SGS-THOMSON MICROELECTRONICS

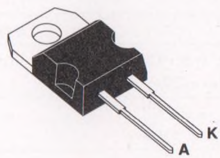
BY 233-200 → 600

FAST RECOVERY RECTIFIER DIODES

- LOW SWITCHING LOSSES
- LOW PEAK RECOVERY CURRENT I_{RM}
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF t_{rr} AND I_{RM} AT 100°C UNDER USERS CONDITIONS

APPLICATIONS

- MOTOR CONTROLS (FREE-WHEELING DIODE)
- SWITCHMODE POWER SUPPLIES
- SNUBBER DIODES



TO220AC
(Plastic)

DESCRIPTION

Fast recovery rectifiers suited for power switching applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
I_{FRM}	Repetitive Peak Forward Current	$t_p \leq 20\mu s$	100	A
$I_{F\,(RMS)}$	RMS Forward Current		20	A
$I_{F\,(AV)}$	Average Forward Current	$T_C = 115°C$ $\delta = 0.5$	10	A
I_{FSM}	Surge non Repetitive Forward Current	$t_p = 10ms$ Sinusoidal	100	A
P_{tot}	Power Dissipation	$T_C = 90°C$	20	W
T_{stg} T_j	Storage and Junction Temperature Range		– 40 to 150	°C

Symbol	Parameter	BYX 233–			Unit
		200	**400**	**600**	
V_{RRM}	Repetitive Peak Reverse Voltage	200	400	600	V
V_{RSM}	Non Repetitive Peak Reverse Voltage	250	450	650	V

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th\,(j-c)}$	Junction-case	3	°C/W

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 = 25°C	I_F = 8A			1.5	V
	T_j = 100°C				1.25	

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t_{rr}	T_j = 25°C V_R = 30V	I_F = 1A	di_F/dt = – 15A/µs			150	ns
Q_{rr}	T_j = 25°C V_R = 100V	I_F = 8A	di_F/dt = – 20A/µs		2.2		µC
I_{RM}	T_j = 25°C V_R = 100V	I_F = 8A	di_F/dt = – 20A/µs			4	A

To evaluate the conduction losses use the following equations :

$V_F = 0.95 + 0.012\ I_F$ $\qquad$ $P = 0.95 \times I_{F(AV)} + 0.012\ I_F{}^2{}_{(RMS)}$

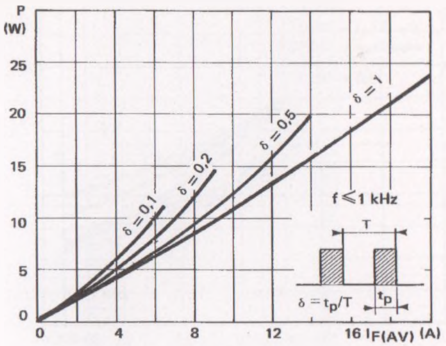


FIGURE 1 : Low frequency power losses versus average current

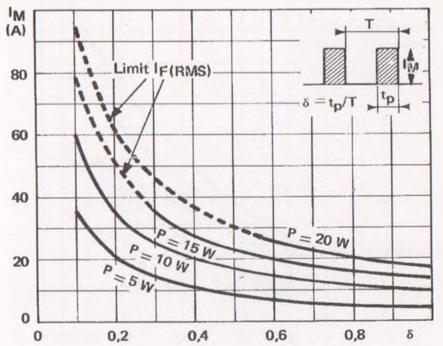


FIGURE 2 : Peak current versus form factor

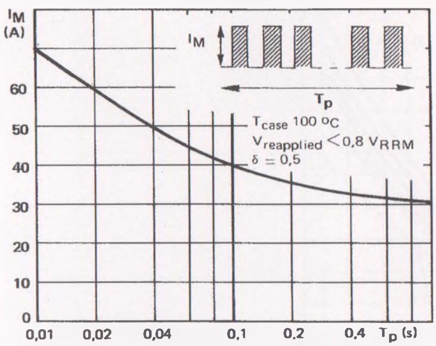


FIGURE 3 : Non repetitive peak surge current versus overload duration

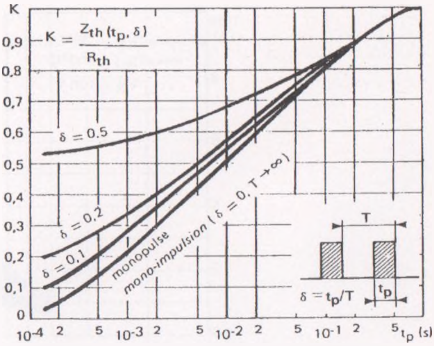


FIGURE 4 : Thermal impedance versus pulse width

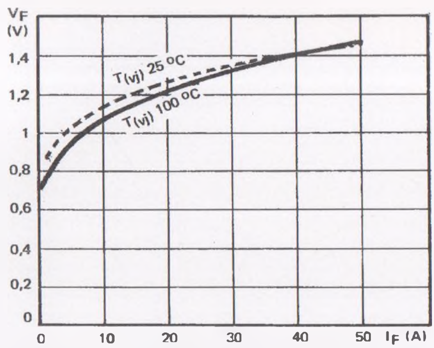


FIGURE 5 : Voltage drop versus forward current

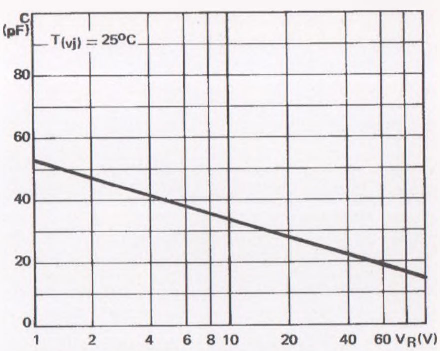


FIGURE 6 : Capacitance versus reverse voltage

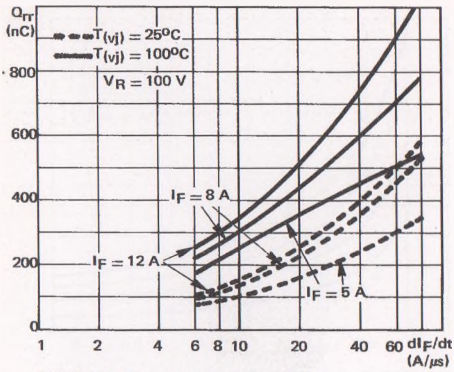


FIGURE 7 : Recovery charge versus dI_F/dt

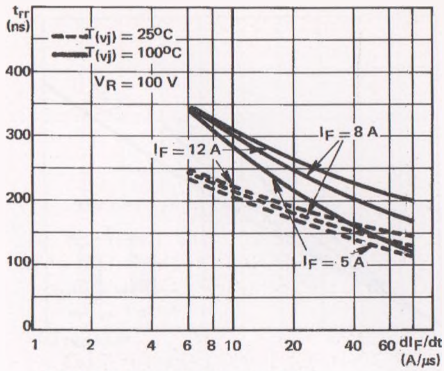


FIGURE 8 : Recovery time versus dI_F/dt

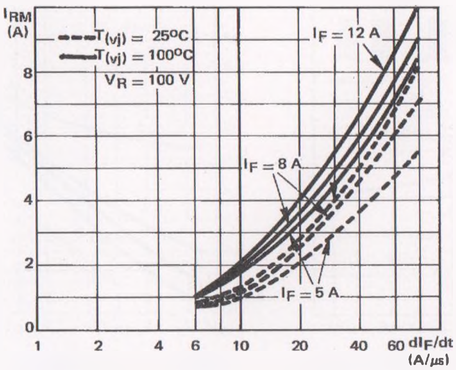


FIGURE 9 : Peak reverse current versus dI_F/dt