

**DESCRIPTION**

The SA/SE/NE558 and 559 Quad Timers are monolithic timing devices which can be used to produce four entirely independent timing functions. The 558 output sinks current whereas the 559 sources current. These highly stable, general purpose controllers can be used in a monostable mode to produce accurate time delays, from microseconds to hours. In the time delay mode of operation, the time is precisely controlled by one external resistor and one capacitor. Astable operation can be achieved by using two of the four timer sections.

The four timing sections in the 558 and 559 are edge triggered; therefore, when connected in tandem for sequential timing applications, no coupling capacitors are required. Output current capability of 100mA is provided in both devices.

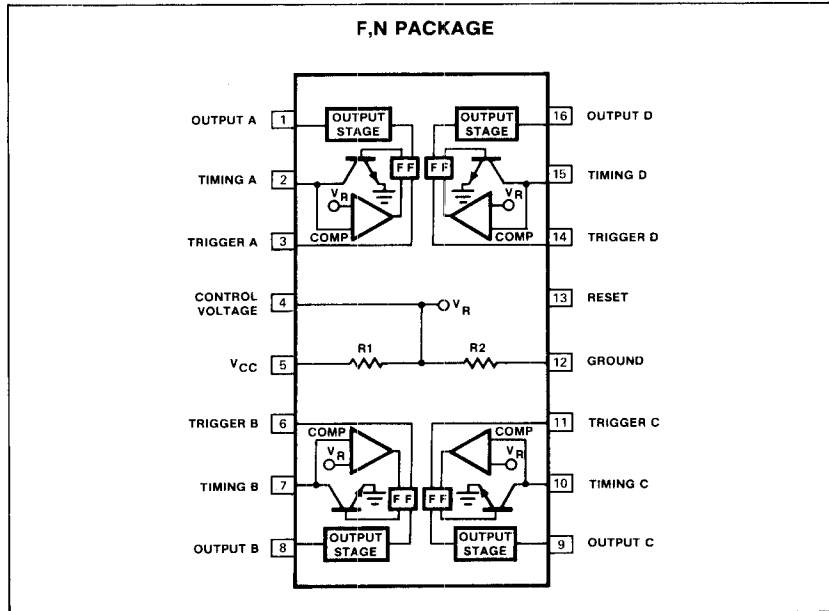
**FEATURES**

- 100mA output current per section
- Edge triggered (no coupling capacitor)
- Output independent of trigger conditions
- Wide supply voltage range 4.5V to 18V
- Timer intervals from microseconds to hours
- Time period equals RC
- Military qualifications pending

**APPLICATIONS**

- Sequential timing
- Time delay generation
- Precision timing
- Industrial controls
- Quad one-shot

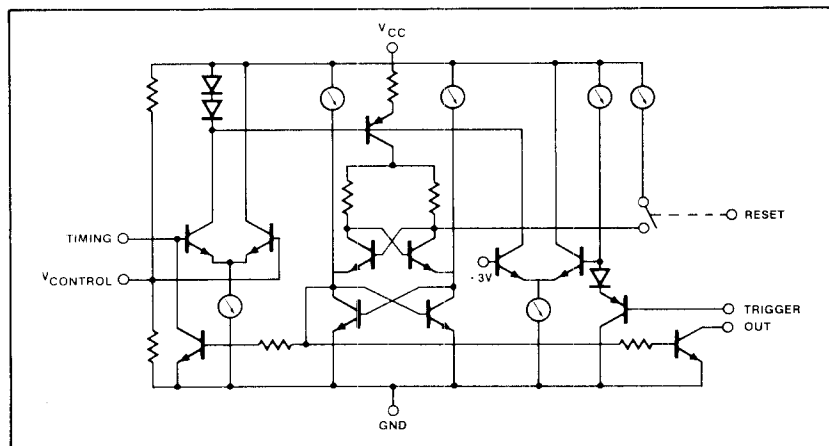
**PIN CONFIGURATION**



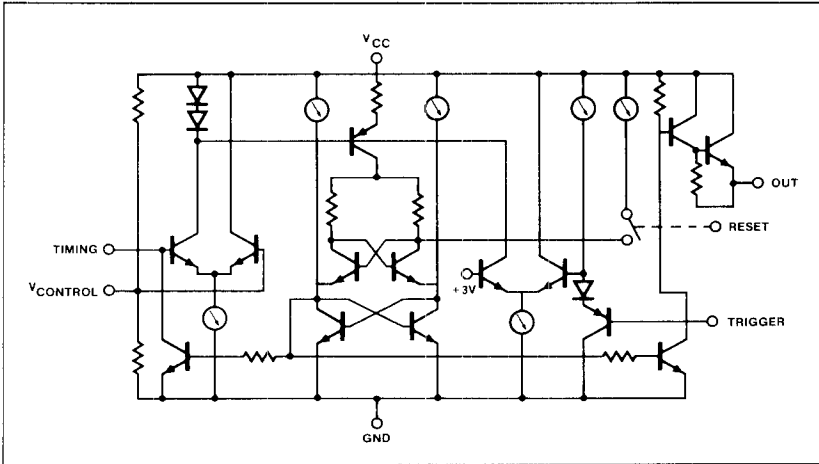
**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	RATING	UNIT
Supply voltage		
SE558, SE559	+18	V
NE558, NE559	+16	V
SA558, SA559	+16	V
Power dissipation	1.25	W
Operating temperature range		
NE558, NE559	0 to +70	°C
SA558, SA559	-40 to +85	°C
SE558, SE559	-55 to +125	°C
Storage temperature range	-65 to +150	°C
Lead temperature (soldering, 60sec)	+300	°C

**558 EQUIVALENT CIRCUIT**



559 EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS  $T_A = 25^\circ\text{C}$ ,  $V_{CC} = +5\text{V}$  to  $+15\text{V}$  unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE558/SE559			NE558/NE559 SA558/SA559			UNIT
		Min	Typ	Max	Min	Typ	Max	
Supply voltage		4.5		18	4.5		16	V
Supply current (558)	$V_{CC} = \text{Reset} = 15\text{V}$		21	32		27	36	mA
(559)	$V_{CC} = \text{Reset} = 15\text{V}$		9	16		12	18	mA
Timing accuracy ( $T = RC$ )	$R = 2\text{k}\Omega$ to $100\text{k}\Omega$ $C = 1\mu\text{F}$							
Initial accuracy			1.0	3		2		%
Drift with temperature			150			150		ppm/ $^\circ\text{C}$
Drift with supply voltage			0.1			0.1		%/V
Trigger voltage <sup>1</sup>	$V_{CC} = 15\text{V}$	0.8	1.5	2.4	0.8	1.5	2.4	V
Trigger current	Trigger = 0V		5	30		5	100	$\mu\text{A}$
Reset voltage <sup>2</sup>		0.8	1.5	2.4	0.8	1.5	2.4	V
Reset current	Reset		50	300		50		$\mu\text{A}$
Threshold voltage			0.63			0.63		$\times V_{CC}$
Threshold leakage			15			15		nA
Output voltage (558) <sup>3</sup>	$I_L = 10\text{mA}$		0.1	0.2		0.1	0.4	V
	$I_L = 100\text{mA}$		0.7	1.5		1.0	2.0	V
Output voltage (559) <sup>4</sup>	$I_L = 10\text{mA}$	13	13.6		12.5	13.3		V
	$I_L = 100\text{mA}$	12.5	13.3		12.0	13.0		V
Output leakage			10			10		nA
Propagation delay (558)			1.0			1.0		$\mu\text{s}$
(559)			0.4			0.4		$\mu\text{s}$
Risetime of output	$I_L = 100\text{mA}$		100			100		ns
Falltime of output	$I_L = 100\text{mA}$		100			100		ns

NOTES

1. The trigger functions only on the falling edge of the trigger pulse only after previously being high. After reset the trigger must be brought high and then low to implement triggering.
2. For reset below 0.8 volts, outputs set low and trigger inhibited. For reset above 2.4 volts, trigger enabled.
3. The 558 output structure is open collector which requires a pull up resistor to  $V_{CC}$  to sink current. The output is normally low sinking current.
4. The 559 output structure is a darlington emitter follower which requires a pull down resistor to ground to source current. The output is normally low and sources current only when switched high.

