

TRIAC

Power Modules

Features

- Glass passivated junctions for greater reliability
- Electrically isolated base plate (3500V RMS)
- Available up to 1200 V_{RRM}, V_{DRM}
- High surge capability
- Large creepage distances
- Simplified mechanical designs, rapid assembly
- B-package case style
- UL E78996 approved

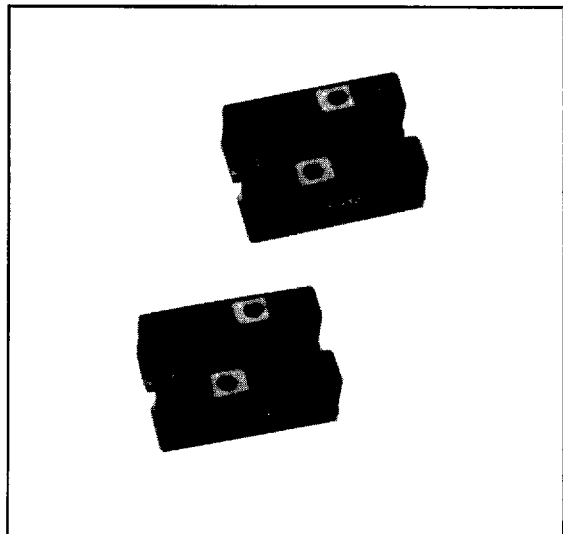
25A

Description

The B25AC.. series of B-modules consist of power TRIAC configured in a single package. With their isolating base plate, mechanical designs are greatly simplified giving advantages of cost reduction and reduced size. Applications include power supplies, control circuits, light dimmers and battery chargers.

Major Ratings and Characteristics

Parameters	B25AC/B25A2C	Units
I _{T(RMS)}	25	A
@ T _C	70	°C
I _{TSM} 50Hz	214	A
60Hz	224	A
I ² _t 50Hz	229	A ² s
60Hz	209	A ² s
I ² _t	2290	A ² √s
V _{RRM} range	100 to 1200	V
T _J	-40 to 125	°C



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ELECTRICAL SPECIFICATIONS

Voltage Ratings

Part number	Voltage Code	V_{RRM}, V_{DRM} maximum repetitive peak reverse and off-state voltage gate open circuit	V_{RSM} maximum non-repetitive peak reverse voltage
		V	V
B25AC B25A2C	10	100	150
	20	200	300
	40	400	500
	60	600	700
	80	800	900
	100	1000	1100
	120	1200	1300

On-state Conduction

Parameter	Value	Units	Conditions		
$I_{T(RMS)}$ Max. RMS on-state current	25	A	180° cond. full sine wave, $T_c=70^\circ\text{C}$, per single junction		
I_{TSM} Maximum peak one half cycle non repetitive surge current	214	A	10ms	No voltage reappplied	Sinusoidal full Wave Initial $T_J=125^\circ\text{C}$ Either direction
	224	A	8.3ms		
	150	A	20ms	100% V_{RRM} reappplied	
	158	A	16.6ms		
I^2t Maximum I^2t for fusing	229	A ² s	10ms	No voltage reappplied	Initial $T_J=125^\circ\text{C}$ Either direction
	209	A ² s	8.3ms		
	162	A ² s	10ms	100% V_{RRM} reappplied	
	147	A ² s	8.3ms		
I^2/t Maximum I^2/t for fusing (1)	2290	A ² /s	t=0 to 10ms, no voltage reappplied, Initial $T_J=125^\circ\text{C}$		
V_{TM} Maximum peak on-state voltage	1.75	V	$T_J=25^\circ\text{C}$, $I_{TM}=35\text{Apk}$, $t_p=400\mu\text{s}$, either direction		
I_H Maximum holding current	200	mA	$T_J=25^\circ\text{C}$ anode supply=6V, resistive load, gate open, Initial $I_T=1\text{A}$, either direction		

Switching

Parameter	Value	Units	Conditions
di/dt Maximum rate of rise of turned-on current	100	A/ μs	$T_J=125^\circ\text{C}$, from 0.67 V_{DRM} $I_{TM} = \pi \times I_{T(AV)}, I_g = 500\text{mA}$ $t_r < 0.5\mu\text{s}, t_p > 6\mu\text{s}$

(1) I^2t for time $t_x = I^2/t \times \sqrt{t_x}$

(3) $16.7\% \times p \times I_{T(AV)} < I < p \times I_{T(AV)}$

(5) $T_J = 125^\circ\text{C}$

(2) Average power = $V_{T(ON)} \times I_{T(AV)} + r_t \times (I_{T(RMS)})^2$

(4) $p \times I_{T(AV)} < I < 20 \times p \times I_{T(AV)}$

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ELECTRICAL SPECIFICATIONS

Off-state

Parameter	B25AC/B25A2C	Units	Conditions
dv/dt Minimum critical rate-of-rise of commutation voltage	10	V/ μ s	$T_J = 125^\circ\text{C}$, rated V_{DRM} Either direction
dv/dt Minimum critical rate-of-rise of on-state voltage	100	V/ μ s	$T_J = 125^\circ\text{C}$, Exponential to 100% rated V_{DRM} Either direction
I_{DM} Max. peak off-state current	100	V/ μ s	$T_J = 125^\circ\text{C}$, rated V_{DRM} , either direction
V_{INS} RMS Isolation voltage	3500	V	50Hz, circuit to base, all terminals shorted; $t = 1\text{ s}$

Triggering

Parameter	B25AC/B25A2C	Units	Conditions
P_{GM} Maximum peak gate power	8.0	W	
$P_{\text{G(AV)}}$ Maximum average gate power	2.0	W	
$+I_{\text{GM}}$ Maximum peak gate current	1.5	A	
$-V_{\text{GM}}$ Maximum peak negative gate voltage	10	V	
V_{GT} Maximum required DC gate current to trigger	2.5	V	$T_J = 25^\circ\text{C}$, 12V MT1 to MT2
I_{GT} Maximum required DC gate current to trigger	150	mA	$T_J = 25^\circ\text{C}$, 12V MT1 to MT2 for other temperatures refer to Fig. 7
	150	mA	
	150	mA	
	150	mA	
V_{GD} Maximum gate voltage that will not trigger	0.2	V	@ $T_J = 125^\circ\text{C}$, rated V_{DRM} applied
I_{GD} Maximum gate current that will not trigger	2.0	mA	@ $T_J = 125^\circ\text{C}$, rated V_{DRM} applied

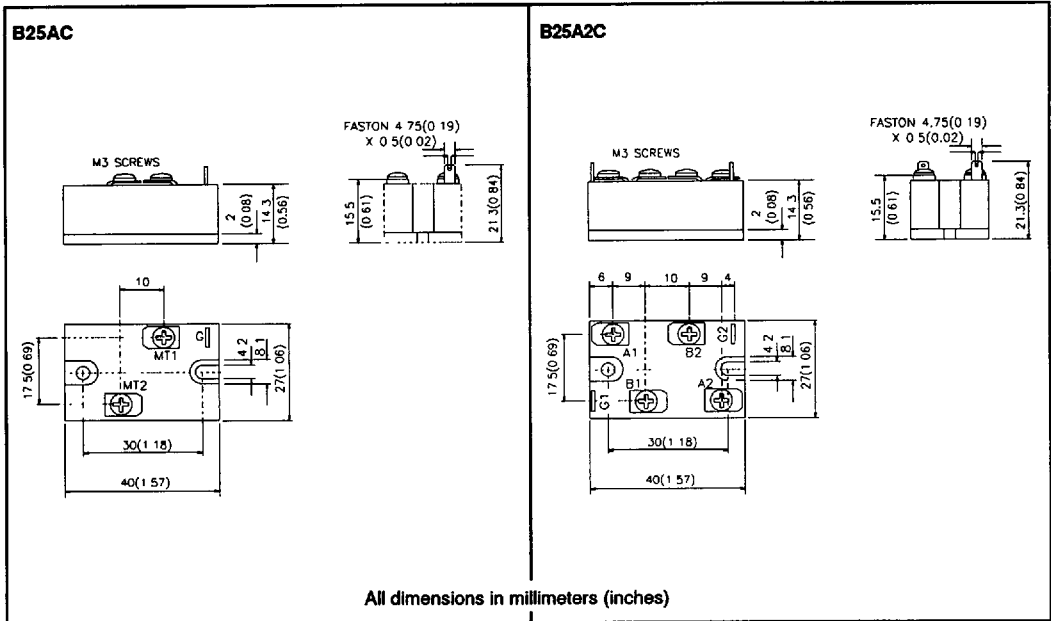
Thermal and Mechanical Specifications

Parameter	B25AC/B25A2C	Units	Conditions
T_J Junction temperature range	-40 to 125	$^\circ\text{C}$	
T_{stg} Storage temperature range	-40 to 125	$^\circ\text{C}$	
R_{thJC} Maximum thermal resistance, junction to case	1.55	K/W	Per junction - DC operation
$R_{\text{thC-S}}$ Max. thermal resistance case to heatsink	0.10	K/W	Mounting surface smooth flat and greased Per module
T Mounting torque $\pm 10\%$	Module to heatsink	2.5	M4 mounting screws Non-lubricated threads (2)
	Terminals MT1 and MT2	0.8	M3 screw terminals; Non-lubricated threads
wt Approximate weight	40	g	
Case style	"B" Type		See outline table

(2) A mounting compound is recommended and the torque should be rechecked after a period of about 3 hours to allow for the spread of the compound

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Outline Table



Ordering Information Table

Device Code

B	25	AC	120	K	L
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① ② ③ ④ ⑤ ⑥

- 1 - Module type
- 2 - Max. RMS on-state current
- 3 - Circuit configuration **
- 4 - Voltage code (See Voltage Ratings Table)
- 5 - dv/dt code:
No letter = 300V/μs
D = 500V/μs
K = 1000V/μs
- 6 - Terminal type:
No letter = Screw terminal
L = Fast on

Circuit configuration **

B..AC

1 TRIAC
(single junction)

B..A2C

2 TRIACS
(2 junctions "split" circuit)

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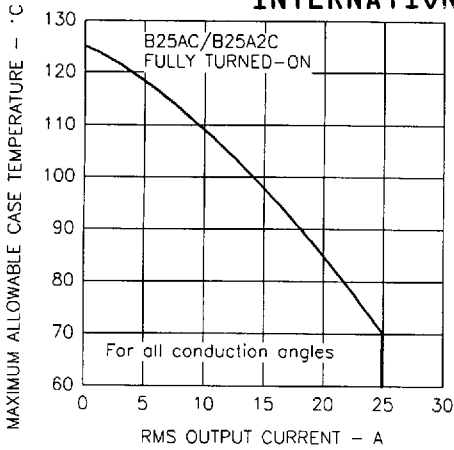


Fig. 1 - Current Ratings Characteristics

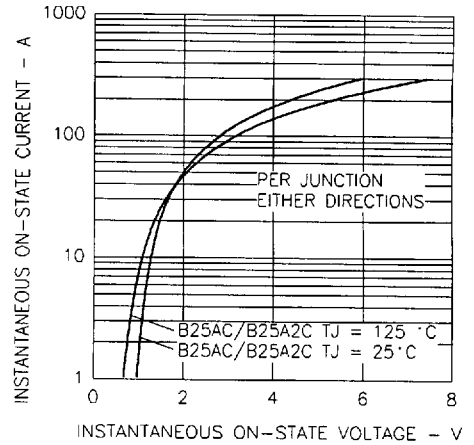


Fig. 2 - Current Ratings Characteristics

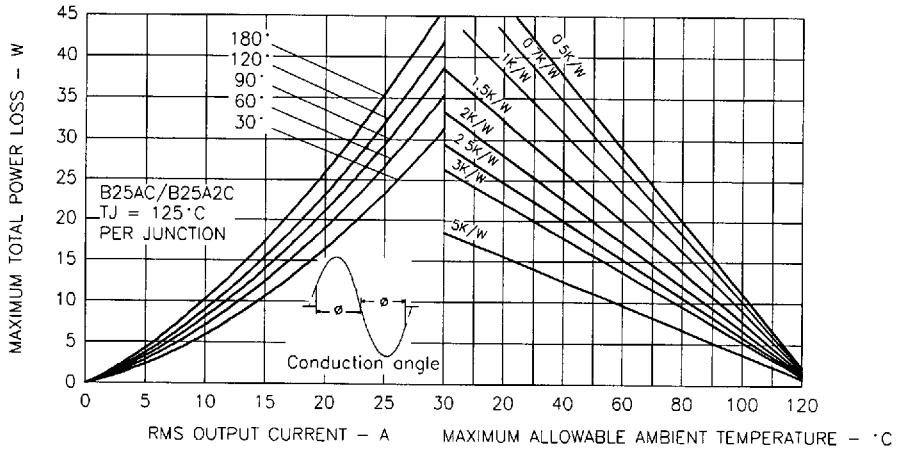


Fig. 3 - On-state Power Loss Characteristics

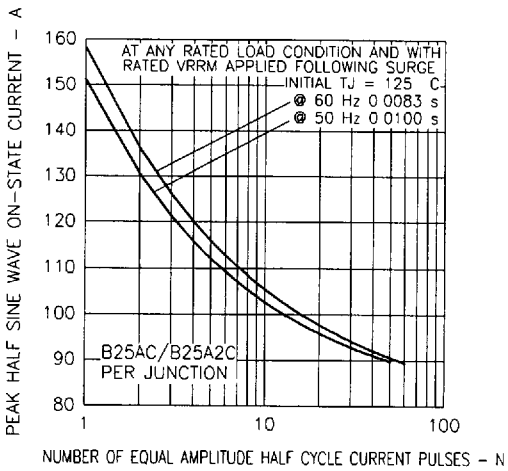


Fig. 4 - Maximum Non-Repetitive Surge Current

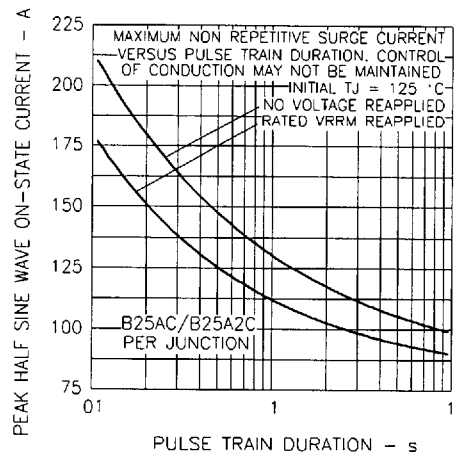


Fig. 5 - Maximum Non-Repetitive Surge Current

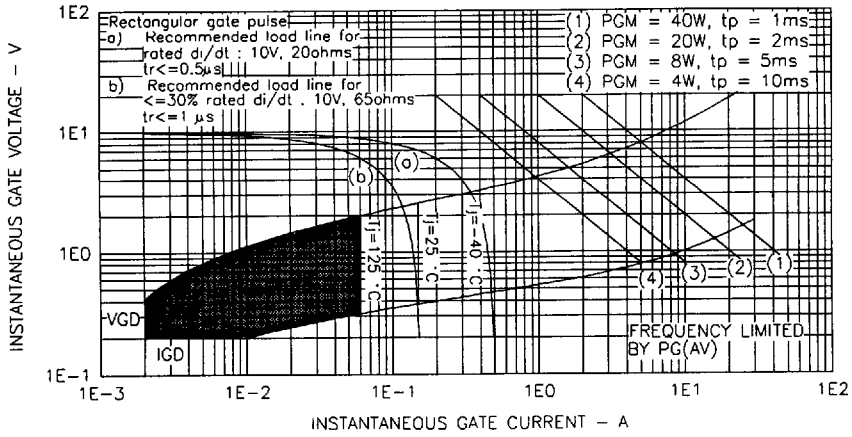


Fig. 6 - Gate Characteristics

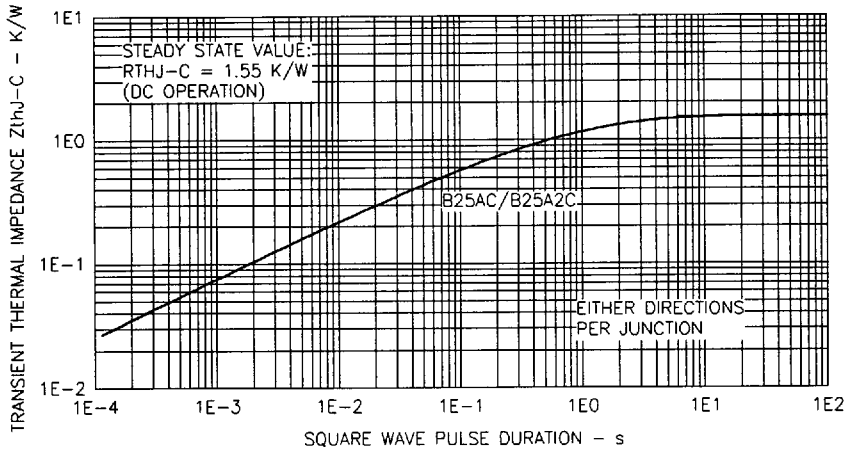


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics