

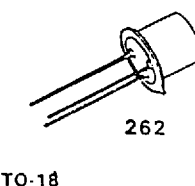
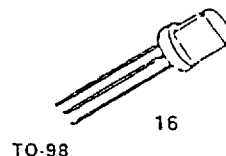
# Silicon Economy Bilateral Switch (SBS)

NO  
Font

<del>2N4991</del>
<del>2N4992</del>
<del>2N4993</del>

The General Electric SBS is a silicon planar, monolithic integrated circuit having the electrical characteristics of a bilateral thyristor. The device is designed to switch at 8 volts with a  $0.02\%/^{\circ}\text{C}$  temperature coefficient and excellently matched characteristics in both directions. A gate lead is provided to eliminate rate effect and to obtain triggering at lower voltages.

The Silicon Bilateral Switches are specifically designed and characterized for applications where stability of switching voltage over a wide temperature range and well matched bilateral characteristics are an asset. They are ideally suited for half wave and full wave triggering in low voltage SCR and Triac phase control circuits.

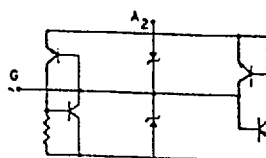


absolute maximum ratings: ( $25^{\circ}\text{C}$  free air) (unless otherwise specified)

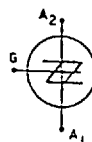
Storage Temperature Range	-65 to +150	$^{\circ}\text{C}$
Operating Junction Temperature Range	-55 to +125	$^{\circ}\text{C}$
Power Dissipation*	300	mW
DC Forward Anode Current*	175	mA
DC Gate Current *†	5	mA
Peak Recurrent Forward Current (1% duty cycle, 10 $\mu\text{sec}$ pulse width, $T_A = 100^{\circ}\text{C}$ )	1.0	Amp
Peak Non-Recurrent Forward Current (10 $\mu\text{sec}$ pulse width, $T_A = 25^{\circ}\text{C}$ )	5.0	Amps

\*Derate linearly to zero at  $125^{\circ}\text{C}$ .

†This rating applicable only on OFF state. Maximum gate current in conducting state limited by maximum power rating.



EQUIVALENT CIRCUIT



CIRCUIT SYMBOL

electrical characteristics:\*\* ( $25^{\circ}\text{C}$ , unless otherwise specified)

## STATIC

		2N4991			2N4992			2N4993		
		MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
Switching Voltage	$V_S$	6		10	7.5		9.0	6		10
Switching Current	$I_S$			500			120			500
Absolute Switching Voltage Difference	$ V_{S2} - V_{S1} $			.5			.2			.5
Absolute Switching Current Difference	$ I_{S2} - I_{S1} $			100			10			100
Holding Current	$I_{H1}$			1.5			.5			1.5
Current (OFF State)										
( $V_F = 5\text{V}$ , $T_A = 25^{\circ}\text{C}$ )	$I_{H2}$			1.0			0.1			1.0
( $V_F = 5\text{V}$ , $T_A = 85^{\circ}\text{C}$ )	$I_{H3}$			10.0			10.0			10.0
Temperature Coefficient of Switching Voltage ( $T_A = -55^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ )	$T_C$		$\pm .02$			$\pm .05$			$\pm .02$	
Forward Voltage Drop (On State) ( $I_F = 175\text{mA}$ )	$V_F$			1.70			1.70			1.70
Forward Gate Current to Trigger ( $V_F = 5\text{V}$ , $R_L = 1\text{K}\Omega$ )	$I_{GF}$			—			100			—

## DYNAMIC

Turn-on Time (See Circuit 1)	$t_{on}$			1.0			1.0			1.0
Peak Pulse Amplitude (See Circuit 3)	$V_o$	3.5			3.5			3.5		
Turn-off Time (See Circuit 2)	$t_{off}$			30.0			30.0			30.0

\*\*This device is a symmetrical negative resistance diode. All electrical limits shown apply in either direction of current flow.