BT145-800R Thyristors

●DESRCRIPTION:

Planar passivated Silicon Controlled Rectifier (SCR) in a TO220 plastic package intended for use in applications requiring high bidirectional blocking voltage capability, high current inrush capability and high thermal cycling performance.

●Features and benefits

- AC power control
- High bidirectional blocking voltage capability
- High thermal cycling performance
- Planar passivated for voltage ruggedness and reliability
- High junction operating temperature capability ($T_{j(max)}$ = 150 °C)
- Package meets UL94V0 flammability requirement
- Package is RoHS compliant
- IEC 61000-4-4 fast transient

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●Applications

- Capacitive Discharge Ignition (CDI)
- Crowbar protection
- Inrush protection
- Motor control
- Voltage regulation
- High junction operating temperature capability (Tj(max) = 150 °C)

●Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Absolute maximum rating							
V_{RRM}	repetitive peak reverse voltage			-	-	800	V
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 128$ °C; Fig. 1; Fig. 2; Fig. 3		-	-	25	A
I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(init)}$ = 25 °C; t_p = 10 ms; Fig. 4; Fig. 5		-	-	300	A
		half sine wave; $T_{j(init)}$ = 25 °C; t_p = 8.3 ms		-	-	330	A
T_j	junction temperature			-	-	150	°C
Symbol	**Parameter**	**Conditions**		**Min**	**Typ**	**Max**	**Unit**
Static characteristics							
I_{GT}	gate trigger current	V_D = 12 V; I_T = 0.1 A; T_j = 25 °C; Fig. 7		1.5	-	15	mA
I_H	holding current	V_D = 12 V; T_j = 25 °C; Fig. 9		-	-	60	mA
V_T	on-state voltage	I_T = 30 A; T_j = 25 °C; Fig. 10		-	1.1	1.5	V
Dynamic characteristics							
dV_D/dt	rate of rise of off-state voltage	V_{DM} = 536 V; T_j = 150 °C; (V_{DM} = 67% of V_{DRM}); exponential waveform; gate open circuit		80	-	-	V/μs

●Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{DRM}	repetitive peak off-state voltage			-	800	V
V_{RRM}	repetitive peak reverse voltage			-	800	V
$I_{T(AV)}$	average on-state current	half sine wave; $T_{mb} \leq 128$°C;		-	16	A
$I_{T(RMS)}$	RMS on-state current	half sine wave; $T_{mb} \leq 128$°C; Fig. 1; Fig. 2; Fig. 3		-	25	A

I_{TSM}	non-repetitive peak on-state current	half sine wave; $T_{j(init)}$ = 25 °C; t_p = 10 ms; Fig. 4; Fig. 5		-	300	A
		half sine wave; $T_{j(init)}$ = 25 °C; t_p = 8.3 ms		-	330	A
I^2t	I^2t for fusing	t_p = 10 ms; SIN		-	450	A^2s
dI_T/dt	rate of rise of on-state current	I_G = 20 mA		-	200	A/µs
I_{GM}	peak gate current			-	5	A
V_{RGM}	peak reverse gate voltage			-	5	V
P_{GM}	peak gate power			-	20	W
$P_{G(AV)}$	average gate power	over any 20 ms period		-	0.5	W
T_{stg}	storage temperature			-40	150	°C
T_j	junction temperature			-	150	°C

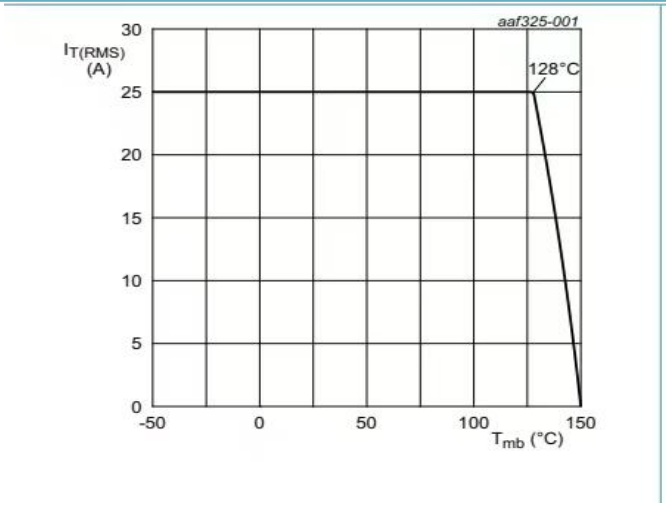


Fig. 1. RMS on-state current as a function of mounting base temperature; maximum values

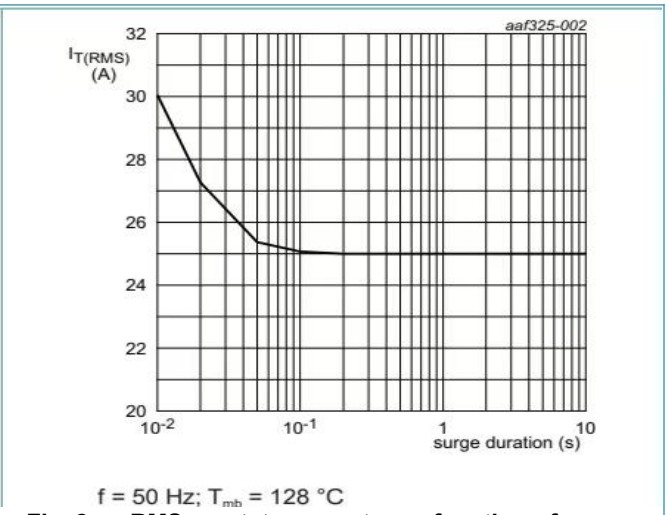


Fig. 2. RMS on-state current as a function of surge duration; maximum values

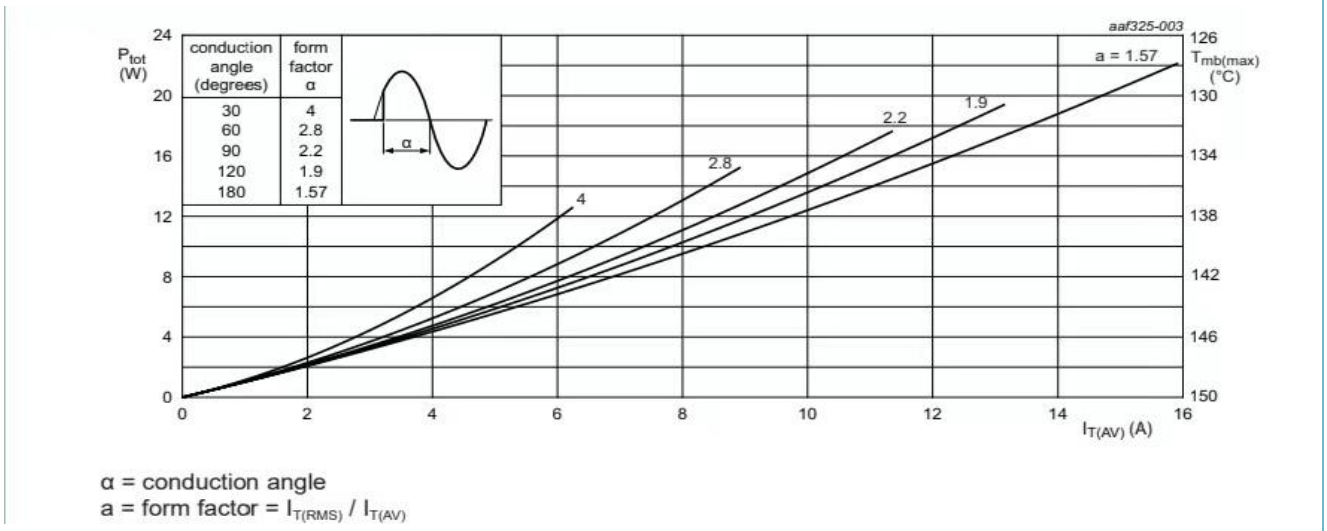


Fig. 3. Total power dissipation as a function of RMS on-state current; maximum values

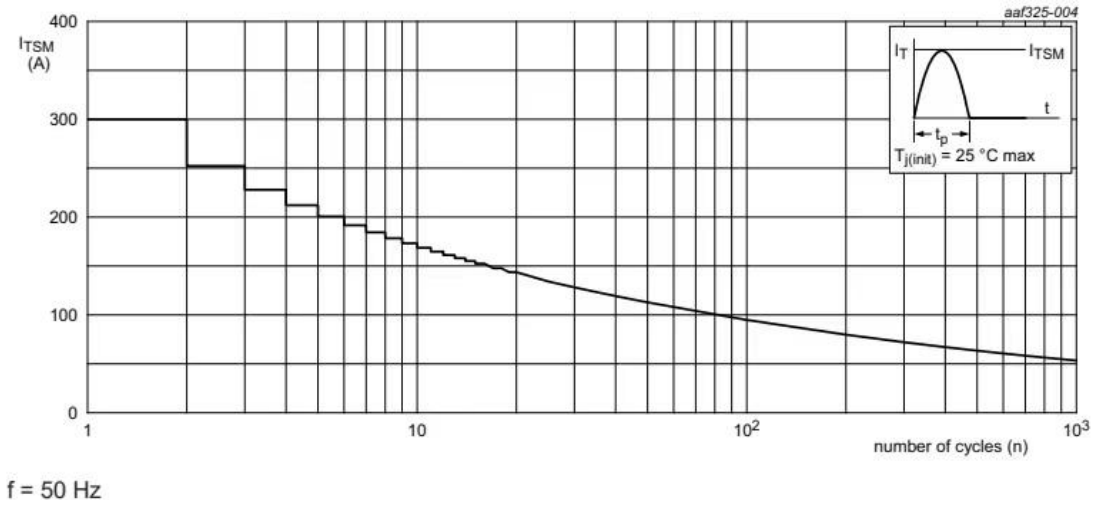


Fig. 4. Non-repetitive peak on-state current as a function of the number of sinusoidal current cycles; maximumvalues

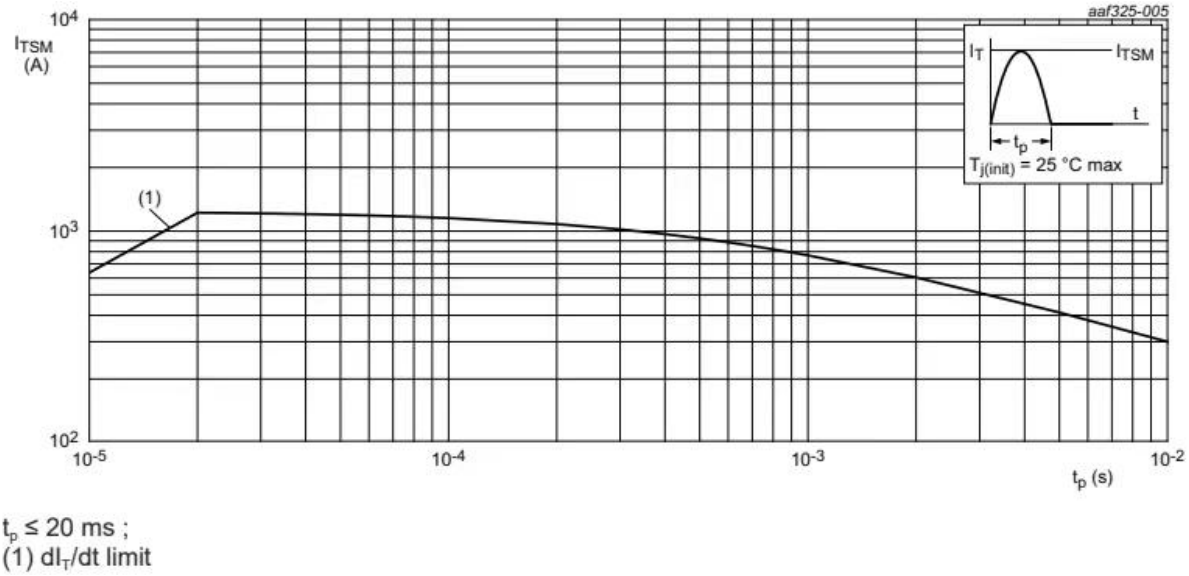


Fig. 5. Non-repetitive peak on-state current as a function of pulse duration; maximum values

•Thermal Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 6		-	-	1	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	60	-	K/W

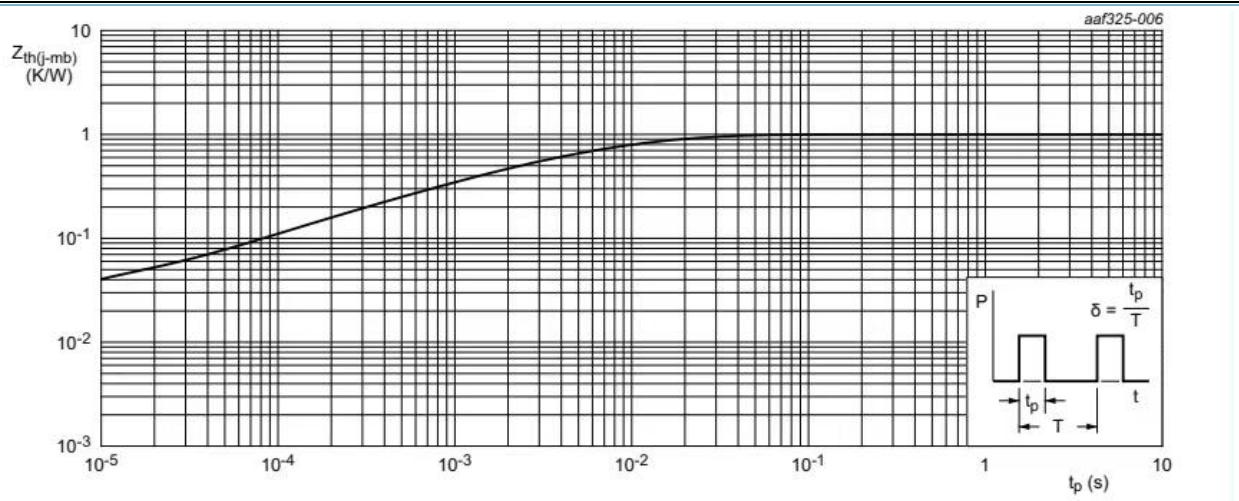
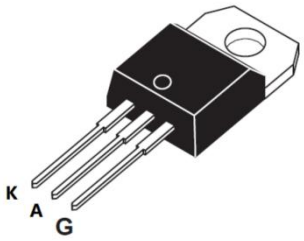
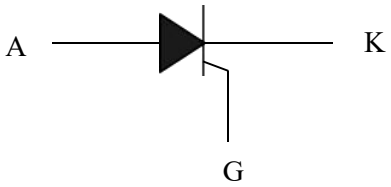


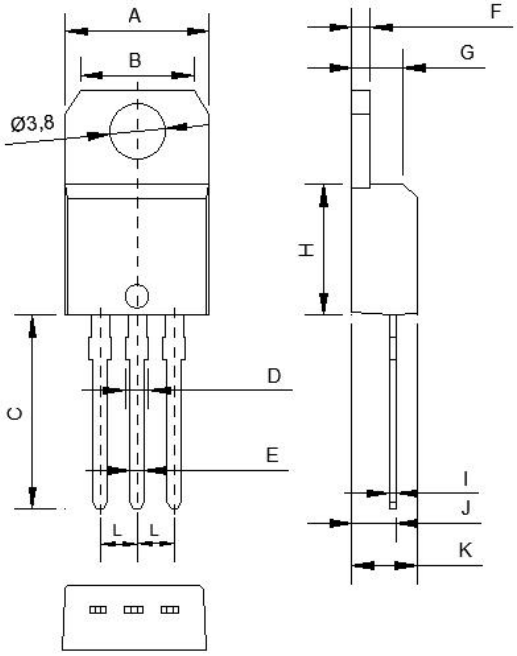
Fig. 6. Transient thermal impedance from junction to mounting base as a function of pulse duration

●Symbol





●PACKAGE MECHANICAL DATA



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	9.85	9.95	0.388	0.392
B	7.75	7.85	0.305	0.309
C	13.20	13.40	0.520	0.528
D	1.56	1.60	0.061	0.063
E	0.96	1.00	0.038	0.039
F	1.23	1.27	0.048	0.050
G	3.45	3.55	0.136	0.140
H	8.95	9.05	0.352	0.356
I	0.44	0.46	0.017	0.018
J	2.98	3.02	0.117	0.119
K	4.40	4.50	0.173	0.177
L	2.53	2.55	0.100	0.100