

VIDEO SYNCHRONOUS DETECTOR

■ GENERAL DESCRIPTION

The NJM2220/2230 discriminate existence and fineness of video signal. It is applicable to VCR, TV, Video camera, Hi-Fi VCR, on screen display and others.

■ FEATURES

- Operating Voltage (+4.5V~+13V)
- Package Outline DMP8, SIP9
- Bipolar Technology

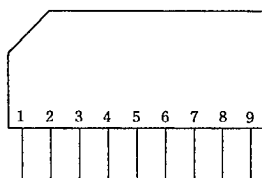
■ RECOMMENDED OPERATING CONDITION

- Operating voltage: $V^+ = 4.75 \sim 10V$

■ APPLICATION

- Video camera, other video equipment

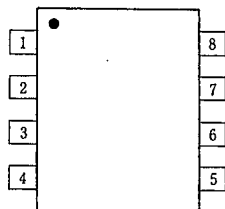
■ PIN CONFIGURATION



NJM2220S

PIN FUNCTION

1. M.M Time Constant set
2. SYNC Input (Comp, N, V SYNC)
3. SYNC Output
4. SSG SYNC Input
5. GND
6. SYNC DET, Judgement Control
7. SYNC DET
8. M.M Smoothing
9. V^+ 5~10V

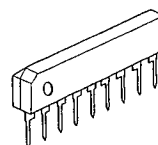


NJM2230M

PIN FUNCTION

1. M.M Time Constant Set
2. SYNC Input (Comp, H, V SYNC)
3. SYNC Output
4. SSG SYNC Input
5. GND
6. SYNC DET, Judgement Control
7. M.M Smoothing
8. V^+ 5~10V

■ PACKAGE OUTLINE



NJM2220S



NJM2230M

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	12	V
Power Dissipation	Pd	(SIP9) 500	mW
		(DMP8) 300	mW
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

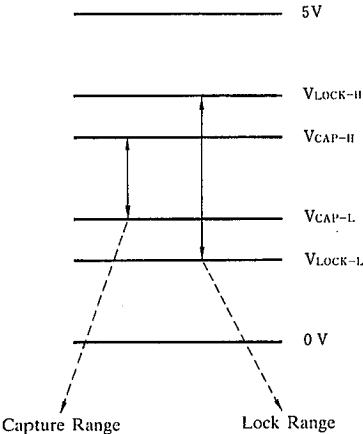
■ ELECTRICAL CHARACTERISTICS

(V*=5V, Ta=25°C)

PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current		I _{CC}		—	8	11	mA
Schmitt Circuit CAP Voltage	H side	V _{CAP-H}	(Note 1)	2.07	2.22	2.37	V
	L side	V _{CAP-L}	(Note 1)	1.57	1.72	1.87	V
Schmitt Circuit LOCK Voltage	H side	V _{LOCK-H}	(Note 1)	2.53	2.68	2.83	V
	L side	V _{LOCK-L}	(Note 1)	1.25	1.40	1.55	V
Mono-Multi Output Width		W _{MM}	(Note 2)	—	25	—	μsec
Input Threshold Level	2P	V _{TH-2}		1.0	1.5	2.0	V
	4P	V _{TH-4}		1.0	1.5	2.0	V
	6P	V _{TH-6}		—	0.8	1.4	V
Output Voltage Pin 7	H side	V _{7-H}		4.9	5.0	—	V
	L side	V _{7-L}		—	0.1	0.3	V
Output Voltage Pin 6	H side	V _{6-H}		3.6	4.0	—	V
	L side	V _{6-L}		—	—	0.1	V
Output Voltage Pin 3	H side	V _{3-H}		4.9	5.0	—	V
	L side	V _{3-L}		—	0.1	0.3	V
M.M Smoothed D.C. Voltage		V _B (V ₇)	Pin 2=2V	2.9	3.2	3.5	V

(): Apply to 2230M

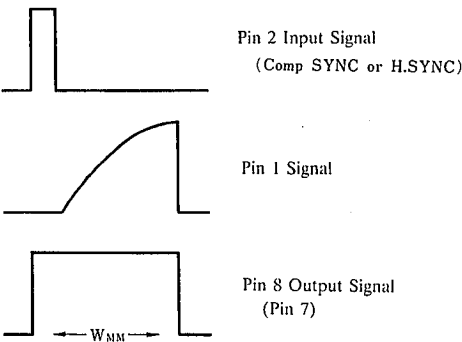
(Note 1)



ITEM	V _{CAP-L}	V _{LOCK-H}	V _{CAP-H}	V _{LOCK-L}					
Pin 8 Voltage (Pin 7)	0	→	5	→	0				
Pin 6 Voltage	L	→	H	→	L	→	H	→	L
Pin 7 Voltage	H	→	L	→	H	→	L	→	H

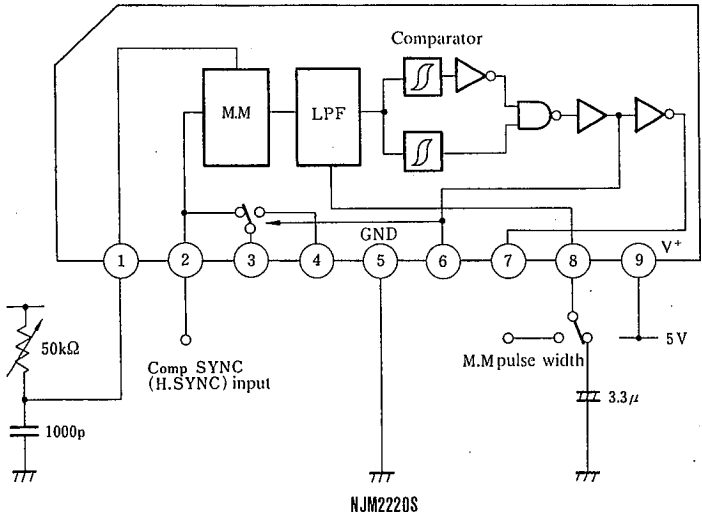
Measure Pin 8 (Pin 7) DC voltage at a moment when Pin 6 output voltage turns state.

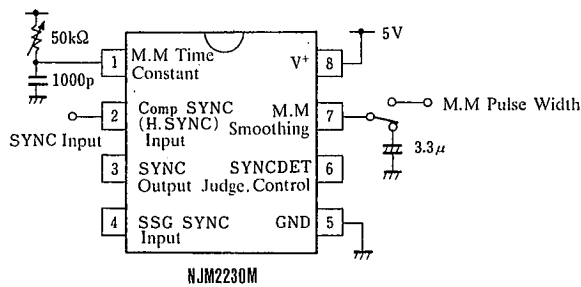
(Note 2)



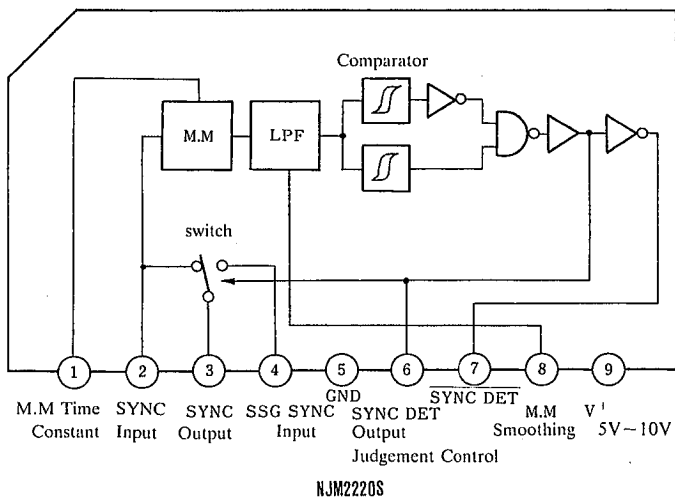
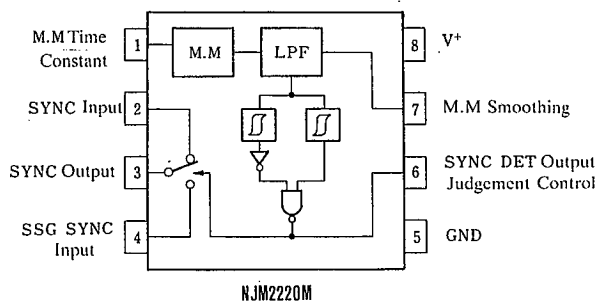
Adjust Pin 8 (Pin 7) DC Voltage to 2V (at V⁺=5V) by varying Pin 1 outer resistor, and test Pin 8 output pulse width after taking off Pin 8 outer capacitor.

■ TEST CIRCUIT



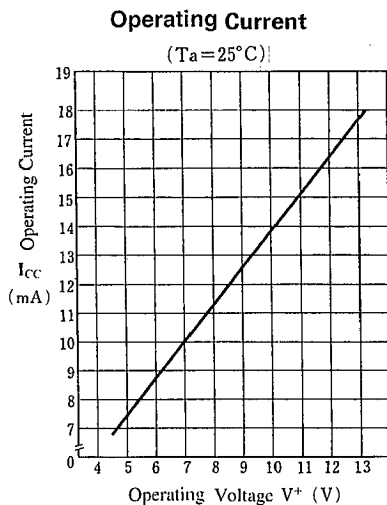
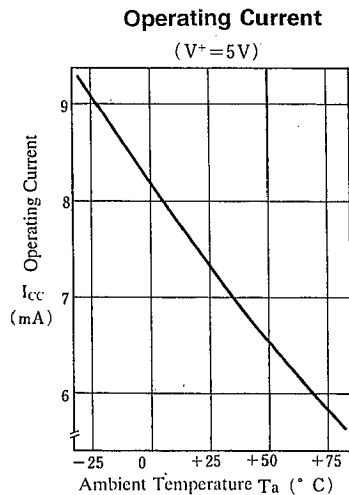
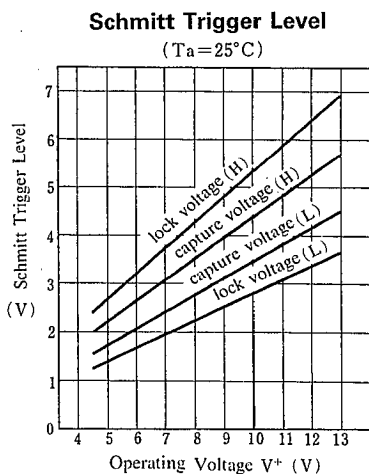
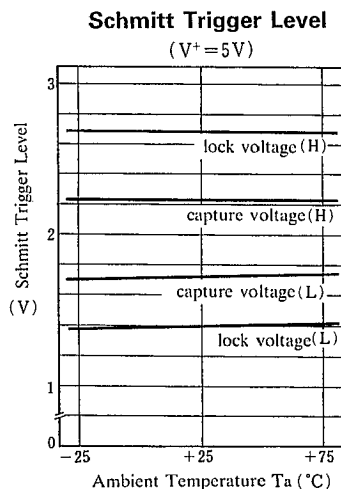


■ OPERATIVE PRINCIPLE

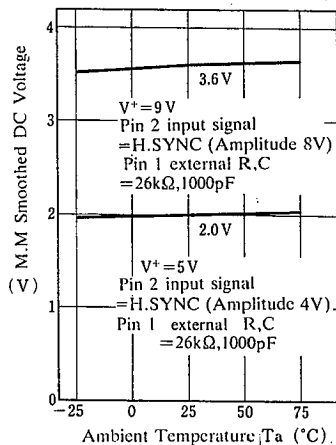


- M.M: Varies duty ratio of output signal depended on input synchronous signal condition (irregular, on signal).
- LPF: Converts M.M. output signal to DC level. The more larger the duty ratio is, DC level is clamped at $V^+/2+0.7$ (V).
- Comparator: Outputs discriminating signal of input signal by DC level of LPF output. Stabilized output signal can be obtained due to that the hysteresis is given to the output.
- Switch: Makes exchanging operation of SYNC Input and SSG SYNC Input signal by discriminating signal from comparator or Pin 6 signal of SYNC DET Output Judge Control.

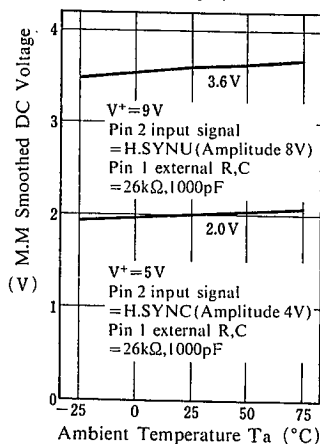
■ TYPICAL CHARACTERISTICS



M.M Smoothed DC Voltage
(Carbon film resistor-polyster film Capacitor)



M.M Smoothed DC Voltage
(Metal film resistor-polyster film Capacitor)



MEMO

[CAUTION]

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