _j = 100°C				1.8	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t _{rr}	T _j = 25°C	I _F = 1A	di _F /dt = - 15A/μs	V _R = 30V		130	ns
		I _F = 0.5A	I _R = 1A	I _{rr} = 0.25A		55	

TURN -OFF SWITCHING CHARACTERISTICS (Without Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	di _F /dt = - 120A/μs	V _{CC} = 200V I _F = 30 A L _p ≤ 0.05μH T _j = 100°C See Figure 11			160	ns
	di _F /dt = - 240A/μs			100		
I _{RM}	di _F /dt = - 120A/μs				15	A
	di _F /dt = - 240A/μs			19		

TURN -OFF OVERVOLTAGE COEFFICIENT (With Series Inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
C = $\frac{V_{RP}}{V_{CC}}$	T _j = 100°C di _F /dt = - 30A/μs	V _{CC} = 150V I _F = I _{F(AV)} L _p = 4μH See Figure 12			4	

To evaluate the conduction losses use the following equations :

$$V_F = 1.47 + 0.010 I_F \quad P = 1.47 \times I_{F(AV)} + 0.010 I_F^2 (RMS)$$

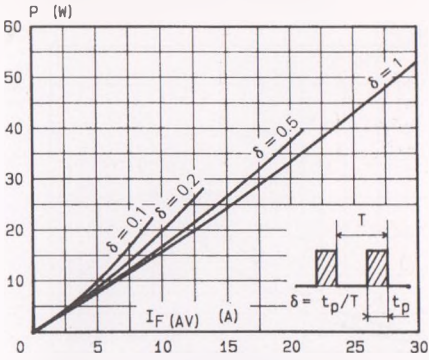


FIGURE 1 : Low frequency power losses versus average current.

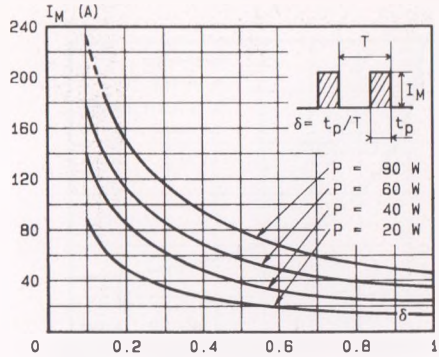


FIGURE 2 : Peak current versus form factor.

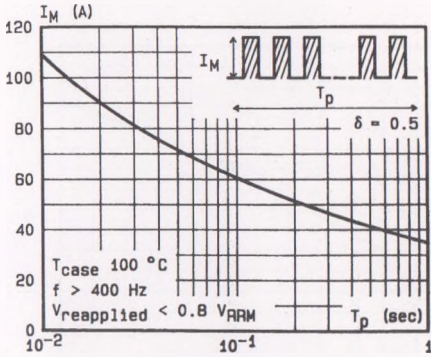


FIGURE 3 : Non repetitive peak surge current versus overload duration.

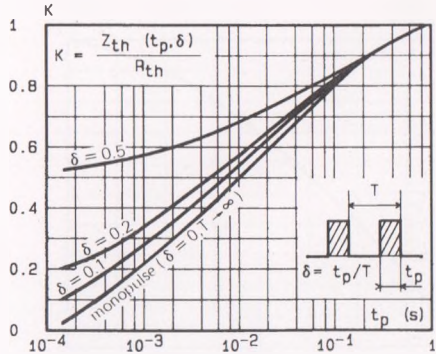


FIGURE 4 : Thermal impedance versus pulse width.

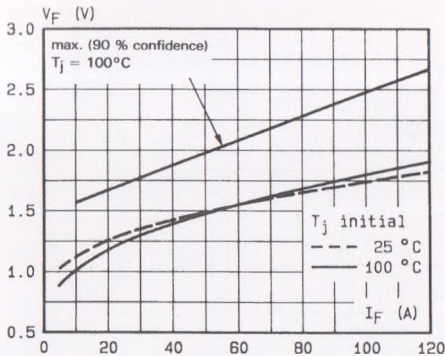


FIGURE 5 : Voltage drop versus forward current.

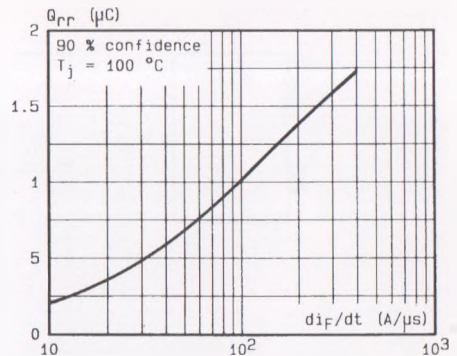


FIGURE 8 : Recovery charge versus di_F/dt .

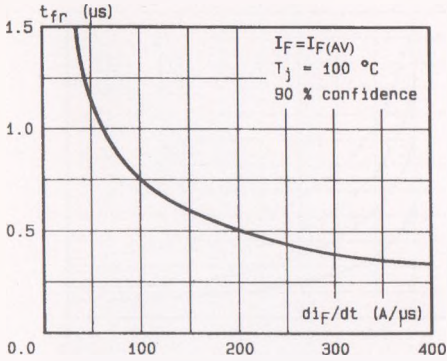


FIGURE 7 : Recovery time versus di_F/dt .

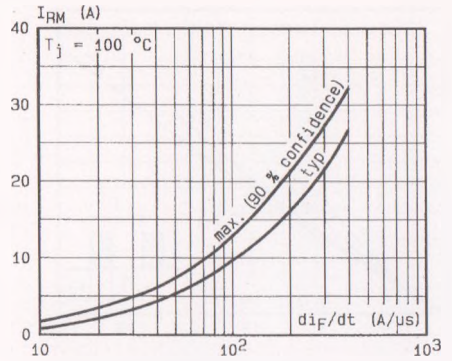


FIGURE 8 : Peak reverse current versus di_F/dt .

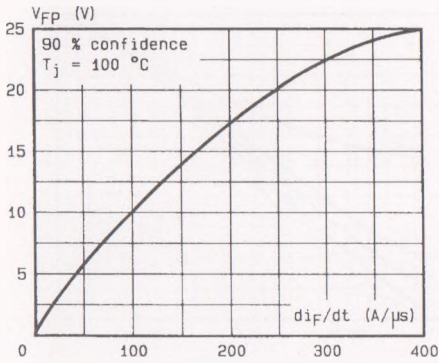


FIGURE 9 : Peak forward voltage versus di_F/dt .

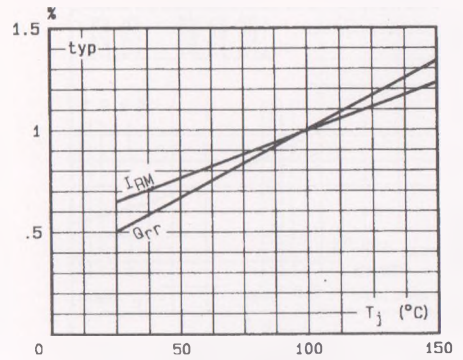


FIGURE 10 : Dynamic parameters versus junction temperature.

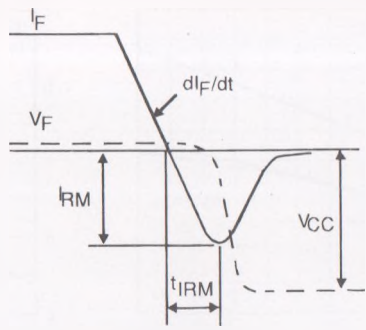
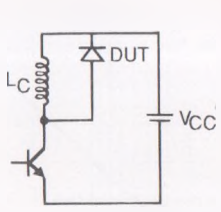


Figure 11 : Turn-off switching characteristics (without series inductance).

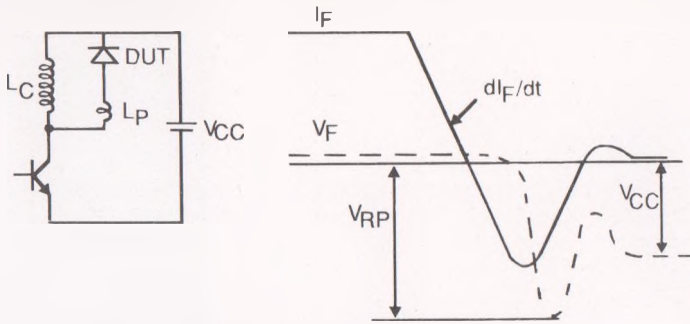


Figure 12 : Turn-off switching characteristics (with series inductance).