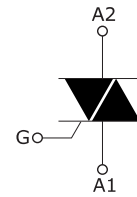


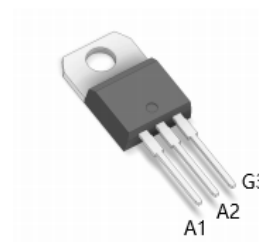
Product features and main applications:

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 (Tj = 25 °C unless otherwise stated)

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

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}	$V_D=12\text{V}$ $R_L=100\ \Omega$	I II III	MAX	≤ 50	mA	
V_{GT}			MAX	1.5	V	
V_{GD}	$V_D = V_{DRM}$, $R_L = 3.3\ \text{k}\Omega$, $T_j = 125^{\circ}\text{C}$		MIN	0.2	V	
I_H	$I_T = 100\ \text{mA}$		MAX	80	mA	
I_L	$I_G = 1.2 \times I_{GT}$		MAX	I -III	80	mA
				II	100	
dv/dt	$V_D = 67\% V_{DRM}$, gate open, $T_j = 125^{\circ}\text{C}$		MIN	500	V/us	
$(dv/dt)_c$	Critical rise rate of commutation voltage $T_J = 150^{\circ}\text{C}$		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}	V _D = V _{DRM} , R _L = 3.3 kΩ, T _j = 125 ° C		MIN	0.2		V
I _H	I _T =500mA		MAX	80		mA
I _L	I _G = 1.2 x I _{GT}		MAX	80		mA
				100		
dv/dt	V _D = 67% V _{DRM} , gate open, T _j = 125 ° C		MIN	500		V/us
(dv/dt) _c	Critical rise rate of commutation voltage T _J = 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 _{RRM}	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

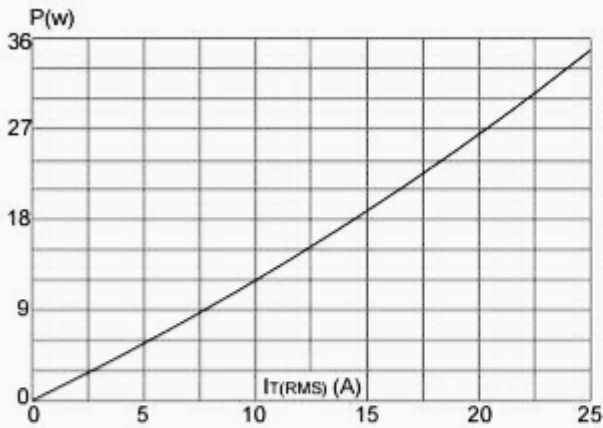


FIG.2: RMS on-state current versus case temperature

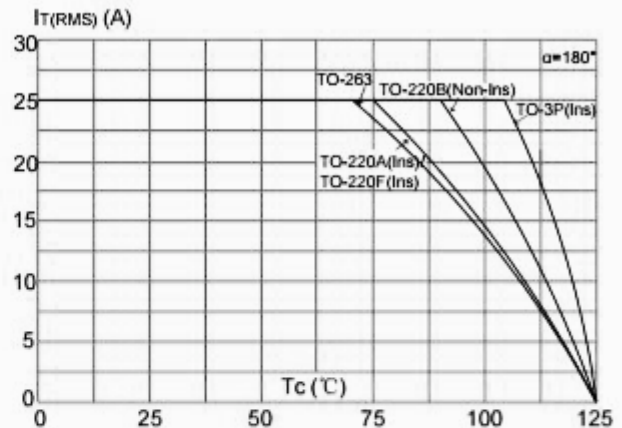


FIG.3: Surge peak on-state current versus number of cycles

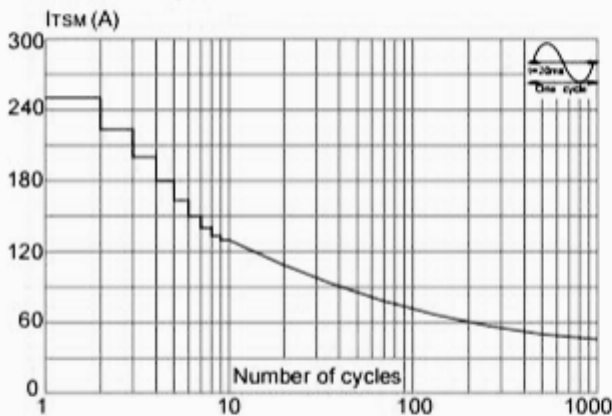


FIG.4: On-state characteristics (maximum values)

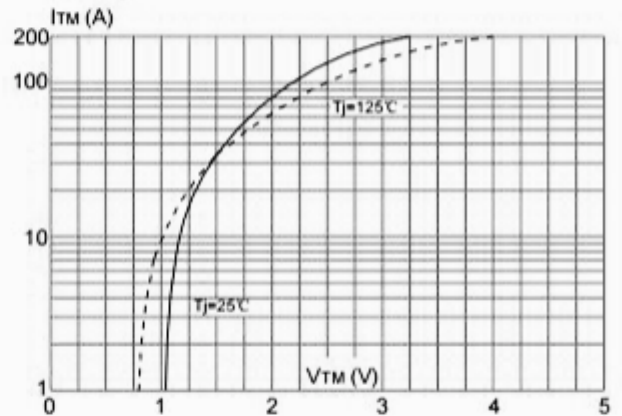


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

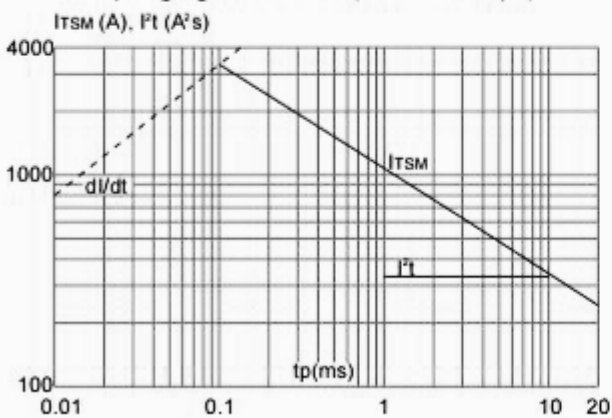
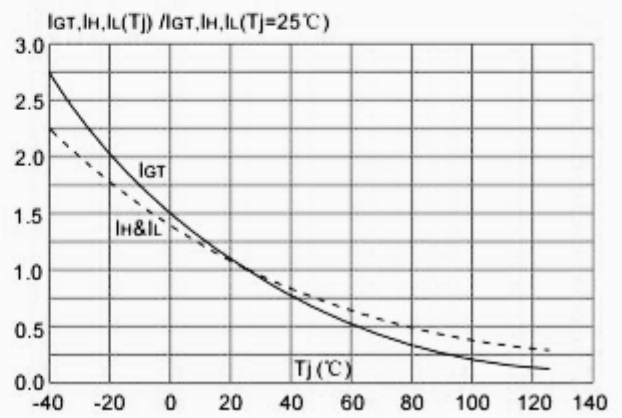
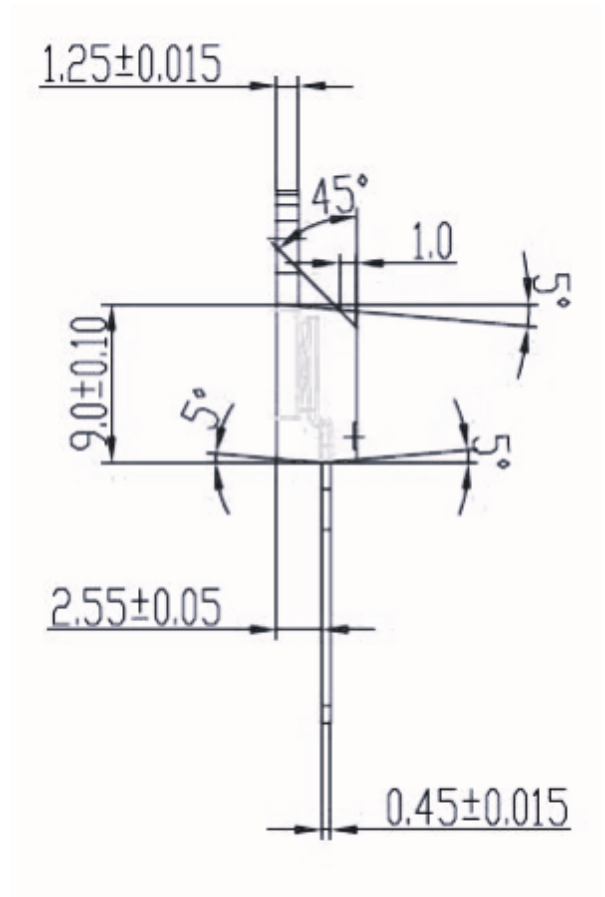
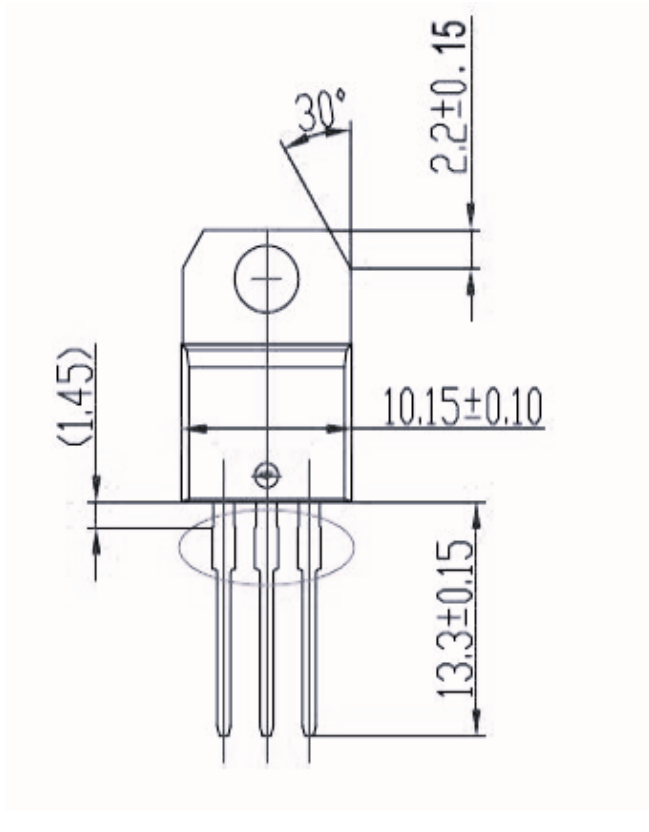


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



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