

NTSC-M / PAL CONVERTOR

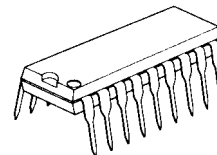
GENERAL DESCRIPTION

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.

PACKAGE OUTLINE



NJM2218D

FEATURES

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

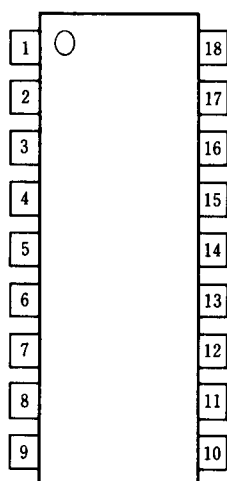
RECOMMENDED OPERATING CONDITION

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

APPLICATION

- TV, VCR

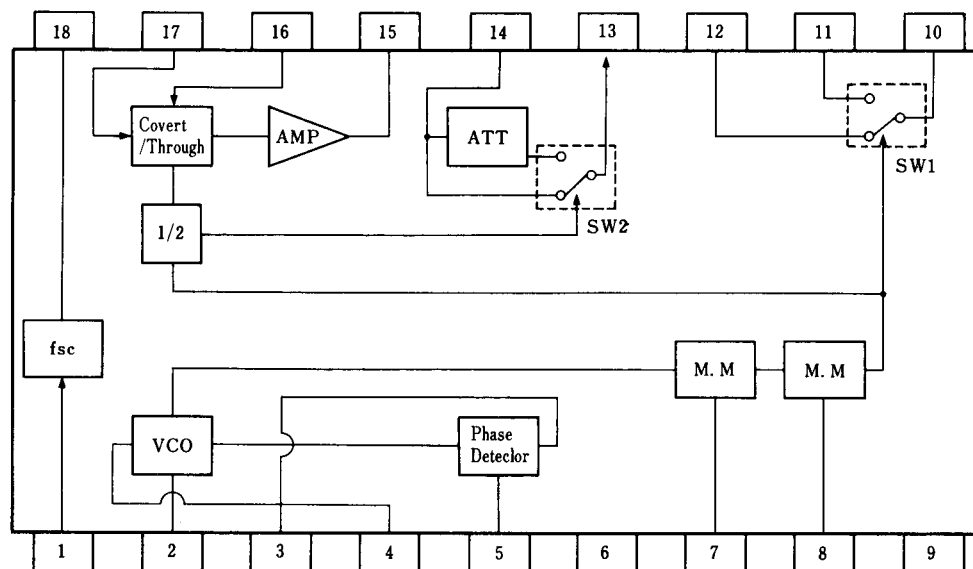
PIN CONFIGURATION



NJM2218D

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

BLOCK DIAGRAM



NJM2218

■ ABSOLUTE MAXIMUM RATINGS

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

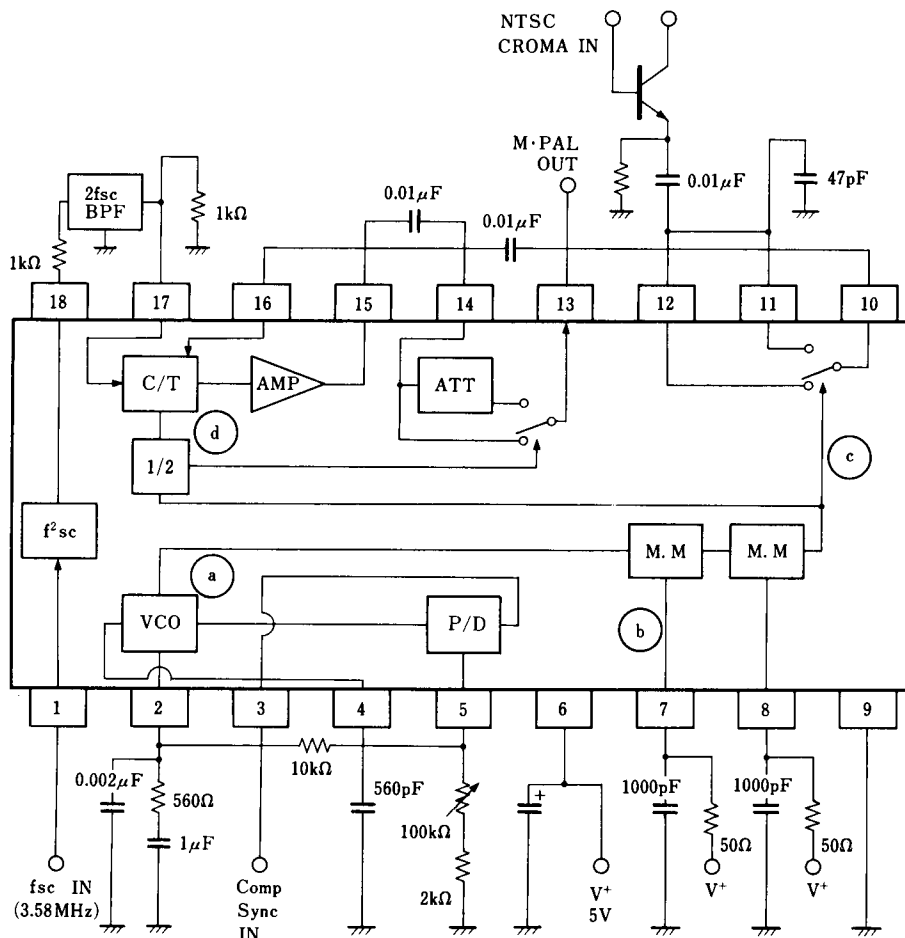
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	+10	V
Power Dissipation	P_D	700	mW
Operating Temperature Range	T_{opr}	-20 to +70	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS

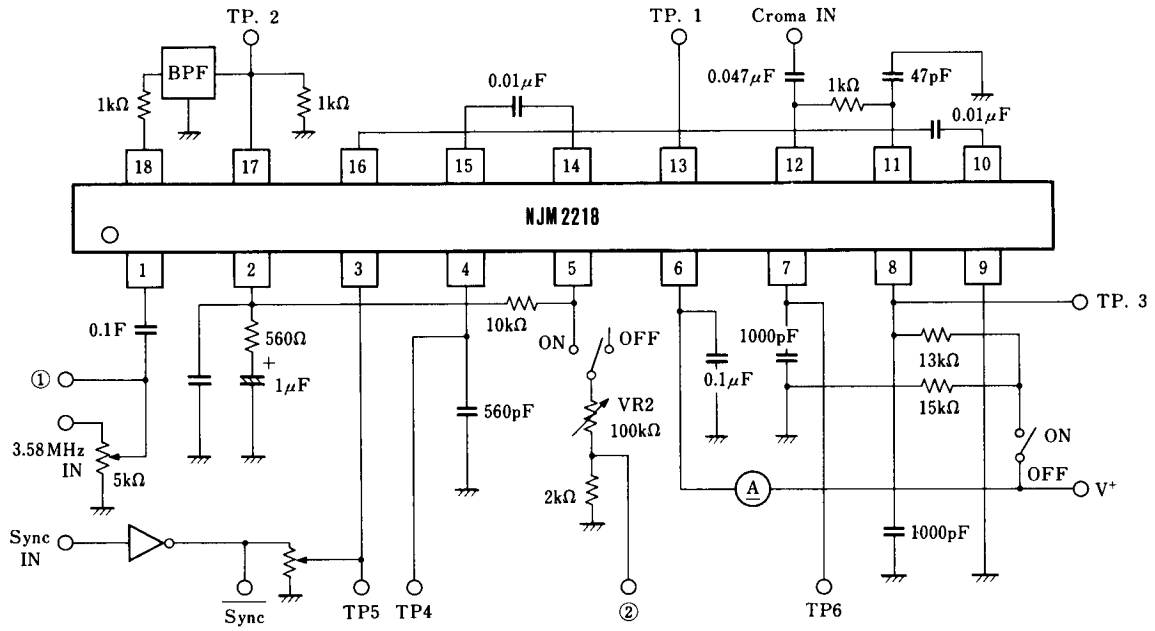
($V^+ = 50\text{V}$, $T_a = 25^\circ\text{C}$)

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	Δf_l	3.0	5.0	-	kHz
	Capture Range	Δf_c	0.8	1.3	-	kHz
Mono Multi Characteristic	Pulse Delay Time	P_{Dt}	-0.7	3.0	13.0	μs
	Pulse Wide (1)	P_{W1}	7.0	9.0	11.0	μs
	Pulse Wide (2)	P_{W2}	8.0	10.0	12.0	μs
M / PAL Convert Characteristic	Offset Voltage	Δ_v	0	20	80	mV
	Gain Difference	Δ_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

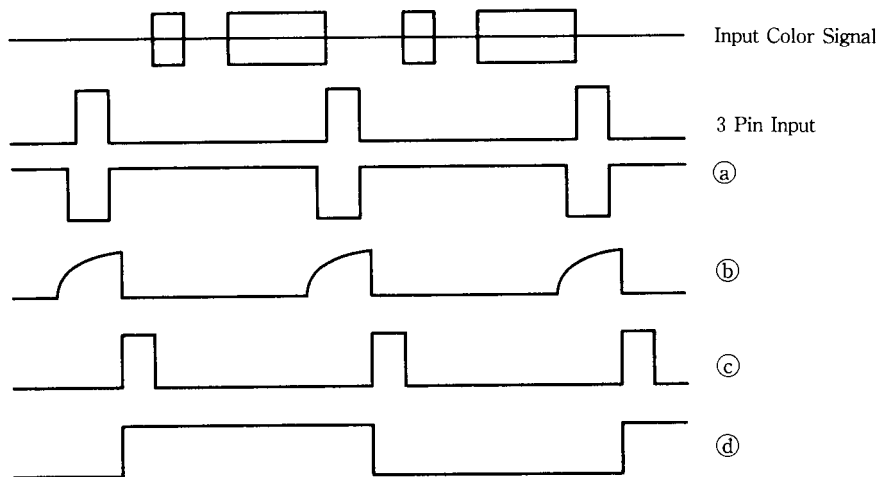
● AFC, M / M BLOCK

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_{P-P} input pin

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

● SW1 BLOCK

12 Pin : NTSC COLOR SIGNAL (100 to 200mV_{P-P}) 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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