INTERSIL

556
Dual Precision Timer

FEATURES

- **Timing from microseconds to hours**
- **Operates in both astable and monostable time delay modes**
- **High output current**
- **Adjustable duty cycle**
- **TTL compatible**
- **Temperature stability of 0.005%/°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**

GENERAL DESCRIPTION

The NE/SE556 Dual 555 Monolithic timing circuit is a highly stable controller capable of producing accurate time delays or oscillation. Timing is provided by an external resistor and capacitor for each timing function; the two timers operate independently of each other sharing only V^+ and ground. The circuits may be triggered and reset on falling waveforms. The output structures will sink or source 150mA.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage ..... +18V
Power Dissipation* 800mW
Operating Temperature Range NE556 ..... 0°C to +70°C
SE556 ..-55°C to +125°C
Storage Temperature Range .....-65°C to +150°C
Lead Temperature (Soldering, 60 sec) ..... +300°C
*Derate linearly at 6.5mV/°C above ambient temperature of 75°C.

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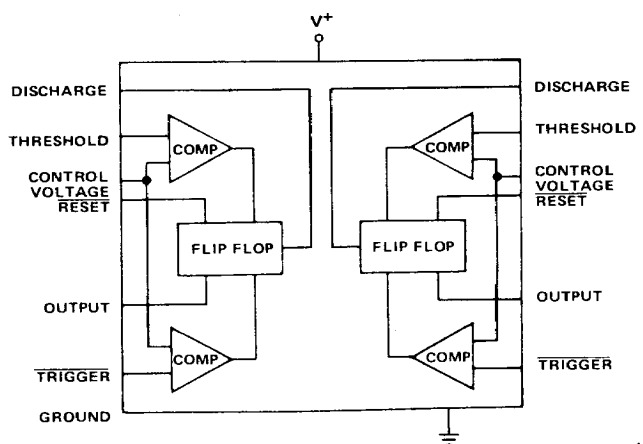
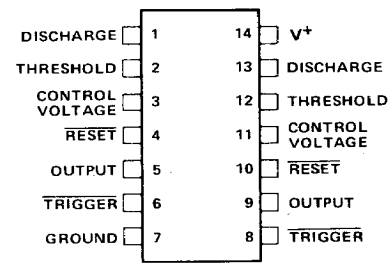
BLOCK DIAGRAM



PIN CONFIGURATION



(OUTLINE DRAWINGS JD, PD)

ORDERING INFORMATION

NE556/D	0°C to +70°C	Dice
NE556F		14 pin CERDIP
NE556N		14 pin plastic DIP
SE556/D	-55°C to +125°C	Dice
SE556F*		14 pin CERDIP

*Add /883B to order number if 883B processing is desired.

ELECTRICAL CHARACTERISTICS

TEST CONDITIONS: $T_A = 25°C$, $V^+ = +5V$ to $+15$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE556			NE556			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Supply Voltage		4.5		18	4.5		16	V
Supply Current (each device)	$V^+ = 5V$ $R_L = \infty$		3	5		3	6	mA
	$V^+ = 15V$ $R_L = \infty$ Low State, Note 1		10	11		10	14	
Timing Error (Monostable) Initial Accuracy	$R_A = 2K\Omega$ to $100K\Omega$ C = 0.1μF Note 2		0.5	1.5		0.75		%
Drift with Temperature			30	100		50		ppm/°C
Drift with Supply Voltage			0.05	0.2		0.1		%/V
Timing Error (Astable) Initial Accuracy	R_A, $R_B = 2K\Omega$ to $100K\Omega$ C = 0.1μF Note 2		1.5			2.25		%
Drift with Temperature			90			150		ppm/°C
Drift with Supply Voltage			0.15			0.3		%/V
Threshold Voltage			2/3			2/3		V^+
Threshold Current	Note 3		30	100		30	100	nA
Trigger Voltage	$V^+ = 15V$	4.8	5	5.2		5		V
	$V^+ = 5V$	1.45	1.67	1.9		1.67		
Trigger Current			0.5			0.5		μA
Reset Voltage		0.4	0.7	1.0	0.4	0.7	1.0	V
Reset Current			0.1			0.1		mA
Control Voltage Level	$V^+ = 15V$	9.6	10	10.4	9.0	10	11	V
	$V^+ = 5V$	2.9	3.33	3.8	2.6	3.33	4	
Output Voltage (low)	$V^+ = 15V$							
	$I_{SINK} = 10mA$		0.1	0.15		0.1	.25	
	$I_{SINK} = 50mA$		0.4	0.5		0.4	.75	
	$I_{SINK} = 100mA$		2.0	2.25		2.0	2.75	
	$I_{SINK} = 200mA$		2.5			2.5		
	$V^+ = 5V$							
	$I_{SINK} = 8mA$		0.1	0.25				
	$I_{SINK} = 5mA$					.25	.35	
Output Voltage (high)	$I_{SOURCE} = 200mA$		12.5			12.5		
	$V^+ = 15V$							
	$I_{SOURCE} = 100mA$							
	$V^+ = 15V$	13.0	13.3		12.75	13.3		
	$V^+ = 5V$	3.0	3.3		2.75	3.3		
Rise Time of Output			100			100		ns
Fall Time of Output			100			100		
Discharge Leakage Current			20	100		20	100	nA
Matching Characteristics (Note 4) Initial Timing Accuracy			0.05	0.1		0.1	0.2	%
Timing Drift with Temperature			±10			±10		ppm/°C
Drift with Supply Voltage			0.1	0.2		0.2	0.5	%/V

NOTES:
1. Supply current when output is high is typically 1.0mA less.
2. Tested at $V^+ = 5V$ and $V^+ = 15V$.
3. This will determine the maximum value of $R_A + R_B$ for 15V operation. The maximum total R = 20 MΩ.
4. Matching characteristics refer to the difference between performance characteristics of each timer section.