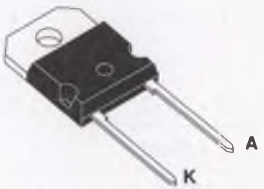
SGS-THOMSON MICROELECTRONICS

BYT60P-1000

FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING



SOD 93
(Plastic)

DESCRIPTION

Single high voltage rectifier suited for Switch Mode Power Supplies and other power converters.

ABSOLUTE MAXIMUM RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1000	V
I_{FRM}	Repetitive peak forward current	tp ≤ 10µs	750	A
$I_{F(RMS)}$	RMS forward current		85	A
$I_{F(AV)}$	Average forward current	Tc=50°C δ = 0.5	60	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	400	A
Tstg Tj	Storage and junction temperature range		- 65 to + 150 - 65 to + 150	°C °C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
Rth (j-c)	Junction to case	0.8	°C/W

ELECTRICAL CHARACTERISTICS (Per diode)
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	T_j = 25°C	I_F = 60 A			1.9	V
	T_j = 100°C				1.8	
I_R **	T_j = 25°C	$V_R = V_{RRM}$			100	µA
	T_j = 100°C				6	mA

Pulse test : * tp = 380 µs, duty cycle < 2 %
** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T_j = 25°C	I_F = 0.5A Irr = 0.25A I_R = 1A			70	ns
		I_F = 1A dI_F/dt = -15A/µs V_R = 30V			170	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	dI_F/dt = -240A/µs	V_{CC} = 200V I_F = 60A Lp ≤ 0.05µH T_j = 100°C see fig. 1			200	ns
	dI_F/dt = -480A/µs			120		
I_{RM}	dI_F/dt = -240A/µs				40	A
	dI_F/dt = -480A/µs			44		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T_j = 100°C V_{CC} = 200V $I_F = I_{F(AV)}$ dI_F/dt = -60A/µs Lp = 2µH see fig12		3.3	4.5	/

To evaluate the conduction losses use the following equation :
$P = 1.47 \times I_{F(AV)} + 0.005 \times I^2_{F(RMS)}$

Fig.1 : Low frequency power losses versus average current.

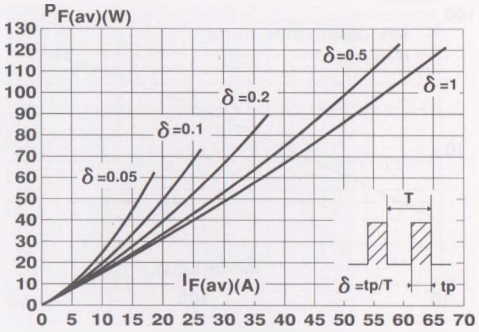


Fig.2 : Peak current versus form factor.

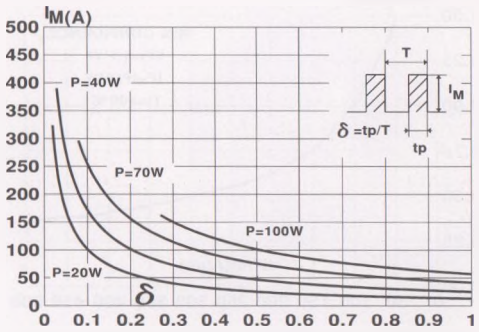


Fig.3 : Non repetitive peak surge current versus overload duration.

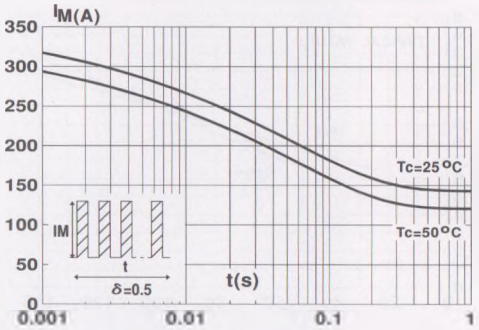


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

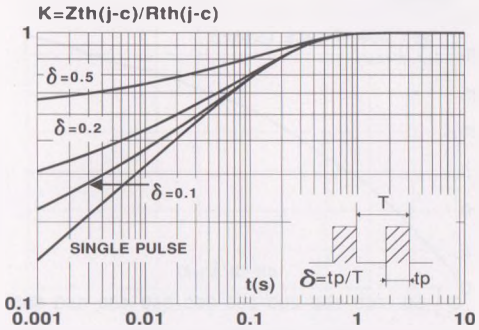


Fig.5 : Voltage drop versus forward current.

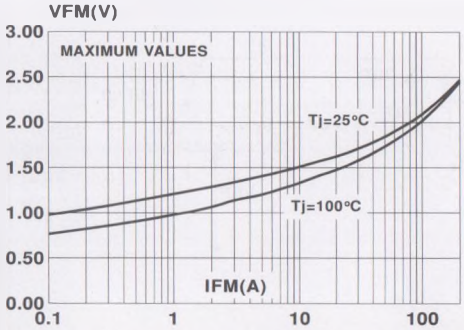


Fig.6 : Recovery charge versus dI_F/dt.

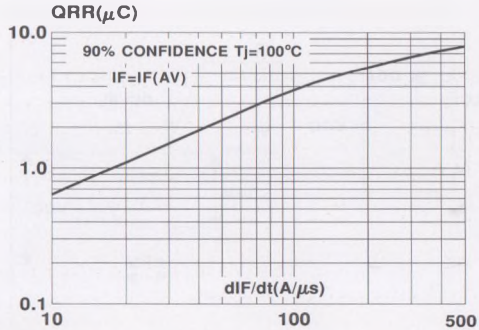


Fig.7 : Recovery time versus dI_F/dt.

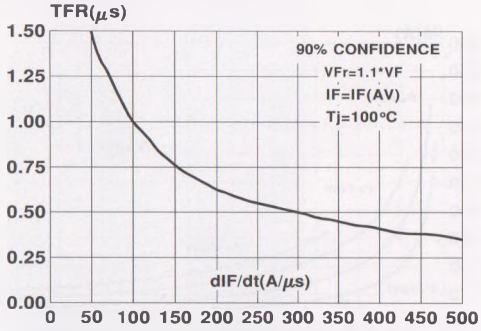


Fig.8 : Peak reverse current versus dIF/dt.

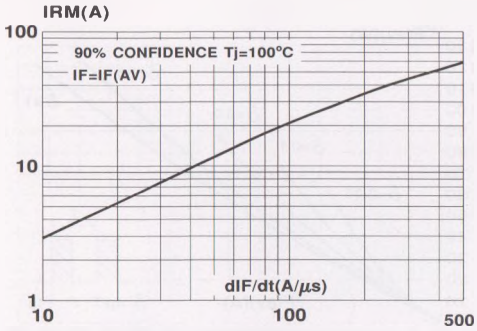


Fig.9 : Peak forward voltage versus dI_F/dt.

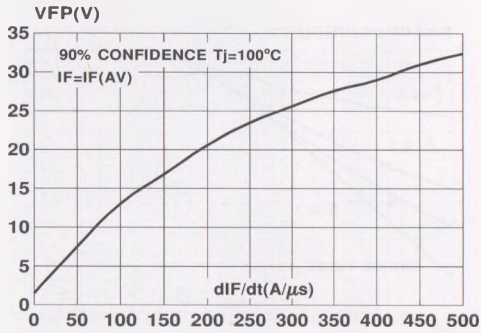


Fig.10 : Dynamic parameters versus junction temperature.

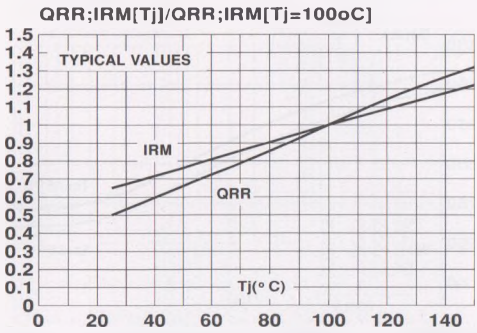


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

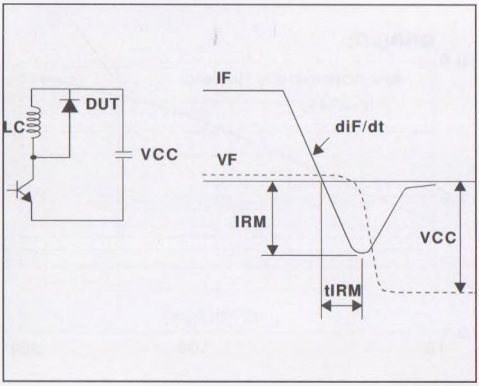


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)