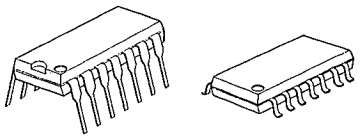
DUAL TIMER

■ 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

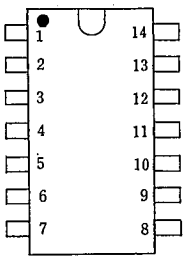


NJM556D NJM556M

■ FEATURES

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

■ PIN CONFIGURATION

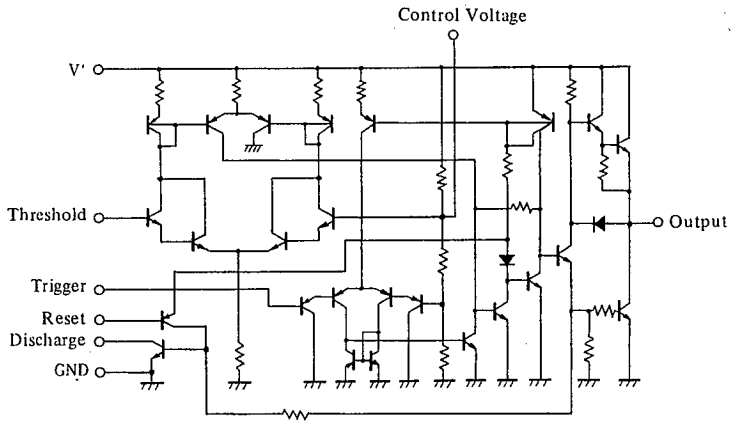


NJM556D
NJM556M

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℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	18	V
Power Dissipation	P_D	(DIP14) 570	mW
		(DMP14) 700(note)	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

(note) At on PC board

■ ELECTRICAL CHARACTERISTICS

(V^+=+5～+15V, Ta=25℃)

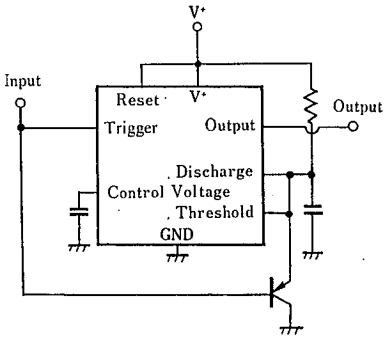
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	V^+		4.5	—	16	V
Operating Current (Note 2)	I_{CC}	V^+=5V, R_L=∞ (Each Section)	—	3	6	mA
Operating Current (Note 2)	I_{CC}	V^+=15V, R_L=∞ (Each Section)	—	10	14	mA
Threshold Voltage	V_{TH}		—	2/3	—	×V^+
Trigger Voltage	V_T	V^+=15V	—	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.

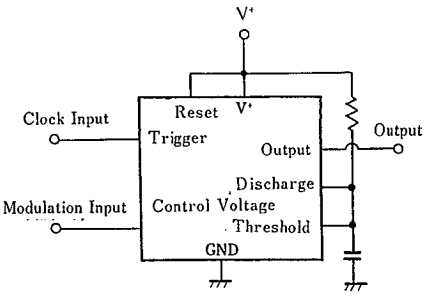
PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Timing Error	Initial Accuracy	E_{ta}	R_A, R_B=2k～100kΩ, C=0.1μF	—	2.25	—	%
(Free Running)	vs. Temperature	E_{ta}	R_A, R_B=2k～100kΩ, C=0.1μF	—	150	—	ppm/°C
(Note 3)	vs. Operating Voltage	E_{ta}	R_A, R_B=2k～100kΩ, C=0.1μF	—	0.3	—	%/Volt
Timing Error	Initial Accuracy	E_{tm}	R_A, R_B=2k～100kΩ, C=0.1μF	—	0.75	—	%
(Monostable)	vs. Temperature	E_{tm}	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	Initial Accuracy			—	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 Ditection Circuit

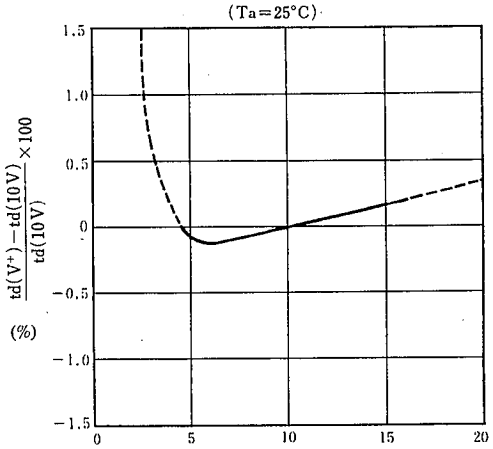


Pulse Width Moduration Circuit

■ TYPICAL CHARACTERISTICS

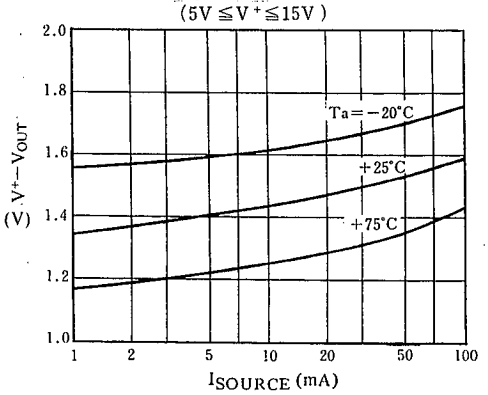
Delay Time vs. Operating Voltage

(Ta=25°C)

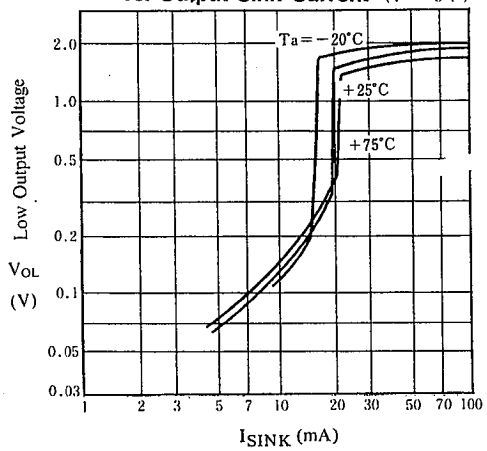


High Output Voltage Drop vs. Output Source Current

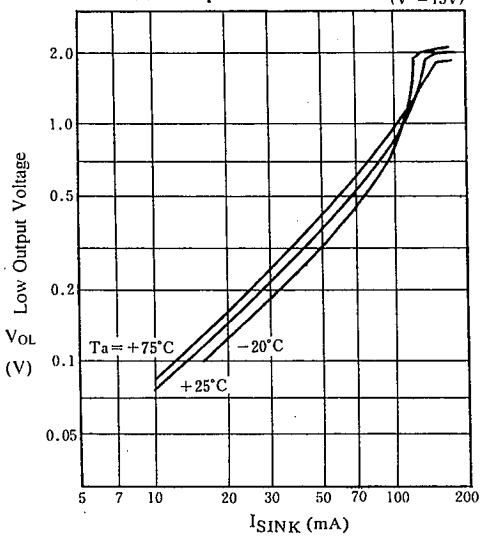
(5V ≦ V+ ≦ 15V)



Low Output Voltage vs. Output Sink Current (V+ = 5 V)



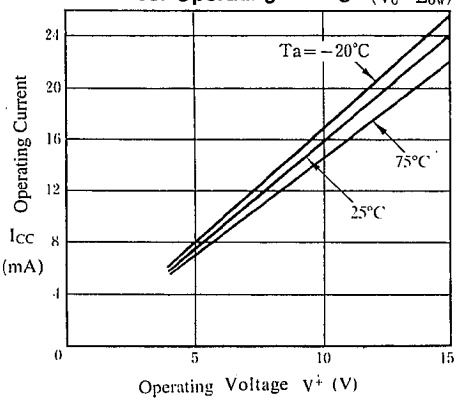
Low Output Voltage vs. Output Sink Current (V+ = 15V)



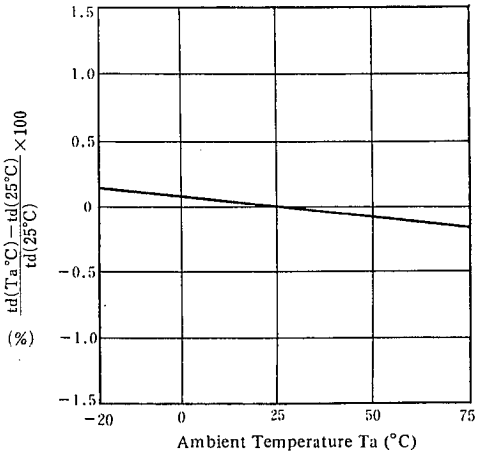
6

■ TYPICAL CHARACTERISTICS

Operating Current vs. Operating Voltage (V_O=L_{OW})



Delay time vs. Temperature (V^+=10V)



MEMO