

# SWEEP CONTROL

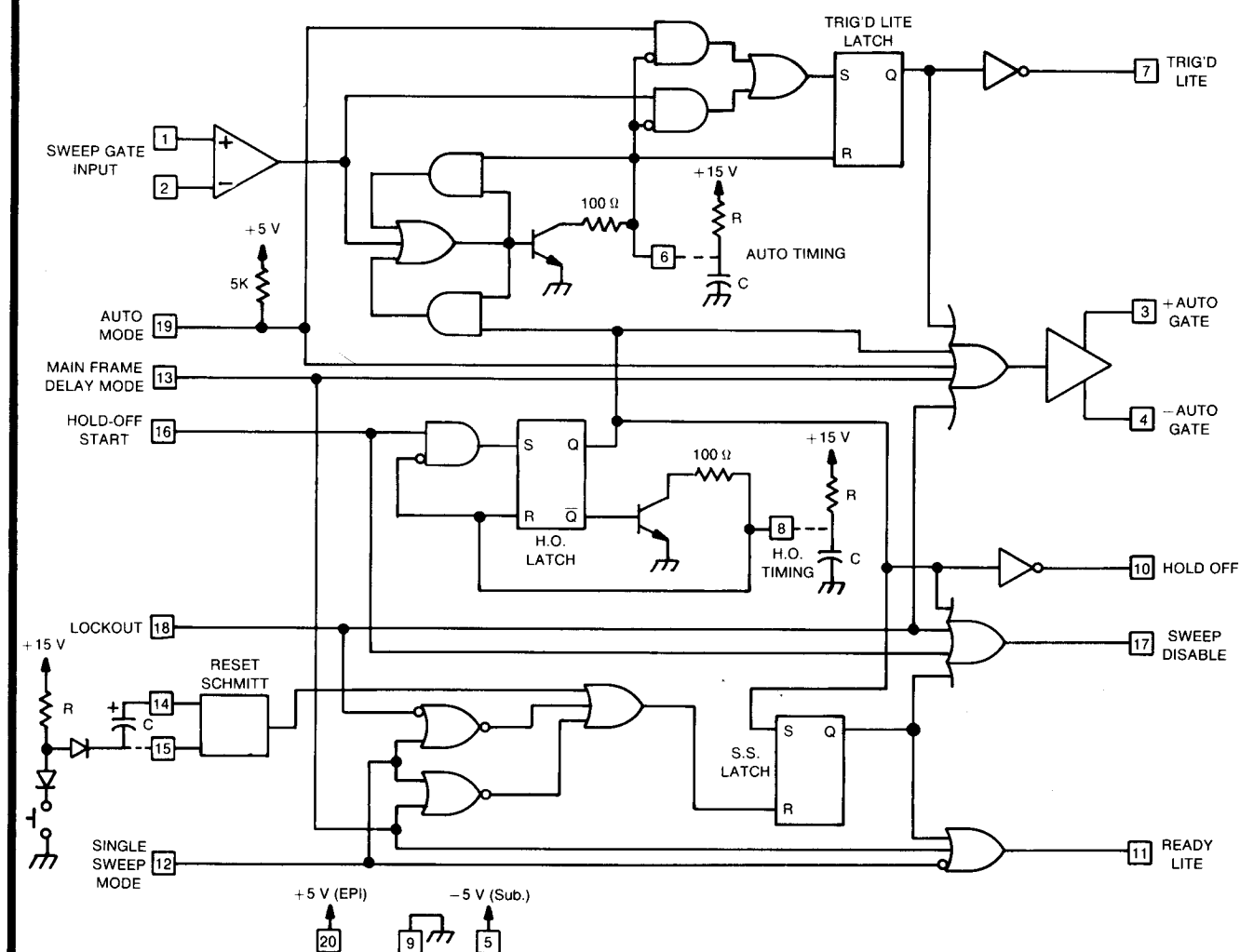
## DESCRIPTION

The sweep control IC contains bright baseline Auto, Single Sweep, and Holdoff logic. Lamp drivers are provided for Single Sweep and Trigger Lights. It also contains Lockout and Main Frame delay mode controls used in 7000 Series Scopes.

## FEATURES

- Sweep gate input, 0.125 V differential signal generates a triggered gate.
- Auto bright baseline time constant determined by external R-C.
- Holdoff time constant determined by external R-C.
- Single sweep mode.
- Auto gate outputs.
- 60 mA drive for trigger and reset light bulbs.

LOGIC DIAGRAM

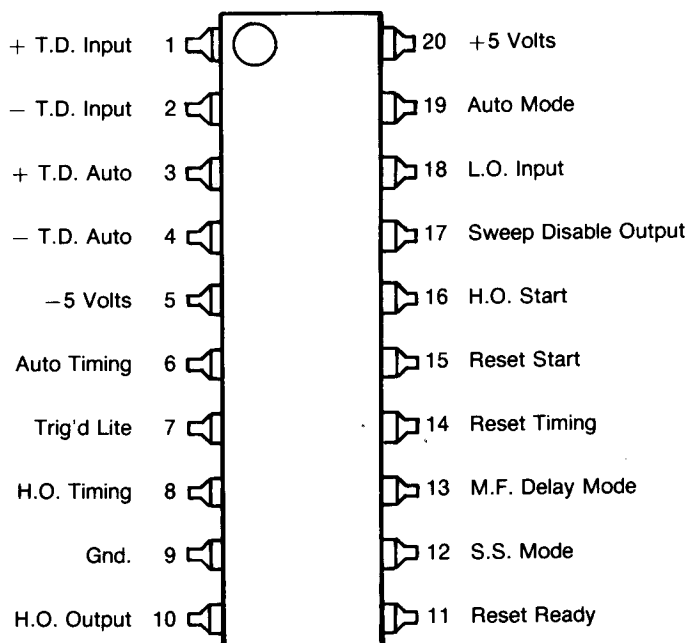


5

## ABSOLUTE MAXIMUMS

SYMBOLS	IDENTIFICATION	MIN	MAX	UNITS
T-A	Operating Ambient Temperature	-15°C	+75°	C
T-J	Junction Temperature T-A = 75°C Power = 250 mW		+99°	C
T-STG	Storage Temperature	-55°	+125°	C
V <sub>CC</sub>	Positive Supply	+4.00	+6.00	V
V <sub>EE</sub>	Negative Supply	-4.00	-6.00	V
I <sub>C</sub>	Sink Current into Lamp Drivers (Pins 7 and 11)		100	mA
I <sub>C</sub>	Sink Current into Hold-Off Out (Pin 10)		10	mA

## PIN CONNECTIONS



## ELECTRICAL CHARACTERISTICS

PIN(S)	SYMBOL	NAME	MIN	MAX	UNITS
1&2	DR	DYNAMIC RANGE	-500	500	mV
1&2	$I_{LEAK}$	INPUT LEAKAGE		50	$\mu A$
3	$\overline{I_{OUT}}$	OUTPUT CURRENT (Absence of Gate)		100	$\mu A$
3	$I_{OUT}$	OUTPUT CURRENT (Presence of Gate)	2.7	3.7	mA
4	$I_{OUT}$	OUTPUT CURRENT (Presence of Gate)		100	$\mu A$
4	$\overline{I_{OUT}}$	OUTPUT CURRENT (Absence of Gate)	2.7	3.7	mA
3&4	$V_{OUT}$	VOLTAGE TO GND	-0.5	5.50	V
5	$V_{EE}$	NEGATIVE SUPPLY VOLTAGE	-4.8	-5.2	V
5	$I_{EE}$	-5 VOLT SUPPLY CURRENT	15	35	mA
6	$R_{IN}$	INPUT IMPEDANCE (while charging)	500		k $\Omega$
8	$R_{IN}$	INPUT IMPEDANCE (while charging)	1.0		M $\Omega$
6&8	$I_{LEAK}$	INPUT LEAKAGE (while charging)		10	$\mu A$
6&8	$V_{DIS.}$	DISCHARGED VOLTAGE $I_C = 1.5$ mA		360	mV
7&11	$V_{SAT}$	TRANSISTOR SATURATION $I_C = 60$ mA		700	mV
7&11	$I_{LEAK}$	OFF CURRENT $V_C = 5$ VOLTS		40	$\mu A$
10	$V_{SAT.}$	TRANSISTOR SATURATION $I_C = 5$ mA		400	mV
10	$I_{LEAK}$	OFF CURRENT $V_C = 5$ VOLTS		10	$\mu A$
12	$V_{IN}$	S.S. MODE HI VOLTAGE IN, $R_{IN}$ $= 800 \Omega$ MIN.	4.0	5.5	V

5

## ELECTRICAL CHARACTERISTICS (cont)

PIN(S)	SYMBOL	NAME	MIN	MAX	UNITS
12	$\overline{V}_{IN}$	S.S. MODE LO VOLTAGE IN $R_{IN}$ = 5 K $\Omega$ MIN.	-300	300	mV
13	$V_{IN}$	M.F. DELAY MODE HI VOLTAGE IN $R_{IN}$ = 1.5 K $\Omega$ MIN.	4.0	5.5	V
13	$\overline{V}_{IN}$	M.F. DELAY MODE LO VOLTAGE IN $R_{IN}$ = 1 M $\Omega$ MIN.	-300	300	mV
16	$V_{IN}$	H.O. START HI VOLTAGE IN $R_{IN}$ = 2 K $\Omega$ MIN.	2.2	2.8	V
16	$\overline{V}_{IN}$	H.O. START LO VOLTAGE IN $R_{IN}$ = 1 M $\Omega$ MIN.	-300	300	mV
17	$V_{OUT}$	SWEEP DISABLE HI Nominal Current = 5 mA	1.55		V
17	$\overline{V}_{OUT}$	SWEEP DISABLE LO	-1.10	-0.45	V
18	$V_{IN}$	LOCKOUT HI VOLTAGE IN $R_{IN}$ = 1 K $\Omega$ MIN.	2.5	5.5	V
18	$\overline{V}_{IN}$	LOCKOUT LO VOLTAGE IN $R_{IN}$ = 1 K $\Omega$ MIN.	-300	300	mV
20	$V_{CC}$	POSITIVE SUPPLY VOLTAGE	4.8	5.2	V
20	$I_{CC}$	+5 VOLTS SUPPLY CURRENT	12	16	mA

## APPLICATIONS INFORMATION

## Input Features

**Sweep Gate Input Pins 1&2**—A differential signal of  $\pm 0.125$  V from ground will cause the input emitter coupled pair to switch and generate a triggered gate inside the IC.

**Auto Timing Pin 6**—Refer to Figure 1. The auto bright baseline time constant is determined by an external R-C connected to pin 6 as shown. The switching point needed to determine the R-C is  $+4.2$  V  $\pm$  .3 V. When the timing reset has been initiated with a trigger, the voltage at pin 6 must recover to less than +1 volt before recharging can begin.

**Hold-Off Timing Pin 8**—Refer to Figure 2. The hold-off time constant is determined by an external R-C as shown. The switching point occurs at  $+4.2 \pm .3$  V.

**Single Sweep Mode Pin 12**—A nominal +5 volt signal applied to pin 12 places the IC in single sweep mode and allows reset ready lite to be on when the reset button is pushed (pin 15). Open circuit or grounding of pin 12 places the IC in auto or normal triggering mode.

**Main Frame Delay Mode Pin 13**—A nominal +5 volt signal applied to pin 13 sets the IC to single sweep mode but does not allow lighting of reset ready lite. High also inhibits the auto circuit. Reset to Ready is accomplished with the rise of LOCKOUT (pin 18).

**Reset Timing and Reset Start Pins 14 & 15**—Refer to Figures 3 and 4. A closure of RESET to ground will generate a reset pulse causing the single sweep latch to be reset and lighting the RESET READY LITE (pin 11).

**Hold-Off Start Pin 16**—This is the input pin to reset the sweep and initiate holdoff. The incoming waveform is intended to be short with respect to sweep duration as might be supplied from a sweep end comparator. High is +2.5 volts min.

**Lockout Pin 18**—A minimum of +2.5 volts applied to pin 18 will cause SWEEP DISABLE (pin 17) to go high and will reset the single sweep latch if in main frame delaying mode. LOCKOUT will not reset the single sweep latch in single sweep mode.

**Auto Mode Pin 19**—This pin is to be grounded for bright baseline auto operation. When pin 19 is grounded and no triggers have been present (pin 1 negative with respect to pin 2) for more than the time constant set at pin 6, then the auto gate occurs at pins 3 and 4.

**Auto Gate Outputs Pins 3 & 4**—The occurrence of an auto gate will cause the differential switching of a nominal 3.2 mA of current from pin 4 to pin 3.

**Trigger Lite Pin 7**—This pin is pulled to ground to sink 60 mA of lamp current when a trigger gate has occurred.

**Hold-Off Pin 10**—This is a current sink to ground during hold-off. Maximum sink current is 5 mA.

**Reset Ready Lite Pin 11**—This pin is pulled to ground to sink 60 mA of lamp current when a high is supplied to pin 12 and no triggers are present (S.S. latch reset and pin 13 low).

**Sweep Disable Out Pin 17**—This signal is used to reset and holdoff the sweep. A high at this pin will reset the sweep if it is running and the sweep will be held off as long as it is high.

FIGURE 1

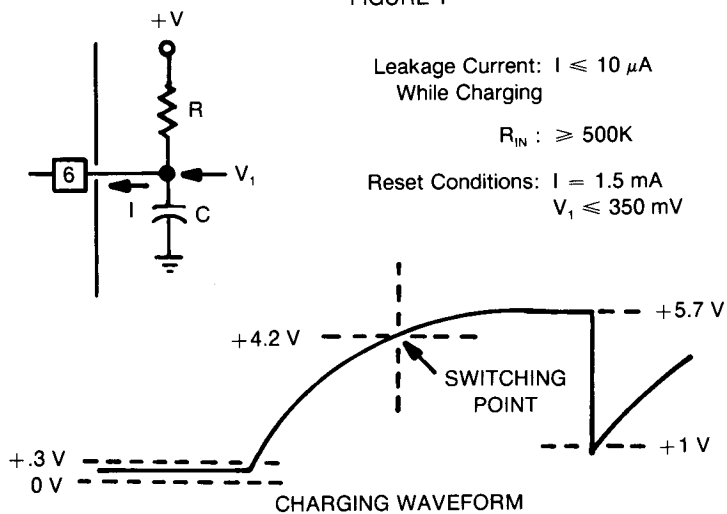


FIGURE 2

