

16A 4Quadrants TRIACs

Product Summary

Symbol	Value	Unit
$I_{T(AV)}$	16	A
$V_{DRM} V_{RRM}$	600/800	V
V_{TM}	1.55	V

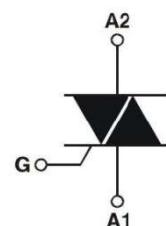
Features

With high ability to withstand the shock loading of large current, Provide high dv/dt rate with strong resistance to electromagnetic interference

Application

Power charger, T-tools, massager, solid staterelay, AC Motor speed regulation and so on.

Circuit diagram



TO-263

Order Information

Part Number	Package	Marking	packing	packing Quantity
BT139Q	TO-263	BT139 600E XXXX	Tape	800PCS/Reel

Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value		Unit
Repetitive peak off-state voltage	V_{DRM}	600/800		V
Repetitive peak reverse voltage	V_{RRM}	600/800		V
RMS on-state current	$I_{T(RMS)}$	16		A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	140		A
I^2t value for fusing (tp=10ms)	I^2t	98		A^2s
Critical rate of rise of on-state current ($ IG = 2 \times G_T $)	dI/dt	I - II - III IV	50 10	$A/\mu s$
Peak gate current	I_{GM}	2		A
Gate peak power	I_{GM}	5		W
Average gate power dissipation	$P_G(AV)$	0.5		W
Junction Temperature	T_J	-40~+125		°C
Storage Temperature	T_{STG}	-40 ~+150		°C

Electrical characteristics (TA=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Value			Unit		
			D	E	F			
Gate trigger current	I_{GT}	$V_D=12V$, $I_T=0.1A$, $T_j=25^\circ C$, Fig.6	I - II - III	≤ 5	≤ 10	≤ 25	mA	
Gate trigger voltage			IV	≤ 10	≤ 25	≤ 70		
Gate non-trigger voltage	V_{GD}	$V_D=V_{DRM}$, $T_j=125^\circ C$			≥ 0.2		V	
Holding current	I_H	$V_D = 12V$, $I_{GT}=0.1A$, $T_j=25^\circ C$, Fig.6	I - II - III - IV	≤ 10	≤ 25	≤ 30	mA	
Latching current	I_L		I - III - IV	≤ 15	≤ 30	≤ 40	mA	
Critical-rate of rise of commutation voltage	dV_D/dt		II	≤ 20	≤ 40	≤ 70	mA	
		$V_D=67\%_{DRM}$, $T_j=125^\circ C$			≥ 10	≥ 20	≥ 50	V/us

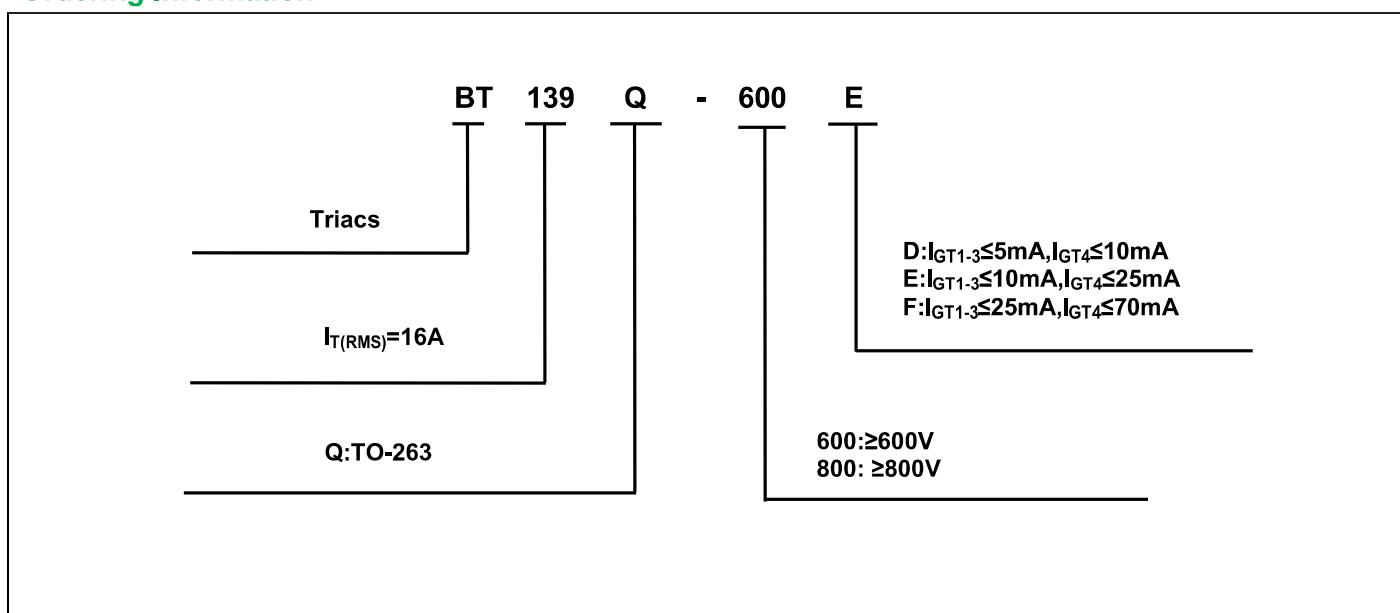
STATIC CHARACTERISTICS

Forward "on" voltage	V_{TM}	$I_{TM}=20A, tp=380us$, Fig.4	≤ 1.55			V		
Repetitive Peak Off-State Current	I_{DRM}	$V_D=V_{DRM}$ $V_R=V_{RRM}$	$T_j=25^\circ C$		≤ 10	≤ 10	≤ 10	uA
Repetitive Peak Reverse Current	I_{RRM}		$T_j=125^\circ C$		≤ 1	≤ 1	≤ 1	mA

THERMAL RESISTANCES

Thermal resistance	$R_{th(j-c)}$	Junction to case(AC)	TYP.	1.2	$^\circ C/W$
	$R_{th(j-a)}$	Junction to ambient	TYP.	45	$^\circ C/W$

Ordering Information



Typical Characteristics

FIG.1: Maximum power dissipation versus RMS on-state current (full cycle)

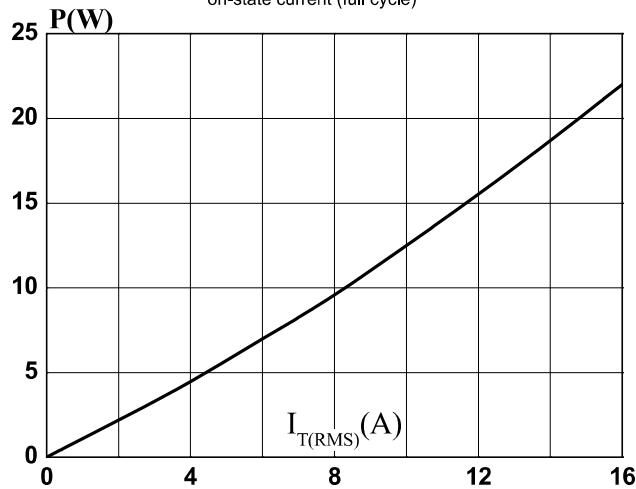


FIG.2: RMS on-state current versus case temperature (full cycle)

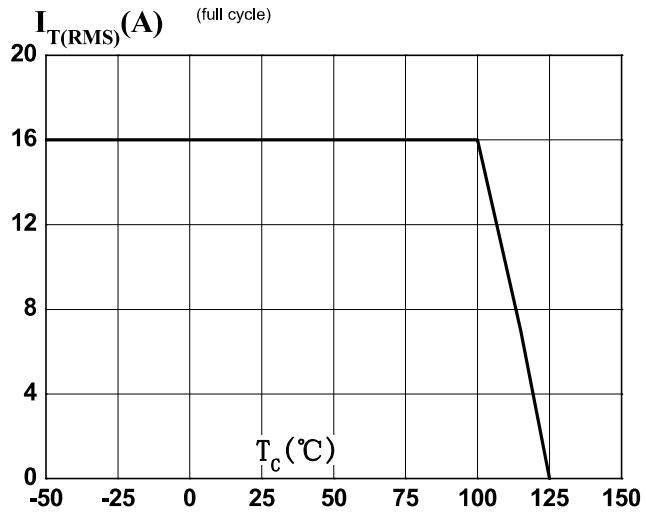


FIG.3: Surge peak on-state current versus number of cycles

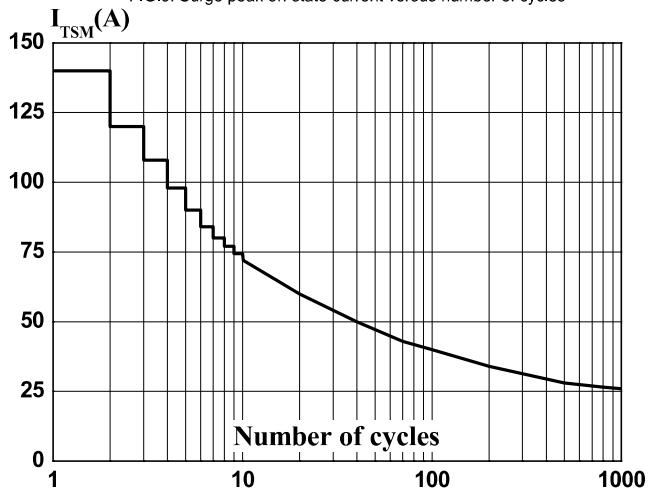
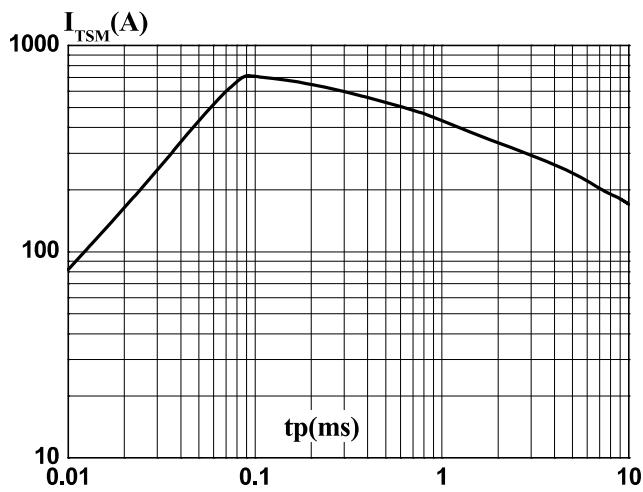

 FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$


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

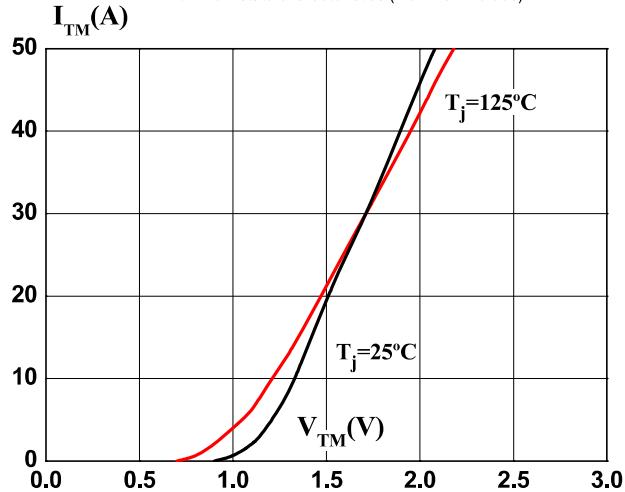
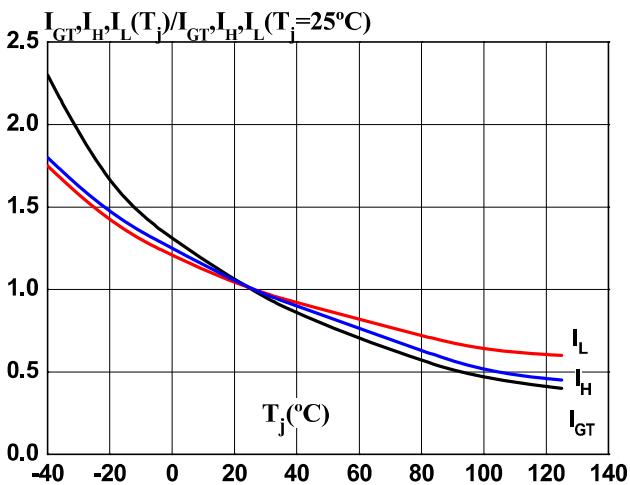
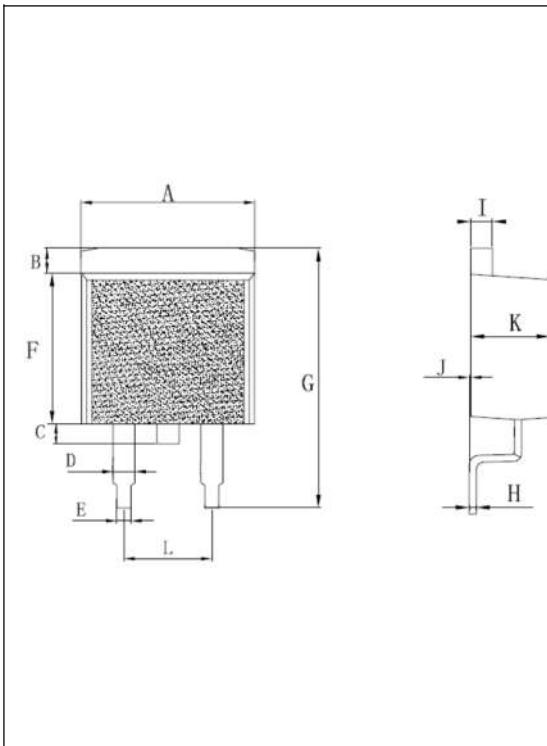


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature (typical values)



Package Information

TO-263



The technical drawing illustrates the TO-263 package in two views: a top view showing the lead frame and a side view showing the profile. Dimension labels are as follows:

- Top View Dimensions:**
 - A: Total width of the package body.
 - B: Width of the lead frame.
 - C: Lead thickness.
 - D: Lead spacing.
 - E: Lead height.
 - F: Lead pitch.
 - G: Total height of the package.
 - L: Lead length.
- Side View Dimensions:**
 - I: Lead height.
 - J: Lead spacing.
 - K: Lead width.
 - H: Lead length.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	9.7	10.4	0.381	0.409
B	1.31	1.62	0.051	0.063
C	0.65	1.22	0.025	0.048
D	1.15	1.36	0.045	0.053
E	0.62	0.95	0.024	0.037
F	8.75	9.32	0.344	0.366
G	14.75	15.8	0.580	0.622
H	0.32	0.48	0.012	0.018
I	1.18	1.36	0.046	0.053
J	0	0.15	0	0.005
K	4.38	4.86	0.172	0.191
L	4.85	5.23	0.190	0.205