

SNUBBERLESS TRIAC

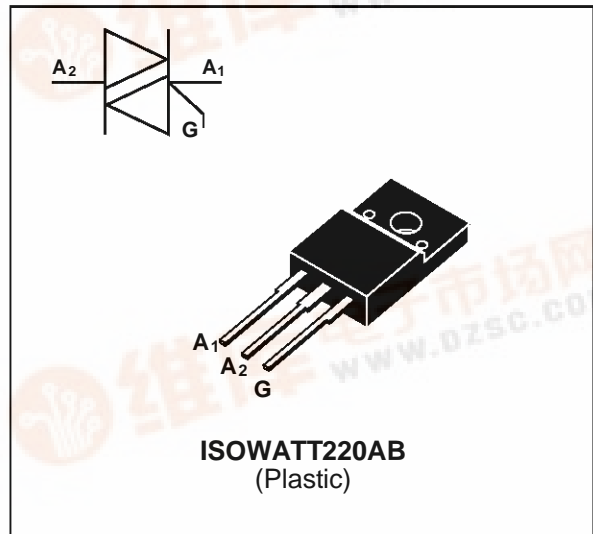
FEATURES

- $I_{T(RMS)} = 10\text{ A}$
- $V_{DRM} = V_{RRM} = 400\text{V to } 800\text{V}$
- EXCELLENT SWITCHING PERFORMANCES
- INSULATING VOLTAGE = $1500V_{(RMS)}$
- U.L. RECOGNIZED : E81734

DESCRIPTION

The T1020/1030W triacs use high performance glass passivated chip technology, housed in a fully molded plastic ISOWATT220AB package.

The SNUBBERLESS™ concept offers suppression of R-C network, and is suitable for applications such as phase control and static switch on inductive and resistive loads.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter	Value	Unit
$I_{T(RMS)}$	RMS on-state current (360° conduction angle)	$T_c = 90^\circ\text{C}$ 10	A
I_{TSM}	Non repetitive surge peak on-state current (T_j initial = 25°C)	$t_p = 16.7\text{ ms}$ (1 cycle, 60 Hz)	110
		$t_p = 10\text{ ms}$ (1/2 cycle, 50 Hz)	125
I^2t	I^2t Value (half-cycle, 50 Hz)	$t_p = 10\text{ ms}$ 78	A^2s
di/dt	Critical rate of rise of on-state current Gate supply : $I_G = 500\text{ mA}$ $di_G/dt = 1\text{ A}/\mu\text{s}$.	Repetitive $F = 50\text{ Hz}$	20
		Non Repetitive	100
T_{stg} T_j	Storage temperature range Operating junction temperature range	- 40 to + 150 - 40 to + 125	$^\circ\text{C}$
TI	Maximum lead temperature for soldering during 10s at 4.5 mm from case	260	$^\circ\text{C}$

Symbol	Parameter	T1020 / 1030-xxxW				Unit
		400	600	700	800	
V_{DRM} V_{RRM}	Repetitive peak off-state voltage $T_j = 125^\circ\text{C}$	400	600	700	800	V

T1020W / 1030W

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth(j-a)	Junction to ambient	50	°C/W
Rth(j-c)	Junction to case for A.C (360° conduction angle)	3.0	°C/W

GATE CHARACTERISTICS (maximum values)

$P_{G(AV)} = 1 \text{ W}$ $P_{GM} = 10 \text{ W}$ ($t_p = 20 \mu\text{s}$) $I_{GM} = 4 \text{ A}$ ($t_p = 20 \mu\text{s}$)

ELECTRICAL CHARACTERISTICS

Symbol	Test Conditions	Quadrant		T1020	T1030	Unit	
I_{GT}	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III	MAX	20	30	mA
V_{GT}	$V_D = 12\text{V (DC)}$ $R_L = 33\Omega$	$T_j = 25^\circ\text{C}$	I-II-III	MAX	1.5		V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3k\Omega$	$T_j = 125^\circ\text{C}$	I-II-III	MIN	0.2		V
tgt	$V_D = V_{DRM}$ $I_G = 500\text{mA}$ $di_G/dt = 3\text{A}\mu\text{s}$	$T_j = 25^\circ\text{C}$	I-II-III	TYP	2		μs
I_H^*	$I_T = 100\text{mA}$ Gate open	$T_j = 25^\circ\text{C}$		MAX	35	50	
V_{TM}^*	$I_{TM} = 14\text{A}$ $t_p = 380\mu\text{s}$	$T_j = 25^\circ\text{C}$		MAX	1.5		V
I_{DRM} I_{RRM}	V_{DRM} rated V_{RRM} rated	$T_j = 25^\circ\text{C}$		MAX	10		μA
		$T_j = 125^\circ\text{C}$		MAX	2		mA
dV/dt^*	Linear slope up to $V_D = 67\%V_{DRM}$ Gate open	$T_j = 125^\circ\text{C}$		MIN	200	300	$\text{V}/\mu\text{s}$
$(dV/dt)^c^*$	$(di/dt)^c = 5.3 \text{ A/ms}$ (see note)	$T_j = 125^\circ\text{C}$		MIN	10	20	$\text{V}/\mu\text{s}$

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

Note : In usual applications where $(di/dt)^c$ is below 5.3 A/ms, the $(dV/dt)^c$ is always lower than 10V/ μs , and, therefore, it is **unnecessary** to use a snuber R-C network across T1020W / T1030W triacs.

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

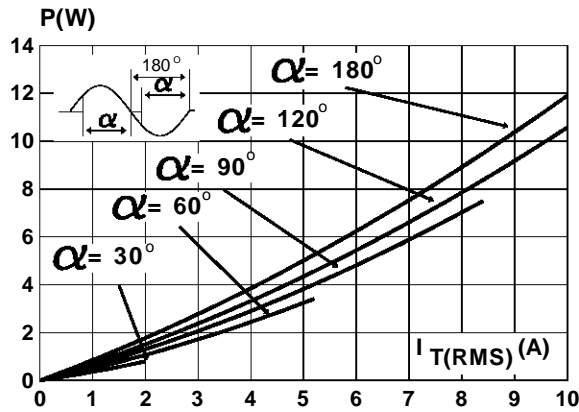


Fig.2 : Correlation between maximum power dissipation and maximum allowable temperature (Tamb and Tcase) for different thermal resistances heatsink + contact.

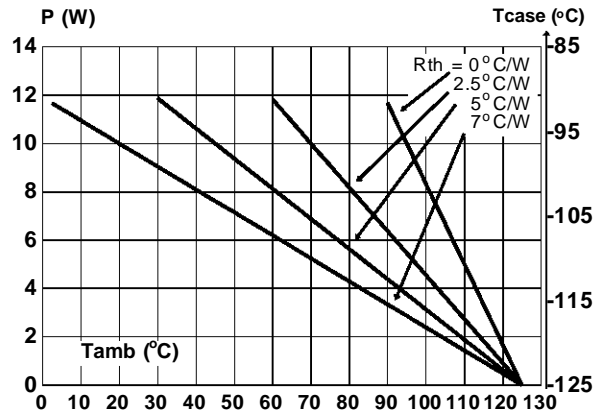


Fig.3 : RMS on-state current versus case temperature.

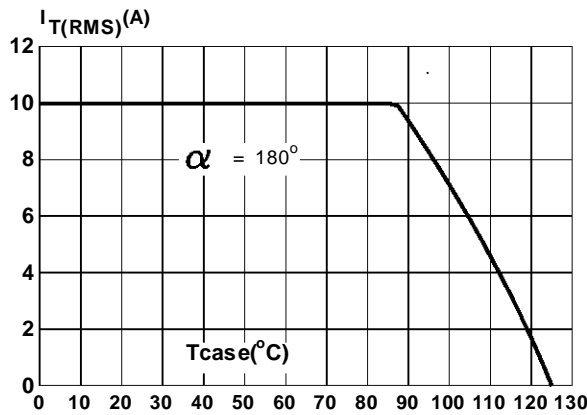


Fig.4 : Thermal transient impedance junction to case and junction to ambient versus pulse duration.

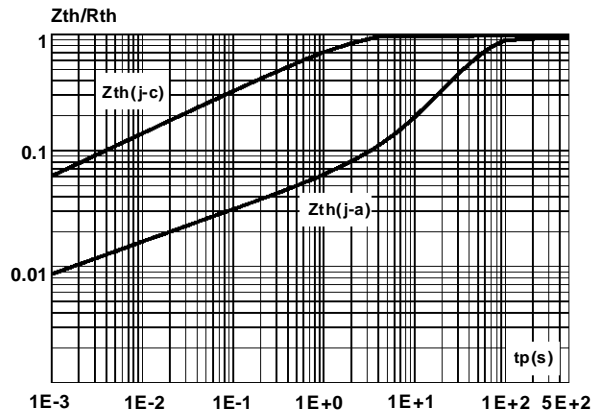


Fig.5 : Relative variation of gate trigger current and holding current versus junction temperature.

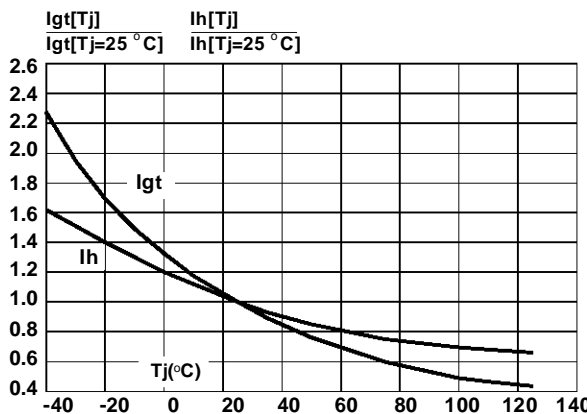
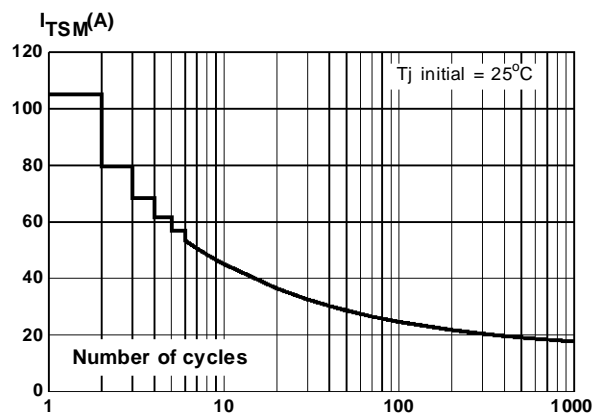


Fig.6 : Non repetitive surge peak on-state current versus number of cycles.



T1020W / 1030W

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

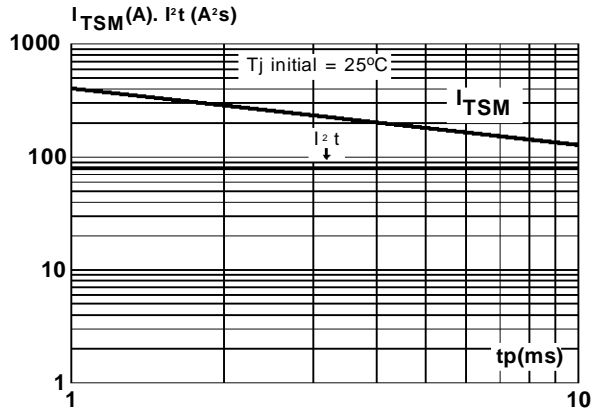
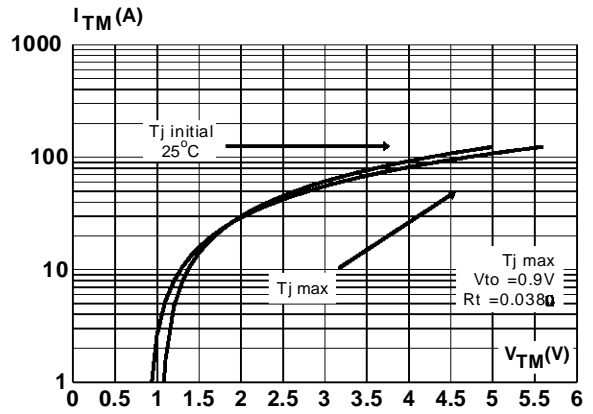
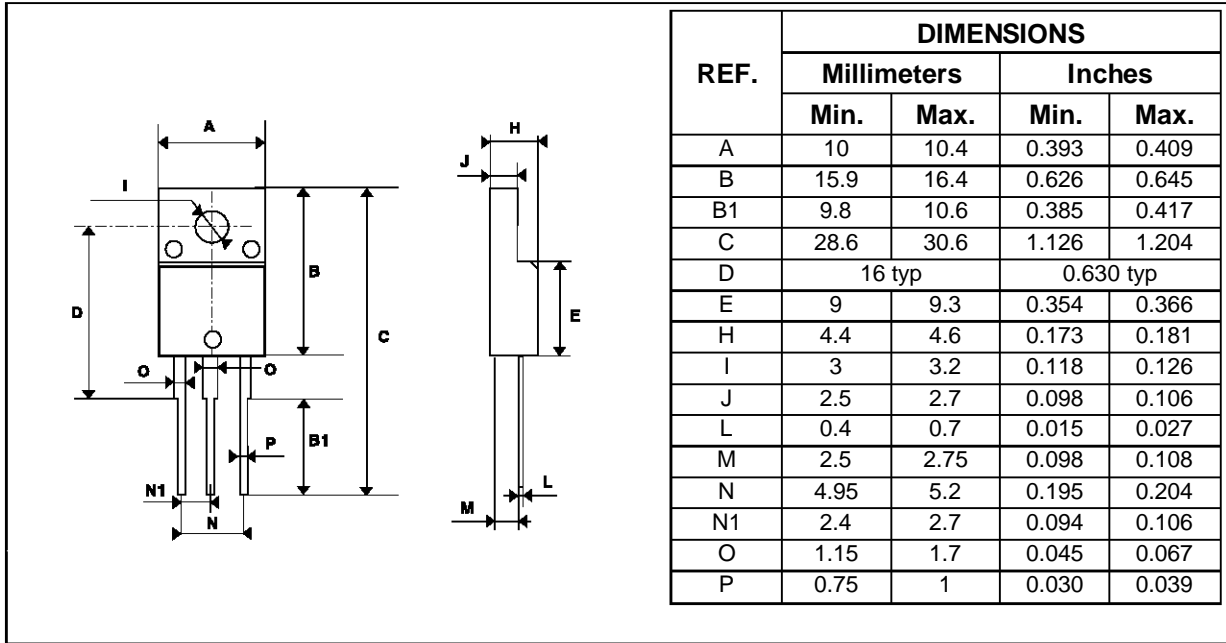


Fig.8 : On-state characteristics (maximum values).



PACKAGE MECHANICAL DATA
ISOWATT220AB



Cooling method : C
 Marking : Type number
 Weight : 2.1g
 Recommended torque value : 0.55 m.N.
 Maximum torque value : 0.70 m.N.

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