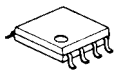
VIDEO SYNCHRONOUS DETECTOR

■ GENERAL DESCRIPTION

The **NJM2230** discriminate existence and fineness of video signal. It is applicable VCR, TV, Video camera, Hi-Fi VCR, on screen display and others.

■ PACKAGE OUTLINE



NJM2230M

■ FEATURES

- Operating Voltage (+4.7V to + 13V)
- Package Outline DMP8
- Bipolar Technology

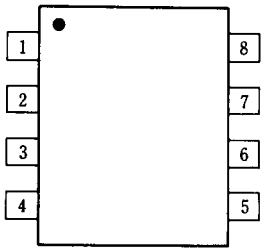
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage V^+=4.75 to 10V

■ APPLICATION

- Video camera, other video equipment

■ PIN CONFIGURATION



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

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

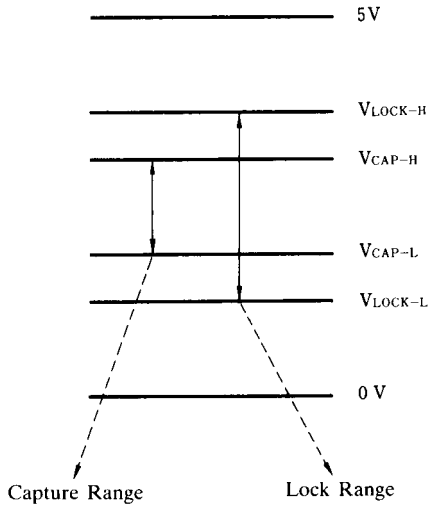
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	12	V
Power Dissipation	P_D	(DMP8) 300	mW
Operating Temperature Range	T_{opr}	-40 to +85	°C
Storage Temperature Range	T_{stg}	-40 to +125	°C

■ ELECTRICAL CHARACTERISTICS

(V^+=5V, Ta=25°C)

PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current		Icc		-	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_7	Pin 2=2V	2.9	3.2	3.5	V

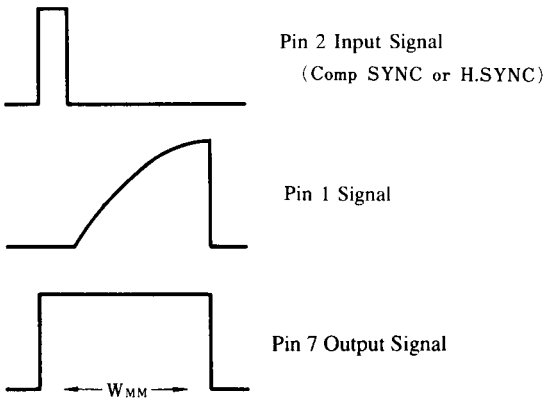
(Note 1)



ITEM	V_{CAP-L}	V_{LOCK-H}	V_{CAP-H}	V_{LOCK-L}
Pin 7 Voltage	0	→ 5	→	0
Pin 6 Voltage	L	→ H →	L →	H → L

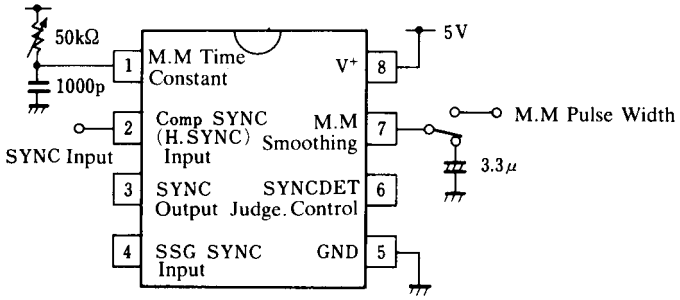
Measure Pin 7 Voltage at a moment when Pin 6 output voltage turns state.

(Note 2)



Adjust Pin 7 DC Voltage to 2V (at V^+=5V) by varying Pin 1 outer resistor, and test Pin7 output pulse width after taking off Pin7 outer capacitor.

■ TEST CIRCUIT



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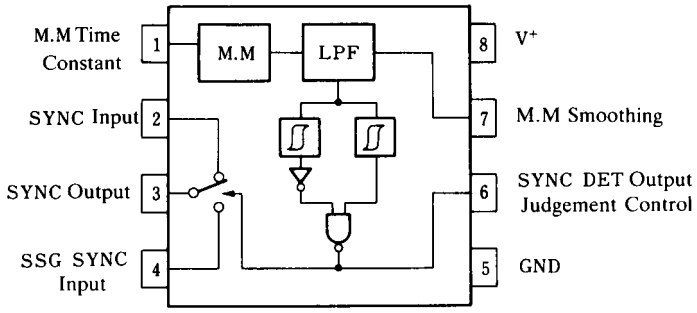
■ OPERATIVE PRINCIPLE



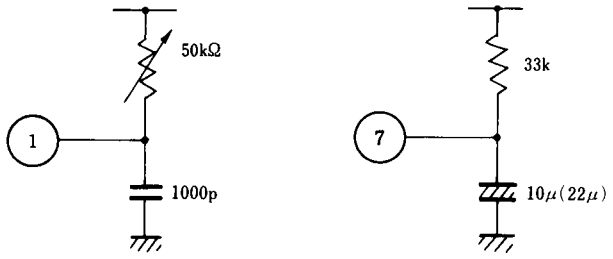
NJM2230M

- 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 Judgement Control.

■ TERMINAL FUNCTION

PIN NO.	EXPLANATION
1	Connect resistor and capacitor for M. M. time constant. (Value of R, C is changed by a kind of Pin 2 SYNC Input signal.)
2	Input synchronous signal (Comp SYNC, H. SYNC or V. SYNC) separated from video signal.
3	It outputs Pin 2 or Pin 4 signal by Pin 2 signal condition. ● Pin 2 input signal; normal → Output Pin 2 input signal. ● Pin 2 input signal; abnormal → Output Pin 4 input signal.
4	Input artificial synchronous signal generated by SSG (Sync. Signal Generator).
5	GND
6	Input DC voltage (H or L state) by Pin 2 signal condition. When outer SW is turned to 1, Pin 2 input signal is forced to flow out from Pin 3. ● Pin 2 input signal; normal → H state ● Pin 2 input signal; abnormal → L state
7	Connect capacitor for smoothing M. M. (Value depends on Pin 2 input Signal). Adjust Pin 1 attached volume to the level that Pin 8 voltage becomes 2V (V^+=5V) with Pin 2 signal. If V^+>5V, then V_7=2/5V^+ (V)
8	V^+: 5 to 10V

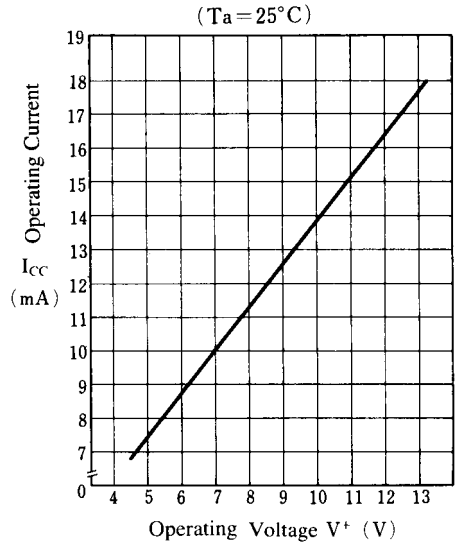
(Note) In some application, it happens that still, search or tracking is large off the point and unordinary SYNC or lack of SYNC occurs. If it is not desirable, you can do in SYNC condition by using Pin 6 as control input terminal.
Also we recommend sensitivity adjustment with external parts. by it error detection of unordinary SYNC improve.
Lower a time constant of M.M. by changing external resistance value into a small value.
In this case synchronous peak voltage at Pin7 becomes lower and so makes to 2V (V+=5V) by putting resistance in to V+. (Adjust to 2V by Pin1 external resistance)



■ TYPICAL CHARACTERISTICS

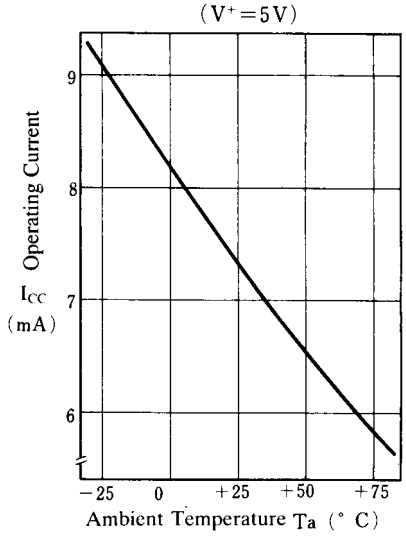
Operating Current

(Ta=25°C)



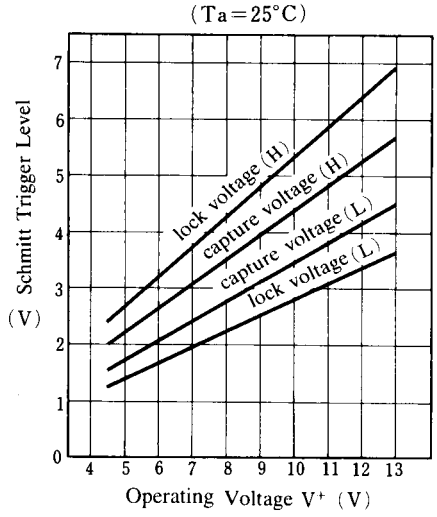
Operating Current

(V+=5V)



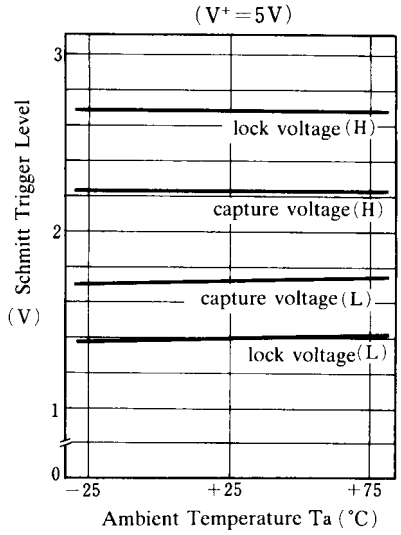
Schmitt Trigger Level

(Ta=25°C)



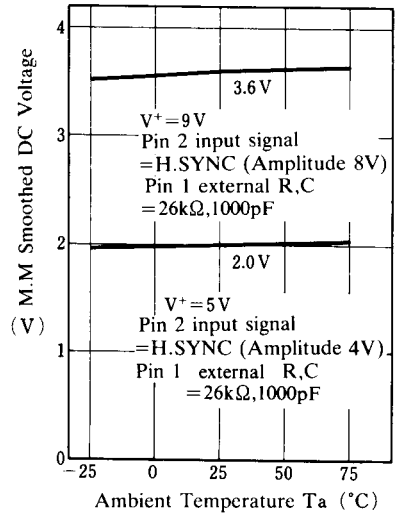
Schmitt Trigger Level

(V+=5V)



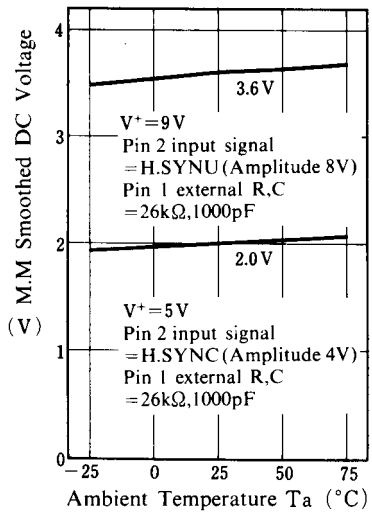
M. M Smoothed DC Voltage

(Carbon film resister-polyster film Capacitor)



M. M Smoothed DC Voltage

(Metal film resister −polyster film Capacitor)



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