SGS-THOMSON MICROELECTRONICS

S G S-THOMSON T-03-17

# BYT 71-100 A → 800 A

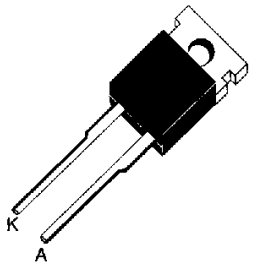
## FAST RECOVERY RECTIFIER DIODES

- HIGH VOLTAGE CAPABILITY
- FAST AND SOFT RECOVERY
- THE SPECIFICATIONS AND CURVES ENABLE THE DETERMINATION OF $t_{rr}$ AND $I_{RM}$ AT 100°C UNDER USERS CONDITIONS

### APPLICATIONS

- MOTOR CONTROLS AND CONVERTERS
- SWITCHMODE POWER SUPPLIES

Cathode connected to case




**DO 220 AB**
(Plastic)

### DESCRIPTION

Fast recovery rectifiers suited for applications in combination with superswitch transistors.

### ABSOLUTE RATINGS (limiting values)

| Symbol | Paramèter | | Value | Unit |
|---|---|---|---|---|
| $I_{FRM}$ | Repetitive Peak Forward Current | $t_p \leq 20\mu s$ | 90 | A |
| $I_{F(RMS)}$ | RMS Forward Current | | 12 | A |
| $I_{F(AV)}$ | Average Forward Current | $T_C = 115°C$ $\delta = 0.5$ | 6 | A |
| $I_{FSM}$ | Surge non Repetitive Forward Current | $t_p = 10ms$ Sinusoidal | 90 | A |
| $P_{tot}$ | Power Dissipation | $T_C = 90°C$ | 15 | W |
| $T_{stg}$ $T_j$ | Storage and Junction Temperature Range | | – 40 to 150 | °C |

| Symbol | Parameter | BYX 71– | | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | 100 A | 200 A | 400 A | 600 A | 800 A | |
| $V_{RRM}$ | Repetitive Peak Reverse Voltage | 100 | 200 | 400 | 600 | 800 | V |
| $V_{RSM}$ | Non Repetitive Peak Reverse Voltage | 100 | 200 | 400 | 600 | 800 | V |

### THERMAL RESISTANCE

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | Junction-case | 4 | °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 | $I_F$ = 6A | | | 1.4 | V |
| | $T_j$ = 100°C | | | | 1.3 | |

RECOVERY CHARACTERISTICS

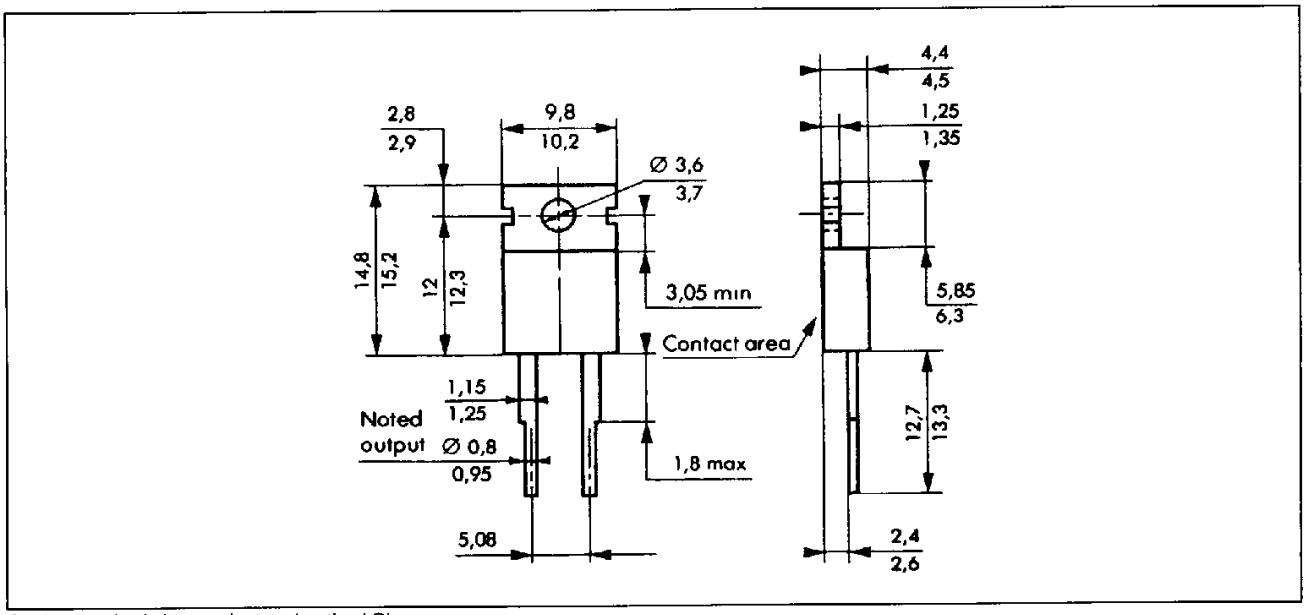
| Symbol | Test Conditions | | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $t_{rr}$ | $T_j$ = 25°C<br>$V_R$ = 30V | $I_F$ = 1A | $dI_F/dt$ = – 15A/µs | | | 300 | ns |
| $Q_{rr}$ | $T_j$ = 25°C<br>$V_R$ = 200V | $I_F$ = 6A | $dI_F/dt$ = – 50A/µs | | 1.5 | | µC |

To evaluate the conduction losses use the following equations :

$V_F = 1.2 + 0.025\ I_F$ $\qquad P = 1.2 \times I_{F(AV)} + 0.025\ I^2_{F(RMS)}$

## PACKAGE MECHANICAL DATA

DO 220 AB Plastic




Cooling method by conduction (method C)
Marking type number
Weight 2.4g
Recommended torque value . 80cm. N
Maximum torque value 100cm N

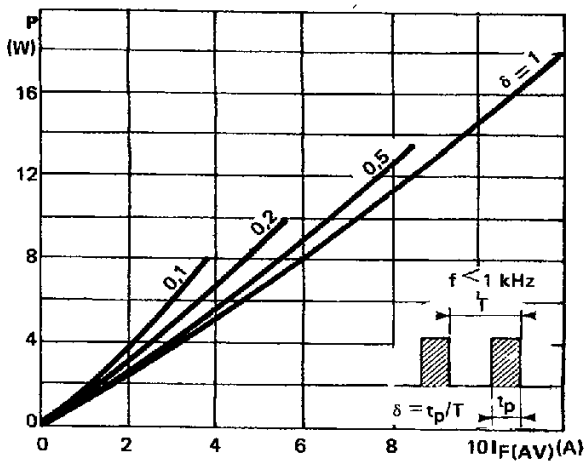



FIGURE 1: Low frequency power losses versus average current

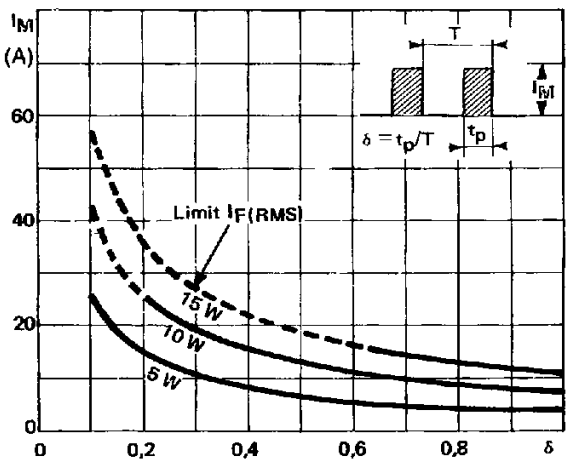



FIGURE 2: Peak current versus form factor

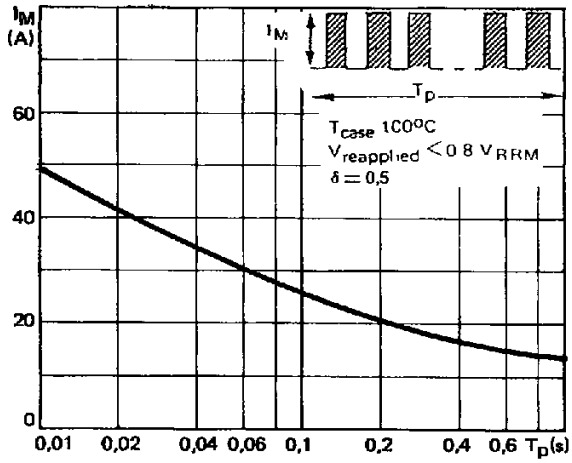



FIGURE 3: Non repetitive peak surge current versus overload duration

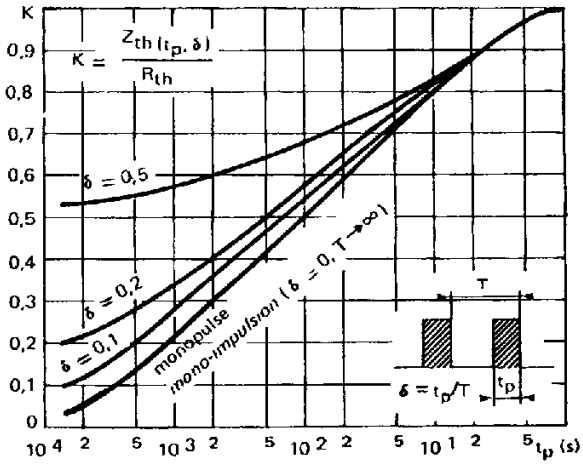



FIGURE 4 : Thermal impedance versus pulse width

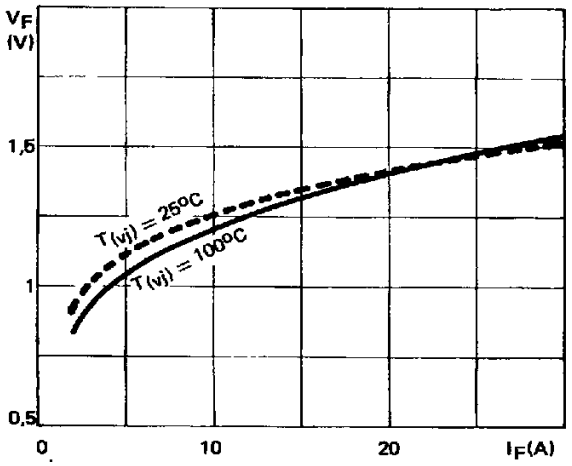



FIGURE 5: Forward voltage drop versus forward current

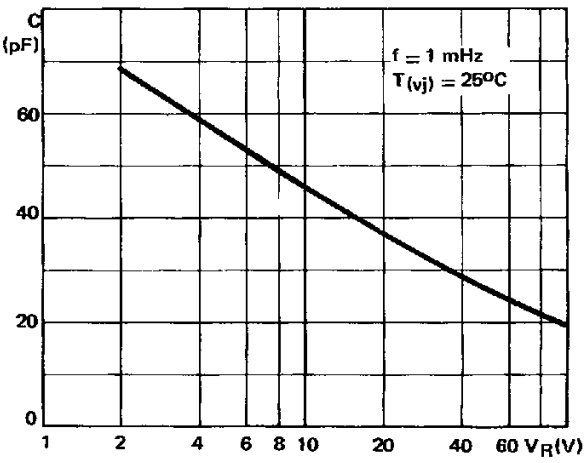



FIGURE 6: Capacitance versus applied reverse voltage

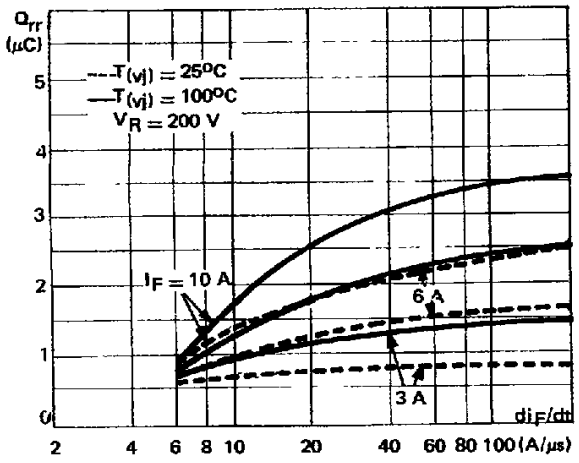



FIGURE 7: Recovery charge versus $di_F/dt$

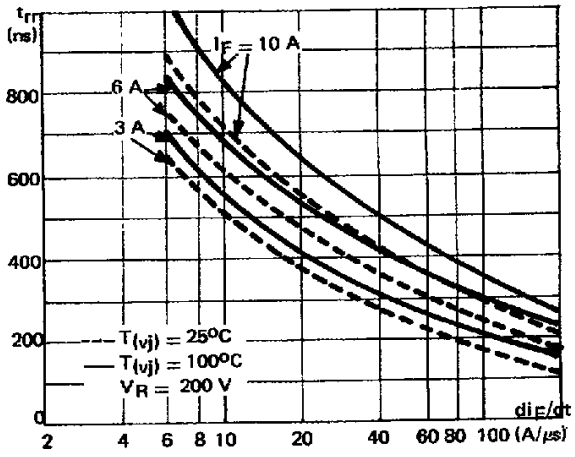



FIGURE 8: Recovery time versus $di_F/dt$

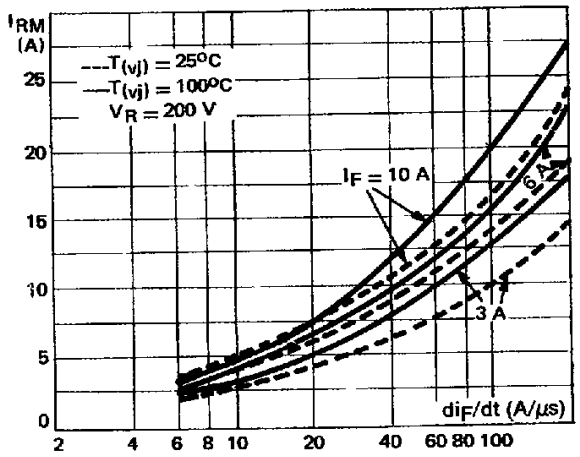



FIGURE 9: Peak reverse current versus $di_F/dt$