SGS-THOMSON
MICROELECTRONICS

BTA 40 A

TRIACS

- GLASS PASSIVATED CHIP
- FAST-ON CONNEXIONS
- I_{GT} SPECIFIED IN FOUR QUADRANTS
- INSULATING VOLTAGE 2500 V_{RMS}
- UL RECOGNIZED (E81734)

DESCRIPTION

This new design of plastic insulated power triacs offers maximum efficiency with maximum ease of mounting.

ADVANTAGES

- NO TAPPING REQUIRED FOR FIXING
- EXCELLENT THERMAL IMPEDANCE AND HIGH RELIABILITY CONSTRUCTION

RD 91
(Plastic)
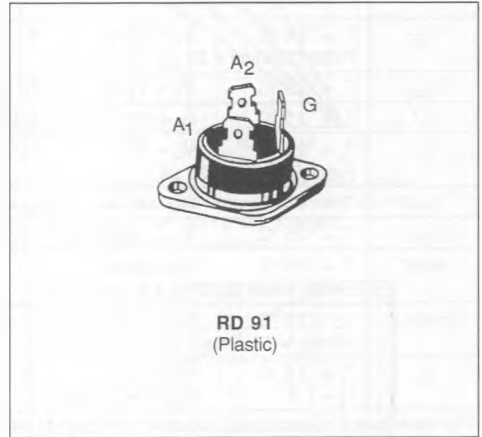
ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	T_C = 75 °C	40	A
I_{TSM}	Non Repetitive Surge Peak on-state Current (T_j initial = 25 °C - Half sine wave)	t = 8.3 ms	315	A
		t = 10 ms	300	
I^2t	I^2t Value for Fusing	t = 10 ms	450	A^2s
di/dt	Critical Rate of Rise of on-state Current (1)	Repetitive F = 50 Hz	10	A/µs
		Non Repetitive	50	
T_{stg} T_j	Storage and Operating Junction Temperature Range		– 40 to 125 – 40 to 125	°C °C

Symbol	Parameter	BTA 40–					Unit
		200A	400A	600A	700A	800A	
V_{DRM}	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1) I_G = 1.5 A di_G/dt = 1 A/µs
(2) T_j = 125 °C.

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th (c-h)}$	Contact (case-heatsink) with Grease	0.15	°C/W
$R_{th (j-c)}$ DC	Junction to Case for DC	1.2	°C/W
$R_{th (j-c)}$ AC	Junction to Case for 360 ° Conduction Angle (F = 50 Hz)	0.9	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{GM} = 40$ W ($t_p = 10$ µs)　　　$P_{G(AV)} = 1$ W　　　$I_{GM} = 10$ A ($t_p = 10$ µs)　　　$V_{GM} = 16$ V ($t_p = 10$ µs)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
I_{GT}	$T_j = 25$ °C　　　$V_D = 12$ V Pulse Duration > 20 µs		$R_L = 33$ Ω	I-II-III	1		100	mA
				IV	1		150	
V_{GT}	$T_j = 25$ °C　　　$V_D = 12$ V Pulse Duration > 20 µs		$R_L = 33$ Ω	I-II-III-IV			1.5	V
V_{GD}	$T_j = 125$ °C　　$V_D = V_{DRM}$		$R_L = 3.3$ kΩ	I-II-III-IV	0.2			V
I_H*	$T_j = 25$ °C　　$I_T = 500$ mA		Gate Open			30	100	mA
I_L	$T_j = 25$ °C　　　$V_D = 12$ V Pulse Duration > 20 µs		$I_G = 300$ mA	I-II-III-IV			150	mA
V_{TM}*	$T_j = 25$ °C　　$I_{TM} = 60$ A		$t_p = 10$ ms				1.8	V
I_{DRM}*	$T_j = 125$ °C　　V_{DRM} Specified					1.5	6	mA
dv/dt*	$T_j = 125$ °C　　Gate Open Linear Slope up to $V_D = 67$ % V_{DRM}					250		V/µs
$(dv/dt)_c$*	$T_C = 75$ °C　　$V_D = V_{DRM}$ $(di/dt)_c = 18$ A/ms		$I_T = 60$ A			10		V/µs
t_{gt}	$T_j = 25$ °C　　$V_D = V_{DRM}$ $I_G = 1$ A　　　$di_G/dt = 10$ A/us		$I_T = 60$ A	I-II-III-IV		2.5		µs

* For either polarity of electrode A₂ voltage with reference to electrode A₁.

PACKAGE MECHANICAL DATA : RD 91 Plastic

Triac　1 2 3 = G A₁ A₂
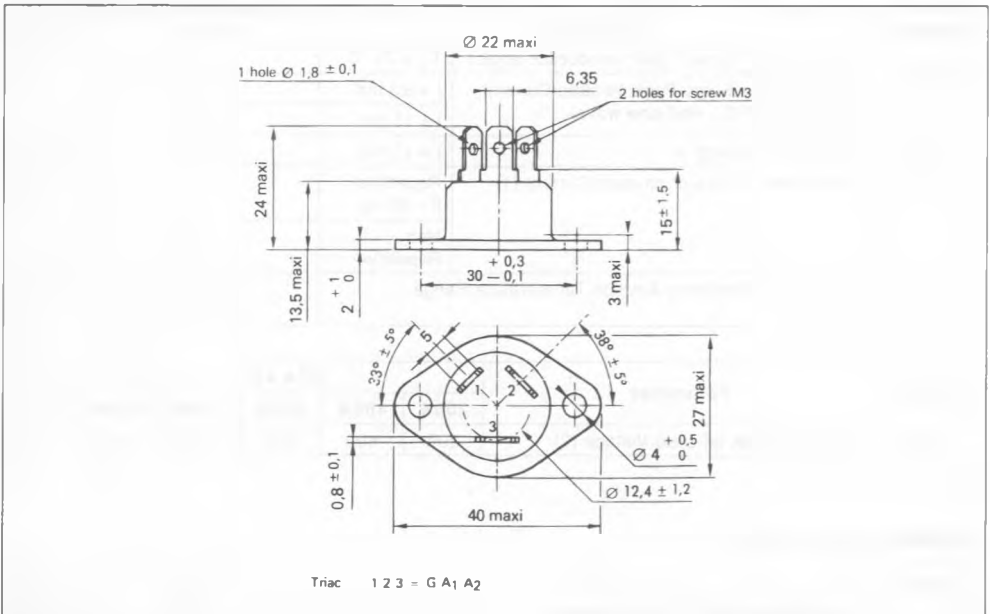
Cooling method : by conduction (method C)
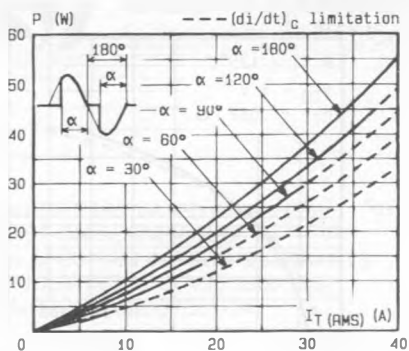Marking : type number
Weight : 15 g

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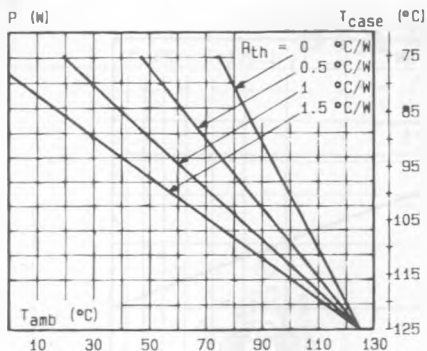Fig.1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

Fig.2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T_{amb} and T_{case}) for different thermal resistances heatsink + contact.
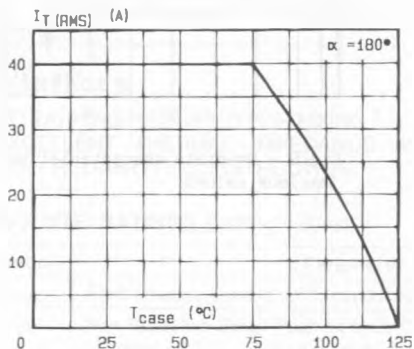

Fig.3 - RMS on-state current versus case temperature.
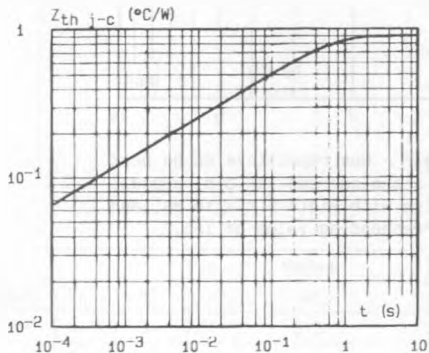

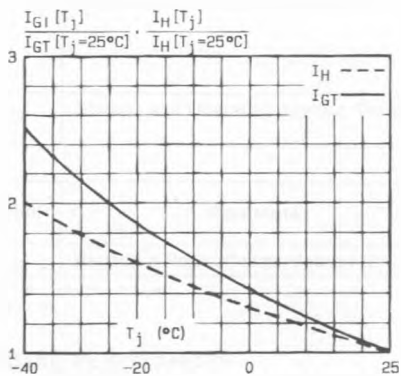Fig.4 - Thermal transient impedance junction to case versus pulse duration.

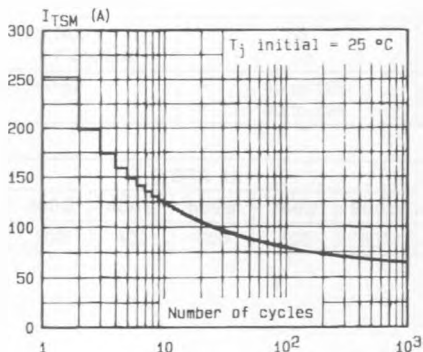Fig.5 - Relative variation of gate trigger current and holding current versus junction temperature.

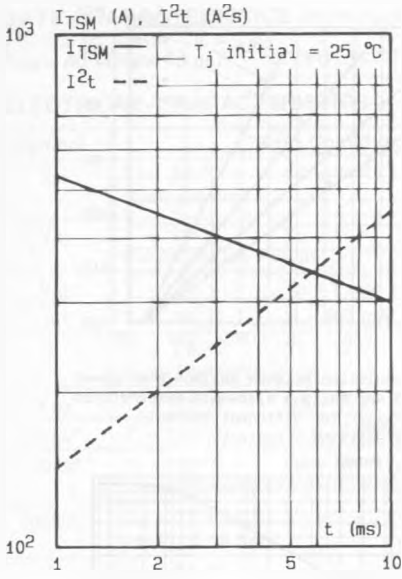Fig.6 - Non repetitive surge peak on-state current versus number of cycles.

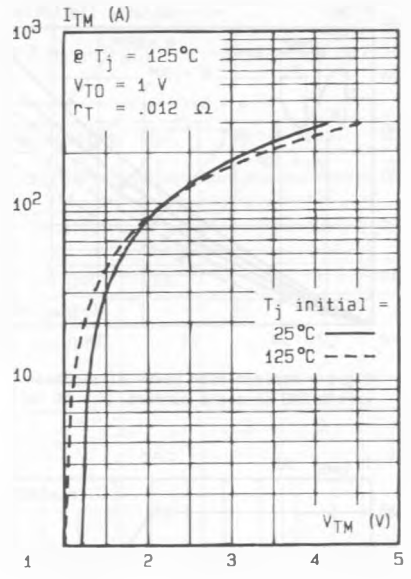Fig.7 – Non repetitive surge peak on-state current for a sinusoidal pulse with width : t ≤ 10 ms, and corresponding value of I^2t.

Fig.8 – On-state characteristics (maximum values).

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