

FAST RECOVERY RECTIFIER DIODES

FAST RECOVERY RECTIFIER

- 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
- RECTIFIERS IN S.M.P.S.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 10\mu s$	60	A
$I_{F(AV)}$	Average Forward Current *	$T_a = 65^\circ C$ $\delta = 0.5$	3	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	60	A
P	Power Dissipation *	$T_a = 65^\circ C$	4.2	W
T_{stg} T_j	Storage and Junction Temperature Range		- 40 to + 150	$^\circ C$

Symbol	Parameter	BYT 03-			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
$R_{th(j-a)}$	Junction-ambient*	20	$^\circ C/W$

* On infinite heatsink with 10mm lead length

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			20	μA
	$T_j = 100^\circ\text{C}$				0.5	mA
V_F	$T_j = 25^\circ\text{C}$	$I_F = 3\text{A}$			1.5	V
	$T_j = 100^\circ\text{C}$				1.4	

RECOVERY CHARACTERISTICS

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

TURN -OFF SWITCHING CHARACTERISTICS - Without Series Inductance

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$T_j = 100^\circ\text{C}$ $V_{CC} = 200\text{V}$ $I_F = 3\text{A}$		35	50	ns
I_{RM}	$di_F/dt = -50\text{A}/\mu\text{s}$	$L_P \leq 0.05\mu\text{H}$		1.5	2	A

To evaluate the conduction losses use the following equations :

$$V_F = 1.1 + 0.050 I_F$$

$$P = 1.1 \times I_F (AV) + 0.050 I_F^2 (RMS)$$

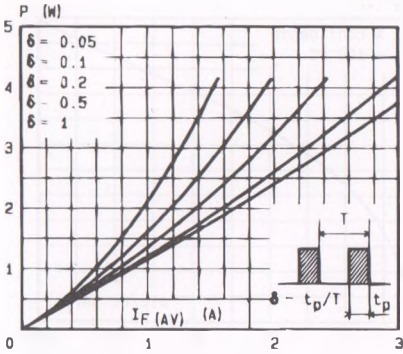


Fig. 1 - Maximum average power dissipation versus average forward current.

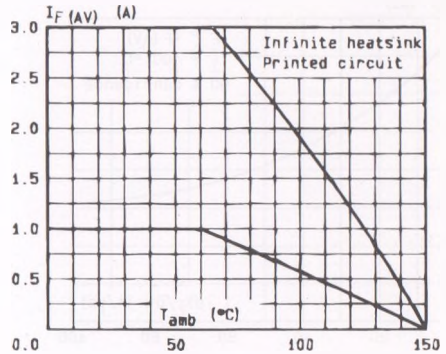


Fig. 2 - Average forward current versus ambient temperature.

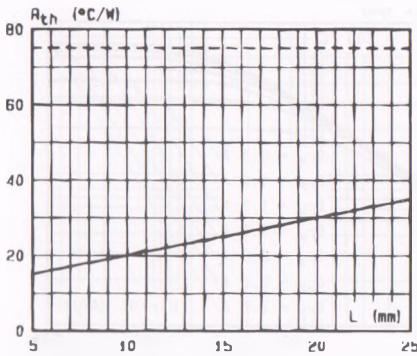


Fig. 3 - Thermal resistance versus lead length.

Mounting n°1 INFINITE HEATSINK Mounting n°2 PRINTED CIRCUIT

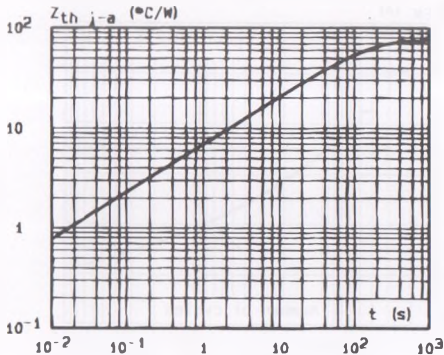
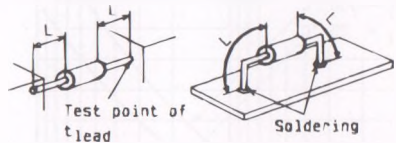


Fig. 4 - Transient thermal impedance junction-ambient for mounting n°2 versus pulse duration (L = 10 mm).

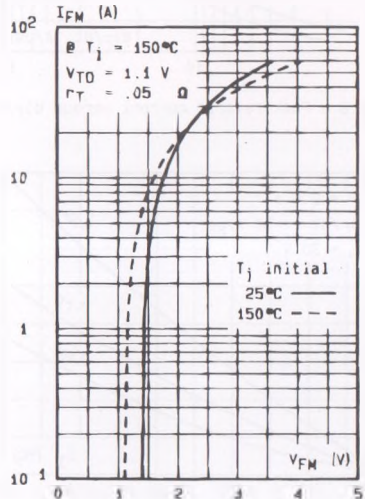


Fig. 5 - Peak forward current versus peak forward voltage drop (maximum values).

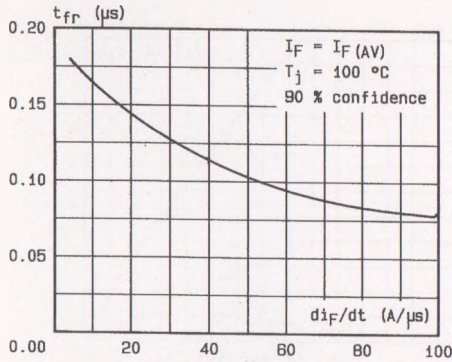


Fig.7 - Recovery time versus di_F/dt .

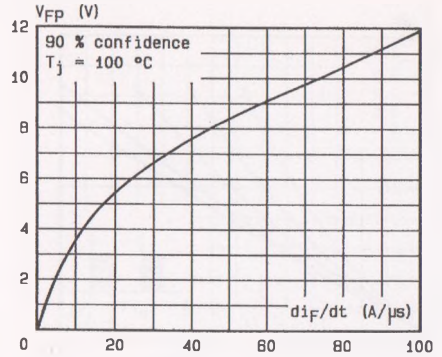


Fig.8 - Peak forward voltage versus di_F/dt .

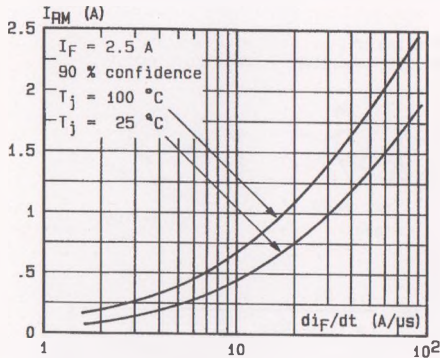


Fig.9 - Peak reverse current versus di_F/dt .

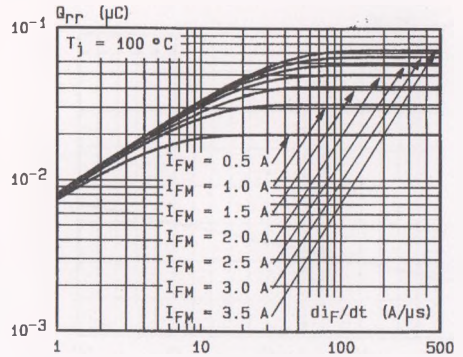


Fig.10 - Recovered charge versus di_F/dt (typical values).

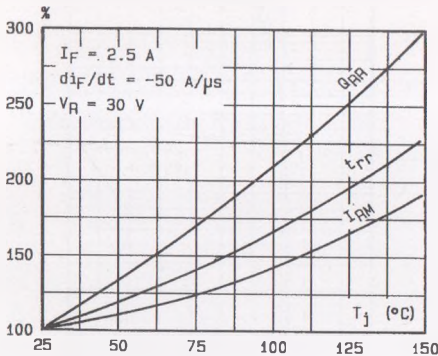


Fig.11 - Dynamic parameters versus junction temperature.

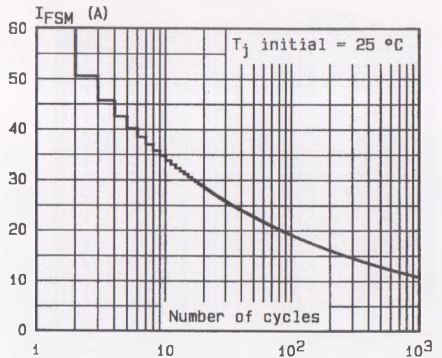


Fig.12 - Non repetitive surge peak current versus number of cycles