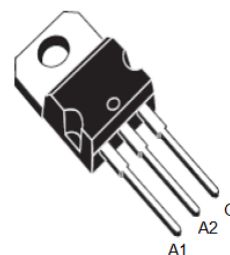
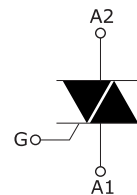


Product features and main applications:

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.



TO-220A

Characteristics

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

Symbol	Parameter name			value	Unit
$I_{T(RMS)}$	RMS on-state current (full sine wave)	BTA	$T_c=80^{\circ}\text{C}$	24	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = $25\text{ }^{\circ}\text{C}$)	$F=50\text{HZ}$ $t_p=20\text{ms}$		240	A
I^2t	I^2t value for fusing	$t_p=10\text{ms}$		288	A^2S
di/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, $t_r \leq 100\text{ ns}$	$T_j=125^{\circ}\text{C}$		50	$\text{A}/\mu\text{s}$

V_{DRM}/V_{RRM}	Off state repetitive peak voltage Reverse repetitive peak voltage	$T_j=25^{\circ}\text{C}$		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)
--3quadrants**

Symbol	Name and test conditions	Quadrant	Range	value		Unit
I_{GT}	$V_D=12V \quad R_L=100 \, \Omega$	I II III	MAX	≤ 50		mA
V_{GT}			MAX	1.5		V
V_{GD}	$V_D = V_{DRM}, R_L = 3.3 \, k \, \Omega, T_j = 125 \, ^\circ \, C$		MIN	0.2		V
I_H	$I_T = 100 \, mA$		MAX	80		mA
I_L	$I_G = 1.2 \times I_{GT}$		MAX	I -III	80	mA
				II	100	
dv/dt	$V_D = 67\% V_{DRM}, \text{ gate open, } T_j = 125 \, ^\circ \, C$		MIN	500		V/us
$(dv/dt)_c$	Critical rise rate of commutation voltage $T_J = 150 \, ^\circ C$		MIN	10		V/us

Table 3. Electrical characteristics (T_j = 25 °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 IV	MAX	I II III	IV	mA	
				≅ 50	≅ 120		
V _{GT}	MAX		1.5		V		
V _{GD}	VD = VDRM, RL = 3.3 kΩ, Tj = 125 ° C		MIN	0.2		V	
I _H	I _T =500mA		MAX	80		mA	
I _L	IG = 1.2 x IGT		MAX	80		mA	
				100			
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} = 50A	T _j =25°C	MAX	1.55	V
V _{T0}	threshold on-state voltage	T _j =150°C	MAX	0.87	V
R _d	Dynamic resistance	T _j =150°C	MAX	14.6	mΩ
I _{DRM} I _{R RM}	V _{DRM} = V _{RRM}	T _j =25°C T _j =150°C	MAX	5	uA
				1	mA
R _{th(j-c)}	Junction to ambient	BTA	MAX	2.05	°C/W

BTA24 characteristic curve

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

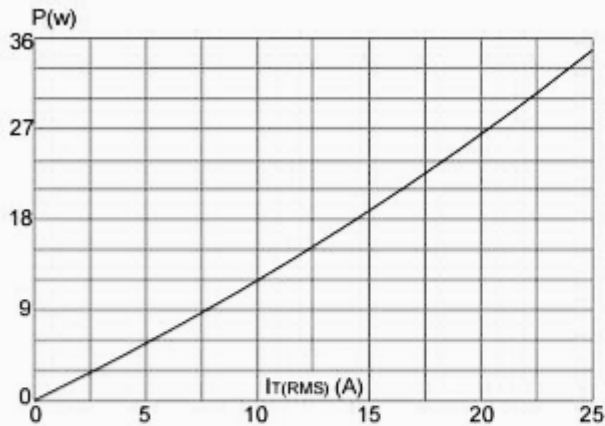


FIG.2: RMS on-state current versus case temperature

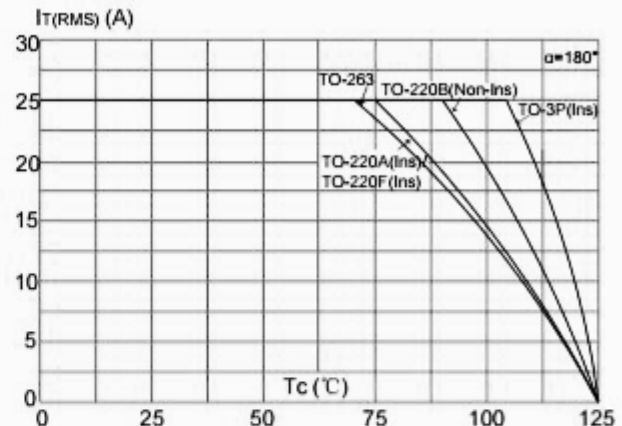


FIG.3: Surge peak on-state current versus number of cycles

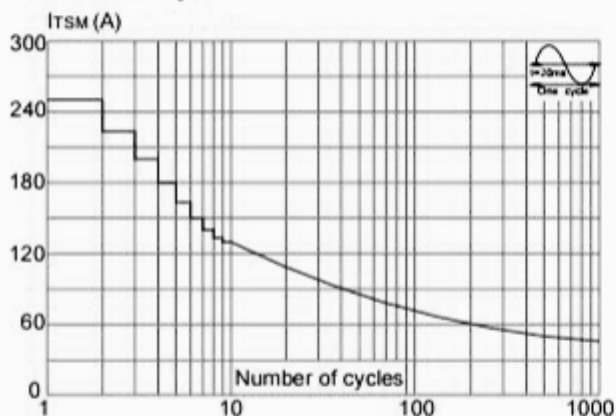


FIG.4: On-state characteristics (maximum values)

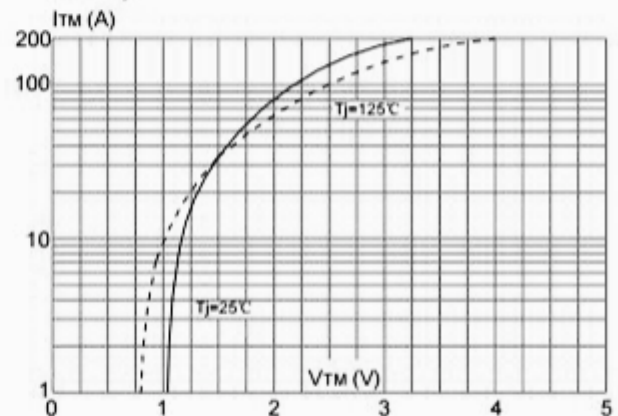


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

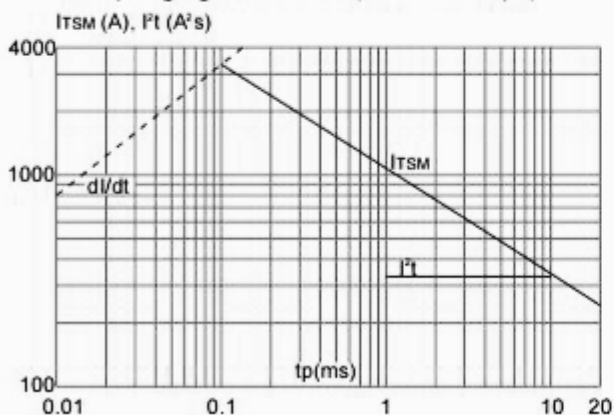
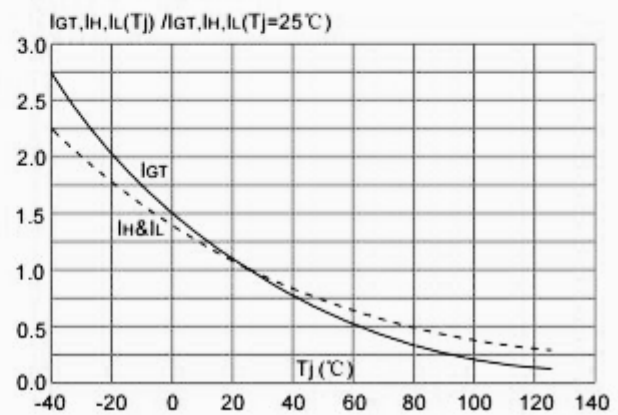
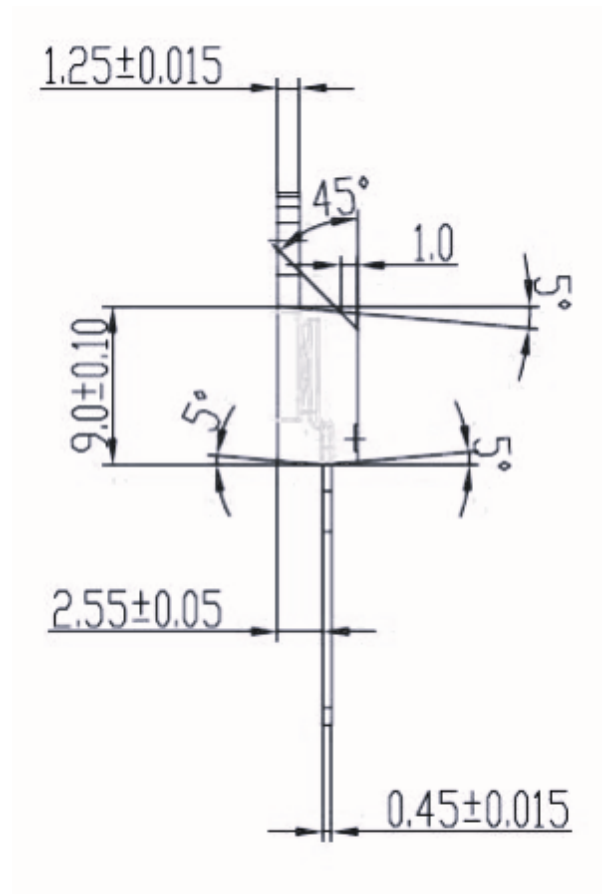
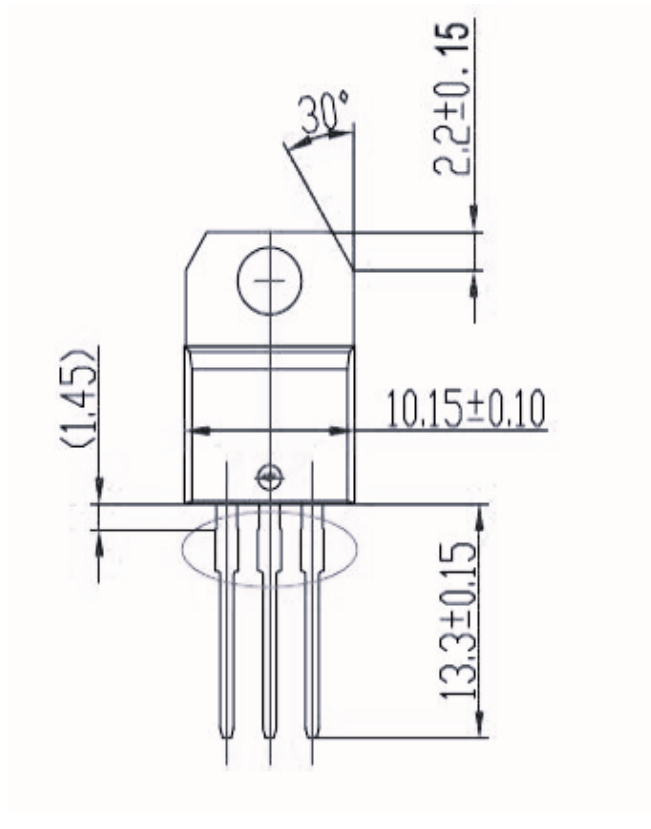


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



TO-220A Dimensional drawing:

Unit: mm (± 0.1)



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW BTA24-600CRG	TO-220A	1000	Tube and box
UMW BTA24-600BWRG	TO-220A	1000	Tube and box
UMW BTA24-600CWRG	TO-220A	1000	Tube and box
UMW BTA24-800CRG	TO-220A	1000	Tube and box
UMW BTA24-800BRG	TO-220A	1000	Tube and box
UMW BTA24-800BWRG	TO-220A	1000	Tube and box
UMW BTA24-800CWRG	TO-220A	1000	Tube and box