



BTA41/BTB41

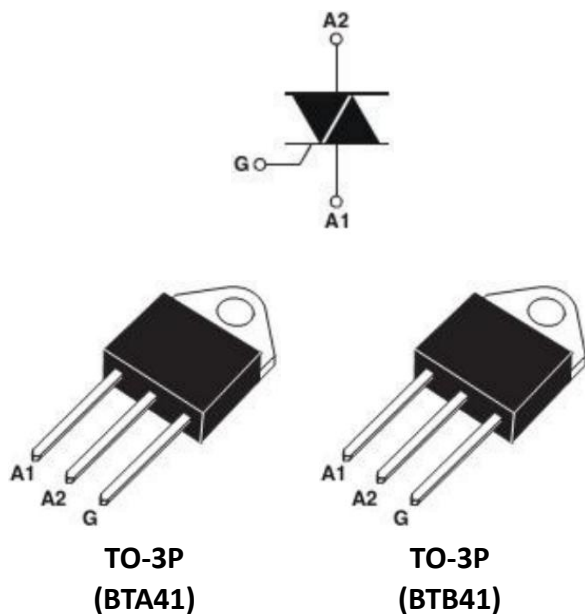
Silicon Controlled Rectifier

Features

- NPNPN five-layer silicon bidirectional device
- With independent intellectual property rights of single-side grooving technology
- Table glass passivation process
- Multilayer metallized electrode on the back
- High blocking voltage and high temperature stability

Applications

- Solid state relay
- Phase-controlled circuit
- Adjustable heating controller
- Speed control controller



Maximum Ratings(at $T_A = 25\text{ }^{\circ}\text{C}$, unless specified otherwise.)

Parameter	Symbol	Conditions		Value	Unit
RMS On-State Current	$I_{T(RMS)}$	BTA	$T_C=80^{\circ}\text{C}$	41	A
		BTB	$T_C=90^{\circ}\text{C}$		
Non Repetitive Surge Peak On-State Current	I_{TSM}	$F=50\text{Hz}, t=20\text{ms}$		410	A
I^2t Value	I^2t	$t_p=10\text{ms}$		880	A^2S
Critical Rate of Rise of On-State Current	di/dt	$T_j=125^{\circ}\text{C}$		50	$\text{A}/\mu\text{s}$
Peak Gate Current	I_{GM}	$t_p=20\mu\text{s}, T_j=125^{\circ}\text{C}$		8	A
Repetitive Peak Off-State Voltage	V_{DRM}	$T_j=25^{\circ}\text{C}$		800/1000/1200	V
Repetitive Peak Reverse Voltage	V_{RRM}	$T_j=25^{\circ}\text{C}$		800/1000/1200	V
Average Gate Power Dissipation	$P_{G(AV)}$	$T_j=125^{\circ}\text{C}$		1	W
Operating Junction Temperature	T_j			-40~+125	
Storage Junction Temperature	T_{STG}			-40~+150	$^{\circ}\text{C}$



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Electrical Characteristics(Three quadrants)

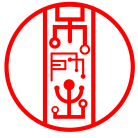
Parameter	Symbol	Conditions	Quadrants	Min	Max	Unit
Gate Trigger Current	I _{GT}	V _D =12V,R _L =100Ω	I		50	mA
Gate Trigger Voltage	V _{GT}		II		1.5	V
GateNon Trigger Voltage	V _{GD}		III	0.2		V
Holding Current	I _H	I _T =0.5A			60	mA
Latching Current	I _L	I _G =1.2I _{GT}			100	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	V _D =2/3*V _{DRM} ,T _j =125°C Gate open		500		V/μs
Critical Rate of Rise of Off-State Voltage at Commutation	(dv/dt) _c	T _j =125°C		10		V/μs

Electrical Characteristics(Three quadrants)

Parameter	Symbol	Conditions	Quadrants	Min	Max	Unit
Gate Trigger Current	I _{GT}	V _D =12V,R _L =100Ω	I,II,III		50	mA
			IV		120	mA
Gate Trigger Voltage	V _{GT}	V _D =V _{DRM} ,T _j =125°C	I,II,III		1.5	V
GateNon Trigger Voltage	V _{GD}			0.2		V
Holding Current	I _H	I _T =0.5A			80	mA
Latching Current	I _L	I _G =1.2I _{GT}	I,II,III		70	mA
			IV		160	mA
Critical Rate of Rise of Off-State Voltage	dv/dt	V _D =2/3*V _{DRM} ,T _j =125°C Gate open		500		V/μs
Critical Rate of Rise of Off-State Voltage at Commutation	(dv/dt) _c	T _j =125°C		10		V/μs

Static Parameters

Parameter	Symbol	Conditions	Value	Unit
Peak On-State Voltage	V_{TM}	$T_j=25^\circ C$	1.50	V
Threshold voltage	V_{T0}	$T_j=125^\circ C$	0.86	V
Resistance	R_d	$T_j=125^\circ C$	6.4	m Ω
Repetitive Peak Off-State Current	I_{DRM}	$T_j=25^\circ C$	10	μA
	I_{RRM}	$T_j=125^\circ C$	2	mA
Junction to Case (DC)	$R_{th(j-c)}$	BTA	0.9	$^\circ C/W$
		BTB	0.6	



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Typical Characteristics

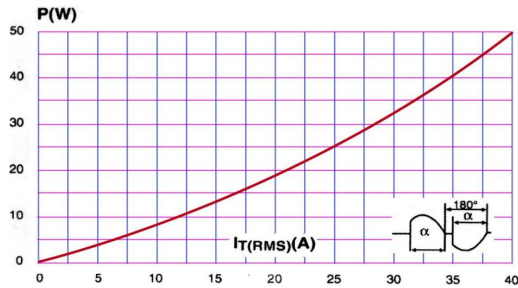


Fig1. Maximum power dissipation VS.
RMS on-state current

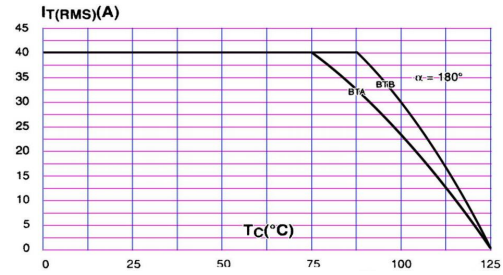


Fig2. RMS on-state current VS.
case temperature

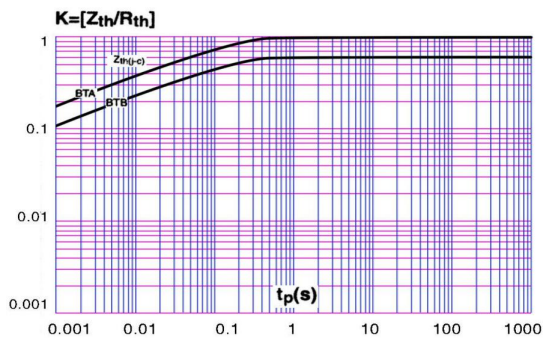


Fig3. Transient Thermal resistance curve

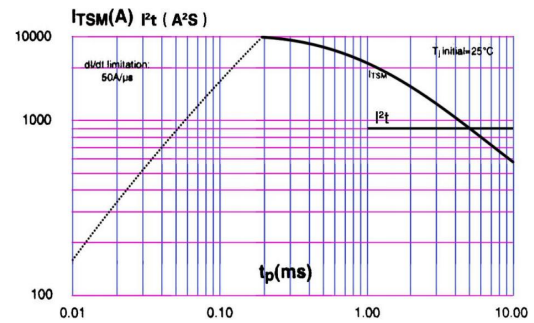


Fig4. I_{TSM} -t, P_t -t curve

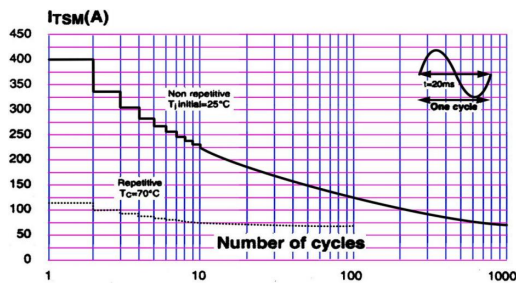


Fig5. Surge peak on-state current VS.
Number of cycles

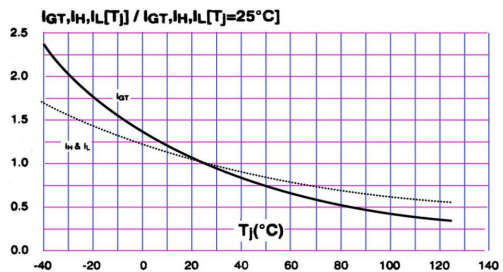


Fig6. Gate trigger characteristics curve

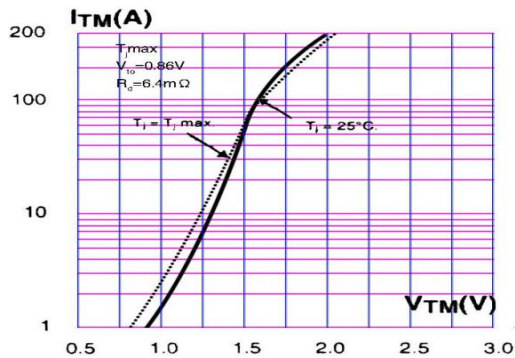


Fig7. On-state characteristics (Maximum)



TO-3P

Dimensions in mm (± 0.1)





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