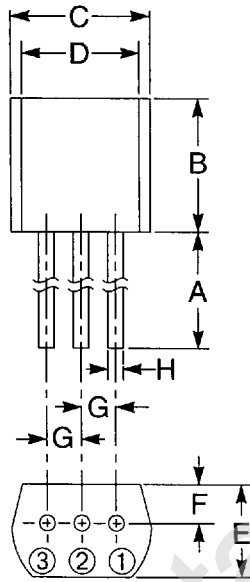


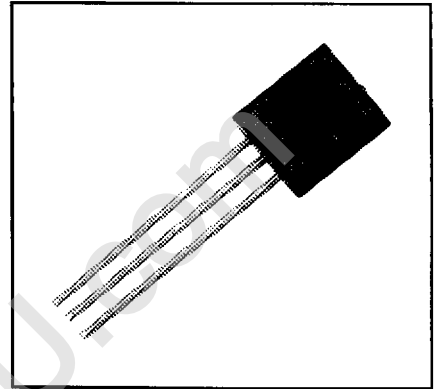
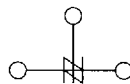
Silicon Bilateral Switch

OUTLINE DRAWING



CONNECTION DIAGRAM

- ① TERMINAL 1
- ② GATE
- ③ TERMINAL 2



Description:

The BS08A bilateral switch is a silicon planar monolithic integrated circuit with the electrical characteristics of a bilateral thyristor. The device is designed to switch at 7 to 9 volts with a 0.01%/°C temperature coefficient and have excellently matched characteristics in both directions.

Features:

- Low Switching Voltage of 7 to 9 Volts
- Excellent Switching Voltage Temperature Characteristics (0.01%/°C)
- High Reliability Devices
- Gate Electrode Facilitating Switching Operation Control and Synchronization.

Applications:

- Trigger Circuits for Thyristor or Triac, Oscillators, Timers

Ordering Information:

Example: Select the complete five digit part number you desire from the table - i.e. BS08A is a 175mA Silicon Bilateral Switch.

Type
BS08A

Outline Drawing

Dimensions	Inches	Millimeters
A	0.492 Min.	12.5 Min.
B	0.13 Max.	3.3 Max.
C	0.17	4.3
D	0.14	3.55
E	0.098 Max.	2.5 Max.
F	0.035	0.9
G	0.049 ± 0.012	1.25
H	0.018	0.45



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BS08A
Silicon Bilateral Switch

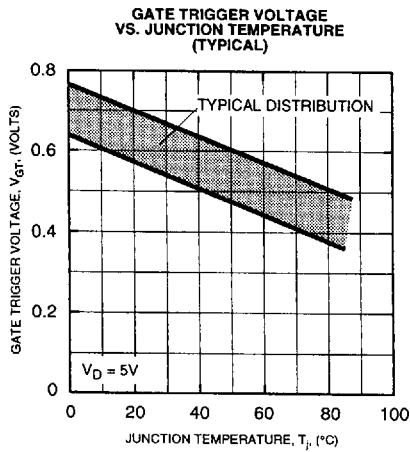
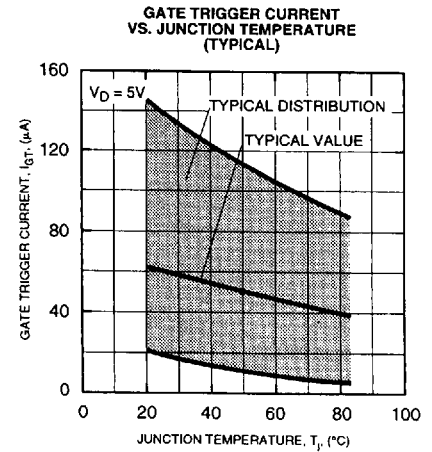
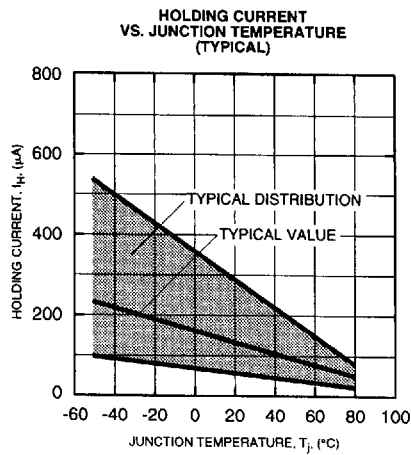
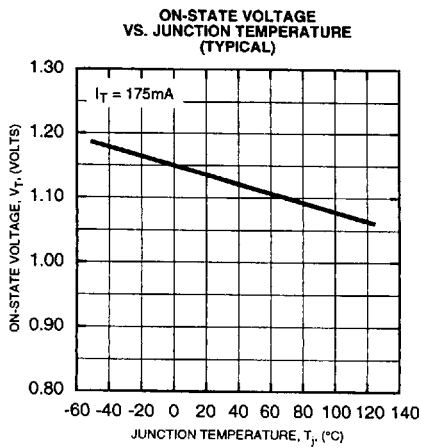
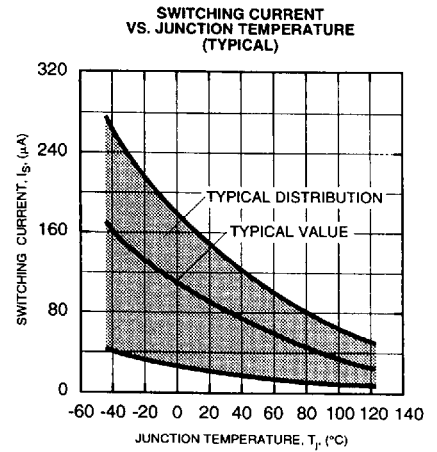
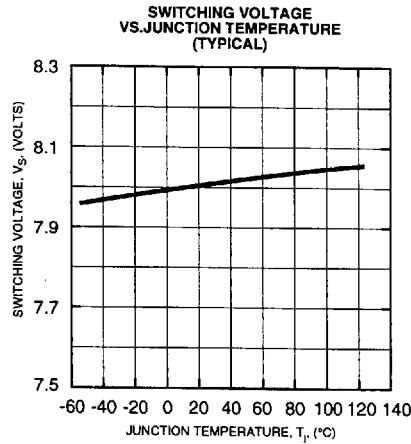
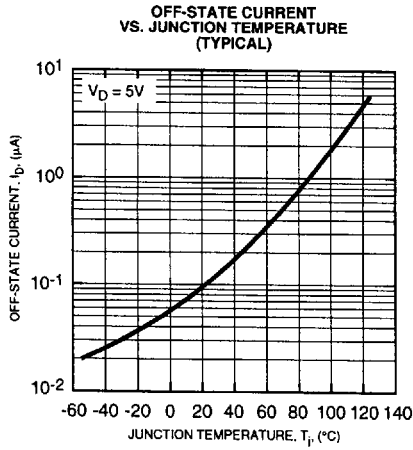
Absolute Maximum Ratings, $T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified

Ratings	Symbol	BS08A	Units
DC Forward Anode Current	I_T	175	mA
Repetitive Peak Forward Current (1% Duty Cycle, 10 μ s Pulsewidth), $T_a = 100\text{ }^\circ\text{C}$	–	1.0	Amperes
Non-repetitive Peak Forward Current (10 μ s Pulsewidth)	–	2.0	Amperes
Power Dissipation	P_T	250	mW
DC Gate Current	I_G	5	mA
Storage Temperature	T_{stg}	-55 to 125	$^\circ\text{C}$
Operating Temperature	T_j	-55 to 125	$^\circ\text{C}$

Electrical and Thermal Characteristics, $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	BS08A			Units
			Min.	Typ.	Max.	
Switching Voltage	V_S	$T_a = 25\text{ }^\circ\text{C}$	7	8	9	Volts
Switching Current	I_S	$T_a = 25\text{ }^\circ\text{C}$	–	–	200	μA
Absolute Switching Voltage Difference	$ V_{S1} - V_{S2} $	$T_a = 25\text{ }^\circ\text{C}$	–	–	0.5	Volts
Absolute Switching Current Difference	$ I_{S1} - I_{S2} $	$T_a = 25\text{ }^\circ\text{C}$	–	–	100	μA
Holding Current	I_H	$T_a = 25\text{ }^\circ\text{C}$	–	–	1.5	mA
Off-state Current	I_D	$V_D = 5\text{V}, T_a = 25\text{ }^\circ\text{C}$	–	–	1.0	μA
		$V_D = 5\text{V}, T_a = 85\text{ }^\circ\text{C}$	–	–	10	μA
Temperature Coefficient of Switching Voltage	–	$T_a = -55\text{ to }85\text{ }^\circ\text{C}$	–	± 0.01	–	$\%/^\circ\text{C}$
Peak On-state Voltage	V_T	$I_T = 175\text{mA}, T_a = 25\text{ }^\circ\text{C}$	–	–	1.4	Volts
Gate Trigger Current	I_{GT}	$V_D = 5\text{V}, T_a = 25\text{ }^\circ\text{C}$	10	–	200	μA
Gate Non-trigger Voltage	V_{GD}	$V_D = 5\text{V}, T_a = 85\text{ }^\circ\text{C}$	0.2	–	–	Volts

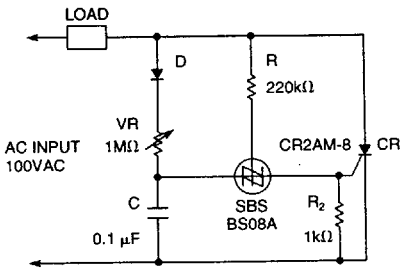
BS08A
Silicon Bilateral Switch



BS08A
Silicon Bilateral Switch

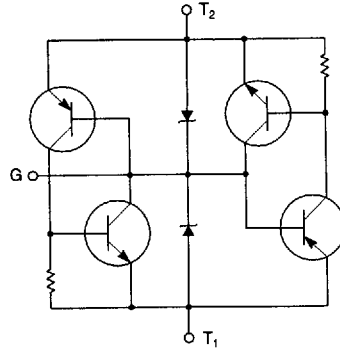
APPLICATION EXAMPLES

THYRISTOR TRIGGER CIRCUIT

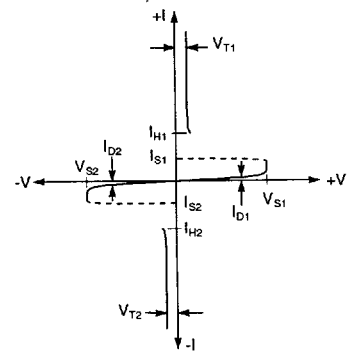


This circuit is widely used in DC motor control and other control applications.

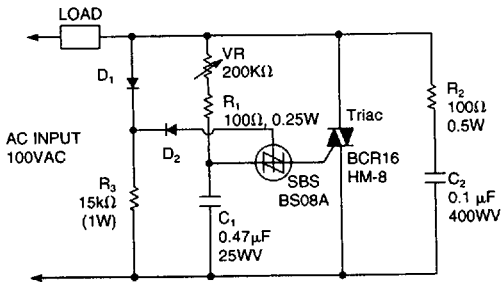
EQUIVALENT CIRCUIT



STATIC CHARACTERISTICS

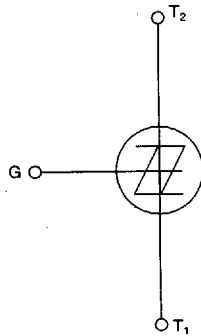


TRIAC TRIGGER CIRCUIT

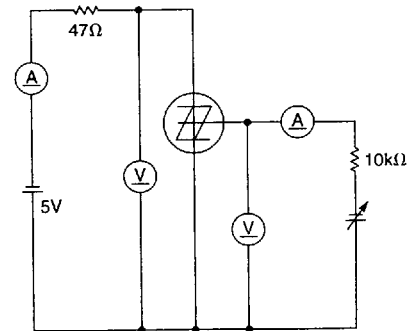


This circuit is useable in such applications as lighting control circuits, electric heater control, and other load control applications.

CIRCUIT SYMBOL



GATE CHARACTERISTICS MEASUREMENT CIRCUIT





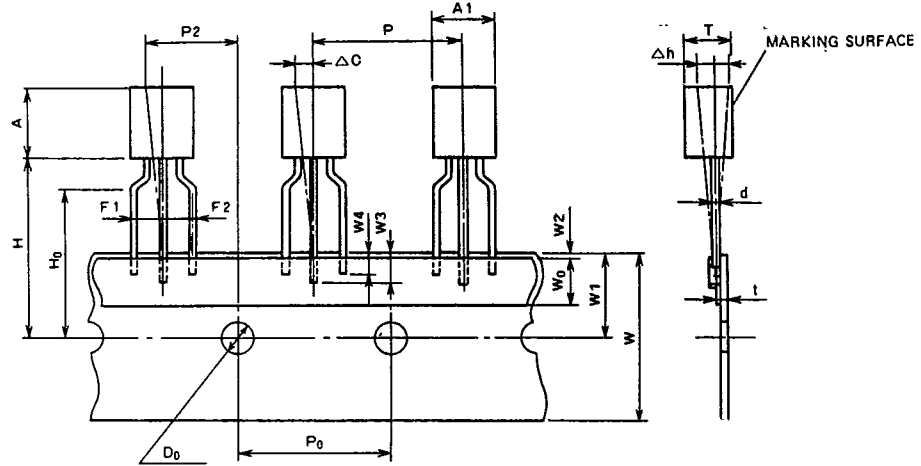
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Taping

STANDARD SPECIFICATIONS FOR TAPING OF MOLDED PACKAGE THYRISTORS AND TRIACS

TO-92 Package

Thyristor
 CR02AM, CR03AM, CR04AM
 Triac
 BCR1AM



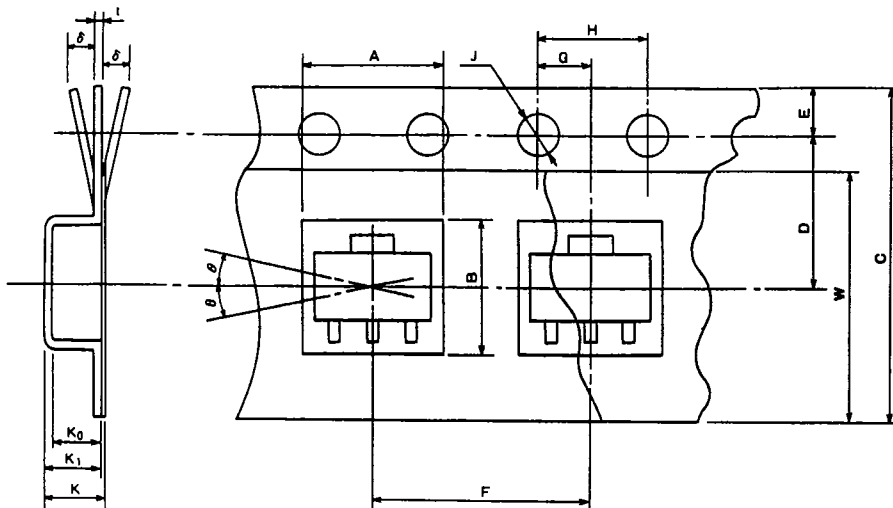
Taping dimensions

Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	P ₀	12.7 ± 0.3	The cumulative pitch error is ± 1mm per 20 pitches.
Feed hole deviation (1)	P2	6.35 ± 1.3	
Distance between lead wires	F1, F2	2.5 ± 0.4	
Defective product (1)	Δh	0 ± 2.0	
Tape width	W	18.0 ± ^{1.0} / _{0.5}	
Sticker tape width	W ₀	6.0 ± 0.5	
Feed hole deviation (2)	W1	9.0 ± 0.5	
Sticker tape deviation	W2	0.5 MAX	
Position of product bottom surface	H	17.5 MIN	
Lynch height of lead wire	H ₀	16.0 ± 0.5	
Feed hole diameter	D ₀	4.0 ± 0.2	
Tape thickness	t	0.7 ± 0.2	
Defective product (2)	ΔC	0 ± 1.0	



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Powerex Semiconductor Data Book
 Taping



SOT-89 Package

Thyristor
 CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts Insertion	Height	A	5.0 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	4.6 ± 0.1	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	K_0	1.8 ± 0.1	Inner space
	Pitch	F	8.0 ± 0.1	Cumulative error +0.1/-0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm 0.05$	
	Pitch	H	4.0 ± 0.1	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	1.5 ± 0.1	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	2.0 ± 0.5	Center line of concave square hole and round feed hole
	Horizontal	D	5.65 ± 0.05	Center line of concave square hole and round feed hole
Cover tape	Width	W	$9.5 + 0.3/-0$	Thickness: 0.1 MAX
Carrier tape	Width	C	12 ± 0.2	Warp $\delta 0.3$ MAX
	Thickness	t	0.3 ± 0.05	
	Package hole depth	K_1	2.1 ± 0.1	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	θ	30° MAX.	
Total Thickness		K	2.3 ± 0.1	Total thickness including cover and carrier tapes