

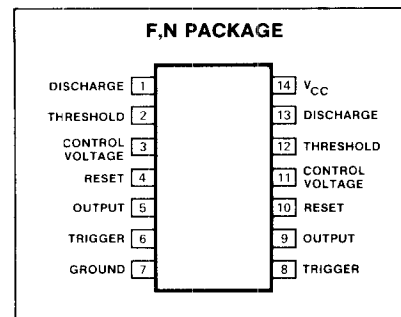
FEATURES

- Turn off time less than $2\mu\text{S}$
- Maximum operating frequency greater than 500kHz
- Timing from microseconds to hours
- Replaces two 555 timers
- Operates in both astable and monostable modes
- High output current
- Adjustable duty cycle
- TTL compatible
- Temperature stability of 0.005% per $^{\circ}\text{C}$

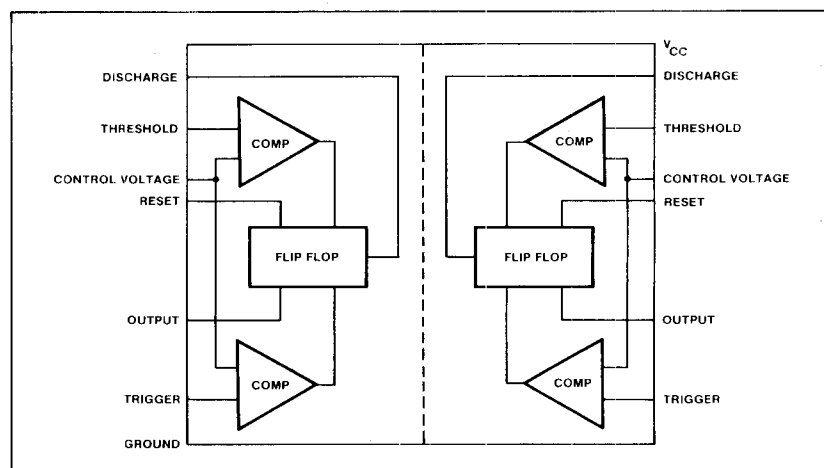
APPLICATIONS

- Precision timing
- Sequential timing
- Pulse shaping
- Pulse generator
- Missing pulse detector
- Tone burst generator
- Pulse width modulation
- Time delay generator
- Frequency division
- Industrial controls
- Pulse position modulation
- Appliance timing
- Traffic light control
- Touch tone encoder

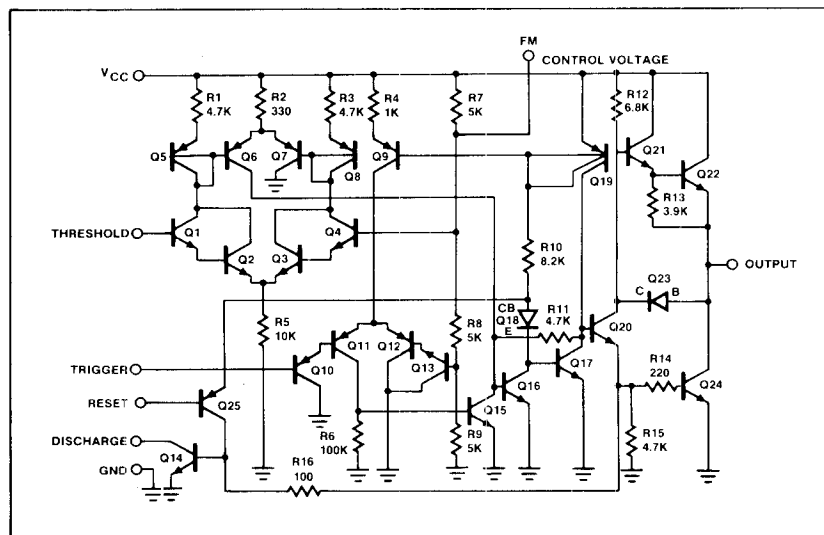
PIN CONFIGURATION



BLOCK DIAGRAM



EQUIVALENT SCHEMATIC (Shown for one circuit only)



ABSOLUTE MAXIMUM RATINGS

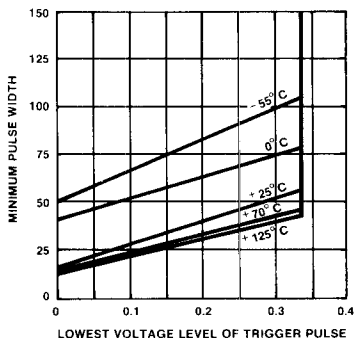
PARAMETER	RATING	UNIT
Supply voltage		
SE556-1	+18	V
NE556-1, SE556-1C, SA556-1	+16	V
Power dissipation	1.20	W
Operating temperature range		
NE556-1	0 to +70	°C
SA556-1	-40 to +85	°C
SE556-1, SE556-1C	-55 to +125	°C
Storage temperature range	-65 to +150	°C
Lead temperature (soldering, 60 sec)	+300	°C

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

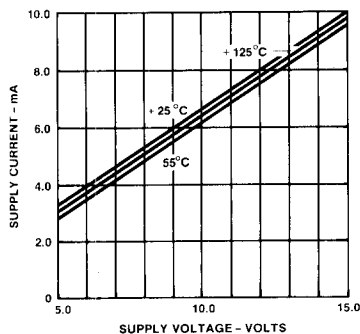
PARAMETER	TEST CONDITIONS	SE556-1			SA556-1/NE556-1/SE556-1C			UNITS
		Min	Typ	Max	Min	Typ	Max	
Supply voltage		4.5		18	4.5		16	V
Supply current (low state) ¹	$V_{CC} = 5\text{V}$ $R_L = \infty$		6	10		6	12	mA
	$V_{CC} = 15\text{V}$ $R_L = \infty$		20	24		20	30	mA
Timing error (monostable)	$R_A = 2\text{k}\Omega$ to $100\text{k}\Omega$							
Initial accuracy ²	$C = 0.1\mu\text{F}$		0.5	1.5		0.75	3.0	%
Drift with temperature			30	100		50		ppm/°C
Drift with supply voltage			0.05	0.2		0.1	0.5	%/V
Timing error (astable)	$R_A, R_B = 1\text{k}\Omega$ to $100\text{k}\Omega$							
Initial accuracy ²	$C = 0.1\mu\text{F}$		1.5			2.25		%
Drift with temperature	$V_{CC} = 15\text{V}$		90			150		ppm/°C
Drift with supply voltage			0.15			0.3		%/V
Control voltage level	$V_{CC} = 15\text{V}$	9.6	10.0	10.4	9.0	10.0	11.0	V
	$V_{CC} = 5\text{V}$	2.9	3.33	3.8	2.6	3.33	4.0	V
Threshold voltage	$V_{CC} = 15\text{V}$	9.4	10.0	10.6	8.8	10.0	11.2	V
	$V_{CC} = 5\text{V}$	2.7	3.33	4.0	2.4	3.33	4.2	V
Threshold current ³			30	250		30	250	nA
Trigger voltage	$V_{CC} = 15\text{V}$	4.8	5.0	5.2	4.5	5.0	5.6	V
	$V_{CC} = 5\text{V}$	1.45	1.67	1.9	1.1	1.67	2.2	V
Trigger current	$V_{TRIG} = 0\text{V}$		0.5	0.9		0.5	2.0	μA
Reset voltage ⁵		0.4	0.7	1.0	0.4	0.7	1.0	V
Reset current			0.1	0.4		0.1	0.6	mA
Reset current	$V_{RESET} = 0\text{V}$		0.4	1.0		0.4	1.5	mA
Output voltage (low)	$V_{CC} = 15\text{V}$							
	$I_{SINK} = 10\text{mA}$		0.1	0.15		0.1	0.25	V
	$I_{SINK} = 50\text{mA}$		0.4	0.5		0.4	0.75	V
	$I_{SINK} = 100\text{mA}$		0.8	1.2		2.0	2.5	V
	$I_{SINK} = 200\text{mA}$		2.5			2.5		V
	$V_{CC} = 5\text{V}$							
	$I_{SINK} = 8\text{mA}$		0.1	0.2		0.25	0.3	V
	$I_{SINK} = 5\text{mA}$		0.05	0.15		0.15	0.25	V
Output voltage (high)	$V_{CC} = 15\text{V}$							
	$I_{SOURCE} = 200\text{mA}$		12.5			12.5		V
	$I_{SOURCE} = 100\text{mA}$	13.0	13.3		12.75	13.3		V
	$V_{CC} = 5\text{V}$							
	$I_{SOURCE} = 100\text{mA}$	3.0	3.3		2.75	3.3		V
Turn off time ⁶	$V_{RESET} = V_{CC}$		0.5	2.0		0.5		μs
Rise time of output			100	200		100	300	ns
Fall time of output			100	200		100	300	ns
Discharge leakage current			20	100		20	100	nA
Matching characteristics ⁴								
Initial accuracy ²			0.5	1.0		1.0	2.0	%
Drift with temperature			± 10			± 10		ppm/°C
Drift with supply voltage			0.1	0.2		0.2	0.5	%/V

TYPICAL CHARACTERISTICS

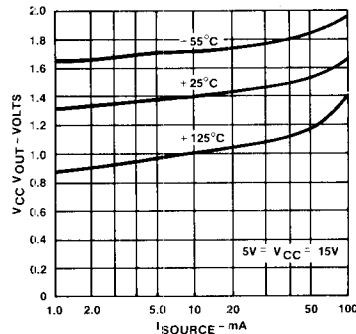
MINIMUM PULSE WIDTH
REQUIRED FOR TRIGGERING



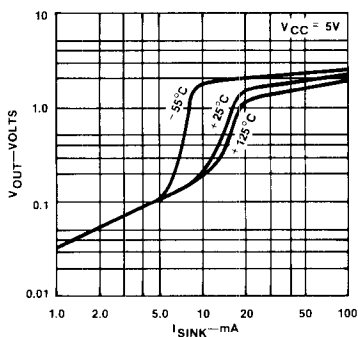
SUPPLY CURRENT
vs SUPPLY VOLTAGE



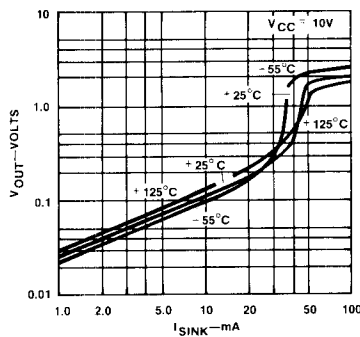
HIGH OUTPUT VOLTAGE DROP
vs OUTPUT SOURCE CURRENT



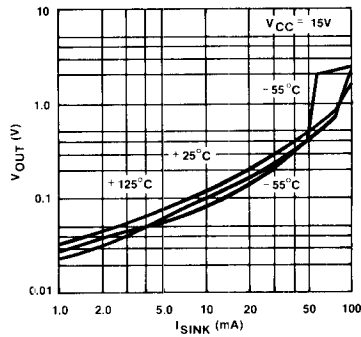
LOW OUTPUT VOLTAGE
vs OUTPUT SINK CURRENT



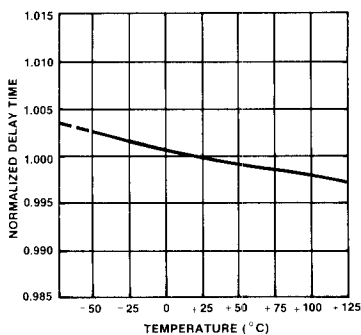
LOW OUTPUT VOLTAGE
vs OUTPUT SINK CURRENT



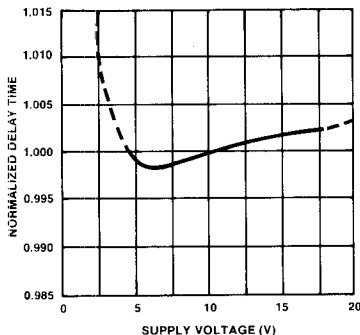
LOW OUTPUT VOLTAGE
vs OUTPUT SINK CURRENT



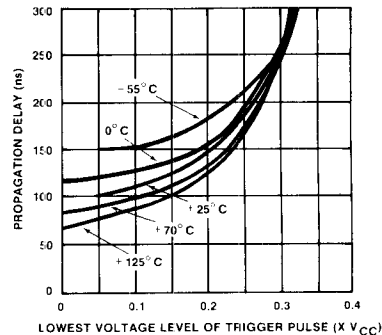
DELAY TIME
vs TEMPERATURE



DELAY TIME vs
SUPPLY VOLTAGE



PROPAGATION DELAY
vs VOLTAGE LEVEL
OF TRIGGER PULSE



NOTES

1. Supply current when output is high is typically 1.0mA less.
2. Tested at $V_{CC} = 5V$ and $V_{CC} = 15V$.
3. This will determine the maximum value of $R_A + R_B$. For 15V operation, the maximum total $R = 10$ megohms, and for 5V operation, the max. total $R = 3.4$ megohms.

4. Matching characteristics refer to the difference between performance characteristics for each timer section in the monostable mode.
5. Specified with trigger input high.
6. Time measured from a positive going input pulse from 0 to $0.8V_{CC}$ into the threshold to the drop from high to low of the output. Trigger is tied to threshold.