

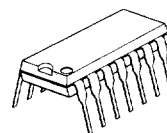
DUAL TIMER

■ GENERAL DESCRIPTION

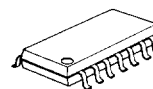
The NJM556 dual monolithic timing circuit is a highly stable controller capable of producing accurate time delays or oscillation. In the time delay mode, delay time is precisely controlled by only two external parts: a resistor and a capacitor. For operation as an oscillator, both the free running frequency and the duty cycle are accurately controlled by two external resistors and a capacitor.

Terminals are provided for triggering and resetting. The circuit will trigger and reset on falling waveforms. The output can source or sink up to 200mA or drive TTL circuits.

■ PACKAGE OUTLINE



NJM556D

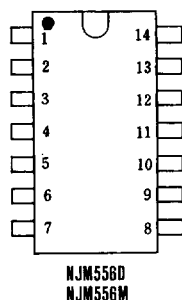


NJM556M

■ FEATURES

- Dual Timer Circuits
- Less number of External Components
- Package Outline DIP14, DMP14
- Bipolar Technology

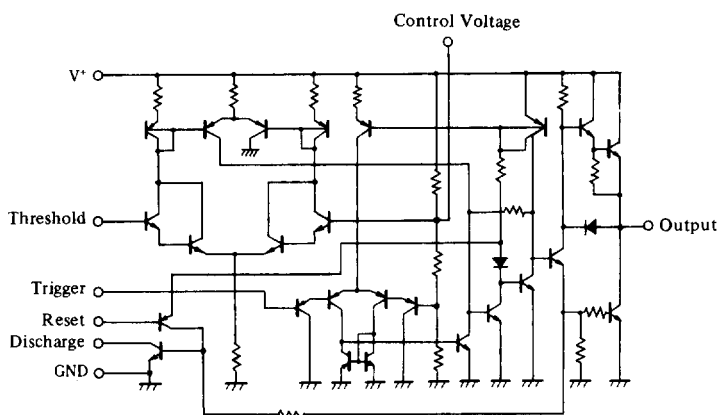
■ PIN CONFIGURATION



PIN FUNCTION

- | | |
|----------------|--------------------|
| 1. Discharge A | 8. Trigger B |
| 2. Threshold A | 9. Output B |
| 3. Control A | 10. Reset B |
| 4. Reset A | 11. Control B |
| 5. Output A | 12. Threshold B |
| 6. Trigger A | 13. Discharge B |
| 7. Ground | 14. V ⁺ |

■ EQUIVALENT CIRCUIT (1/2 Shown)





■ **ABSOLUTE MAXIMUM RATINGS**

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	18	V
Power Dissipation	P _D	(DIP14) 570 (DMP14) 700(note)	mW mW
Operating Temperature Range	T _{opr}	-20 ~ +75	°C
Storage Temperature Range	T _{stg}	-40 ~ +125	°C

(note) At on PC board

■ **ELECTRICAL CHARACTERISTICS**

(V⁺=+5 ~ +15V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V ⁺		4.5	—	16	V
Operating Current (Note 2)	I _{CC}	V ⁺ =5V, R _L =∞ (Each Section)	—	3	6	mA
Operating Current (Note 2)	I _{CC}	V ⁺ =15V, R _L =∞ (Each Section)	—	10	14	mA
Threshold Voltage	V _{TH}		—	2/3	—	×V ⁺
Trigger Voltage	V _T	V ⁺ =15V	—	5	—	V
Trigger Voltage	V _T	V ⁺ =5V	—	1.67	—	V
Trigger Current	I _T		—	0.5	—	μA
Reset Voltage	V _R		0.4	0.7	1.0	V
Reset Current	I _R		—	0.1	—	mA
Threshold Current	I _T		—	0.03	0.1	μA
Control Voltage Level	V _{CL}	V ⁺ =15V	9	10	11	V
Control Voltage Level	V _{CL}	V ⁺ =5V	2.6	3.33	4	V
Output Voltage Drop (Low)	V _{OL}	V ⁺ =15V I _{SINK} =10mA	—	0.1	0.25	V
Output Voltage Drop (Low)	V _{OL}	V ⁺ =15V I _{SINK} =50mA	—	0.4	0.75	V
Output Voltage Drop (Low)	V _{OL}	V ⁺ =15V I _{SINK} =100mA	—	2	2.75	V
Output Voltage Drop (Low)	V _{OL}	V ⁺ =15V I _{SINK} =200mA	—	2.5	—	V
Output Voltage Drop (Low)	V _{OL}	V ⁺ =5V I _{SINK} =5mA	—	0.25	0.35	V
Output Voltage Drop (High)	V _{OH}	V ⁺ =15V I _{SOURCE} =200mA	—	12.5	—	V
Output Voltage Drop (High)	V _{OH}	V ⁺ =15V I _{SOURCE} =100mA	12.75	13.3	—	V
Output Voltage Drop (High)	V _{OH}	V ⁺ =15V I _{SOURCE} =40mA	—	13.5	—	V
Output Voltage Drop (High)	V _{OH}	V ⁺ =5V I _{SOURCE} =100mA	2.75	3.3	—	V

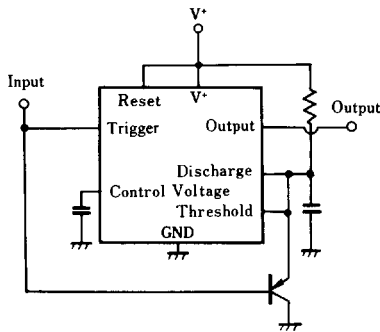
(Note 2) Operating Current when output high typically 2mA less.

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Timing Error (Free Running)	E _{ta}	R _A , R _B =2k~100kΩ, C=0.1μF	—	2.25	—	%
vs. Temperature	E _{tb}	R _A , R _B =2k~100kΩ, C=0.1μF	—	150	—	ppm/°C
(Note 3) vs. Operating Voltage	E _{tc}	R _A , R _B =2k~100kΩ, C=0.1μF	—	0.3	—	%/Volt
Timing Error (Monostable)	E _{tm}	R _A , R _B =2k~100kΩ, C=0.1μF	—	0.75	—	%
vs. Temperature	E _{tb}	R _A , R _B =2k~100kΩ, C=0.1μF	—	50	—	ppm/°C
(Note 3) vs. Operating Voltage	E _{tm}	R _A , R _B =2k~100kΩ, C=0.1μF	—	0.1	—	%/Volt
Matching Characteristics			—	0.5	1	%
Between Each Section vs. Temperature			—	±10	—	ppm/°C
vs. Operating Voltage			—	0.2	0.5	%/Volt

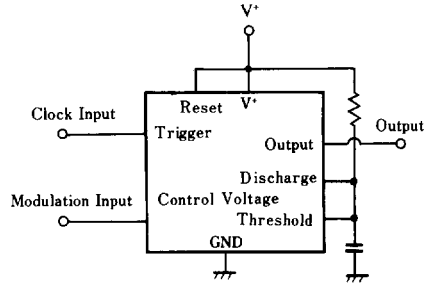
(Note 3): Tested at V⁺=+5V~+15V



TYPICAL APPLICATION



Missing pulse Detection Circuit

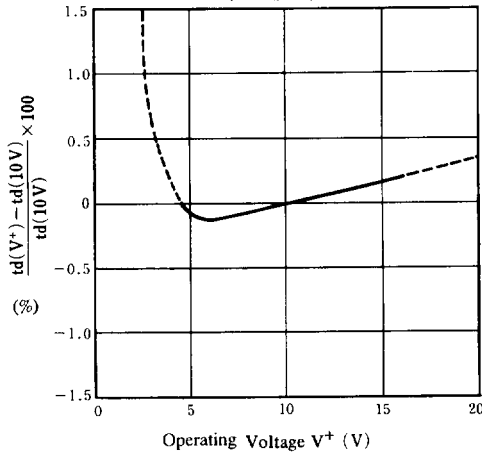


Pulse Width Modulation Circuit

TYPICAL CHARACTERISTICS

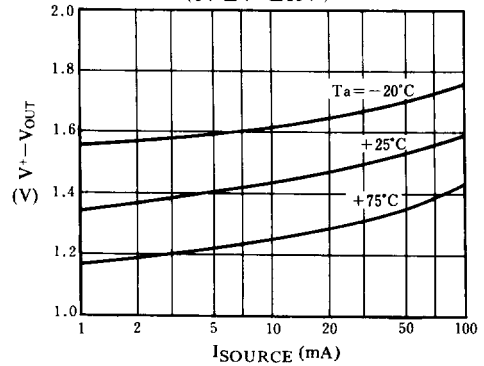
Delay Time vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



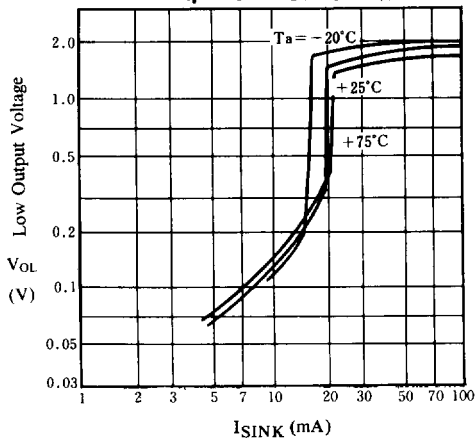
High Output Voltage Drop vs. Output Source Current

($5V \leq V^+ \leq 15V$)



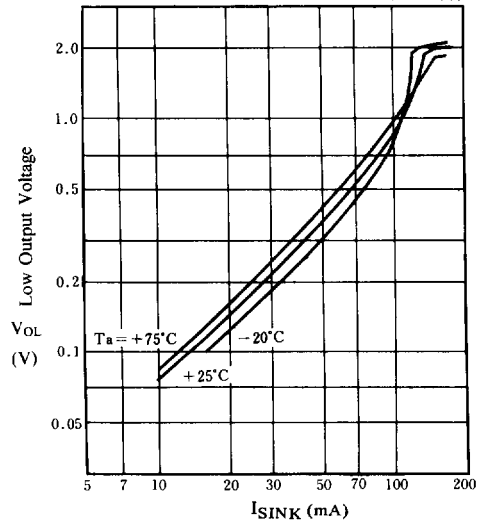
Low Output Voltage vs. Output Sink Current

($V^+ = 5V$)



Low Output Voltage vs. Output Sink Current

($V^+ = 15V$)





■ TYPICAL CHARACTERISTICS

