

## VIDEO SUB-CARRIER SIGNAL QUADRUPLER

### ■ GENERAL DESCRIPTION

The NJM2240 is the quadruple oscillator of video band subcarrier frequency with PLL circuit technique. The NJM2240 is suit to standard clock generator of CCD clock and on-screen display.

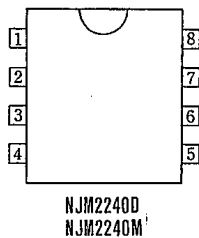
### ■ FEATURES

- Operating Voltage ( +4.7V ~ +5.3V )
- High Input Sensitivity
- Maximum Oscillator Frequency
- Quadrupler Output
- Package Outline DIP8, DMP8, SIP9
- Bipolar Technology

### ■ APPLICATION

- VCR Video Camera AV-TV Video Disc Player

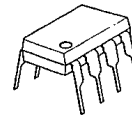
### ■ PIN CONFIGURATION



#### PIN FUNCTION

1.  $f_{sc}$  Input
2. Detection Filter
3. GND
4. Oscillator Output
5. Oscillator C
6.  $V^+$
7. Oscillator R
8. NC

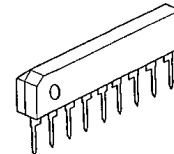
### ■ PACKAGE OUTLINE



NJM2240D



NJM2240M



NJM2240S

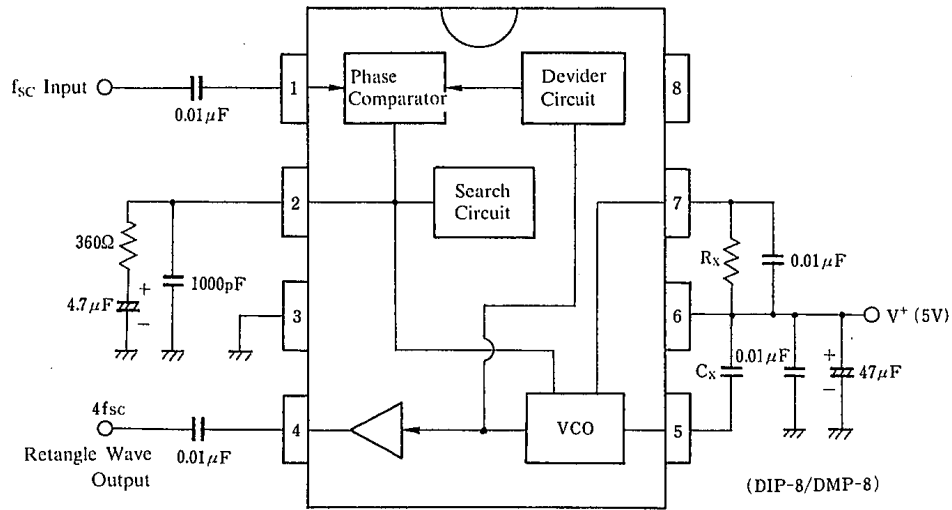


#### PIN FUNCTION

1.  $f_{sc}$  Input
2. Detection Filter
3. GND 1
4. Oscillator Output
5. GND 2
6. Oscillator C
7.  $V^+$
8. Oscillator R
9. NC



## ■ BLOCK DIAGRAM & EXTERNAL COMPONENTS



There is stray capacity assembled on PC board, and so select  $R_x$ ,  $C_x$  to the value which pin 2 voltage (search voltage at VCO locked) becomes about 2V.  $C_x > 4\text{pF}$ ,  $R_x > 2.7\text{k}\Omega$ .

	NTSC	PAL
	4 Multiplier	4 Multiplier
$C_x$	6 p	5 p
$R_x$	4.3 k	3.3 k

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	8	V
Input Voltage	V <sub>IN</sub>	GND-0.3~V*+0.3	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500	mW
		(DMP8) 300	mW
		(SIP8) 500	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

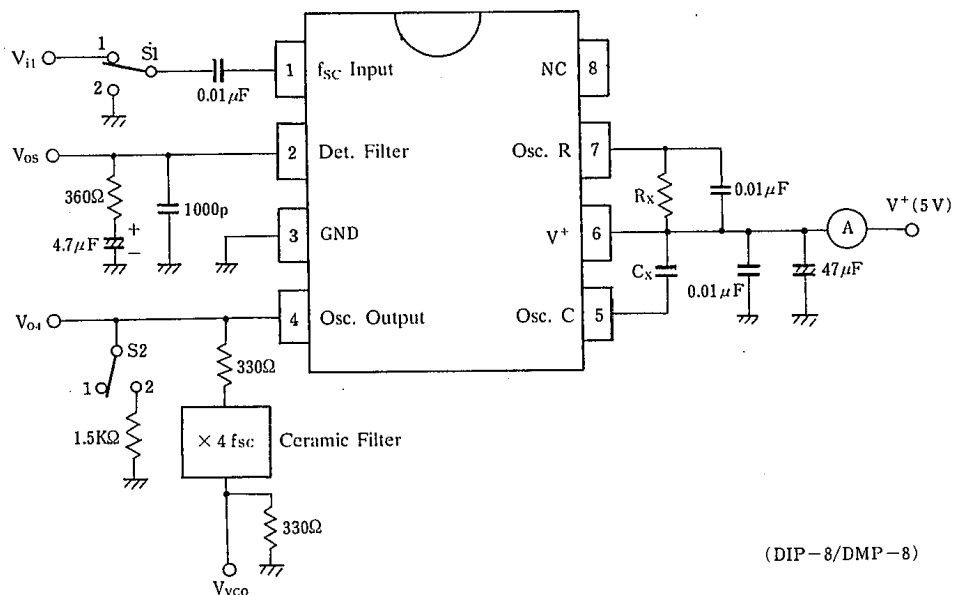
## ■ ELECTRICAL CHARACTERISTICS

(V\*=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Recommended Oper. Voltage Range	V*		4.7	5.0	5.3	V
Operating Current	I <sub>CC</sub>	S1=1, S2=1, input Vi1 : 3.58MHz Count Current	7	10	13	mA
Input Voltage Swing Range	V <sub>fsc</sub>	S1=1, S2=1, input Vi1 : 3.58 or 4.43MHz (sine wave), guaranteed Vi1 voltage range.	0.12	1.0	2.0	V <sub>p-p</sub>
Input Sensitivity	V <sub>is</sub>	S1=1, S2=1, input Vi1 : 3.58 or 4.43MHz (sine wave), actually tested minimum Vi1 voltage.	—	0.05	—	V <sub>p-p</sub>
VCO Oscillation Swing	V <sub>O4</sub>	S1=1, S2=2, input Vi1 : 3.58MHz, 1.0V <sub>p-p</sub>	0.7	0.9	1.1	V <sub>p-p</sub>
fsc Leakage	L <sub>fsc</sub>	S1=1, S2=2, input Vi1 : 3.58MHz, 1.0V <sub>p-p</sub> V <sub>O4</sub> (fsc level/4fsc level)	—	-50	—	dB
4fsc Output Duty	D <sub>4fsc</sub>	S1=1, S2=2, input Vi1 : 3.58MHz, 1.0V <sub>p-p</sub> , V <sub>O4</sub> output signal duty.	45	50	55	%

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## TEST CIRCUIT



(note 1):  $R_x, C_x$  accuracy: less than  $\pm 1\%$

(note 2):  $C_x$  is not considered pin5 stray capacitance. VCO free-run frequency is affected by stray capacitance of PC board, socket and others.

(note 3): The NJM2240 is produced by high frequency wafer process and some of pin may be weak against surge voltage.

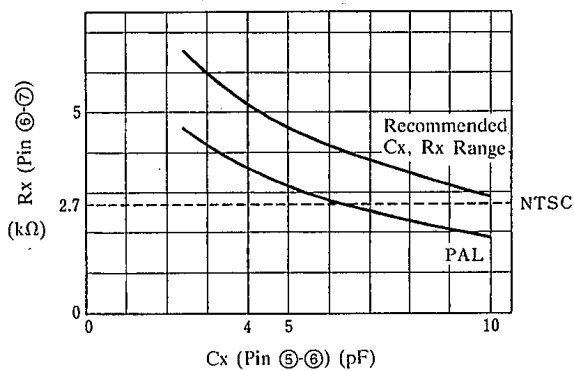
(note 4): Pin 2 filter must be connected to ground.

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## TYPICAL CHARACTERISTICS

### VCO Oscillator Frequency

( $V_{os} = 2V, T_a = 25^\circ C$ )



# NJM2240

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## MEMO

**[CAUTION]**

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.

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*New Japan Radio Co., Ltd.*