

# NTSC-M / PAL CONVERTOR

■ GENERAL DESCRIPTION

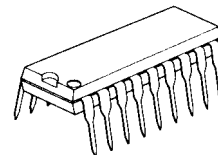
The NJM2218 is a signal processing IC for M / PAL Video signal.  
It is possible to convert from NTSC signal to M / PAL signal.

The NJM2218 has functions of Video Sub-Carrier Doubler Block, Synchronous Signal AFC Block, Logic Block, Convert Block and Video Switch Block.

■ FEATURES

- 1 chip NTSC - M / PAL convertor
- Internal AFC block
- Package Outline DIP18
- Operating Voltage (+4.5V to 5.5V)
- Bipolar Technology

■ PACKAGE OUTLINE



NJM2218D

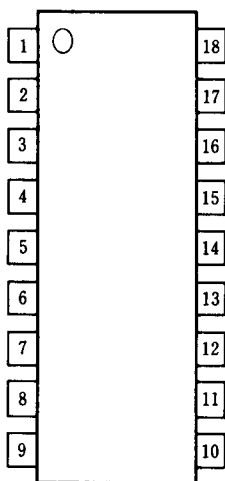
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage  $V^+ = +4.5V$  to  $+5.5V$

■ APPLICATION

- TV, VCR

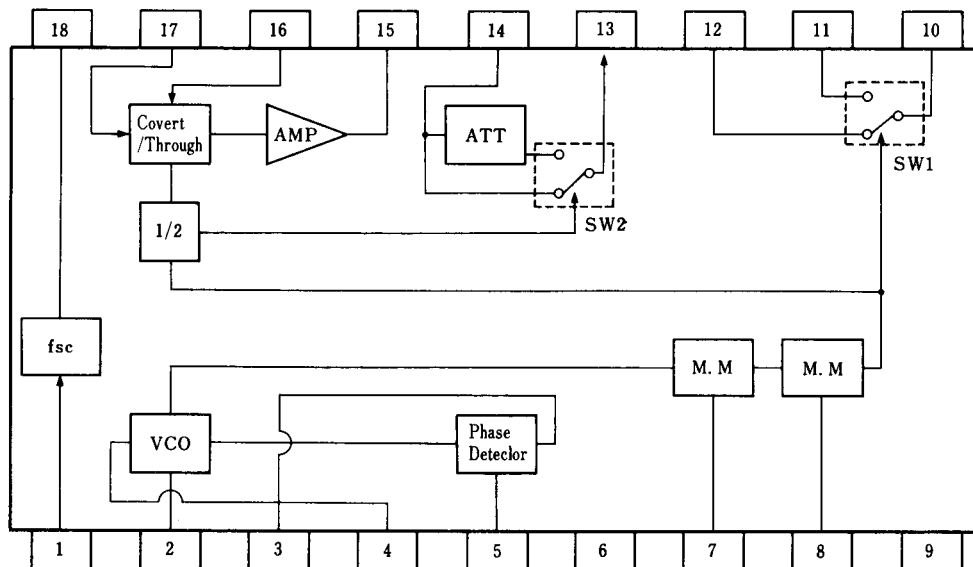
■ PIN CONFIGURATION



NJM2218D

- 1) fsc Input
- 2) VCO Control
- 3) COMP. SYNC Input
- 4) VCO Filter
- 5) Phase Detect Filter
- 6) V<sup>+</sup>
- 7) Mono Multi C/R(1)
- 8) Mono Multi C/R(2)
- 9) GND
- 10) Switch 1
- 11) 45deg Phase Shift Input
- 12) NTSC Chroma Input
- 13) M/PAL Output
- 14) Switch 2 Input
- 15) Convert/Through Output
- 16) Convert/Through Input
- 17) BPF Output
- 18) 2fsc Output

■ BLOCK DIAGRAM



# NJM2218

## ■ ABSOLUTE MAXIMUM RATINGS

( $T_a = 25^\circ\text{C}$ )

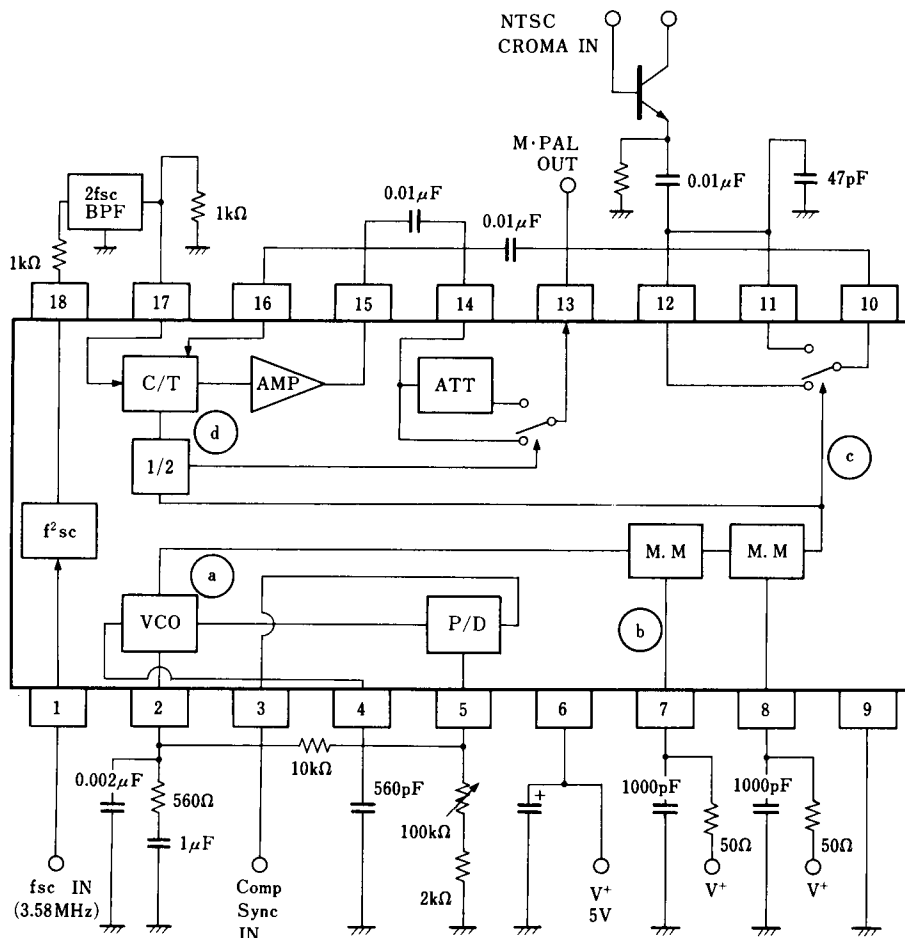
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+$	+10	V
Power Dissipation	$P_D$	700	mW
Operating Temperature Range	$T_{opr}$	-20 to +70	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +125	$^\circ\text{C}$

## ■ ELECTRICAL CHARACTERISTICS

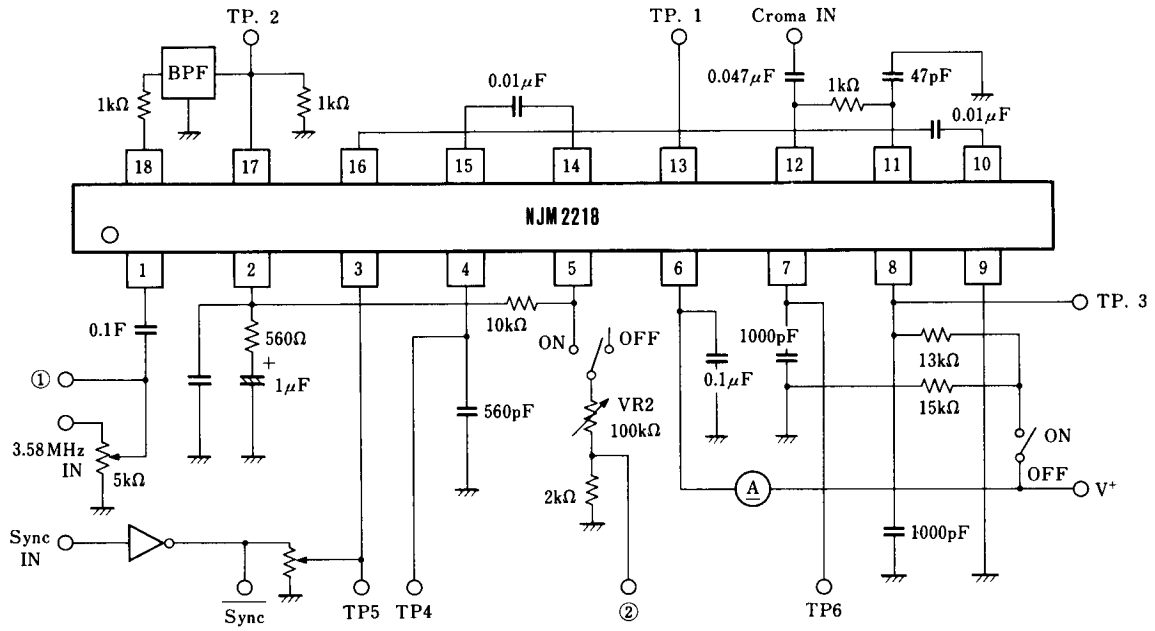
( $V^+ = 50\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	
Operating Current	$I_{OC}$	-	20	28	mA	
Signal Doubler Gain	$G_{2f_{sc}}$	-1.4	+0.6	+2.6	dB	
AFC Characteristic	Free-Run Frequency	$f_{fH}$	18.0	20.0	-	kHz
		$f_{fL}$	-	11.0	18.5	kHz
	Lock Range	$\Delta f_l$	3.0	5.0	-	kHz
	Capture Range	$\Delta f_c$	0.8	1.3	-	kHz
Mono Multi Characteristic	Pulse Delay Time	$P_{Dt}$	-0.7	3.0	13.0	$\mu\text{s}$
	Pulse Wide (1)	$P_{W1}$	7.0	9.0	11.0	$\mu\text{s}$
	Pulse Wide (2)	$P_{W2}$	8.0	10.0	12.0	$\mu\text{s}$
M / PAL Convert Characteristic	Offset Voltage	$\Delta_v$	0	20	80	mV
	Gain Difference	$\Delta_G$	2.0	5.0	8.0	dB
	M / PAL Convert Gain	$V$	-3.0	-1.0	1.0	dB
Sync Threshold Level	$V_{S-TH}$	0.7	1.4	2.0	V	

## ■ APPLICATION



## ■ TEST CIRCUIT



# NJM2218

## ■ BLOCK EXPLANATION

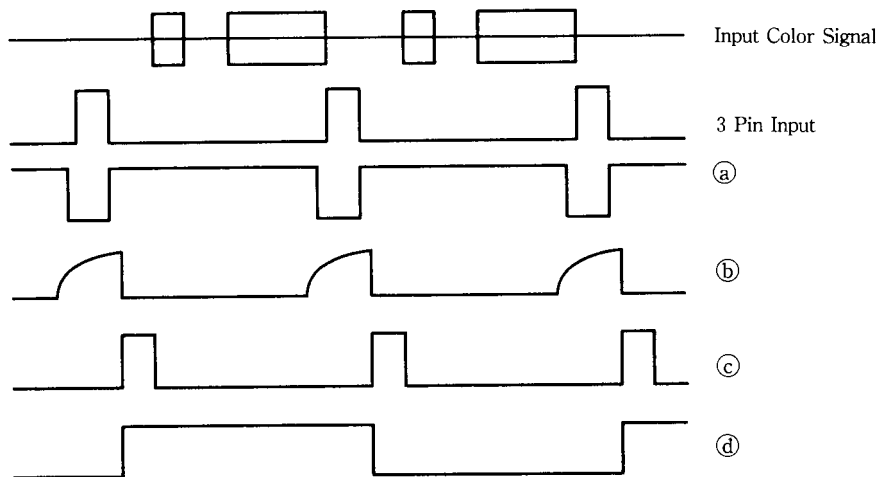
### ● AFC, M / M BLOCK

3 Pin input is Positive Composite Sync Signal.

2, 4, 5 Pin's external circuit can lock both oscillation of 15.75kHz and sync signal.

Internal temperature coefficient is 0ppm, so please use low drift external parts, especially the condenser (560pF) of 4 Pin should be 0ppm / °C.

## ■ TIMING CHART



### ● SIGNAL DOUBLER BLOCK

3.58 (fsc) × 2 = 7.16MHz generator

1 Pin : 100 to 200mV<sub>P-P</sub> input pin

18 Pin : about +0.6dB (GAIN) output pin

### ● SW1 BLOCK

12 Pin : NTSC COLOR SIGNAL (100 to 200mV<sub>P-P</sub>) input pin

10 Pin : 45deg Phase shift Color Burst Signal output pin

### ● CONVERT / THROUGH, AMPLIFIER, ATT, SW2 BLOCK

16 Pin : NTSC Color signal (Phase Shift Color Burst) input pin

17 Pin : 7.16MHz (fsc × 2) input pin

M / PAL Signal is output from 13 Pin through the Amplifier and ATT Block.

#### [CAUTION]

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