



ALTERNISTORS

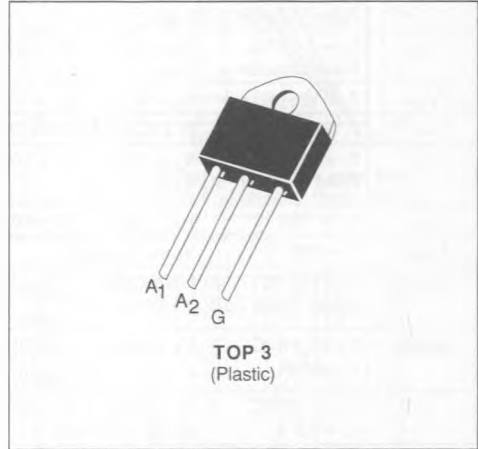
- $(di/dt)_c > 142$  A/ms (400 Hz)
- INSULATING VOLTAGE : 2500 V<sub>RMS</sub>  
( $t \leq 1$  mn - F = 50 Hz)
- UL RECOGNIZED (E81734)

**APPLICATIONS**

- POWER CONTROL ON INDUCTIVE LOAD (motor, transformer...)
- HIGH FREQUENCY OR HIGH  $(di/dt)_c$  LEVEL CIRCUITS

**DESCRIPTION**

New range of solid state AC - switches with very high commutating capability.



**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	$t = 10$ ms	350
		$t = 8.3$ ms	370
		$t = 2.5$ ms	590
$I^2t$	$I^2t$ Value for Fusing	$t = 10$ ms	610
$di/dt$	Critical Rate of Rise of on-state Current (1)	100	A/ $\mu$ s
$T_{stg}$ $T_I$	Storage and Operating Junction Temperature Range	- 40 to 125	°C
		- 40 to 125	°C

Symbol	Parameter	TPDV							Unit
		140	240	440	640	840	1040	1240	
$V_{DRM}$	Repetitive Peak off-state Voltage (2)	100	200	400	600	800	1000	1200	V

(1)  $I_G = 1.5$  A  $di/dt = 1$  A/ $\mu$ s

(2)  $T_J = 125$  °C.

**THERMAL RESISTANCES**

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to Ambient	50	°C/W
$R_{th(c-h)}$	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)

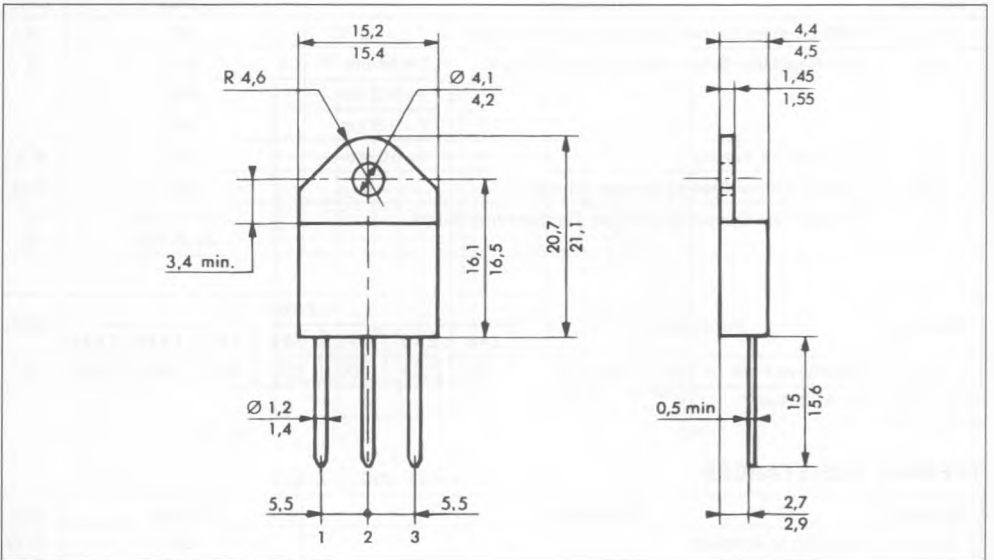
$P_{GM} = 40 \text{ W}$  ( $t_p = 10 \mu\text{s}$ )       $I_{GM} = 8 \text{ A}$  ( $t_p = 10 \mu\text{s}$ )  
 $P_{G(AV)} = 1 \text{ W}$        $V_{GM} = 16 \text{ V}$  ( $t_p = 10 \mu\text{s}$ )

**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			200	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			1.5	V
	Pulse Duration > 20 $\mu\text{s}$							
$V_{GD}$	$T_j = 125 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$R_L = 3.3 \text{ k}\Omega$	I-II-III	0.2			V
$I_H^*$	$T_j = 25 \text{ }^\circ\text{C}$	$I_T = 500 \text{ mA}$	Gate Open			50		mA
$I_L$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = 12 \text{ V}$	$I_G = 400 \text{ mA}$	I-III		50		mA
				II		100		
$V_{TM}^*$	$T_j = 25 \text{ }^\circ\text{C}$	$I_{TM} = 60 \text{ A}$	$t_p = 10 \text{ ms}$				1.8	V
$I_{DRM}^*$	$T_j = 125 \text{ }^\circ\text{C}$	$V_{DRM}$ Specified					8	mA
$dv/dt^*$	$T_j = 125 \text{ }^\circ\text{C}$	Gate Open	Linear Slope up to $V_D = 67\% V_{DRM}$	$V_{DRM} \leq 800 \text{ V}$	500			V/ $\mu\text{s}$
				$V_{DRM} \geq 1000 \text{ V}$	250			
$(di/dt)_c^*$	$T_c = 75 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$I_T = 60 \text{ A}$	$(dv/dt)_c = 200 \text{ V}/\mu\text{s}$	35			A/ms
				$(dv/dt)_c = 10 \text{ V}/\mu\text{s}$	142			
$t_{gt}$	$T_j = 25 \text{ }^\circ\text{C}$	$V_D = V_{DRM}$	$I_T = 60 \text{ A}$	I-II-III		2.5		$\mu\text{s}$
	$I_G = 0.5 \text{ A}$	$di_G/dt = 3.5 \text{ A}/\mu\text{s}$						

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

**PACKAGE MECHANICAL DATA : TOP 3 Plastic**



Cooling method : by conduction (method C)  
 Marking : type number  
 Weight : 5 g

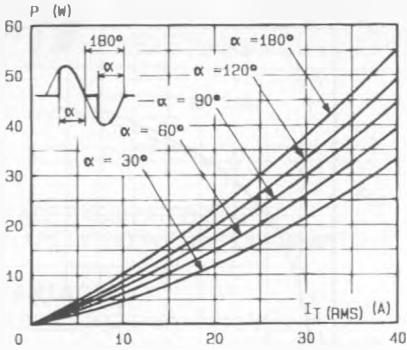


Fig. 1 - Maximum mean power dissipation versus RMS on-state current.

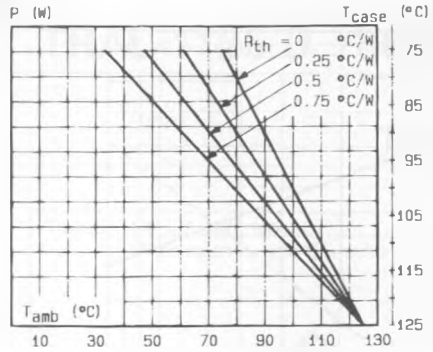


Fig. 2 - Correlation between maximum mean power dissipation and maximum allowable temperatures ( $T_{amb}$  and  $T_{case}$ ) for different thermal resistances heatsink + contact.

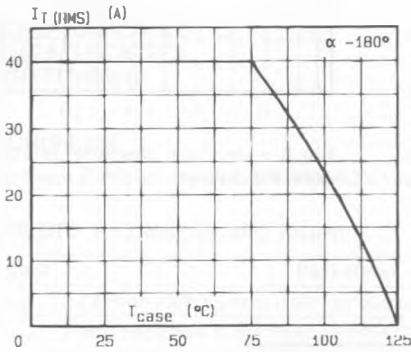


Fig. 3 - RMS on-state current versus case temperature.

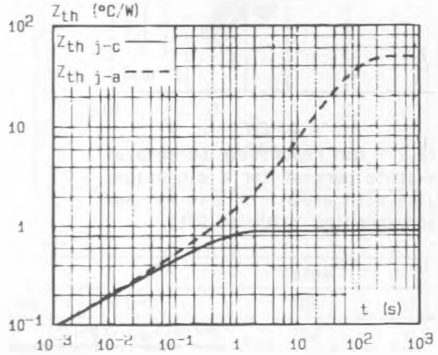


Fig. 4 - Thermal transient impedance junction to case and junction to ambient versus pulse duration.

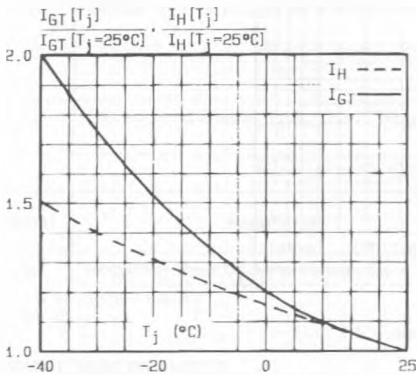


Fig. 5 - Relative variation of gate trigger current and holding current versus junction temperature.

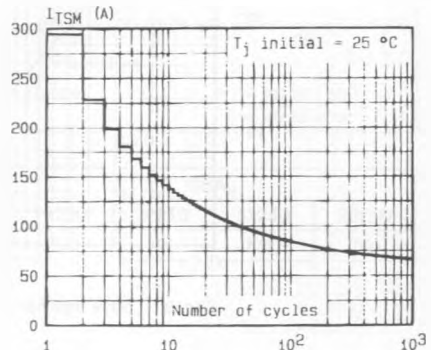


Fig. 6 - Non repetitive surge peak on-state current versus number of cycles.

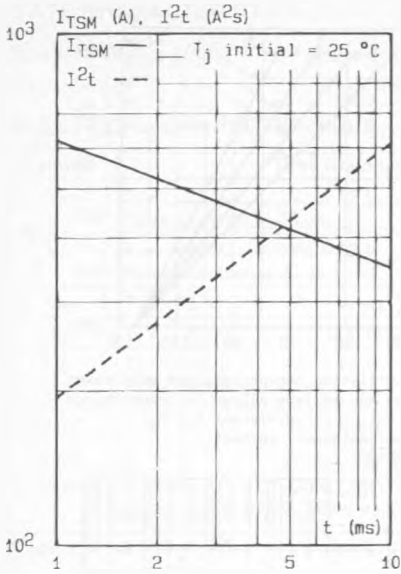


Fig.7 - Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t \leq 10$  ms, and corresponding value of  $I^2t$ .

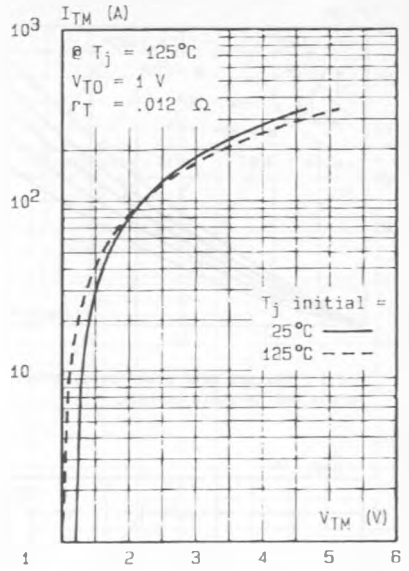


Fig.8 - On-state characteristics (maximum values).

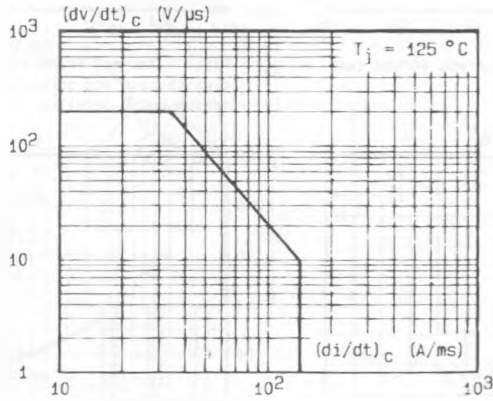


Fig.9 - Safe operating area.