BCT500-Triac

Jiangsu Yangjie Runau Semiconductor Co.,Ltd **500 - 1600 V_{RRM}; 500 A $_{avg}$**

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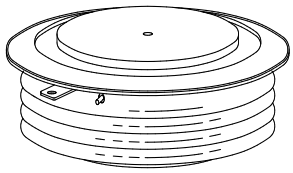
HIGH POWER TRIAC

Features:

- **. All Diffused Structure**
- **. Same silicon wafer contains two thyristors**
- **. Blocking capability up to 1600 volts**
- **. High dv/dt Capability**
- **. Cold pressing encapsulation**

CASE 2TA



ELECTRICAL CHARACTERISTICS AND RATINGS

Blocking-Off State

Device Type	V_{RRM} (1)	V_{DRM} (1)	V_{RSM} (1)
BCT500E	500	500	600
BCT500M	600	600	720
BCT500N	800	800	960
BCT500P	1000	1000	1150
BCT500PB	1200	1200	1300
BCT500PD	1400	1400	1500
BCT500PM	1600	1600	1700

V_{RRM} = Repetitive peak reverse voltage
V_{DRM} = Repetitive peak off state voltage
V_{RSM} = Non Repetitive peak reverse voltage(2)

Repetitive peak reverse leakage and off state leakage	I_{RRM} / I_{DRM}	15 mA 35 mA (3)
Critical rate of voltage rise	dV/dt (4)	500 V/μsec
Critical rate of reverse voltage rise	dV/dt_{com}	500 V/μsec

Notes:
All ratings are specified for Tj=25 °C unless otherwise stated.
(1) All voltage ratings are specified for an applied 50Hz/60zHz sinusoidal waveform over the temperature range -40 to +125 °C
(2) 10 msec. Max. Pulse width
(3) Maximum value for Tj=125 °C.
(4) Minimum value for linear and exponential waveshape to 80% rated V_{DRM}. Gate open, Tj=125 °C
(5) Non repetitive value
(6) The value of di/dt is established in accordance with EIA/NIMA Standard RS- 397, Section5-2-2-6.The value defined would be in addition to that obtained from a snubber circuit, comprising a 0.2 μF capacitor and 20 ohms resistance in parallel with the thyristor under test.

Conducting-on state

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Average value of on-state current	$I_{T(AV)}$		500		A	Sinewave,180° conduction,T_C=65°C
RMS value of on-state current	I_{TRMS}		785		A	Nominal value
Peak one cycle surge (non repetitive) current	I_{TSM}		4200		A	10.0 msec (50Hz), sinusoidal wave-shape, 180° conduction, T_j = 125 °C
I square t	I^2t		45000		A^2s	10 msec
Latching current	I_L		800		mA	V_D = 24 V; R_L= 12 ohms
Holding current	I_H		400		mA	V_D = 24 V; I = 2.5 A
Peak on-state voltage	V_{TM}		1.65		V	I_{TM}=700A
Critical rate of rise of on-state current(5,6)	di/dt		400		A/μs	Switching from V_{DRM} ≤ 1000 V, non-repetitive
Critical rate of rise of on-state current(5)	di/dt		100		A/μs	Switching from V_{DRM} ≤ 1000 V

Gating

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Peak gate power dissipation	P_{GM}		200		W	t_p = 40 us
Average gate power dissipation	$P_{G(AV)}$		5		W	
Peak gate current	I_{GM}		10		A	
Gate trigger current	I_{GT}		300		mA	V_D = 6 V; R_L = 3 ohms;T_j = -40 °C
			150		mA	V_D = 6 V; R_L = 3 ohms;T_j = +25°C
			125		mA	V_D = 6 V; R_L = 3 ohms;T_j =+125°C
Gate trigger voltage	V_{GT}		5		V	V_D = 6 V; R_L = 3 ohms;T_j = -40 °C
			3		V	V_D = 6 V; R_L = 3 ohms;T_j = 0-125°C
		0.30			V	V_D = Rated V_{DRM}; R_L = 1000ohms; T_j = + 125 °C
Peak negative voltage	V_{GRM}		5		V	

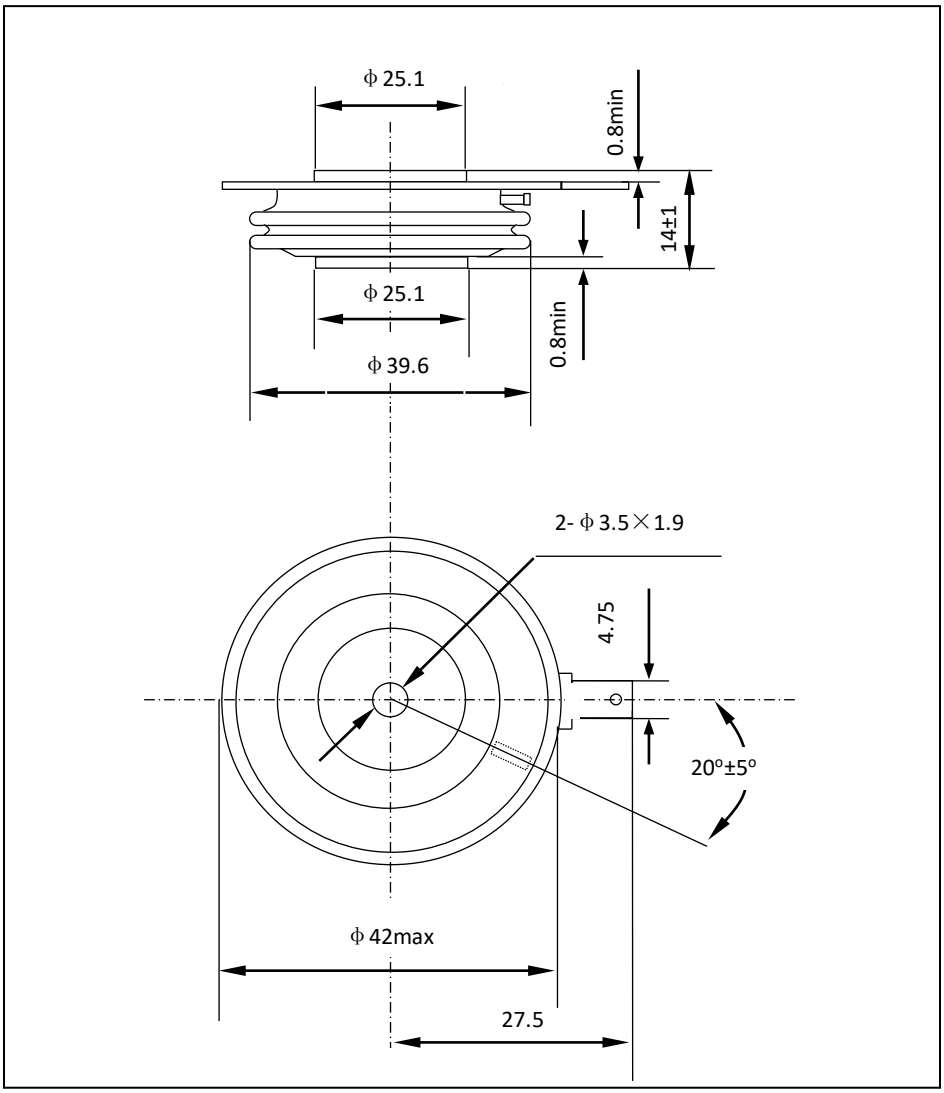
Dynamic

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Delay time	t_d		1.5	0.7	µs	I_{TM} = 50 A; V_D = 67% V_{DRM} Gate pulse: V_G = 30 V; R_G = 10 ohms; t_r = 0.1 µs; t_p = 20 µs
Turn-off time (V_R=-5V)	t_q		150	100	µs	I_{TM} > 1000 A; di/dt = 25 A/µs; V_R ≥ -5 V; Re-applied dV/dt = 200 V/µs linear to 67% V_{DRM} ; T_j = 125 °C; Duty cycle ≥ 0.01%
Reverse recovery current	I_{rr}				A	I_{TM} > 1000 A; di/dt = 25 A/µs; V_R ≥ -50 V; T_j = 125 °C

THERMAL AND MECHANICAL CHARACTERISTICS AND RATINGS

Parameter	Symbol	Min.	Max.	Typ.	Units	Conditions
Operating temperature	T_j	-40	+125		°C	
Storage temperature	T_{stg}	-40	+150		°C	
Thermal resistance- junction to case	$R_{\Theta(j-c)}$		0.040 0.080		°C/W	Double sided cooled Single sided cooled
Thermal resistance - case to heatsink	$R_{\Theta(c-s)}$		0.015 0.030		°C/W	Double sided cooled * Single sided cooled
Mounting force	P	3000 13.4	3500 15.7		lb. kN	
Weight	W			N/A	g.	

* **Mounting surfaces smooth, flat and greased**


ϕ 25.1
0.8min
14±1
ϕ 25.1
0.8min
ϕ 39.6
2- ϕ 3.5×1.9
4.75
20°±5°
ϕ 42max
27.5