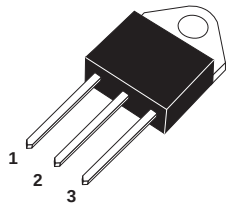
Bi-Directional Triode Thyristor

Designed for high performance full-wave ac control applications where high noise immunity and high commutating di/dt are required.

TO-3P

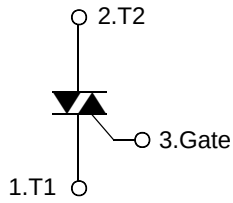


(Insulated)

Features

- Blocking Voltage to 800 V
- Package: TO-3P
- High current density due to double mesa technology, BTA41 series triacs is suitable for general purpose as an ON/OFF function is applications such induction motor stating circuits or phase control speed controllers.
- BTA41 series are 3 Quadrants triacs, They are inductive loads.

Symbol



Absolute Maximum Ratings

Parameter		Symbol	Value	Unit
Storage junction temperature range		Tstg	-40 to +150	℃
Operating junction temperature range		Tj	-40 to + 125	℃
Repetitive Peak OFF-state Voltage	Tj=25℃	V_{DRM}	800	V
Repetitive Peak Reverse Voltage	Tj=25℃	V_{RRM}	800	V
Non repetitive surge peak off-state voltage	Tp=10ms,Tj=25℃	V_{DSM}	900	V
Non repetitive peak reverse voltage		V_{RSM}	900	V
RMS on-state current(full sine wave)	TC=90℃	IT(RMS)	41	A
	TC=70℃			
Non repetitive surge peak on-state current(full cycle,TJ=25℃)	f=60Hz,t=16.7ms	ITSM	430	A
	f=50Hz,t=20ms		410	
I^2t Value for fusing	Tp=10ms	I^2t	410	A^2s
Critical rate of rise of on-state current IG=2*IGT,tr≤100ns,f=120Hz,Tj=125℃		dI/dt	100	A/us
Peak gate current(tp=20us,Tj=125℃)		I_{GM}	4	A
Peak gate power dissipation(tp=20us,Tj=125℃)		P_{GM}	10	W
Average gate power dissipation(Tj=125℃)		PG(AV)	1	W

Electrical Characteristics (Tj=25℃,unless otherwise specified)

Symbol	Test Condition	Quadrant		Limit		Unit
				CW(C)	BW(B)	
I_{GT}	V_D=12V,R_L=33Ω	Ⅰ-Ⅱ-Ⅲ-Ⅳ	MAX	35	100	mA
V_{GT}		Ⅰ-Ⅱ-Ⅲ-Ⅳ	MAX	1.5		V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ Tj=125℃	Ⅰ-Ⅱ-Ⅲ-Ⅳ	MIN	0.2		V
IL	I_G=1.2I_{GT}	Ⅰ-Ⅲ-Ⅳ	MAX	30	50	mA
		Ⅱ	MAX	40	60	mA
IH	I_T=100mA		MAX	40	60	mA
Dv/dt	VD=67%VDRM gate open TJ=125℃		MIN	250	500	V/us
(Dv/dt)c	(dl/dt)c=8.8A/ms Tj=125℃		MIN	7	12.5	V/us

Static Characteristics

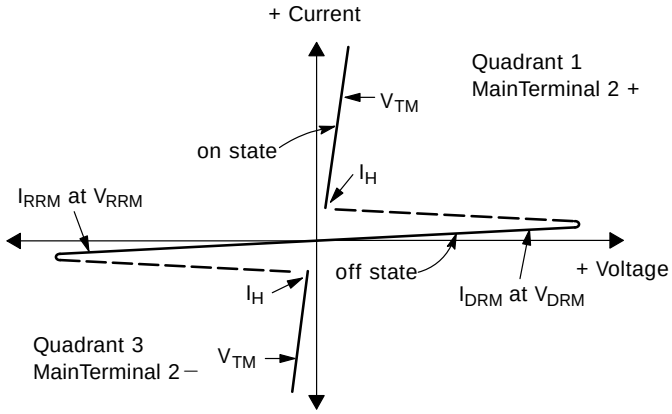
Symbol	Parameter		Value(MAX)	Unit
V_{TM}	ITM=28A,tp=380us	Tj=25℃	1.55	V
I_{DRM}	VD=V_{DRM} VR=V_{RRM}	Tj=25℃	5	uA
I_{RRM}		Tj=125℃	2.5	mA

Thermal Resistances

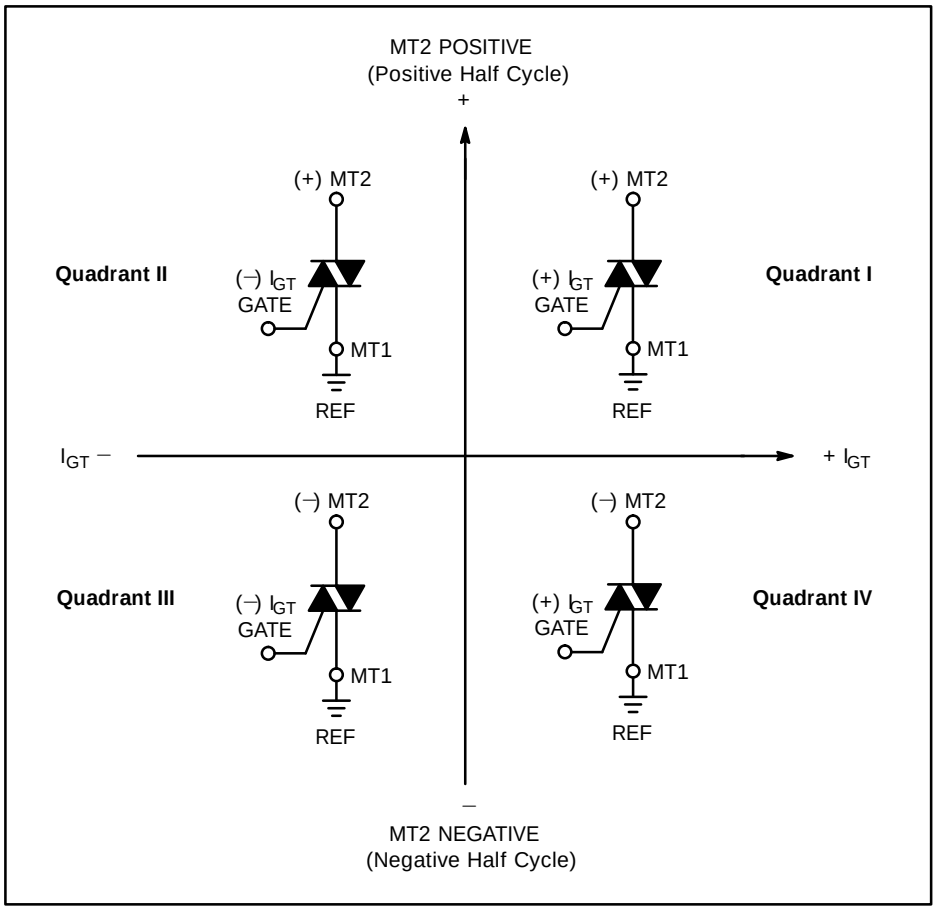
Symbol	Parameter	Value	Unit
Rth(J-C)	Junction to case(AC)	2.1	℃/W

Voltage Current Characteristic of Triacs (Bidirectional Device)

Symbol	Parameter
V_{DRM}	Peak Repetitive Forward Off State Voltage
I_{DRM}	Peak Forward Blocking Current
V_{RRM}	Peak Repetitive Reverse Off State Voltage
I_{RRM}	Peak Reverse Blocking Current
V_{TM}	Maximum On State Voltage
I_H	Holding Current



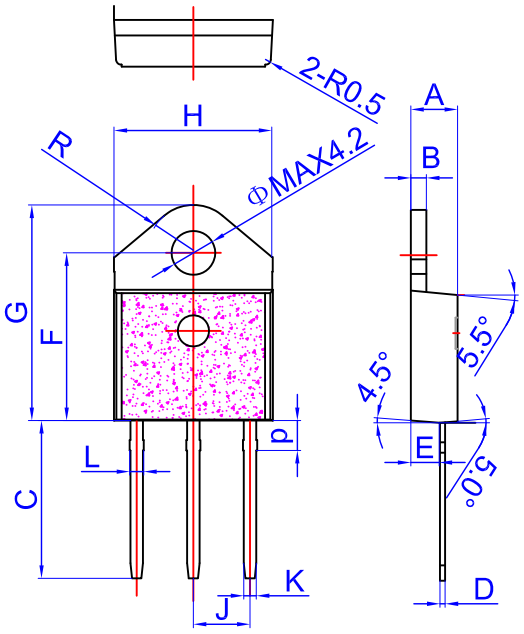
Quadrant Definitions for a Triac



All polarities are referenced to MT1.
With in–phase signals (using standard AC lines) quadrants I and III are used.

PACKAGE MECHANICAL DATA

TO-3P insulated Package



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.6	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.6	0.565		0.614
D	0.5		0.7	0.020		0.028
E	2.7		2.9	0.106		0.114
F	15.8		16.5	0.622		0.650
G	20.4		21.1	0.815		0.831
H	15.1		15.5	0.594		0.610
J	5.4		5.65	0.213		0.222
K	1.2		1.4	0.047		0.055
L	1.35		1.50	0.053		0.059
P	2.8		3.0	0.110		0.118
R		4.6			0.181	

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

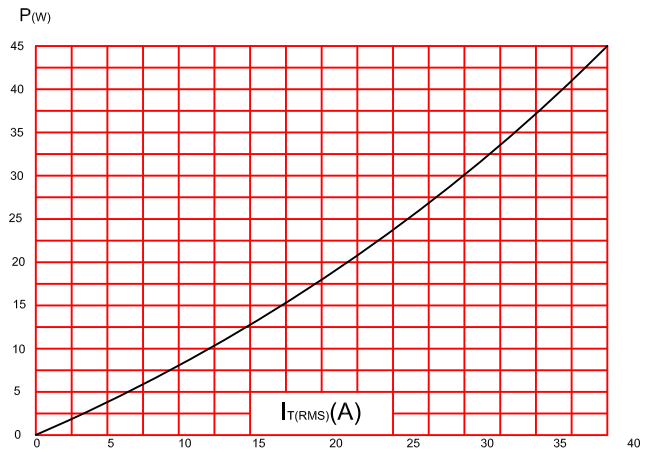


FIG.2:RMS on-state current versus case temperature(full cycle)

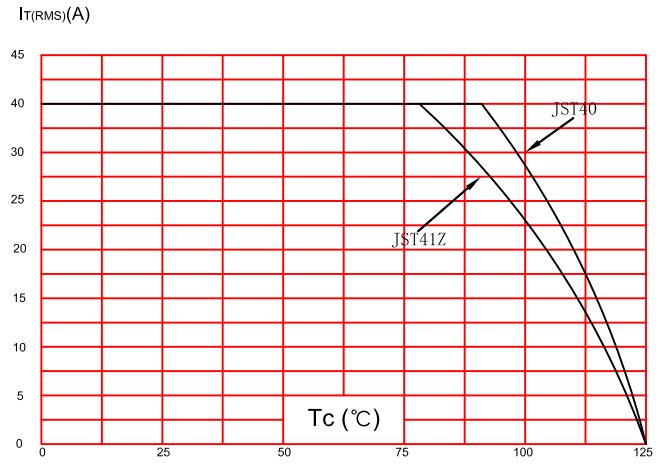


FIG.3:On-state characteristics (maximum values).

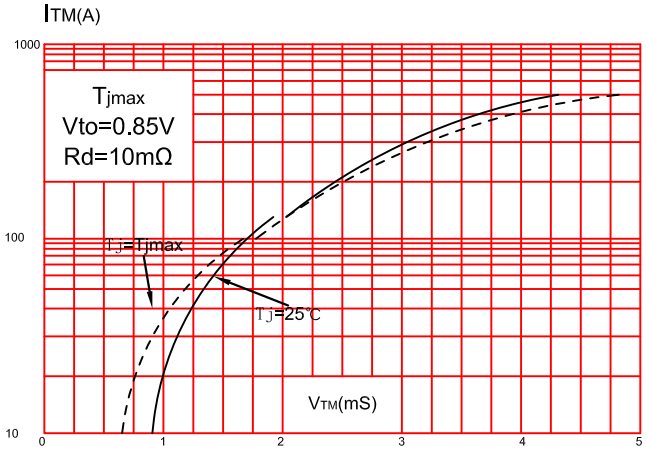


FIG.4:Surge peak on-state current versus number of cycles.

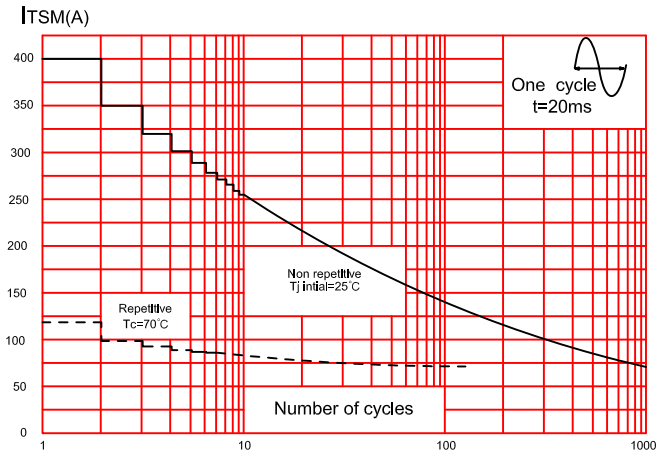


FIG.5:Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms,and corresponding value of I²t.

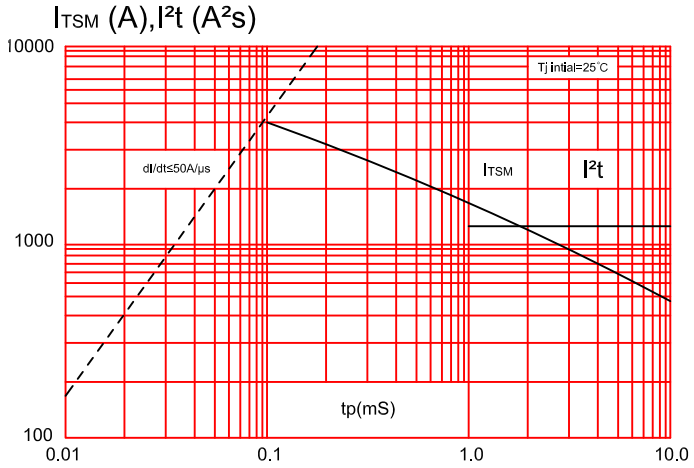


FIG.6:Relative variations of gate trigger current,holding current and latching current versus junction temperature(typical values)