

## 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.

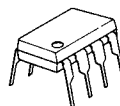
## ■ FEATURES

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

## ■ APPLICATION

- VCR Video Camera AV-TV Video Disc Player

## ■ PACKAGE OUTLINE

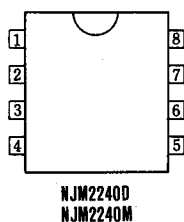


NJM2240D



NJM2240M

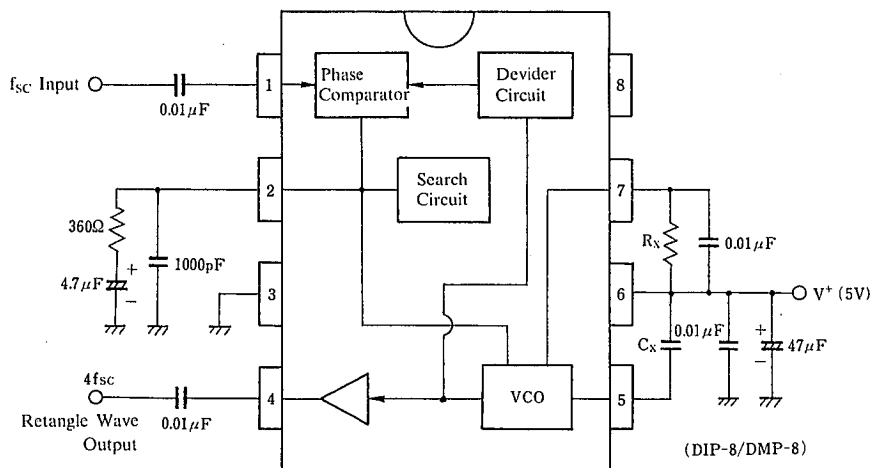
## ■ PIN CONFIGURATION



## PIN FUNCTION

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

## ■ 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)

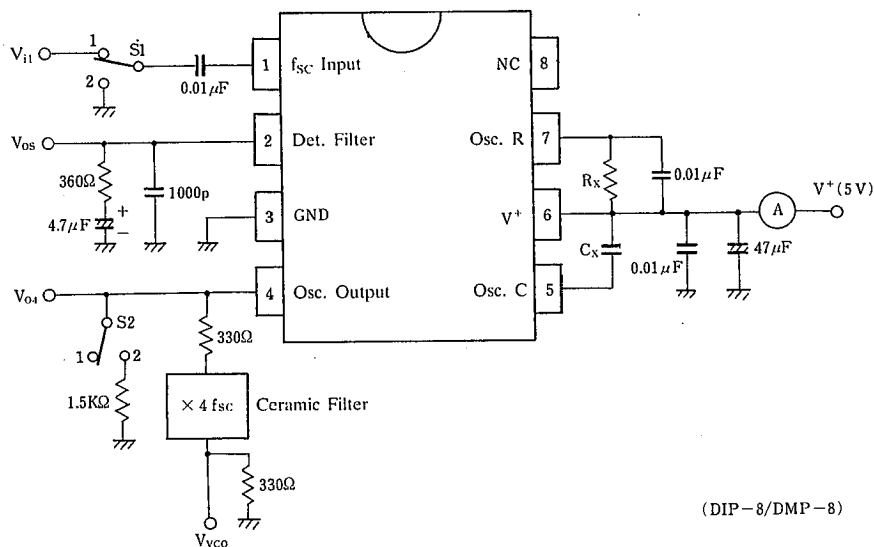
| PARAMETER                   | SYMBOL           | RATINGS              | UNIT |
|-----------------------------|------------------|----------------------|------|
| Supply Voltage              | V*               | 8                    | V    |
| Input Voltage               | V <sub>IN</sub>  | GND - 0.3 ~ V* + 0.3 | V    |
| Power Dissipation           | P <sub>D</sub>   | (DIP8) 500           | mW   |
|                             |                  | (DMP8) 300           | mW   |
| 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<br>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<br>(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<br>(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><br>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,<br>1.0V <sub>p-p</sub> , V <sub>O4</sub> output signal duty.  | 45   | 50   | 55   | %                |

## ■ TEST CIRCUIT



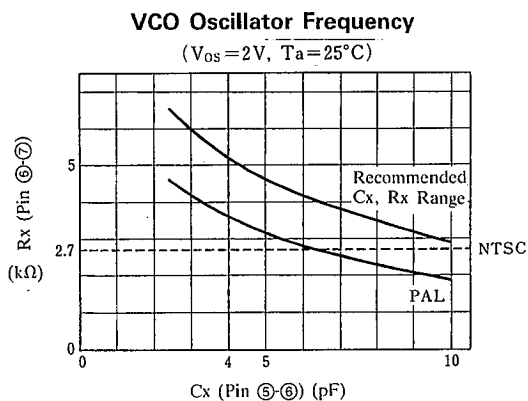
(note 1):  $R_x$ ,  $C_x$  accuracy: less than  $\pm 1\%$

(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.

## ■ TYPICAL CHARACTERISTICS



## MEMO

**[CAUTION]**

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