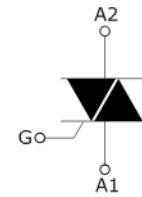


Product features and main applications:

NPNP five-layer structure of silicon bidirectional devices; with independent intellectual property rights of single-sided digging technology, table glass passivation process; multi-layer metallized electrodes on the back; with high blocking voltage and high temperature stability.



Mainly used in:

vacuum cleaners, power tools and other motor speed controllers; solid state relays; heating controllers (temperature regulation); other phase control circuits.



Characteristics

Table 1. Absolute maximum ratings ($T_j = 25^\circ\text{C}$ unless otherwise stated)

Symbol	Parameter name			value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	BTA	$T_c = 80^\circ\text{C}$	12	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	$F = 50\text{Hz}$ $t_p = 20\text{ms}$		120	A
I^2t	I^2t value for fusing	$t_p = 10\text{ms}$		72	A^2S
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ns}$	$T_j = 125$		50	A/us

V_{DRM}/V_{RRM}	Off state repetitive peak voltage Reverse repetitive peak voltage	$T_j=25^{\circ}\text{C}$		600/800	V
I_{GM}	Peak gate current	$t_p=20\mu\text{s}$	$T_j=150^{\circ}\text{C}$	4	A
$P_{G(AV)}$	Average gate power dissipation		$T_j=150^{\circ}\text{C}$	1	W
T_{stg} T_j	Storage junction temperature range Operating junction temperature range			-40 to+150 -40 to+125	$^{\circ}\text{C}$

Table 2. Electrical characteristics ($T_j = 25^{\circ}\text{C}$, unless otherwise specified) --3 quadrants

Symbol	Name and test conditions	Quadrant	Range	value				Unit
I_{GT}	$V_D=12\text{V}$ $R_L=100\Omega$	I II III	MAX	BW	CW	SW	TW	mA
				50	35	10	5	
V_{GT}			MAX	1.5				V
V_{GD}	$V_D = V_{DRM}$ $R_L = 3.3\text{ k}\Omega$, $T_j = 125^{\circ}\text{C}$		MIN	0.2				V
I_H	$I_T = 100\text{ mA}$		MAX	60	40	20	15	mA
I_L	$I_G = 1.2 \times I_{GT}$		MAX	100	60	40	30	mA
dv/dt	$V_D = 67\% V_{DRM}$, gate open, $T_j = 125^{\circ}\text{C}$		MIN	500	500	200	100	V/ μs
$(dv/dt)_c$	Critical rise rate of commutation voltage $T_J = 150^{\circ}\text{C}$		MIN	8				V/ μs

Table 3 Electrical characteristics ($T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise specified) -Standard Triac (4 quadrants)

Symbol	Name and test conditions	Quadrant	Range	value		Unit
I _{GT}	V _D =12V R _L =100Ω	I - II -III	MAX	B	C	mA
		IV		50	20	
				100	60	
V _{GT}		ALL	MAX	1.5		V
V _{GD}	VD = VDRM, RL = 3.3 kΩ, Tj = 125 ° C	ALL	MIN	0.2		V
I _H	I _T =500mA		MAX	60	50	mA
I _L	IG = 1.2 x IGT	I - II -III	MAX	60	50	mA
		IV		100	80	
dv/dt	VD = 67% VDRM, gate open, Tj = 125 ° C		MIN	500		V/us
(dv/dt) _c	Critical rise rate of commutation voltage TJ = 150 °C		MIN	10		V/us

Static parameters

Symbol	Parameter name			value	Unit
V_{TM}	$I_{TM} = 24A$	$T_j = 25^{\circ}C$	MAX	1.50	V
V_{TO}	threshold on-state voltage	$T_j = 150^{\circ}C$	MAX	0.86	V
R_d	Dynamic resistance	$T_j = 150^{\circ}C$	MAX	36.6	mΩ
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j = 25$ $T_j = 150$	MAX	5	uA
				1	mA
$R_{th(j-c)}$	Junction to ambient	BTA	MAX	2.05	$^{\circ}C W$

BTA12 characteristic curve

FIG.1 Maximum power dissipation versus RMS on-state current

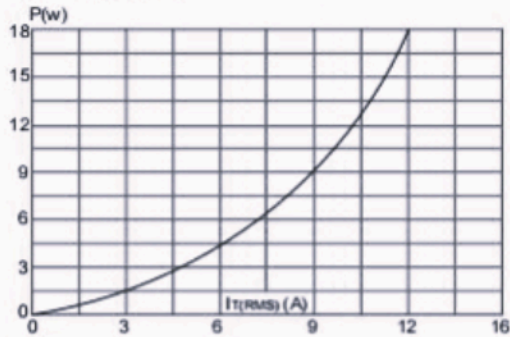


FIG.3: Surge peak on-state current versus number of cycles

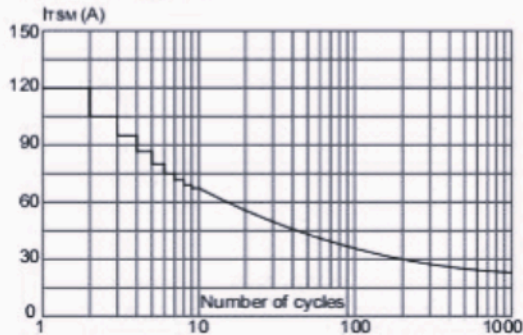


FIG.2 RMS on-state current versus case temperature

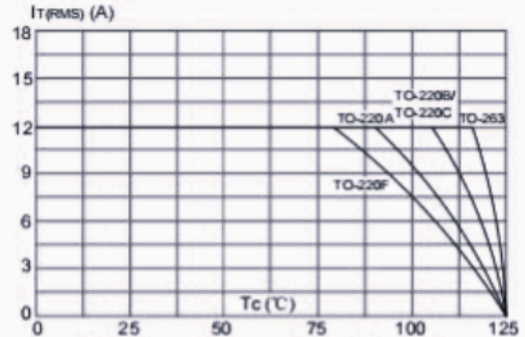


FIG.4: On-state characteristics (maximum values)

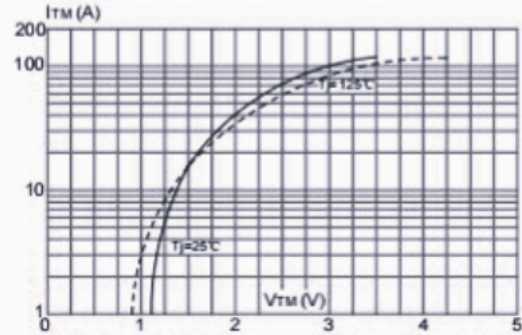


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10ms$, and corresponding value of I^2t ($di/dt < 50A/\mu s$)

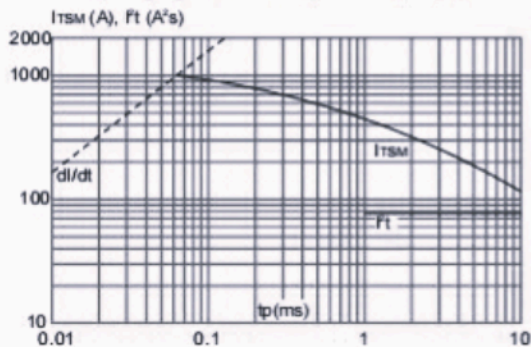
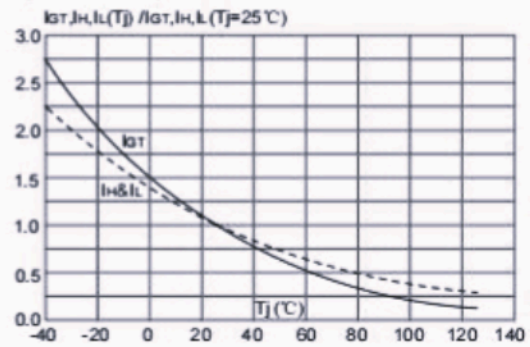
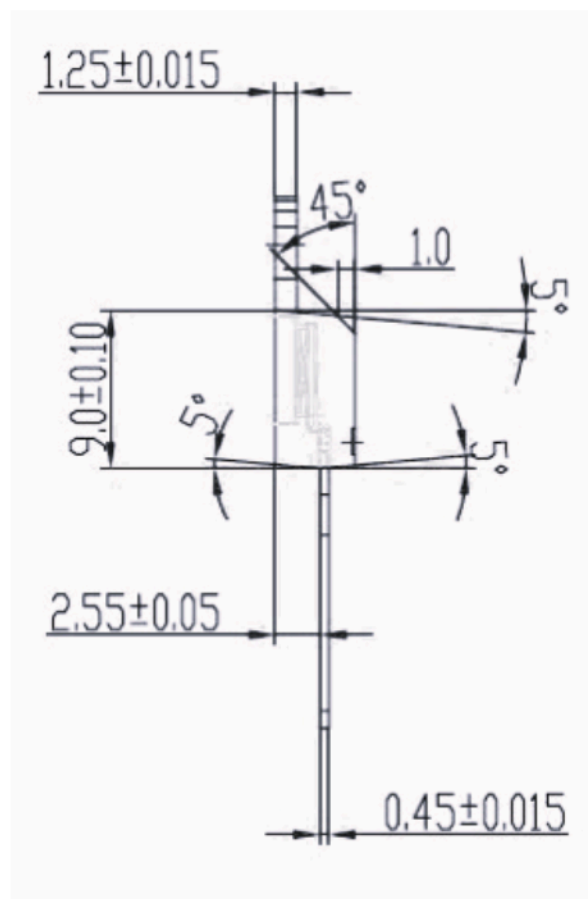
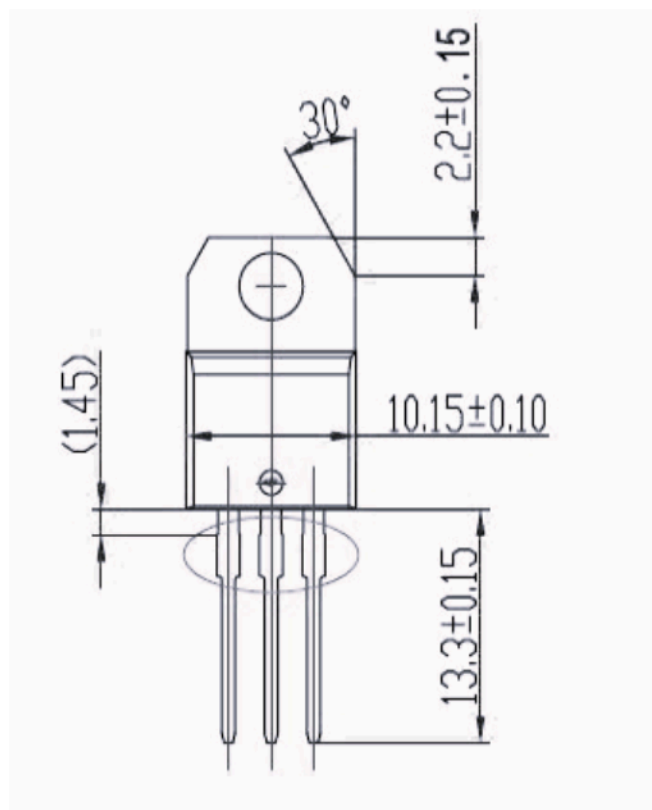


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



TO-220 Dimensional drawing:

Unit: mm (± 0.1)



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW BTA12-600BRG	TO-220A	1000	Tube and box
UMW BTA12-600CRG	TO-220A	1000	Tube and box
UMW BTA12-800BRG	TO-220A	1000	Tube and box
UMW BTA12-800CRG	TO-220A	1000	Tube and box
UMW BTA12-600BWRG	TO-220A	1000	Tube and box
UMW BTA12-600CWRG	TO-220A	1000	Tube and box
UMW BTA12-800BWRG	TO-220A	1000	Tube and box
UMW BTA12-800CWRG	TO-220A	1000	Tube and box
UMW BTA12-600SWRG	TO-220A	1000	Tube and box
UMW BTA12-600TWRG	TO-220A	1000	Tube and box
UMW BTA12-800SWRG	TO-220A	1000	Tube and box