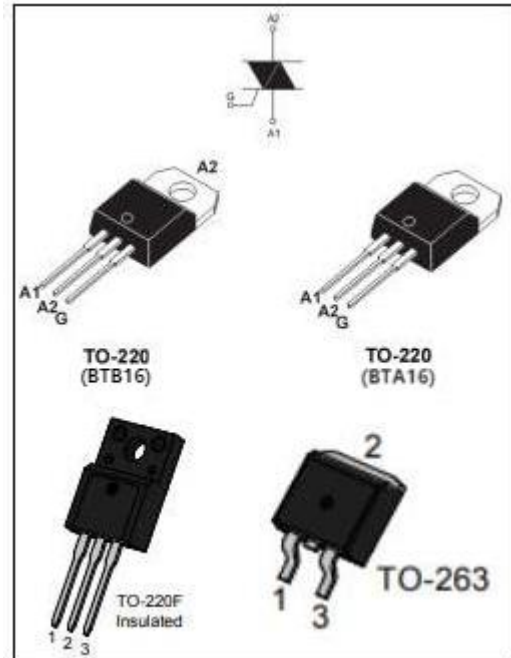


●Product features and main applications:

NPNPN 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 BTB	$T_c=80^\circ\text{C}$ $T_c=90^\circ\text{C}$	16	A
I_{TSM}	Non repetitive surge peak on-state current (full cycle, T_j initial = 25°C)	$F=50\text{HZ}$ $t_p=20\text{ms}$		160	A
I^2t	I^2t value for fusing	$t_p=10\text{ms}$		144	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	Tj=25℃		600/800	V
I _{GM}	Peak gate current	tp=20us	Tj=150℃	4	A
P _{G(AV)}	Average gate power dissipation		Tj=150℃	1	W
Tstg Tj	Storage junction temperature range Operating junction temperature range			—40to+150 —40to+125	℃

● **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	≤ 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	60	mA
I_L	$I_G = 1.2 \times I_{GT}$		MAX	I - III	60
				II	100
dv/dt	$V_D = 67\% V_{DRM}$, gate open, $T_j = 125^{\circ}\text{C}$		MIN	500	V/ μs
$(dv/dt)_c$	Critical rise rate of commutation voltage $T_j = 150^{\circ}\text{C}$		MIN	10	V/ μs



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

Symbol	Name and test conditions	Quadrant	Range	value		Unit	
I _{GT}	V _D =12V R _L =100 Ω	I II III IV	MAX	I II III	IV	mA	
				≦ 50	≦ 120		
V _{GT}	MAX		1.5		V		
V _{GD}	MIN		0.2		V		
I _H	I _T =500mA		MAX	60		mA	
I _L	IG = 1.2 x IGT		MAX	60		mA	
				100			
dv/dt	VD = 67% VDRM, 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}	$I_{TM}= 32\text{A}$	$T_j=25^\circ\text{C}$	MAX	1.50	V
V_{T0}	threshold on-state voltage	$T_j=150^\circ\text{C}$	MAX	0.87	V
R_d	Dynamic resistance	$T_j=150^\circ\text{C}$	MAX	14.6	$\text{m}\Omega$
I_{DRM} I_{RRM}	$V_{DRM} = V_{RRM}$	$T_j=25^\circ\text{C}$	MAX	5	μA
		$T_j=150^\circ\text{C}$		1	mA
$R_{th(j-c)}$	Junction to ambient	BTA		2.10	$^\circ\text{C/W}$
		BTB		1.30	

●BT139-800 characteristic curve

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

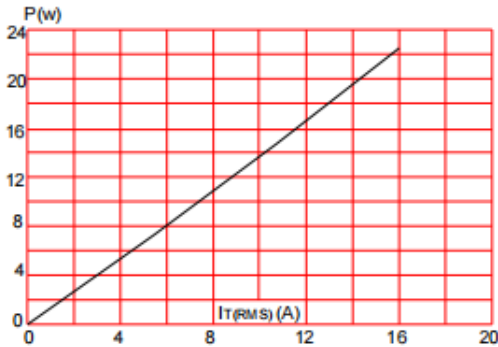


FIG.3: Surge peak on-state current versus number of cycles

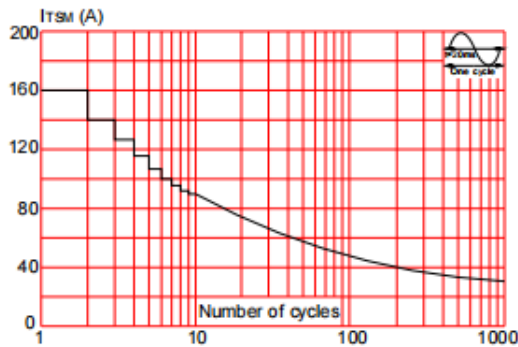


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

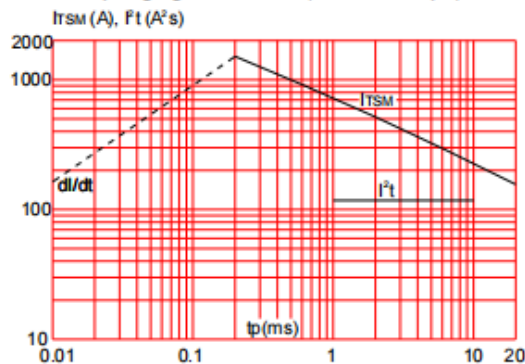


FIG.2: RMS on-state current versus case temperature

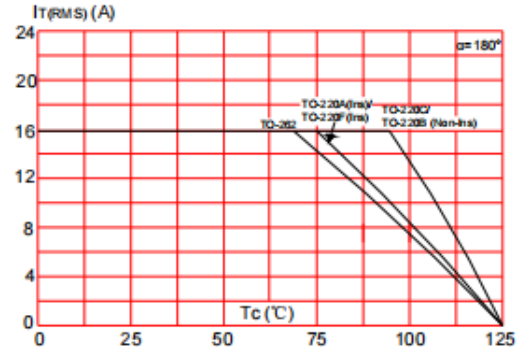


FIG.4: On-state characteristics (maximum values)

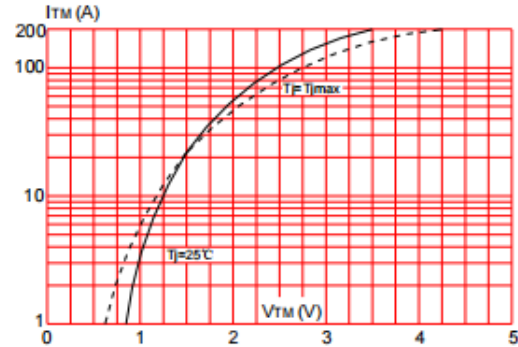
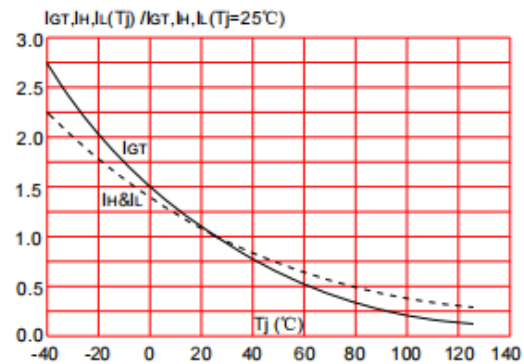


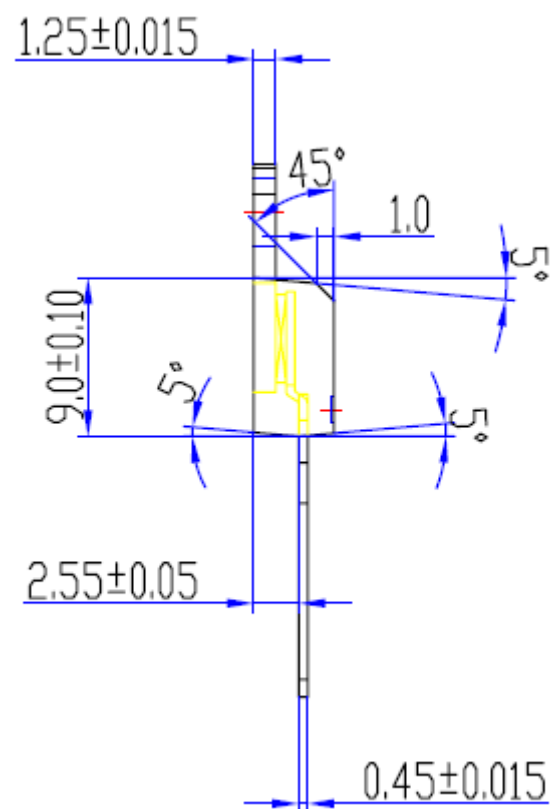
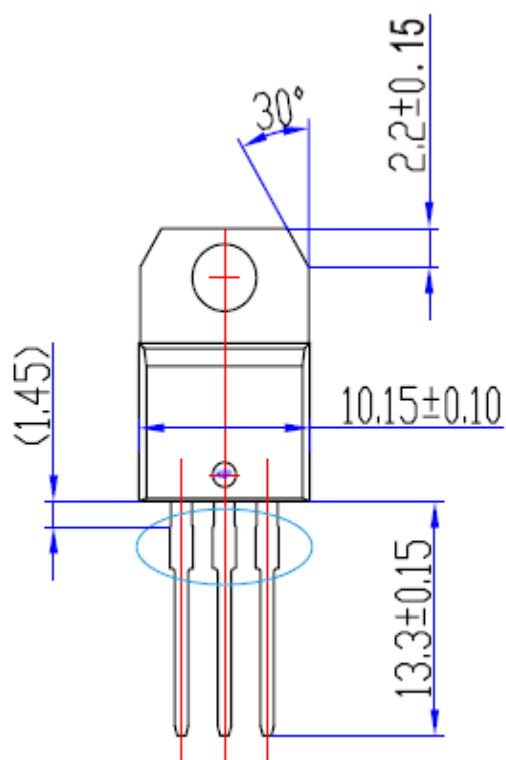
FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature





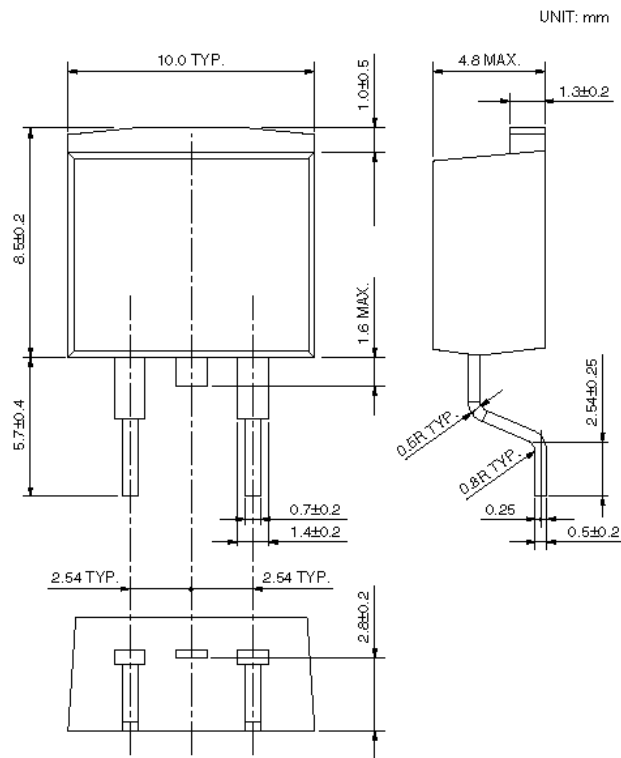
● TO-220 Dimensional drawing:

Unit: mm (± 0.1)



●TO-263 Dimensional drawing:

Unit: mm (± 0.1)



: The area without solder plated

