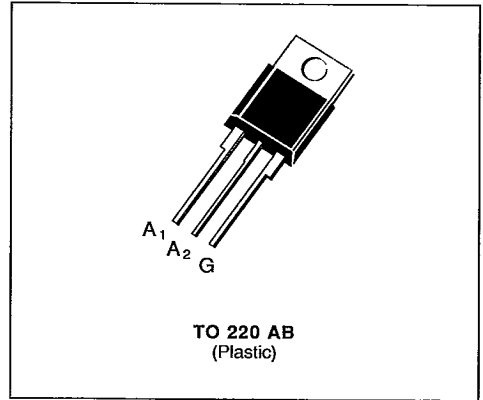


- GLASS PASSIVATED CHIP
- $I_{GT}$  SPECIFIED IN FOUR QUADRANTS
- AVAILABLE IN INSULATED VERSION →  
BTA SERIES (INSULATING VOLTAGE  
2500  $V_{RMS}$ ) OR IN UNINSULATED VERSION  
→ BTB SERIES
- UL RECOGNIZED FOR BTA SERIES (E81734)

**DESCRIPTION**

New range suited for applications such as phase control and static switching.

**ABSOLUTE RATINGS** (limiting values)

Symbol	Parameter		Value	Unit
$I_{T(RMS)}$	RMS on-state Current (360° conduction angle)	$T_C = 75\text{ °C}$	4	A
$I_{TSM}$	Non Repetitive Surge Peak on-state Current ( $T_J$ initial = 25 °C - Half sine wave)	$t = 8.3\text{ ms}$	52	A
		$t = 10\text{ ms}$	50	
$I^2t$	$I^2t$ Value for Fusing	$t = 10\text{ ms}$	12.5	$A^2s$
$di/dt$	Critical Rate of Rise of on-state Current (1)	Repetitive $F = 50\text{ Hz}$	10	$A/\mu s$
		Non Repetitive	50	
$T_{stg}$ $T_J$	Storage and Operating Junction Temperature Range		- 40 to 150	°C
			- 40 to 110	°C

Symbol	Parameter	BTA/BTB 04-					Unit
		200S	400S	600S	700S	800S	
$V_{DRM}$	Repetitive Peak off-state Voltage (2)	200	400	600	700	800	V

(1)  $I_G = 100\text{ mA}$   $di/dt = 1\text{ A}/\mu s$

(2)  $T_J = 110\text{ °C}$ .

**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to Ambient	60	°C/W
$R_{th(j-c)}\text{ DC}$	Junction to Case for DC	8.7	°C/W
$R_{th(j-c)}\text{ AC}$	Junction to Case for 360 ° Conduction Angle ( $F = 50\text{ Hz}$ )	6.5	°C/W

**GATE CHARACTERISTICS** (maximum values)

$P_{GM} = 40 \text{ W}$  ( $t_p = 10 \mu\text{s}$ )       $I_{GM} = 4 \text{ A}$  ( $t_p = 10 \mu\text{s}$ )  
 $P_{G(AV)} = 1 \text{ W}$        $V_{GM} = 16 \text{ V}$  ( $t_p = 10 \mu\text{s}$ )

T-25-13

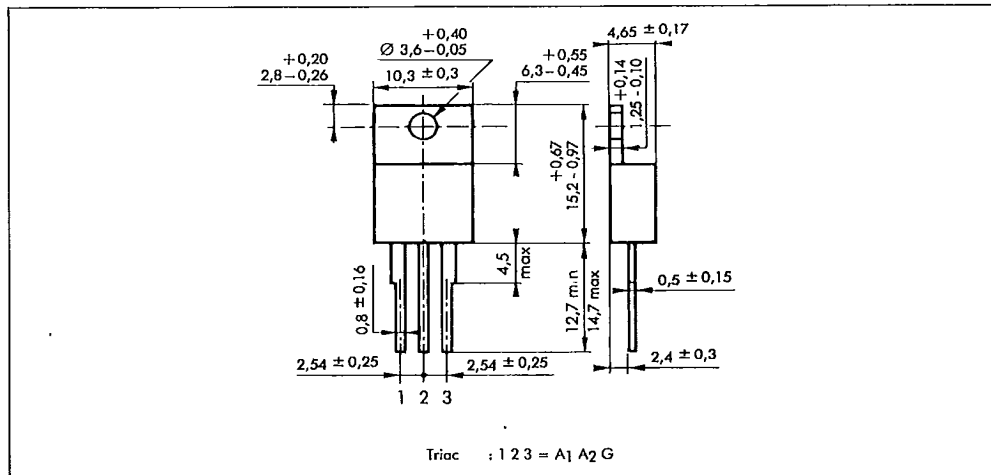
**ELECTRICAL CHARACTERISTICS**

Symbol	Test Conditions			Quadrants	Min.	Typ.	Max.	Unit
$I_{GT}$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = 12 \text{ V}$	$R_L = 33 \text{ } \Omega$	I-II-III-IV			10	mA
	Pulse Duration > 20 $\mu\text{s}$							
$V_{GT}$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = 12 \text{ V}$	$R_L = 33 \text{ } \Omega$	I-II-III-IV			1.5	V
	Pulse Duration > 20 $\mu\text{s}$							
$V_{GD}$	$T_j = 110 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$R_L = 3.3 \text{ k}\Omega$	I-II-III-IV	0.2			V
$I_H^*$	$T_j = 25 \text{ }^\circ\text{C}$	$I_T = 100 \text{ mA}$	Gate Open				25	mA
$I_L$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = 12 \text{ V}$	$I_G = 20 \text{ mA}$	I-III-IV		25		mA
				II		50		
$V_{TM}^*$	$T_j = 25 \text{ }^\circ\text{C}$	$I_{TM} = 5.5 \text{ A}$	$t_p = 10 \text{ ms}$				1.65	V
$I_{DRM}^*$	$V_{DRM}$ Specified						0.01	mA
							$T_j = 110 \text{ }^\circ\text{C}$	0.75
$dv/dt^*$	$T_j = 110 \text{ }^\circ\text{C}$	Gate Open Linear Slope up to $V_D = 67 \% V_{DRM}$			10			V/ $\mu\text{s}$
$(dv/dt)_c^*$	$T_C = 75 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$I_T = 5.5 \text{ A}$			5		V/ $\mu\text{s}$
	$(di/dt)_c = 1.8 \text{ A/ms}$							
$t_{gt}$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$I_T = 5.5 \text{ A}$	I-II-III-IV			2	$\mu\text{s}$

\* For either polarity of electrode A<sub>2</sub> voltage with reference to electrode A<sub>1</sub>.

**PACKAGE MECHANICAL DATA**

TO 220 AB Plastic



Cooling method : by conduction (method C)  
 Marking : type number  
 Weight : 2 g.

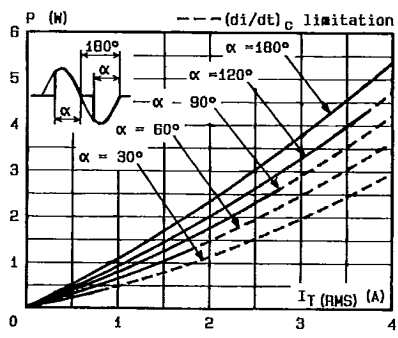


Fig. 1 - Maximum mean power dissipation versus RMS on-state current (F = 60 Hz).

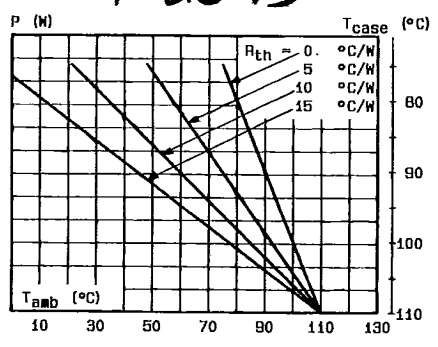


Fig. 2 - Correlation between maximum mean power dissipation and maximum allowable temperatures (T<sub>amb</sub> and T<sub>case</sub>) for different thermal resistances heatsink + contact.

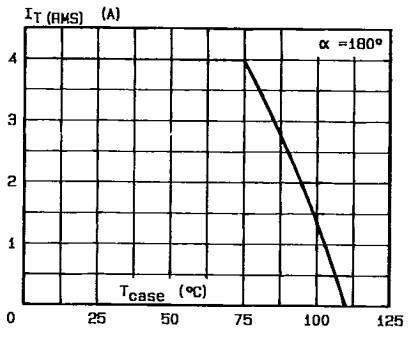


Fig. 3 - RMS on-state current versus case temperature.

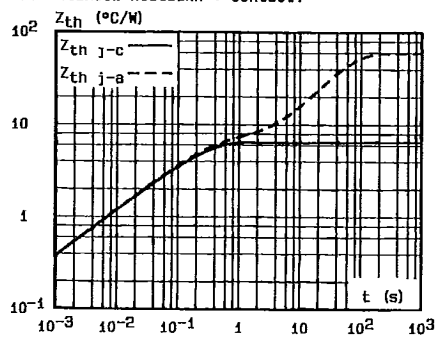


Fig. 4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

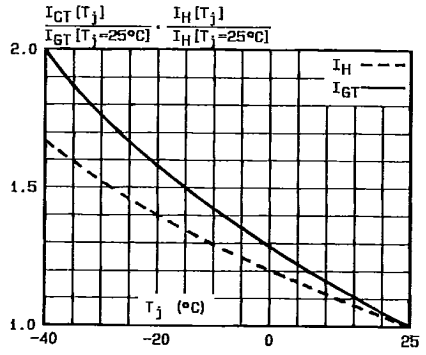


Fig. 5 - Relative variation of gate trigger current and holding current versus junction temperature.

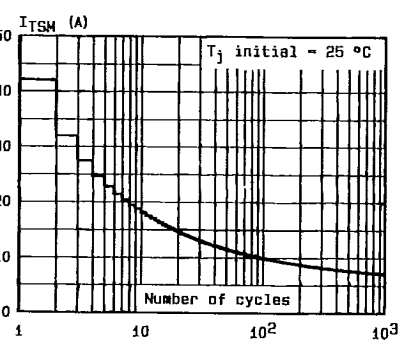


Fig. 6 - Non repetitive surge peak on-state current versus number of cycles.

T-25-13

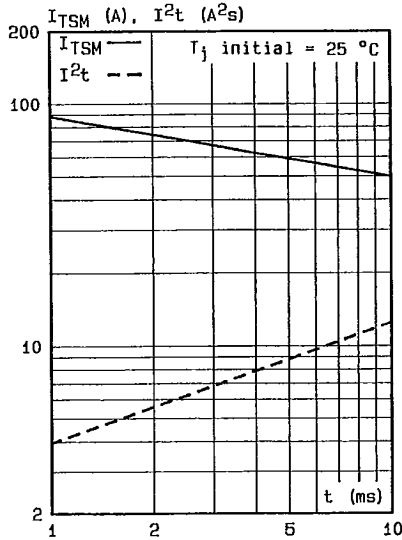


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

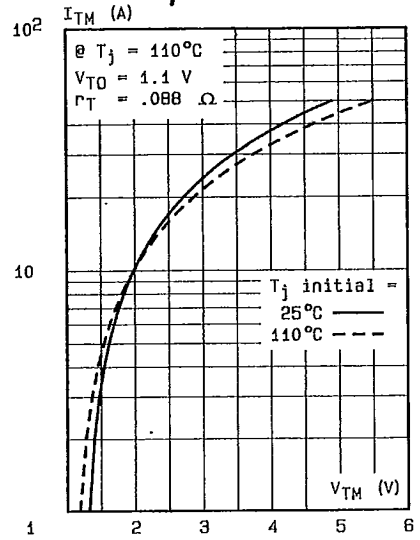


Fig.8 - On-state characteristics (maximum values).