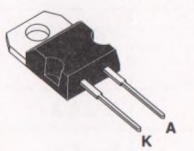
SGS-THOMSON MICROELECTRONICS

BYT71(F)-800

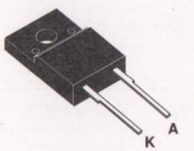
FAST RECOVERY RECTIFIER DIODES

FEATURES

- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- INSULATED PACKAGE :
  insulating voltage = 2000V_{DC}
  capacitance = 12 pF



TO220AC
(Plastic)



ISOWATT220AC
(Plastic)

DESCRIPTION

Single chip rectifier suited for power conversion and polarity protection applications.
This device is packaged in TO220AC and in ISOWATT220AC.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS on-state current			12	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO220AC	Tc=130°C	6	A
		ISOWATT220AC	Tc=105°C	6	
I_{FSM}	Surge non repetitive forward current		tp=10ms sinusoidal	90	A
Tstg Tj	Storage and junction temperature range			- 65 to + 150 - 65 to + 150	°C °C

Symbol	Parameter	BYT71- (F)					Unit
		100	200	400	600	800	
V_{RRM}	Repetitive peak off-state voltage	100	200	400	600	800	V

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	TO220AC	2.3	°C/W
		ISOWATT220AC	4.9	

ELECTRICAL CHARACTERISTICS

STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R **	T_j = 25°C	$V_R = V_{RRM}$			20	µA
	T_j = 100°C				1	mA
V_F *	T_j = 100°C	I_F = 6 A			1.3	V
	T_j = 25°C	I_F = 6 A			1.4	

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 = 1A dI_F/dt = -15A/µs V_R = 30V			300	ns

To evaluate the conduction losses use the following equations :
$P = 1.15 \times I_{F(AV)} + 0.025 \times I_F{}^2{}_{(RMS)}$

Fig.1 : Average forward power dissipation versus average forward current.

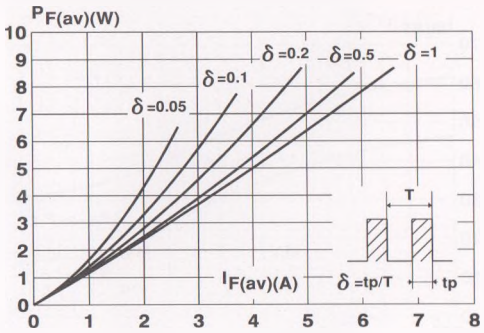


Fig.2 : Peak current versus form factor.

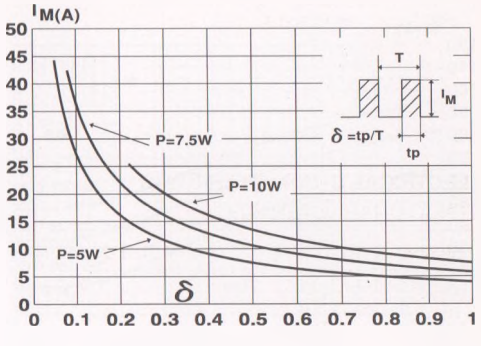


Fig.3 : Forward voltage drop versus forward current (maximum values).

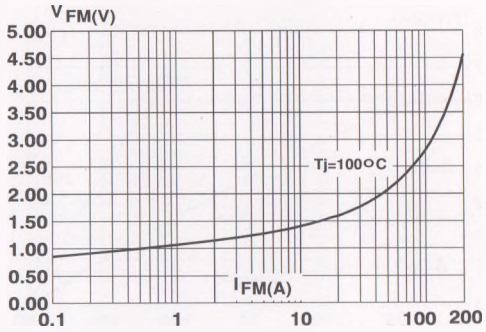


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.
(TO 220 AC)

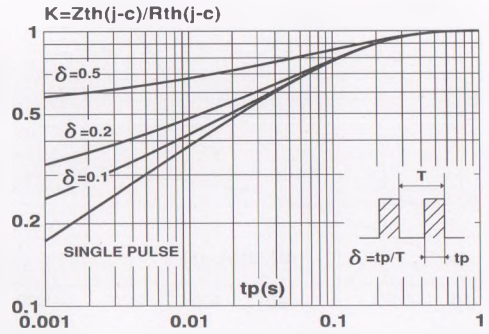


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration.
(ISOWATT220AC)

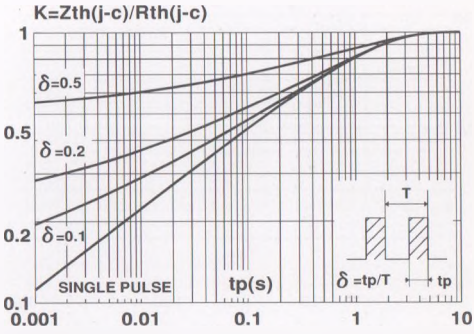


Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO 220 AB)

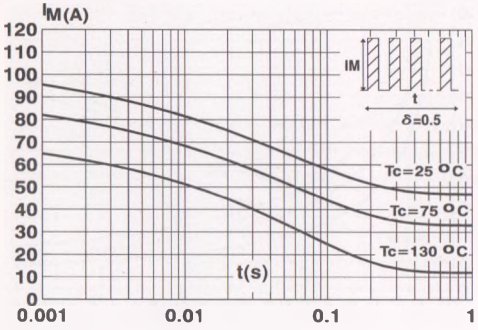


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AB)

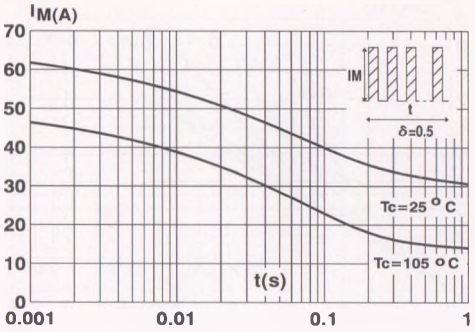


Fig.8 : Average current versus ambient temperature. (duty cycle : 0.5) (TO 220 AB)

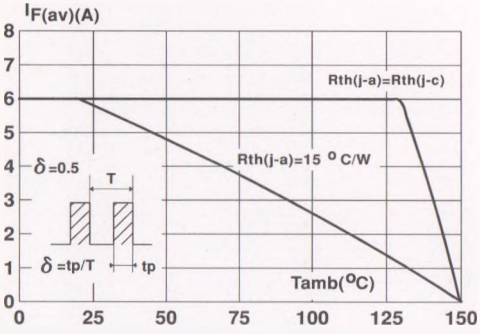


Fig.9 : Average current versus ambient temperature. (duty cycle : 0.5) (ISOWATT220AB)

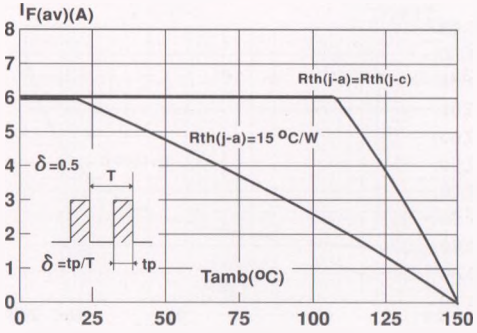


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

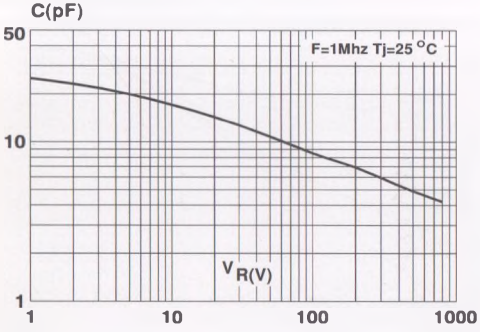


Fig.11 : Recovery charges versus dI_F/dt.

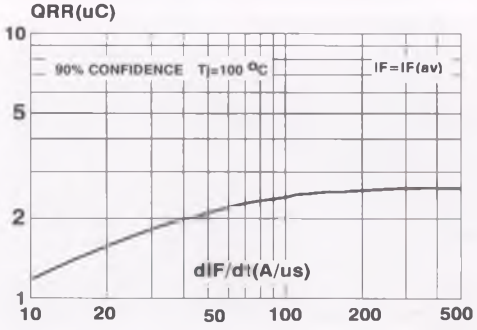


Fig.12 : Peak reverse current versus dIF/dt.

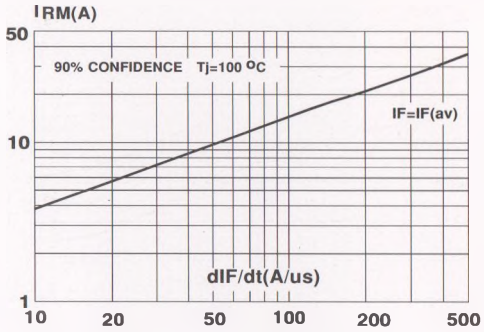


Fig.13 : Dynamic parameters versus junction temperature.

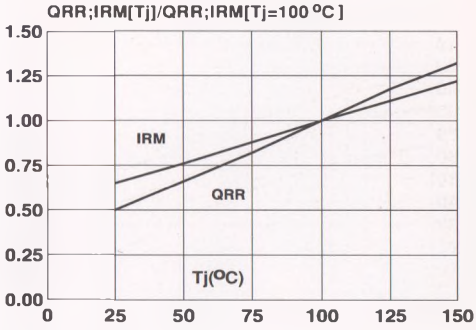


Fig.14 : Peak forward voltage versus dIF/dt.

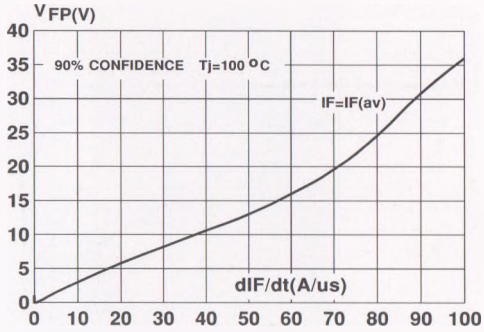


Fig.15 : Recovery time versus dIF/dt.