

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

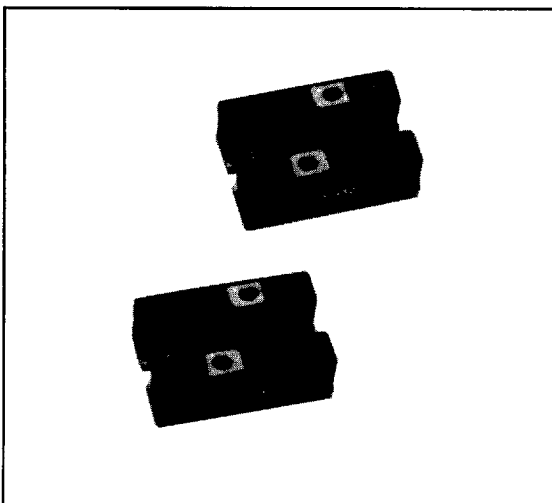
Description

The B25AC.. series of B-modules consist of power TRIAC configured a in 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



ELECTRICAL SPECIFICATIONS

Voltage Ratings

Part number	Voltage Code	V_{RRM}, V_{DRM} maximum repetitive peak reverse and off-state voltage gate open circuit V	V_{RSM} maximum non-repetitive peak reverse voltage 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	Sinusoidal full Wave
	224	A	8.3ms	reapplied	Initial $T_J=125^\circ\text{C}$
	150	A	20ms	100% V_{RRM}	Either direction
	158	A	16.6ms	reapplied	
I^2t Maximum I^2t for fusing	229	A ² s	10ms	No voltage	Initial $T_J=125^\circ\text{C}$
	209	A ² s	8.3ms	reapplied	
	162	A ² s	10ms	100% V_{RRM}	Either direction
	147	A ² s	8.3ms	reapplied	
I^2/t Maximum I^2/t for fusing (1)	2290	A ² /s	$t=0$ to 10ms, no voltage reapplied, initial $T_J=125^\circ\text{C}$		
V_{TM} Maximum peak on-state voltage	1.75	V	$T_J=25^\circ\text{C}$, $I_{TM}=35\text{A}$ pk, $t_p=400\mu\text{s}$, 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 $0.67 V_{DRM}$ $I_{TM} = \pi \times I_{T(AV)} \cdot I_g = 500\text{mA}$ $t_r < 0.5\mu\text{s}$, $t_p > 6\mu\text{s}$

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

(3) $16.7\% \times p \times IT(AV) < I < p \times IT(AV)$

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

(2) Average power = $VT(TO) \times IT(AV) + r \times (IT(RMS))^2$

(4) $p \times IT(AV) < I < 20 \times p \times IT(AV)$

INTERNATIONAL RECTIFIER B5E D

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

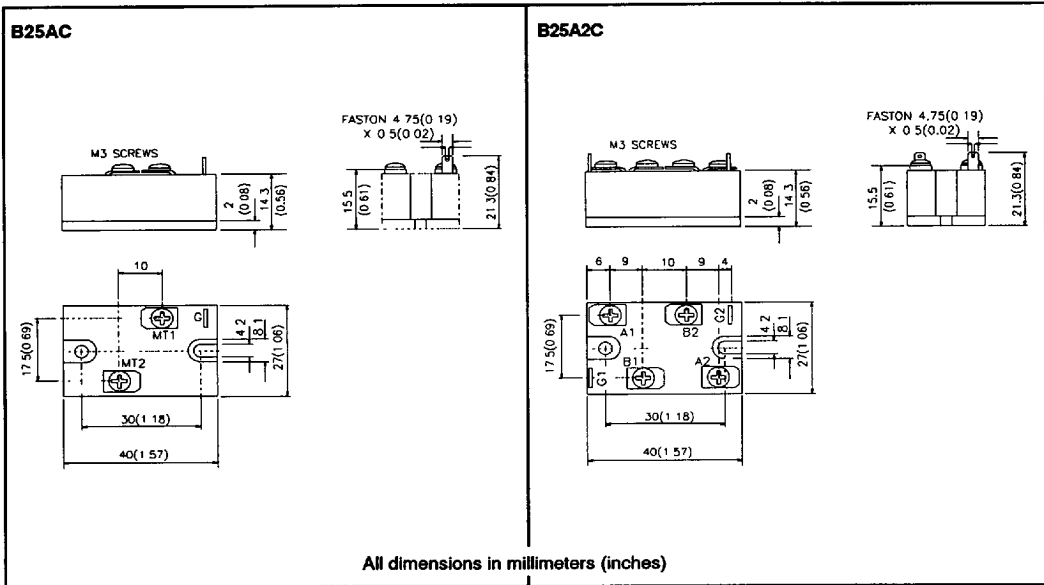
Parameter	B25AC/B25A2C	Units	Conditions
P_{GM} Maximum peak gate power	8.0	W	
$P_{\text{G(AV)}}$ Maximum average gate power	2.0	W	
$+I_{\text{GM}}$ Maximum peak gate current	1.5	A	
$-V_{\text{GM}}$ Maximum peak negative gate voltage	10	V	
V_{GT} Maximum required DC gate current to trigger	2.5	V	$T_J = 25^\circ\text{C}$, 12V MT1 to MT2
I_{GT} Maximum required DC gate current to trigger	150	mA	MT2 + gate + $T_J = 25^\circ\text{C}$, 12V MT1 to MT2
	150	mA	MT2 - gate - for other temperatures refer to Fig. 7
	150	mA	MT2 + gate -
	150	mA	MT2 - gate +
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_{thCS} 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 Terminals MT1 and MT2	2.5	Nm	M4 mounting screws (2) Non-lubricated threads
	0.8	Nm	M3 screw terminals; Non-lubricated threads
w_t 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

Outline Table



Ordering Information Table

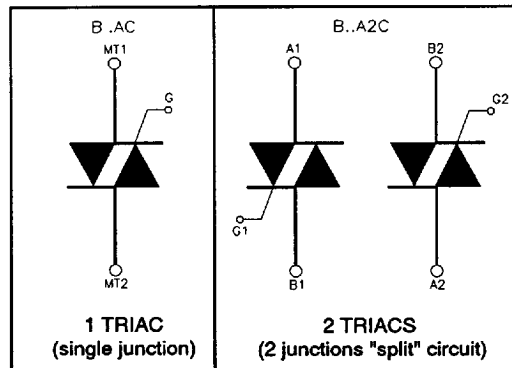
Device Code

B	25	AC	120	K	L
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- 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 **



INTERNATIONAL RECTIFIER

65E D

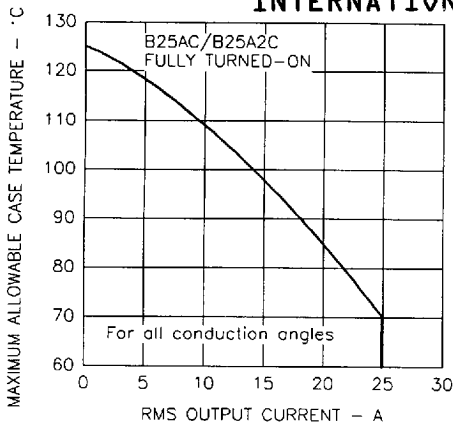


Fig. 1 - Current Ratings Characteristics

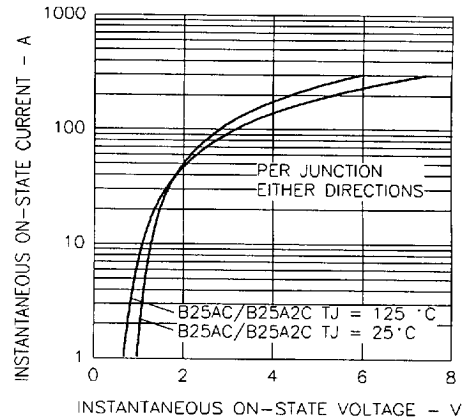


Fig. 2 - Current Ratings Characteristics

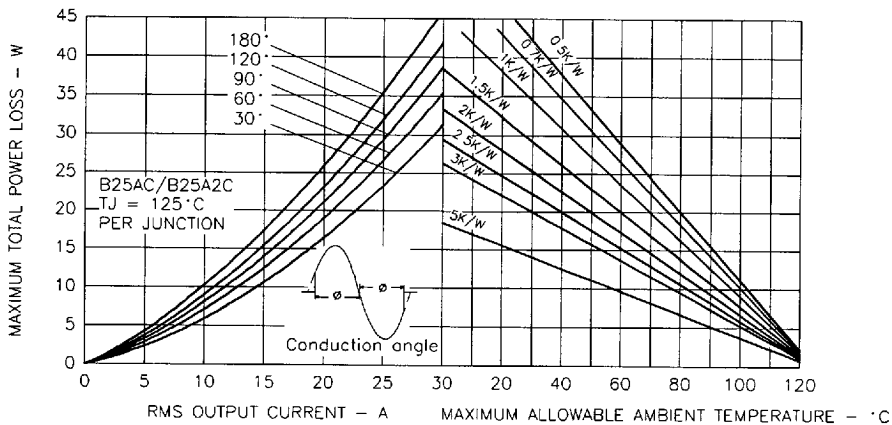


Fig. 3 - On-state Power Loss Characteristics

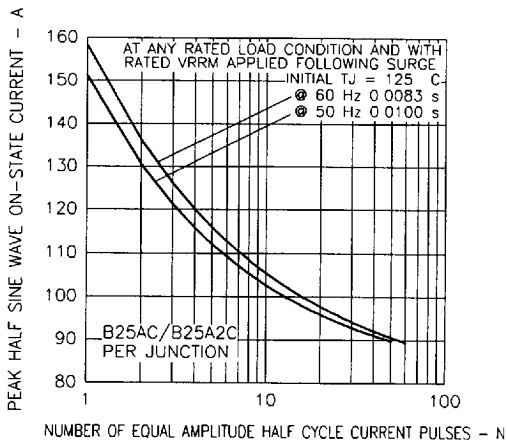


Fig. 4 - Maximum Non-Repetitive Surge Current

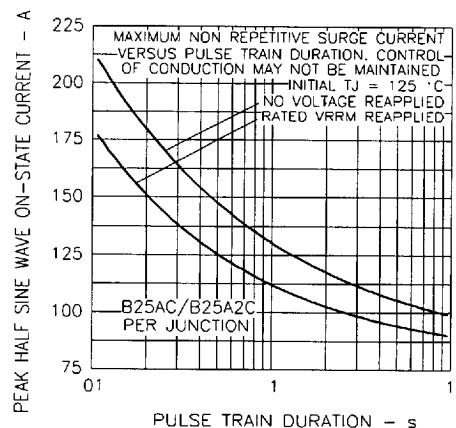


Fig. 5 - Maximum Non-Repetitive Surge Current

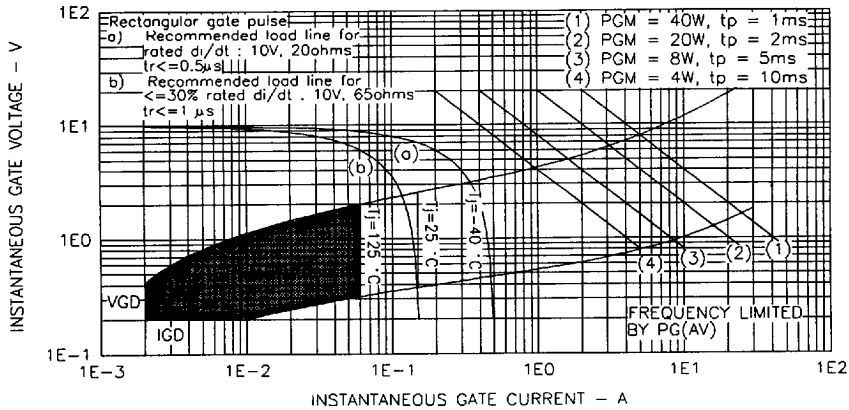
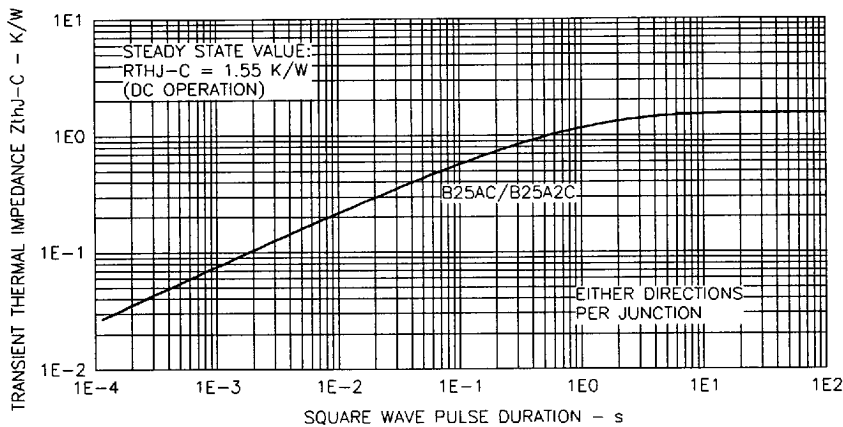


Fig. 6 - Gate Characteristics

Fig. 7 - Thermal Impedance Z_{thJC} Characteristics