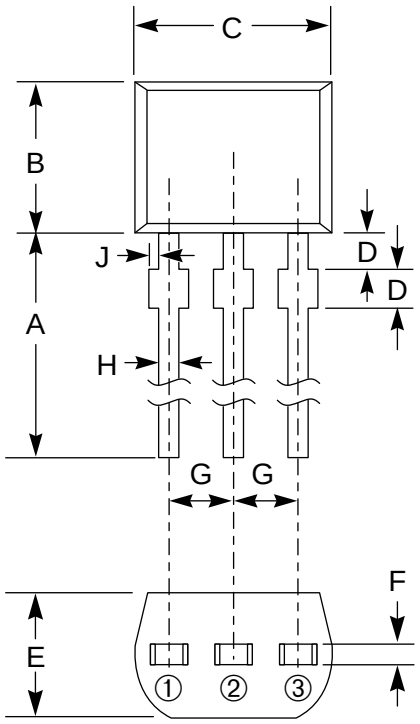
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

Silicon Bilateral Switch

OUTLINE DRAWING

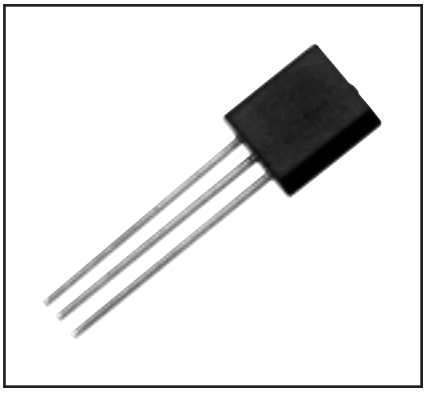


CONNECTION DIAGRAM

① T2 TERMINAL
② GATE
③ T1 TERMINAL

Outline Drawing

Dimensions	Inches	Millimeters
A	0.55 Min.	14.0 Min.
B	0.12 Max.	3.0 Max.
C	0.16	4.0
D	0.14	3.55
E	0.098 Max.	2.5 Max.
F	0.016	0.4
G	0.05 ± 0.012	1.27
H	0.018	0.45



Description:
The BS08D 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. BS08D is a 175mA Silicon Bilateral Switch.

Type
BS08D

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BS08D
Silicon Bilateral Switch

Absolute Maximum Ratings, T_a = 25 °C unless otherwise specified

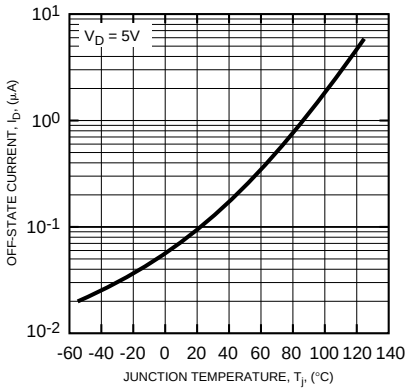
Ratings	Symbol	BS08D	Units
DC Forward Anode Current	I_T	175	mA
Repetitive Peak Forward Current (1% Duty Cycle, 10μs Pulsewidth), T_a = 100°C	–	1.0	Amperes
Non-repetitive Peak Forward Current (10μs Pulsewidth)	–	2.0	Amperes
Power Dissipation	P_T	450	mW
DC Gate Current	I_G	5	mA
Storage Temperature	T_{stg}	-55 to 125	°C
Operating Temperature	T_j	-55 to 125	°C

Electrical and Thermal Characteristics, T_j = 25 °C unless otherwise specified

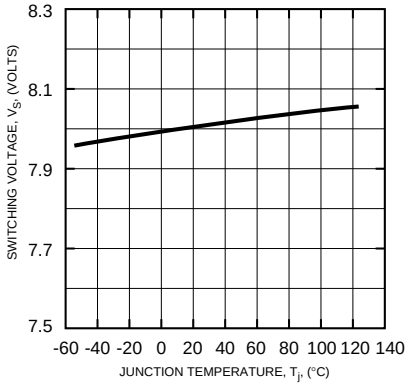
			BS08D			
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Switching Voltage	V_S	T_a = 25°C	7	8	9	Volts
Switching Current	I_S	T_a = 25°C	–	–	200	μA
Absolute Switching Voltage Difference	$\lvert V_{S1}-V_{S2}\rvert$	T_a = 25°C	–	–	0.5	Volts
Absolute Switching Current Difference	$\lvert I_{S1}-I_{S2}\rvert$	T_a = 25°C	–	–	100	μA
Holding Current	I_H	T_a = 25°C	–	–	1.5	mA
Off-state Current	I_D	V_D = 5V, T_a = 25°C	–	–	1.0	μA
		V_D = 5V, T_a = 85°C	–	–	10	μA
Temperature Coefficient of Switching Voltage	–	T_a = -55 to 85°C	–	±0.01	–	%/°C
Peak On-state Voltage	V_T	I_T = 175mA, T_a = 25°C	–	–	1.4	Volts
Gate Trigger Current	I_{GT}	V_D = 5V, T_a = 25°C	10	–	200	μA
Gate Non-trigger Voltage	V_{GD}	V_D = 5V, T_a = 85°C	0.2	–	–	Volts

BS08D
Silicon Bilateral Switch

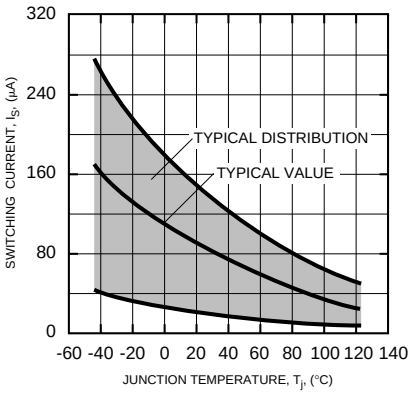
OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



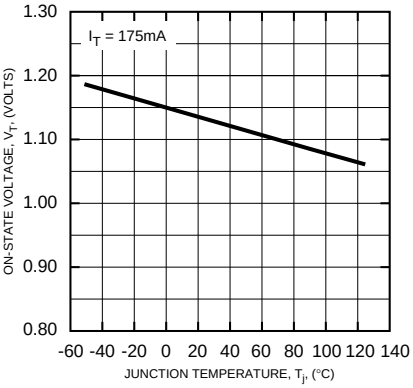
SWITCHING VOLTAGE VS.JUNCTION TEMPERATURE (TYPICAL)



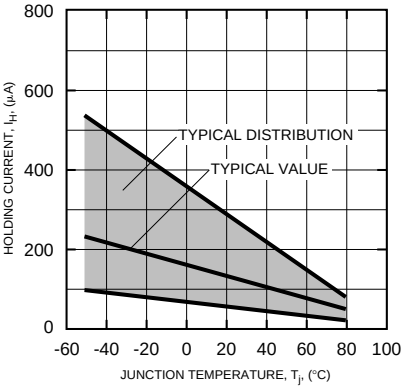
SWITCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



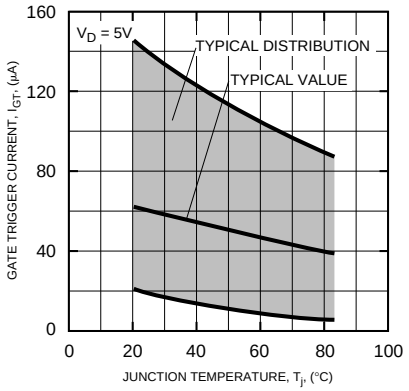
ON-STATE VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



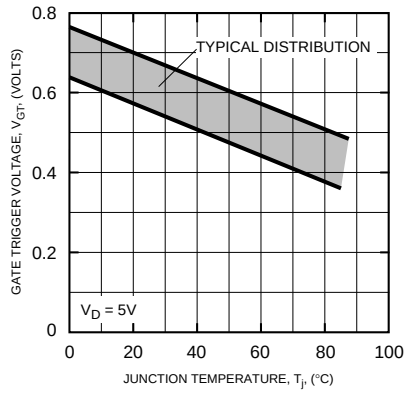
HOLDING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)

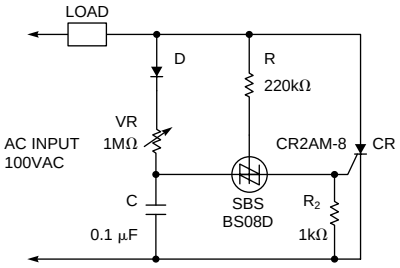


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BS08D
Silicon Bilateral Switch

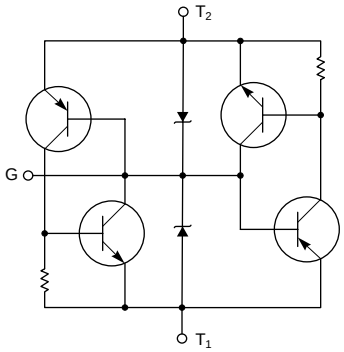
APPLICATION EXAMPLES

THYRISTOR TRIGGER CIRCUIT

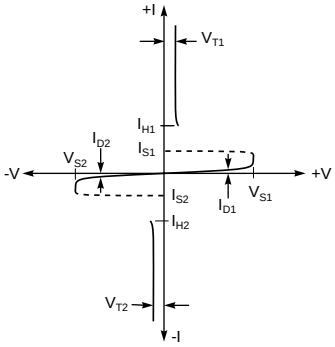


This circuit is widely used in DC motor contol and other control applications.

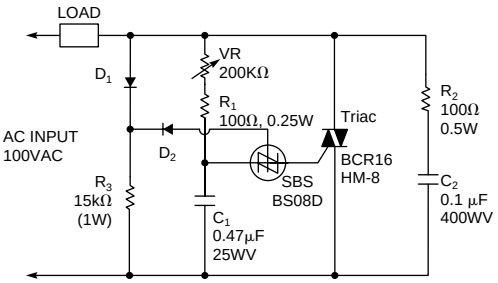
EQUIVALENT CIRCUIT



STATIC CHARACTERISTICS

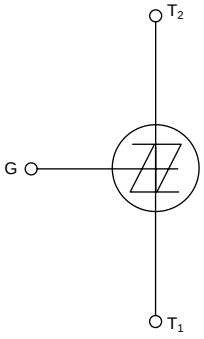


TRIAC TRIGGER CIRCUIT



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

