Documents ressources.

SYSTÈME D'ALIMENTATION PARENTÉRALE.

SOMMAIRE.

GLOSSAIRE.

Invasif (invasive) : Qui oblige à faire pénétrer un capteur à l'intérieur du corps.

Pression ou tension artérielle : Force exercée par le sang en mouvement contre la paroi des artères.

Pression diastolique : Pression artérielle minimale correspondant au relâchement du muscle cardiaque.

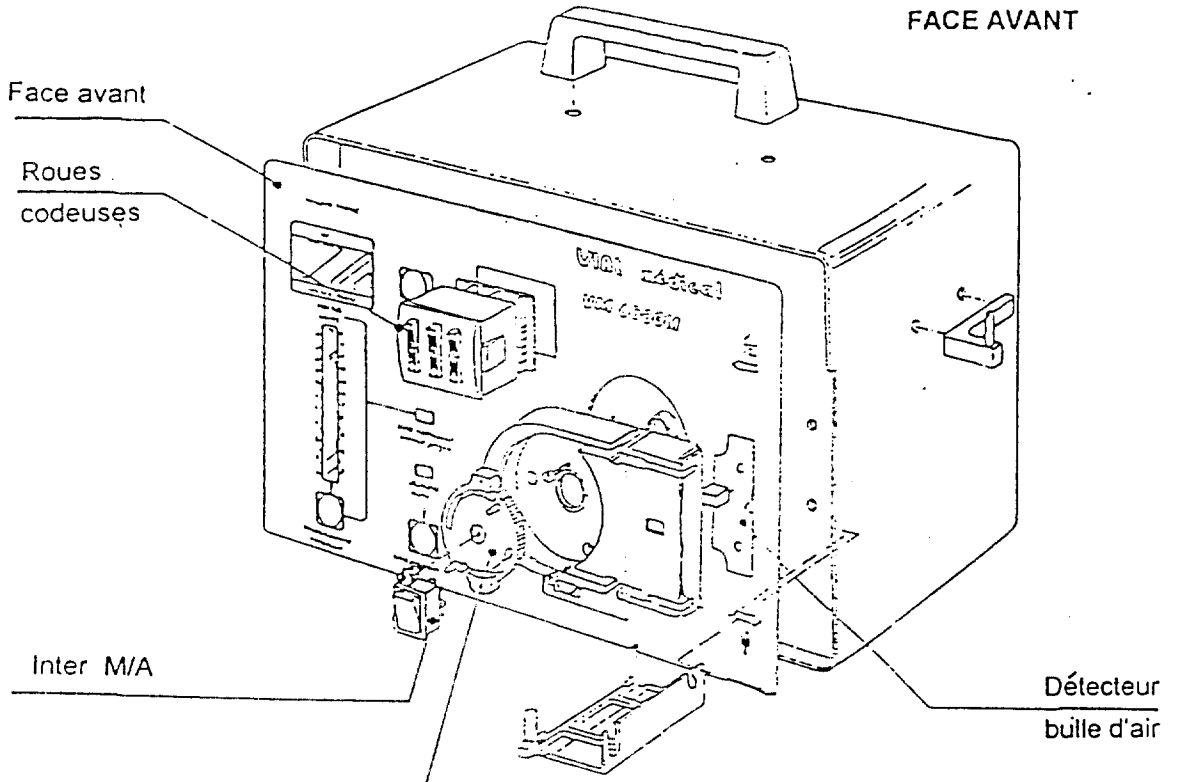
Pression systolique : Pression artérielle maximale correspondant à la contraction du cœur.

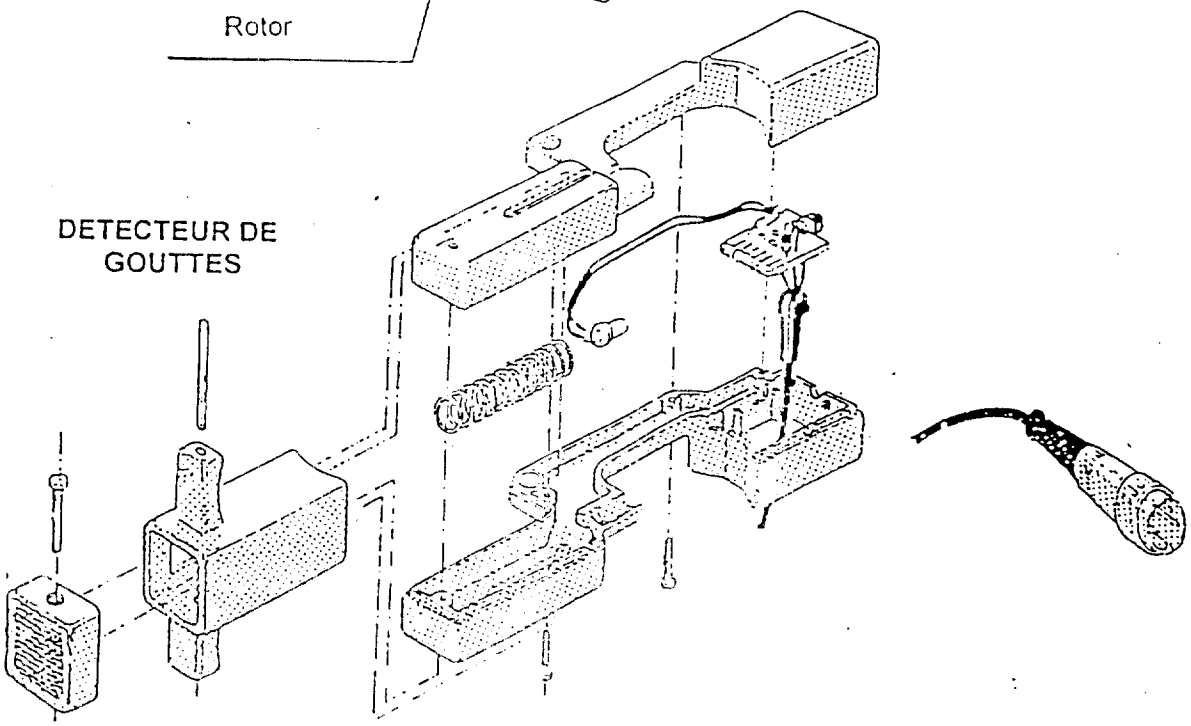
Rythme cardiaque Fréquence des contraction du cœur qui s'exprime en battements par minute.

Soluté : C'est un liquide formé par la dissolution d'un solide dans un liquide.

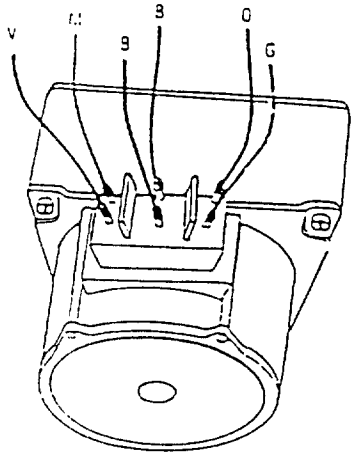
Physiopathologie : C'est l'étude des effets engendrés sur les organismes vivants par les maladies.

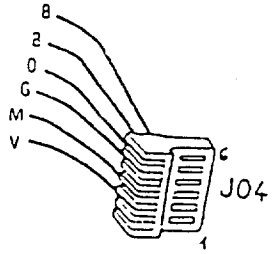
SCHEMA MECANIQUE



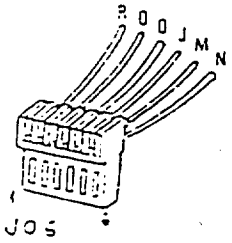


SCHEMA DE CABLAGE

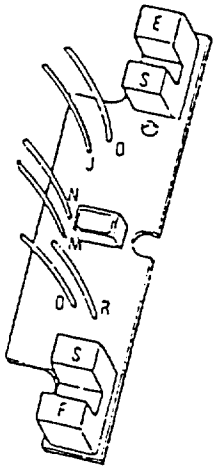




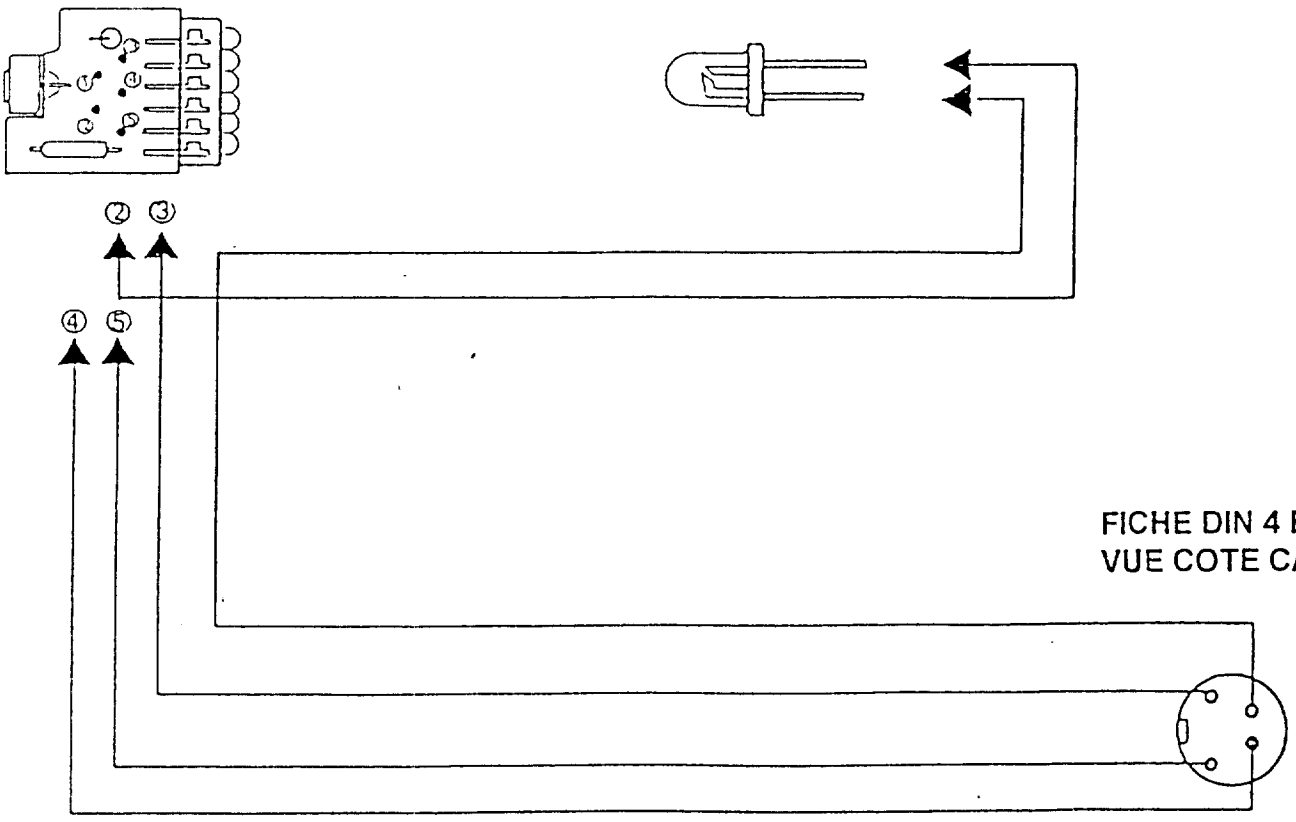
cablage du moteur



Cablage du détecteur de bulle d'air



Branchement du détecteur de gouttes



FICHE DIN 4 BROCHES
VUE COTE CABLAGE

BROCHAGE DES DIFFERENTS CONNECTEURS

JO1 : Connecteur face arrière

1.....commun détecteur
2.....+5v détecteur
3.....signal détecteur
4.....+batterie
5.....0v alimentation extérieure
6.....+12v alimentation extérieure
7.....secondaire transformateur
8.....secondaire transformateur vers diode D9
9.....secondaire transformateur vers diode D9
10.....secondaire transformateur
11.....+12V alimentation extérieure
12.....0V alimentation extérieure
13.....+batterie
14.....appel infirmière (contact fermé au repos)
15.....appel infirmière (contact ouvert au repos)
16.....commun appel infirmière

JO2 : Connecteur roues codeuses

1..... commun
2.....centaine 1
3.....centaine 2
4.....centaine 4
5.....centaine 8
6.....dizaine 1
7.....dizaine 2
8.....dizaine 4
9.....dizaine 8
10.....unité 1
11.....unité 2
12.....unité 4
13.....unité 8
14.....unité 8

JO3 : Connecteur face avant

1.....non connecté
2.....réarmement
3.....commun +5V
4.....programmation
5.....validation
6.....pause

JO4 : Connecteur moteur

1.....phase 1
2.....phase 2
3.....phase 3
4.....phase 4
5.....alimentation +12V
6.....alimentation +12V

JO5 : Connecteur interrupteur M/A

1.....+12V alimentation secteur
2.....+12V circuit
3.....+12V batterie
4.....+12V alarme batterie

JO6 : Connecteur capteur bulle d'air

1.....+5V
2.....sortie capteur 1
3.....sortie capteur 2
4.....cathode émetteur infra-rouge
5.....anode LED alarme bulle d'air
6.....masse

JO7 : Connecteur circuit détection bulle d'air

1.....remise à zéro manuelle
2.....fréquence moteur
3.....alarme bulle d'air
4.....anode LED alarme bulle d'air
5.....non connecté
6.....+5V
7.....masse
8.....+5V
9.....cathode émetteur infra-rouge
10.....signal phototransistor K1
11.....signal phototransistor K2
12.....non connecté

JO8 : Connecteur buzzer

1.....signal commande buzzer
2.....masse

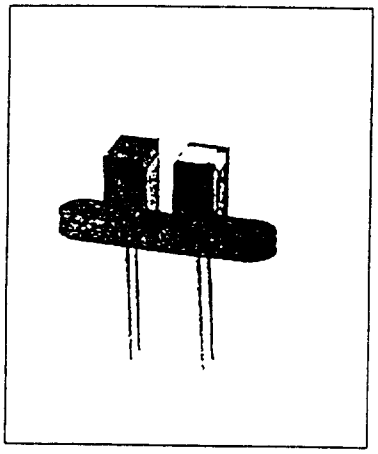
JO9 : Connecteur de contrôle

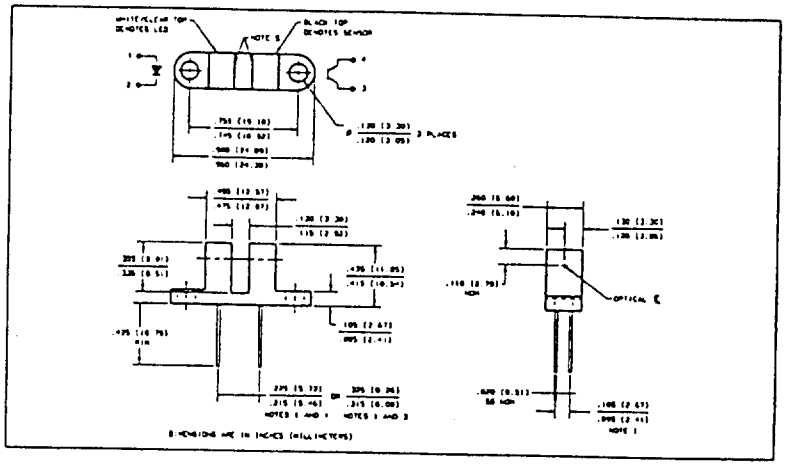
1.....masse
2.....phototransistor K1
3.....phototransistor K2
4.....+ 13,8V

Product Bulletin OPB859
July 1996

OPTEK

High Resolution Slotted Optical Switch
Type OPB859





Features

- Inexpensive opaque plastic housing
- 0.125" (3.18 mm) wide slot
- 0.220" (5.89 mm) lead spacing
- Apertured for high resolution

Description

The OPB859 slotted optical switch consists of an infrared emitting diode and an NPN silicon phototransistor. They are mounted on opposite sides of a .125" (3.18 mm) wide slot. The emitter has a .050" x .050" (1.27 mm X 1.27 mm) aperture while the phototransistor has a .005" x .050" (0.127 mm X 1.27 mm) aperture.

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage and Operating Temperature Range ..... -40° C to +85° C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron)..... 240° C(1)

Input Diode

Forward DC Current..... 40 mA
Peak Forward Current (1 µs pulse width, 300 pps)..... 3.0 A
Reverse DC Voltage..... 2.0 V
Power Dissipation..... 100 mW(2)

Output Phototransistor

Collector-Emitter Voltage..... 30 V
Emitter-Collector Voltage..... 5.0 V
Power Dissipation..... 100 mW(2)

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
(2) Derate linearly 1.67 mW/° C above 25° C.
(3) All parameters tested using pulse technique.
(4) This dimension controlled at housing surface only.
(5) Methanol or isopropanol are recommended as cleaning agents. Plastic housings are soluble in chlorinated hydrocarbons and ketones.

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.7	V	I_F = 20 mA
I_R	Reverse Current		100	µA	V_R = 2.0 V
Output Phototransistor					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	I_C = 1.0 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current		100	nA	V_{CE} = 10 V
Coupled					
$V_{CE(SAT)}$	Saturation Voltage		0.40	V	I_C = 125 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current	250		µA	V_{CE} = 10 V, I_F = 20 mA

HEF4538B

MSI

DUAL PRECISION MONOSTABLE MULTIVIBRATOR

The HEF4538B is a dual retriggerable-resettable monostable multivibrator. Each multivibrator has an active LOW trigger/retrigger input ($\overline{I}_0$), an active HIGH trigger/retrigger input (I_1), an overriding active LOW direct reset input ($\overline{C}_D$), an output (O) and its complement ($\overline{O}$), and two pins (C_{TC}; RC_{TC}) for connecting the external timing components C_t and R_t. Typical pulse width variation over temperature range is ± 0,2%.

The HEF4538B may be triggered by either the positive or the negative edges of the input pulse and will produce an accurate output pulse with a pulse width range of 10 μs to infinity. The duration and accuracy of the output pulse are determined by the external timing components C_t and R_t. The output pulse width (T) is equal to $R_t \times C_t$. The linear design techniques in LOCMOS guarantee precise control of the output pulse width.

A LOW level at $\overline{CE}$ terminates the output pulse immediately.

Schmitt-trigger action in the trigger inputs makes the circuit highly tolerant to slower rise and fall times.

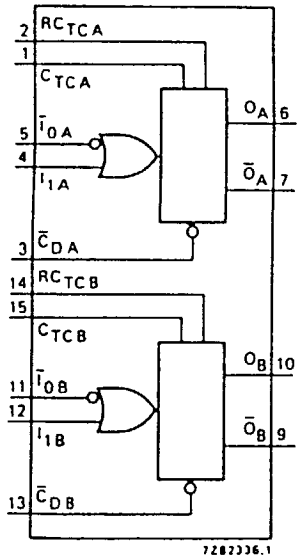


Fig. 1 Functional diagram.

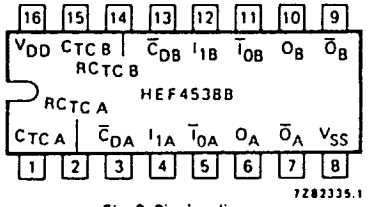


Fig. 2 Pinning diagram.

HEF4538BP : 16-lead DIL; plastic (SOT-38Z).
HEF4538BD: 16-lead DIL; ceramic (cerdip) (SOT-74).
HEF4538BT : 16-lead mini-pack; plastic (SO-16; SOT-109A).

PINNING

$\overline{I}_{0A}$, $\overline{I}_{0B}$	input (HIGH to LOW triggered)
I_{1A}, I_{1B}	input (LOW to HIGH triggered)
$\overline{C}_{DA}$, $\overline{C}_{DB}$	direct reset input (active LOW)
O_A, O_B	output
$\overline{O}_A$, $\overline{O}_B$	complementary output (active LOW)
$C_{TC\,A}$, $C_{TC\,B}$	external capacitor connections*
$RC_{TC\,A}$, $RC_{TC\,B}$	external capacitor/ resistor connections

* Always connected to ground.

FAMILY DATA; I_{DD} LIMITS category MSI: see Family specifications.

FUNCTION TABLE

inputs			outputs	
$\overline{I}_0$	I_1	$\overline{C}_D$	O	$\overline{O}$
↘	L	H	⊓	⊔
H	↗	H	⊓	⊔
X	X	L	L	H

H = HIGH state (the more positive voltage)
L = LOW state (the less positive voltage)
X = state is immaterial
↗ = positive-going transition
↘ = negative-going transition
⊓ = positive output pulse
⊔ = negative output pulse

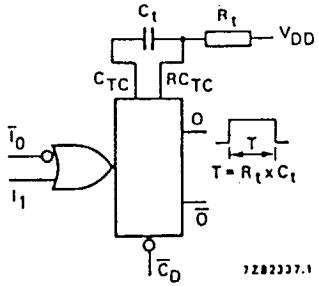


Fig. 4 Connection of the external timing components R_t and C_t.

TYPICAL APPLICATIONS

FIGURE 12 – RETRIGGERABLE MONOSTABLES CIRCUITRY

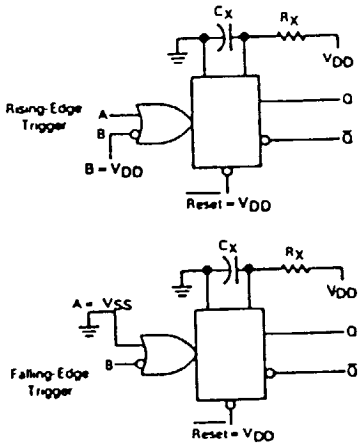
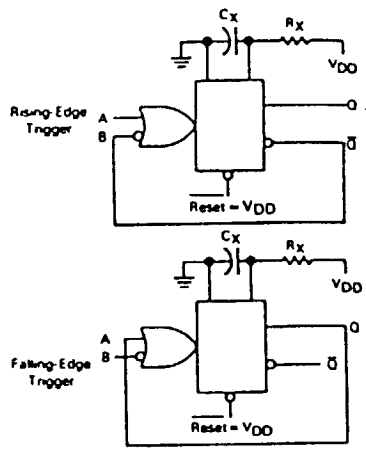


FIGURE 13 – NON-RETRIGGERABLE MONOSTABLES CIRCUITRY



DUAL BINARY COUNTER

The HEF4520B is a dual 4-bit internally synchronous binary counter. The counter has an active HIGH clock input (CP_0) and an active LOW clock input ($\overline{CP}_1$), buffered outputs from all four bit positions (O_0 to O_3) and an active HIGH overriding asynchronous master reset input (MR). The counter advances on either the LOW to HIGH transition of the CP_0 input if $\overline{CP}_1$ is HIGH or the HIGH to LOW transition of the $\overline{CP}_1$ input if CP_0 is LOW. Either CP_0 or $\overline{CP}_1$ may be used as the clock input to the counter and the other clock input may be used as a clock enable input. A HIGH on MR resets the counter (O_0 to O_3 = LOW) independent of CP_0, $\overline{CP}_1$.
Schmitt-trigger action in the clock input makes the circuit highly tolerant to slower clock rise and fall times.

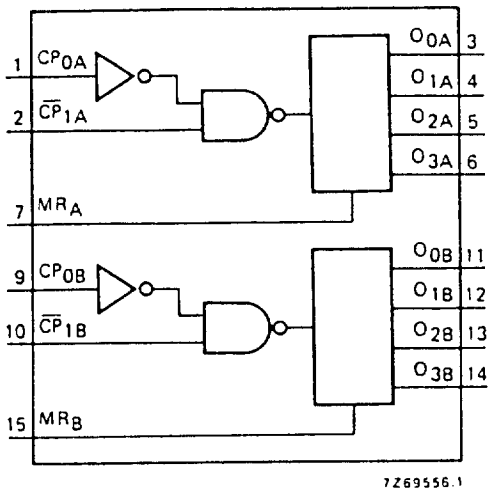


Fig. 1 Functional diagram.

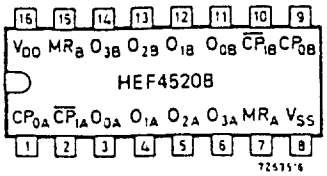


Fig. 2 Pinning diagram.

HEF4520BP : 16-lead DIL; plastic (SOT-38Z).
HEF4520BD : 16-lead DIL; ceramic (cerdip) SOT-74).
HEF4520BT : 16-lead mini-pack; plastic (SO-16; SOT-109A).

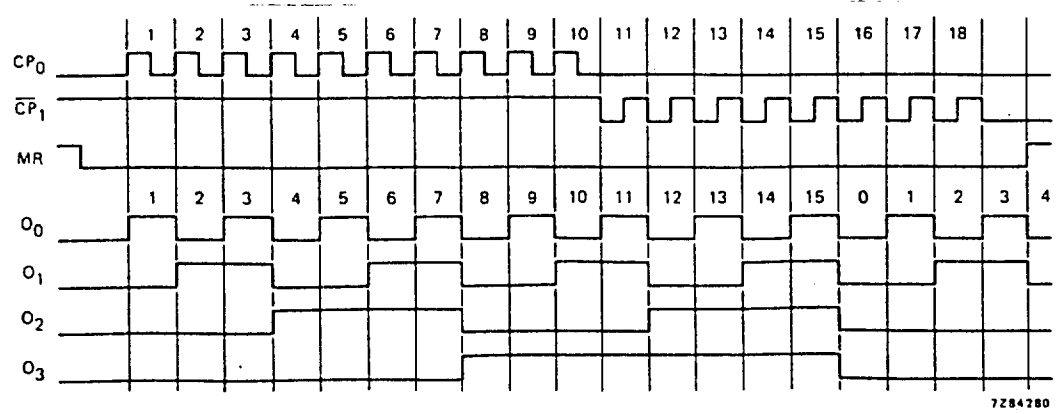
PINNING

CP_{0A}, CP_{0B}	clock inputs (L to H triggered)
$\overline{CP}_{1A}$, $\overline{CP}_{1B}$	clock inputs (H to L triggered)
MR_A, MR_B	master reset inputs
O_{0A} to O_{3A}	outputs
O_{0B} to O_{3B}	outputs

FUNCTION TABLE

CP_0	$\overline{CP}_1$	MR	mode
∫	H	L	counter advances
L	∖	L	counter advances
∖	X	L	no change
X	∫	L	no change
∫	L	L	no change
H	∖	L	no change
X	X	H	O_0 to O_3 = LOW

H = HIGH state (the more positive voltage)
L = LOW state (the less positive voltage)
X = state is immaterial
∫ = positive-going transition
∖ = negative-going transition



DUAL D-TYPE FLIP-FLOP

The HEF4013B is a dual D-type flip-flop which features independent set direct (S_D), clear direct (C_D), clock inputs (CP) and outputs (O,$\overline{O}$). Data is accepted when CP is LOW and transferred to the output on the positive-going edge of the clock. The active HIGH asynchronous clear-direct (C_D) and set-direct (S_D) are independent and override the D or CP inputs. The outputs are buffered for best system performance. Schmitt-trigger action in the clock input makes the circuit highly tolerant to slower clock rise and fall times.

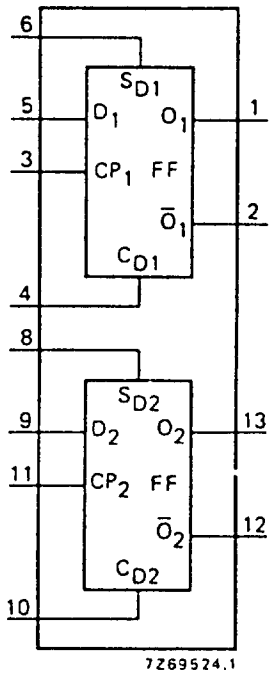


Fig. 1 Functional diagram.

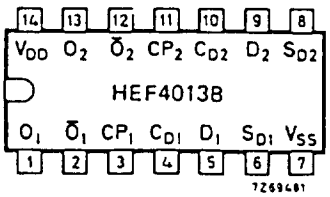


Fig. 2 Pinning diagram.

FAMILY DATA

I_{DD} LIMITS category FLIP-FLOPS

see Family Specifications

FUNCTION TABLES

inputs				outputs	
S_D	C_D	CP	D	O	$\overline{O}$
H	L	X	X	H	L
L	H	X	X	L	H
H	H	X	X	H	H

inputs				outputs	
S_D	C_D	CP	D	O_{n+1}	$\overline{O}_{n+1}$
L	L	∫	L	L	H
L	L	∫	H	H	L

H = HIGH state (the more positive voltage)
L = LOW state (the less positive voltage)
X = state is immaterial
∫ = positive-going transition
O_{n+1} = state after clock positive transition

PINNING

D data inputs
CP clock input (L to H edge-triggered)
S_D asynchronous set-direct input (active HIGH)
C_D asynchronous clear-direct input (active HIGH)
O true output
$\overline{O}$ complement output

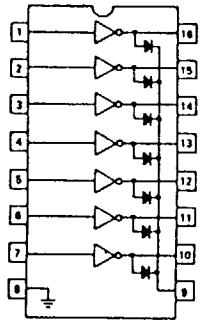
HEF4013BP : 14-lead DIL; plastic (SOT-27).
HEF4013BD: 14-lead DIL; ceramic (cerdip) (SOT-73).
HEF4013BT : 14-lead mini-pack; plastic (SO-14; SOT-108A).

DESCRIPTION :
Les 7 transistors Darlington NPN constituant ce réseau sont conçus pour commander des lampes, relais, tête d'imprimante etc. Chaque transistor est monté en collecteur ouvert avec une diode de protection. Des pointes de courant de 600 mA sont permises et un courant permanent de 500 mA est autorisé.

Valeurs limites (T_A = 25 °C)

Paramètres	Symb.	Valeur	Unité
Tension de sortie	V_O	50	V
Tension d'entrée (sauf MC1411)	V_I	30	V
Courant collecteur permanent	I_C	500	mA
Courant base permanent	I_B	25	mA
Plage de température de fonctionnement	T_A		°C
MC1411-16		– 20 à + 85	
MC1411B-16B		– 40 à + 85	
Plage de température de stockage	T_{stg}	– 55 à +150	°C
Température de jonction	T_J	150	°C
Puissance dissipée (par étage)	P_D	1	W
Puissance dissipée (boîtier)	P_{DT}	1,5	W
Résistance thermique (boîtier air)		125	°C/W

Brochage



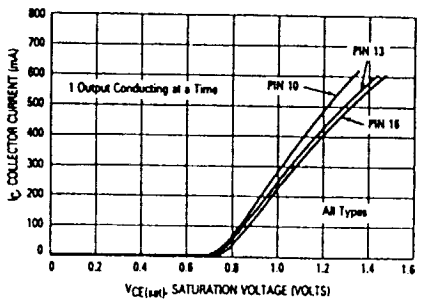
Caractéristiques électriques (T_A = 25 °C sauf mentions particulières)

Caractéristiques		Symbole	Min.	Typ.	Max.	Unités
Courant de fuite de sortie		I_{CEX}				µA
(V_O = 50 V, T_A = + 85 °C)	tous types		–	–	100	
(V_O = 50 V, T_A = + 25 °C)	tous types		–	–	50	
(V_O = 50 V, T_A = + 85 °C, V_I = 6,0 V)	MC1412,B		–	–	500	
(V_O = 50 V, T_A = + 85 °C, V_I = 1,0 V)	MC1416,B		–	–	500	
Tension de saturation collecteur-émetteur		$V_{CE\ (sat)}$				V
(I_C = 350 mA, I_B = 500 µA)	tous types		–	1,1	1,6	
(I_C = 200 mA, I_B = 350 µA)	tous types		–	0,95	1,3	
(I_C = 100 mA, I_B = 250 µA)	tous types		–	0,85	1,1	
Courant d'entrée passant		$I_{I(on)}$				mA
(V_I = 17 V)	MC1412,B		–	0,85	1,3	
(V_I = 3,85 V)	MC1413,B		–	0,93	1,35	
(V_I = 5,0 V)	MC1416,B		–	0,35	0,5	
(V = 12 V)	MC1416,B		–	1,0	1,45	
Tension d'entrée passante		$V_{I(on)}$				V
(V_{CE} = 2,0 V, I_C = 300 mA)	MC1412,B		–	–	13	
(V_{CE} = 2,0 V, I_C = 200 mA)	MC1413,B		–	–	2,4	
(V_{CE} = 2,0 V, I_C = 250 mA)	MC1413,B		–	–	2,7	
(V_{CE} = 2,0 V, I_C = 300 mA)	MC1413,B		–	–	3,0	
(V_{CE} = 2,0 V, I_C = 125 mA)	MC1416,B		–	–	5,0	
(V_{CE} = 2,0 V, I_C = 200 mA)	MC1416,B		–	–	6,0	
(V_{CE} = 2,0 V, I_C = 275 mA)	MC1416,B		–	–	7,0	
(V_{CE} = 2,0 V, I_C = 350 mA)	MC1416,B		–	–	8,0	
Courant d'entrée non passant (I_C = 500 µA, T_A = + 85 °C)	tous types	$I_{I(off)}$	50	100	–	µA
Gain continu en courant (V_{CE} = 2,0 V, I_C = 350 mA)	MC1411,B	h_{FE}	1000	–	–	–
Capacité d'entrée		C_I	–	15	30	pF
Temps d'établissement (50 % E_I à 50 % E_O)		t_{on}	–	0,25	1,0	µs
Courant de fuite des diodes (V_R = 50 V)	T_A = + 25 °C	I_R	–	–	50	µA
	T_A = + 85 °C		–	–	100	
Tension directe des diodes (I_F = 350 mA)		V_F	–	1,5	2,0	V

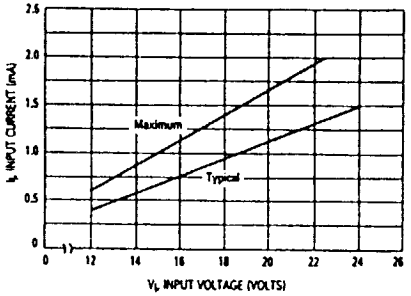
MC 1411, 12, 13, 16 d'après MOTOROLA

Courbes

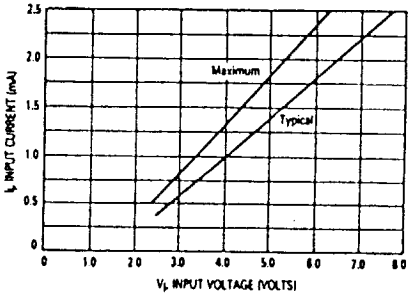
Caractéristiques de sortie



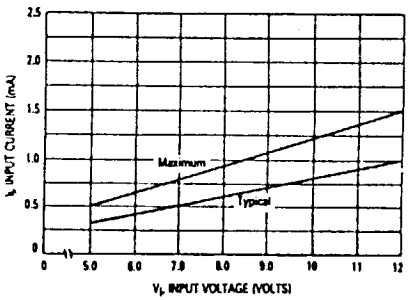
Caractéristiques d'entrée - MC 1412,B

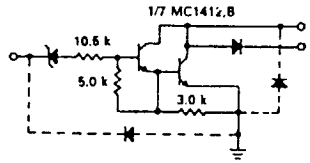


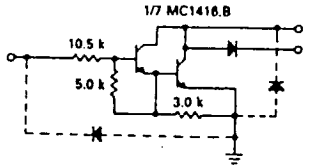
Caractéristiques d'entrée - MC 1413,B

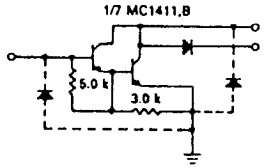


Caractéristiques d'entrée - MC 1416,B

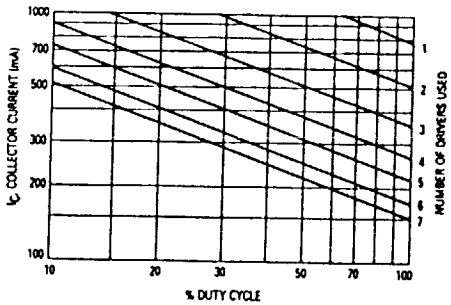


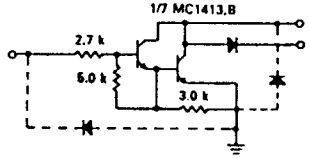






Courant collecteur maximum en fonction du rapport cyclique (et nombre de transistors en service)





RÉGULATEUR DE TENSION VARIABLE POSITIF 1,5 A

LM117/LM217/LM317

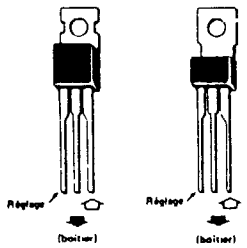
d'après National Semiconductor

DESCRIPTION :
Les LM117 sont des régulateurs de tension positive à 3 broches pouvant débiter 1,5 A sous une tension de sortie allant de 1,2 V à 37 V. Ils ne nécessitent que deux résistances externes. Ces circuits offrent une protection contre les surcharges (même si les circuits de réglage sont débranchés).

Valeurs limites

Puissance dissipée	Limitation interne
Tension différentielle entre l'entrée et la sortie	40 V
Plage de températures de jonction en fonctionnement	0 °C à + 125 °C
Température de stockage	– 65 °C à + 150 °C
Température d'une broche (soudage, 10 s)	300 °C

Boîtier TO-220 — Boîtier TO-202



Brochages
(d'après PUBLITRONIC)

Boîtier métallique TO-3 — Boîtier TO-39 (vu de dessous)

Caractéristiques électriques

Paramètres	Conditions	LM317 Min.	LM317 Typ.	LM317 Max.	Unités
Régulation de ligne	T_A = 25 °C, 3 V ≤ $V_{in} - V_{out}$ ≤ 40 V		0.01	0.04	%/V
Régulation en charge	T_A = 25 °C, 10 mA ≤ I_{out} ≤ I_{max} V_{out} ≤ 5 V V_{out} ≥ 5 V		5 0.1	25 0.5	mV %
Régulation thermique	T_A = 25 °C, Pulsation 20 ms		0.04	0.07	%/W
Courant de la broche de réglage Dérive du courant de la broche de réglage	10 mA ≤ I_L ≤ I_{max} 2,5 V ≤ ($V_{in} - V_{out}$) ≤ 40 V		50 0.2	100 5	µA µA
Tension de référence	3 ≤ ($V_{in} - V_{out}$) ≤ 40 V 10 mA ≤ I_{out} ≤ I_{max}, P ≤ P_{max}	1,20	1,25	1,30	V
Régulation de ligne	3 V ≤ $V_{in} - V_{out}$ ≤ 40 V		0.02	0.07	%/V
Régulation en charge	10 mA ≤ I_{out} ≤ I_{max} V_{out} ≤ 5 V V_{out} ≥ 5 V		20 0.3	70 1.5	mV %
Stabilité en température	T_{min} ≤ T_j ≤ T_{max}		1		%
Courant de charge minimal	$V_{in} - V_{out}$ = 40 V		3.5	10	mA
Courant maximal	$V_{in} - V_{out}$ ≤ 15 V boîtier K et T boîtier H et P $V_{in} - V_{out}$ = 40 V boîtier K et T boîtier H et P	1,5 0.5	2,2 0.8 0.4 0.07		A A A A
Tension de bruit RMS en % de V_{out}	T_A = 25 °C, 10 Hz ≤ f ≤ 10 kHz		0.003		%
Taux de réjection de l'ondulation résiduelle	V_{out} = 10 V, f = 120 Hz C_{ADJ} = 10 µF	66	65 80		dB dB
Stabilité à long terme	T_A = 125 °C		0,3	1	%
Résistance thermique de la jonction par rapport au boîtier	Boîtier H Boîtier K Boîtier T Boîtier P		12 2,3 4 12	15 3	°C/W °C/W °C/W °C/W

RÉGULATEUR DE TENSION VARIABLE POSITIF 1,5 A

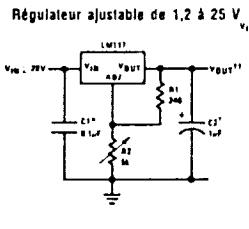
LM117/LM217/LM317

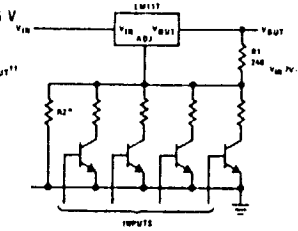
d'après National Semiconductor

Applications

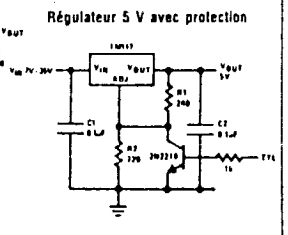
Sélection digitale de la sortie

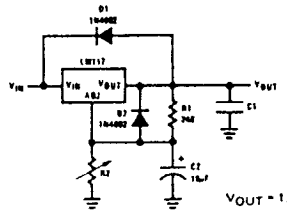
Régulateur ajustable de 1,2 à 25 V





Régulateur 5 V avec protection



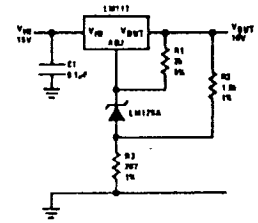


$$V_{OUT} = 1.25V \left(1 + \frac{R2}{R1}\right) + R2I_{ADJ}$$

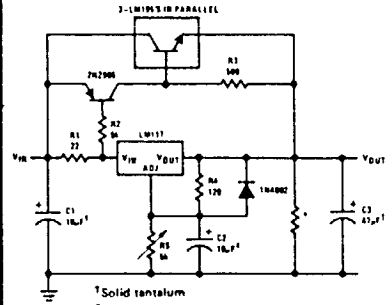
D1 protects against C1
D2 protects against C2

Régulateur avec diodes de protection

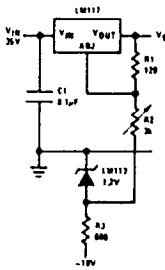
Régulateur 10 V de haute stabilité



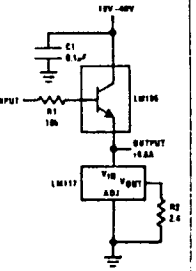
Régulateur ajustable grand courant



Régulateur 0 à 30 V



Suiveur de puissance



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SGS-THOMSON MICROELECTRONICS

NE555
SA555 - SE555

GENERAL PURPOSE SINGLE BIPOLAR TIMERS

- LOW TURN OFF TIME
- MAXIMUM OPERATING FREQUENCY GREATER THAN 500kHz
- TIMING FROM MICROSECONDS TO HOURS
- OPERATES IN BOTH ASTABLE AND MONOSTABLE MODES
- HIGH OUTPUT CURRENT CAN SOURCE OR SINK 200mA
- ADJUSTABLE DUTY CYCLE
- TTL COMPATIBLE
- TEMPERATURE STABILITY OF 0.005% PER°C

N
DIP8
(Plastic Package)

D
SO8
(Plastic Micropackage)

DESCRIPTION

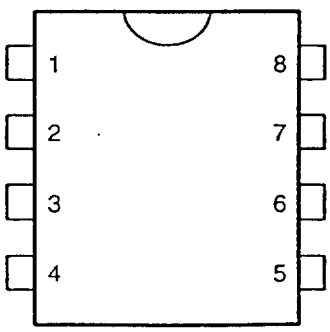
The NE555 monolithic timing circuit is a highly stable controller capable of producing accurate time delays or oscillation. In the time delay mode of operation, the time is precisely controlled by one external resistor and capacitor. For a stable operation as an oscillator, the free running frequency and the duty cycle are both accurately controlled with two external resistors and one capacitor. The circuit may be triggered and reset on falling waveforms, and the output structure can source or sink up to 200mA. The NE555 is available in plastic and ceramic minidip package and in a 8-lead micropackage and in metal can package version.

ORDER CODES

Part Number	Temperature Range	Package	
		N	D
NE555	0°C, 70°C	•	•
SA555	–40°C, 105°C	•	•
SE555	–55°C, 125°C	•	•

533-01.TBL

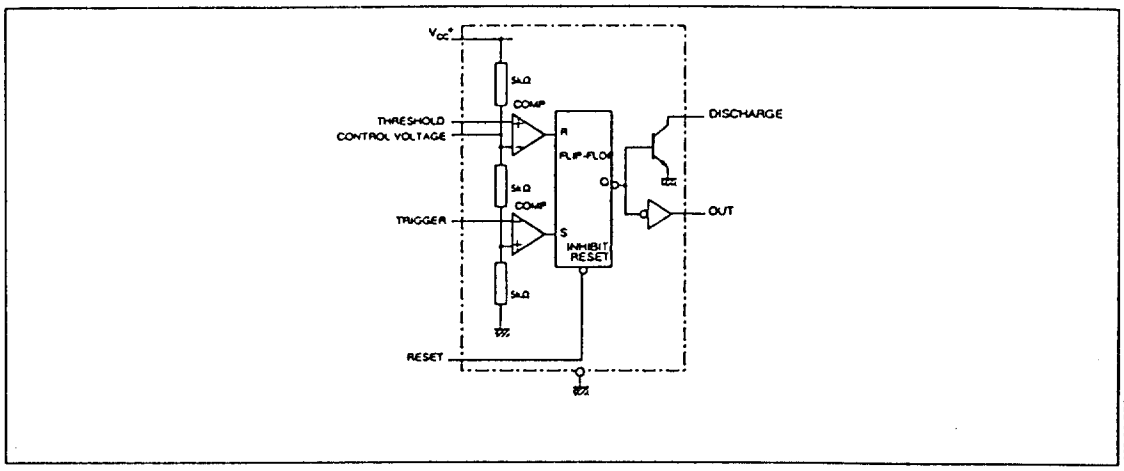
PIN CONNECTIONS (top view)



1 - GND
2 - Trigger
3 - Output
4 - Reset
5 - Control voltage
6 - Threshold
7 - Discharge
8 - Vcc

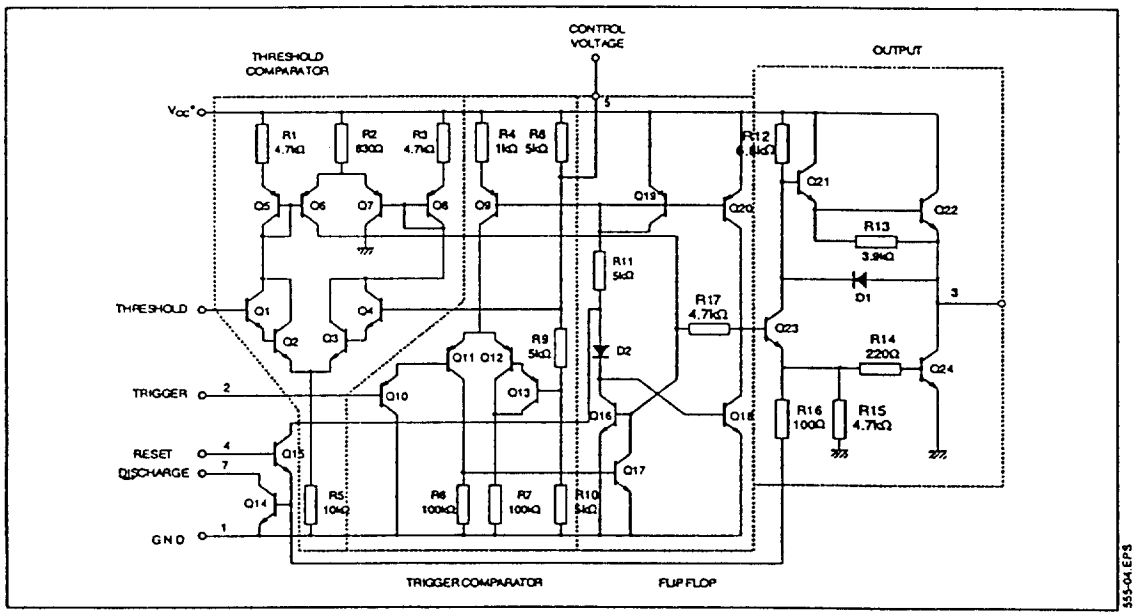
NE555/SA555/SE555

BLOCK DIAGRAM



555-03.EPS

SCHEMATIC DIAGRAM



555-04.EPS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{cc}	Supply Voltage		18	V
T_{oper}	Operating Free Air Temperature Range	for NE555 for SA555 for SE555	0 to 70 –40 to 105 –55 to 125	°C
T_j	Junction Temperature		150	°C
T_{stg}	Storage Temperature Range		–65 to 150	°C

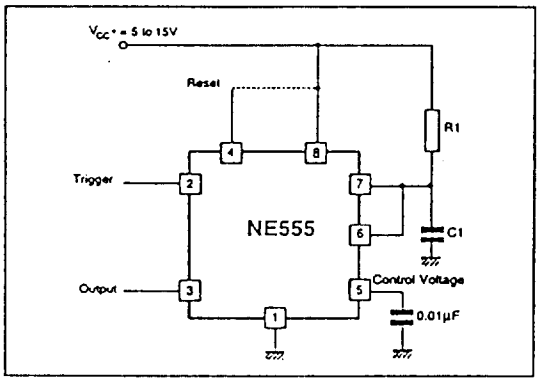
555-02.TBL

APPLICATION INFORMATION

MONOSTABLE OPERATION

In the monostable mode, the timer functions as a one-shot. Referring to figure 10 the external capacitor is initially held discharged by a transistor inside the timer.

Figure 10



The circuit triggers on a negative-going input signal when the level reaches 1/3 Vcc. Once triggered, the circuit remains in this state until the set time has elapsed, even if it is triggered again during this interval. The duration of the output HIGH state is given by $t = 1.1\ R_1C_1$ and is easily determined by figure 12.

Notice that since the charge rate and the threshold level of the comparator are both directly proportional to supply voltage, the timing interval is independent of supply. Applying a negative pulse simultaneously to the reset terminal (pin 4) and the trigger terminal (pin 2) during the timing cycle discharges the external capacitor and causes the cycle to start over. The timing cycle now starts on the positive edge of the reset pulse. During the time the reset pulse in applied, the output is driven to its LOW state.

When a negative trigger pulse is applied to pin 2, the flip-flop is set, releasing the short circuit across the external capacitor and driving the output HIGH. The voltage across the capacitor increases exponentially with the time constant $\tau = R_1C_1$. When the voltage across the capacitor equals 2/3 V_{cc}, the comparator resets the flip-flop which then discharge the capacitor rapidly and drivers the output to its LOW state.

Figure 11 shows the actual waveforms generated in this mode of operation.

When Reset is not used, it should be tied high to avoid any possibly or false triggering.

Figure 11

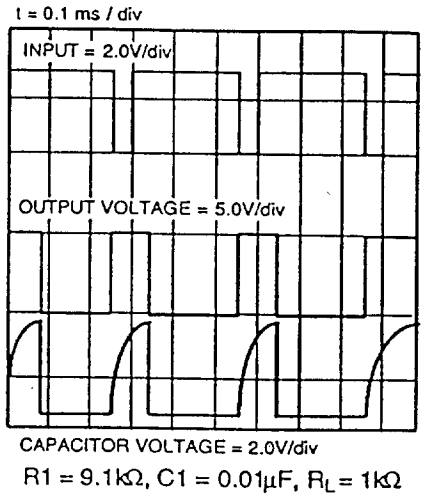
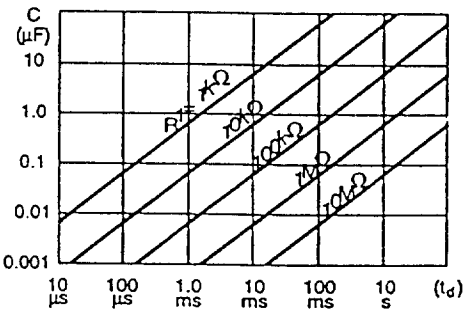


Figure 12



ASTABLE OPERATION

When the circuit is connected as shown in figure 13 (pin 2 and 6 connected) it triggers itself and free runs as a multivibrator. The external capacitor charges through R_1 and R_2 and discharges through R_2 only. Thus the duty cycle may be precisely set by the ratio of these two resistors.

In the astable mode of operation, C_1 charges and discharges between 1/3 V_{cc} and 2/3 Vcc. As in the triggered mode, the charge and discharge times and therefore frequency are independent of the supply voltage.