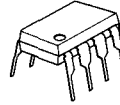


## VIDEO SUB-CARRIER SIGNAL TRIPLER

### ■ GENERAL DESCRIPTION

The NJM2238 is a tripler oscillator based on video subcarrier frequency using PLL circuit technique. The NJM2238 is suit to standard clock generator of CCD clock and on-screen display.

### ■ PACKAGE OUTLINE



NJM2238D



NJM2238M

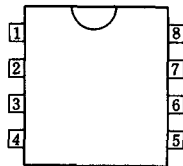
### ■ FEATURES

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

### ■ APPLICATION

- VCR Video Camera AV-TV Video Disc Player

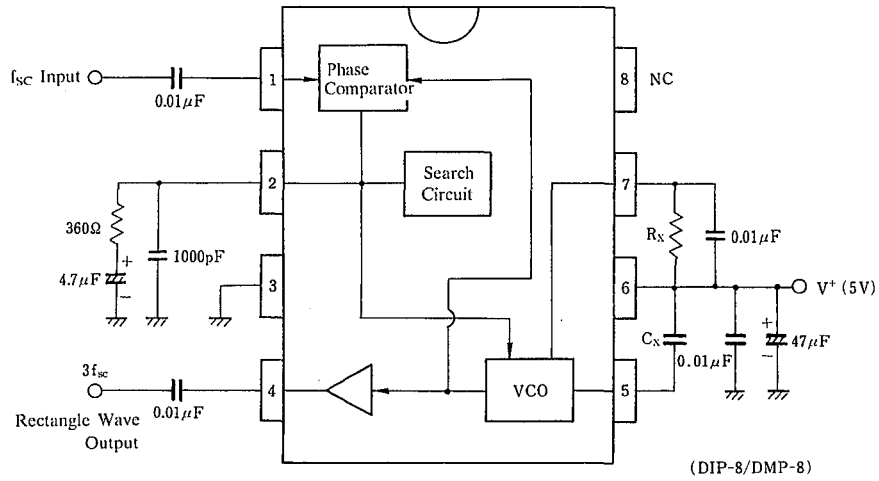
### ■ PIN CONFIGURATION



#### PIN FUNCTION

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

■ 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.  $C_x > 5\text{pF}$ ,  $5.6\text{k}\Omega > R_x > 3.3\text{k}\Omega$

	NTSC	PAL
$C_x$	10 p	8 p
$R_x$	5.2k	4.4k



## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

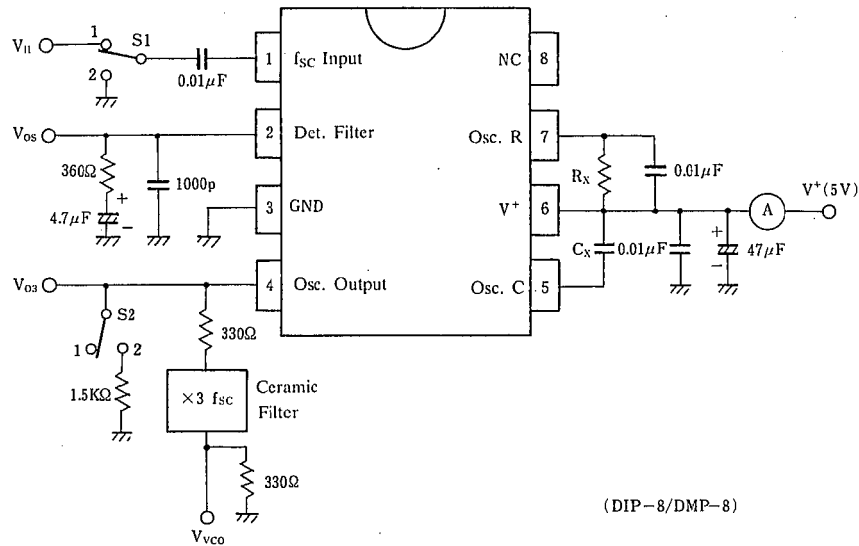
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	8	V
Input Voltage	V <sub>IN</sub>	GND-0.3~V*+0.3	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500	mW
		(DMP8) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

## ■ 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 1.0V <sub>p-p</sub> . Count Current	5.6	8	10.4	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.	0.5	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.	—	0.2	—	V <sub>p-p</sub>
VCO Oscillation Swing	V <sub>O3</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>O3</sub> (fsc level/3fsc level)	—	-50	—	dB
3fsc Output Duty	D <sub>3fsc</sub>	S1=1, S2=2, input Vi1: 3.58MHz, 1.0V <sub>p-p</sub> , V <sub>O3</sub> output signal duty.	45	50	55	%

## ■ TEST CIRCUIT



(note 1): Rx, Cx accuracy: less than  $\pm 1\%$

(note 2): Cx is not considered pin 5 stray capacitance. VCO free-run frequency is affected by stray capacitance of PC board, socket and others.

(note 3): The NJM2238 is produced by high frequency wafer process and some of pin may be weak against surge voltage.

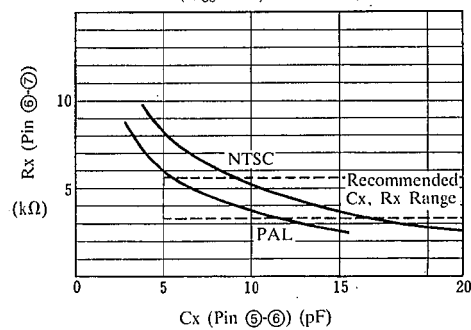
(note 4): Pin 2 filter must be connected to ground.

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## ■ TYPICAL CHARACTERISTICS

### VCO Oscillator Frequency

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



# NJM2238

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## MEMO

**[CAUTION]**

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