

## VIDEO ON-SCREEN DISPLAY

### ■ GENERAL DESCRIPTION

The **NJM2214** is a video display convertive integrated circuit. Its function is below.

- Character superimpose.
- 8 color generating function.
- Luminance signal wave shape-up function.
- Video effector function of painting to background superimposed character or some part of video signal.

### ■ FEATURES

- Operating Voltage (+4.7V to +5.3V)
- Internal 8 Color Generating Circuit.
- Package Outline SDIP22, DMP24
- Bipolar Technology

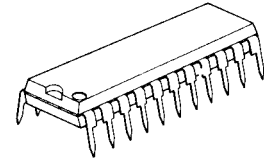
### ■ RECOMMENDED OPERATING CONDITION

- Operating Voltage 4.7 to 5.3V

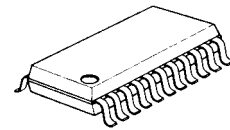
### ■ APPLICATION

- VCR, Video Camera

### ■ PACKAGE OUTLINE



**NJM2214L**



**NJM2214M**

# NJM2214

## ■ ABSOLUTE MAXIMUM RATINGS

( $T_a=25^\circ$ )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V^+$	10	V
Power Dissipation	$P_D$	(SDIP22) 700 (DMP24) 700	mW
Operating Temperature Range	$T_{opr}$	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-40 to +125	$^\circ\text{C}$

## ■ ELECTRICAL CHARACTERISTICS

( $T_a=25^\circ$ ,  $V^+=5\text{V}$ )

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	$I_{CC}$	No signal, No load	17	25	33	mA
Video Switch Voltage Gain	$G_V$	10, 11, 15, 22 (11, 12, 17) Pin=Low 10STEP Stair wave, 2.2V <sub>P-P</sub> , R1=5K	-1	0	+1	dB
Frequency Characteristics	$G_F$	10, 11, 15, 22 (11, 12, 17) Pin=Low 2V <sub>P-P</sub> , 4MHz, R1=5K	-1	0	+1	dB
Differential Gain	DG	10, 11, 15, 22 (11, 12, 17) Pin=Low 10STEP Stair wave, 2.2V <sub>P-P</sub> , R1=5K	-3	0	+3	%
Differential Phase	DP	10STEP Stair wave, 2.2V <sub>P-P</sub> , R1=5K	-3	0	+3	degree
8 Color Output		15 (17) Pin=High, 10, 11, 22 (11, 12) Pin=Low (Note)				
White	Amplitude	$C_{1A}$	-	0	100	mV <sub>P-P</sub>
	Luminance	$C_{1D}$	1.56	1.66	1.76	V
	Phase	$C_{1P}$	-	-	-	degree
Yellow	Amplitude	$C_{2A}$	810	900	990	mV <sub>P-P</sub>
	Luminance	$C_{2D}$	1.45	1.55	1.65	V
	Phase	$C_{2P}$	Phase : Ref. to Yellow	-10	0	10
Cyan	Amplitude	$C_{3A}$	1160	1290	1420	mV <sub>P-P</sub>
	Luminance	$C_{3D}$	1.26	1.36	1.46	V
	Phase	$C_{3P}$	106	116	126	degree

( ) : DMP

## ■ ELECTRICAL CHARACTERISTICS

( $T_a=25^\circ$ ,  $V^+=5V$ )

PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Green	Amplitude	$C_{4A}$		1080	1200	1320	mV <sub>P-P</sub>
	Luminance	$C_{4D}$		1.14	1.24	1.34	V
	Phase	$C_{4P}$		63	73	83	degree
Magenta	Amplitude	$C_{5A}$		1080	1200	1320	mV <sub>P-P</sub>
	Luminance	$C_{5D}$		0.96	1.06	1.16	V
	Phase	$C_{5P}$		243	253	263	degree
Red	Amplitude	$C_{6A}$		1160	1290	1420	mV <sub>P-P</sub>
	Luminance	$C_{6D}$		0.85	0.95	1.05	V
	Phase	$C_{6P}$		286	296	306	degree
Blue	Amplitude	$C_{7A}$		810	900	990	mV <sub>P-P</sub>
	Luminance	$C_{7D}$		0.66	0.76	0.86	V
	Phase	$C_{7P}$		170	180	190	degree
Black	Amplitude	$C_{8A}$		-	0	100	mV <sub>P-P</sub>
	Luminance	$C_{8D}$		0.54	0.64	0.74	V
	Phase	$C_{8P}$		-	-	-	degree
Blanking Pulse Input Threshold Voltage		$V_{TH-19}$	Pin 19 (21)	1.0	1.5	2.0	V
HD		$V_{TH-18}$	Pin 18 (20)	1.0	1.5	2.0	V
Invert		$V_{TH-11}$	Pin 11 (12)	1.0	1.5	2.0	V
2 Value Selection		$V_{TH-10}$	Pin 10 (11)	1.0	1.5	2.0	V
Background ON/OFF		$V_{TH-15}$	Pin 15 (17)	1.0	1.5	2.0	V
Matrix 1		$V_{TH-M1}$	Pin 1 (1)	3.3	3.9	4.5	V
Matrix 2		$V_{TH-M2}$	Pin 2 (2)	3.3	3.9	4.5	V
Matrix 3		$V_{TH-M3}$	Pin 3 (3)	3.3	3.9	4.5	V
Character Input		$V_{TH-21}$	Pin 21 (23)	0.5	1.0	1.5	V
EXT/Character Selection		$V_{TH-20}$	Pin 20 (22)	1.0	1.5	2.0	V

( ) : DMP

(Note) :  $f_{SC1}, f_{SC2}=3.58\text{MHz}$ ,  $300\text{mV}_{PP}$   
 $f_{SC1}$ , =same phase of color burst signal.  
 $f_{SC2}$ , =90 degree phase lag from  $f_{SC1}$ .

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## ■ RELATION BETWEEN 8 COLOR OUTPUT AND MATRIX INPUT

COLOR	MATRIX 1	MATRIX 2	MATRIX 3
White	L	L	L
Yellow	H	L	L
Cyan	L	H	L
Green	H	H	L
Magenta	L	L	H
Red	H	L	H
Blue	L	H	H
Black	H	H	H

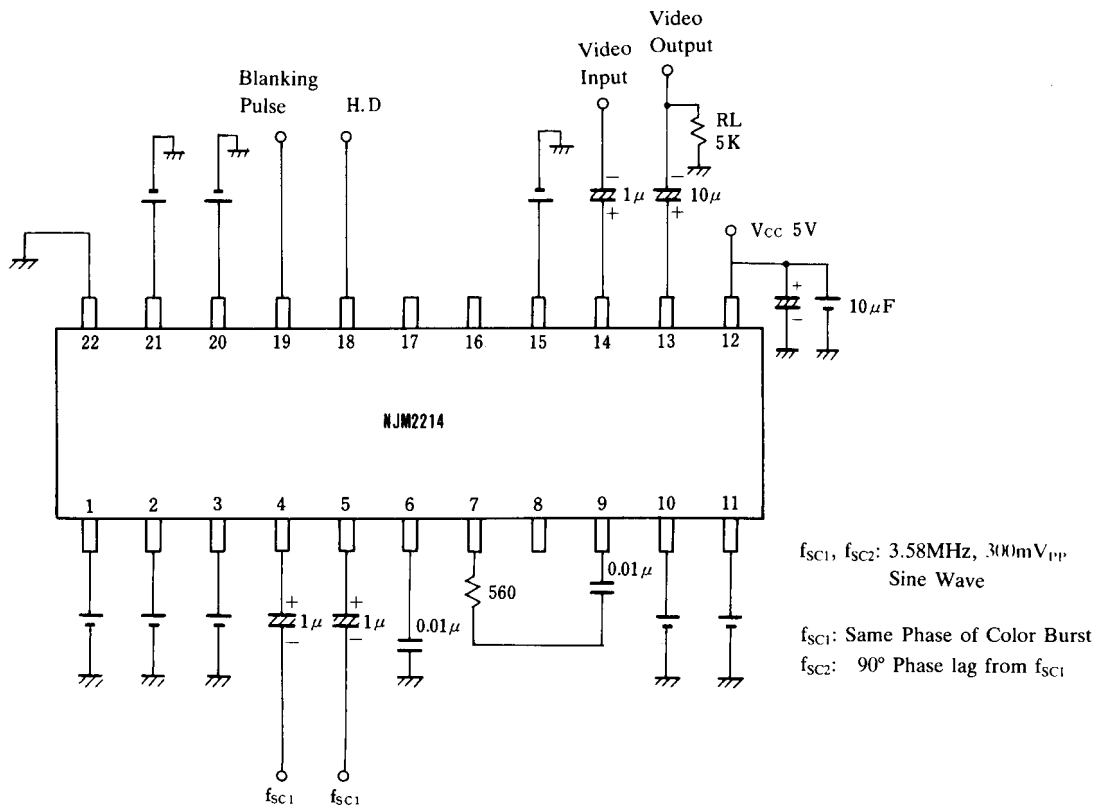
L=0V (DC)

H=5V (DC)

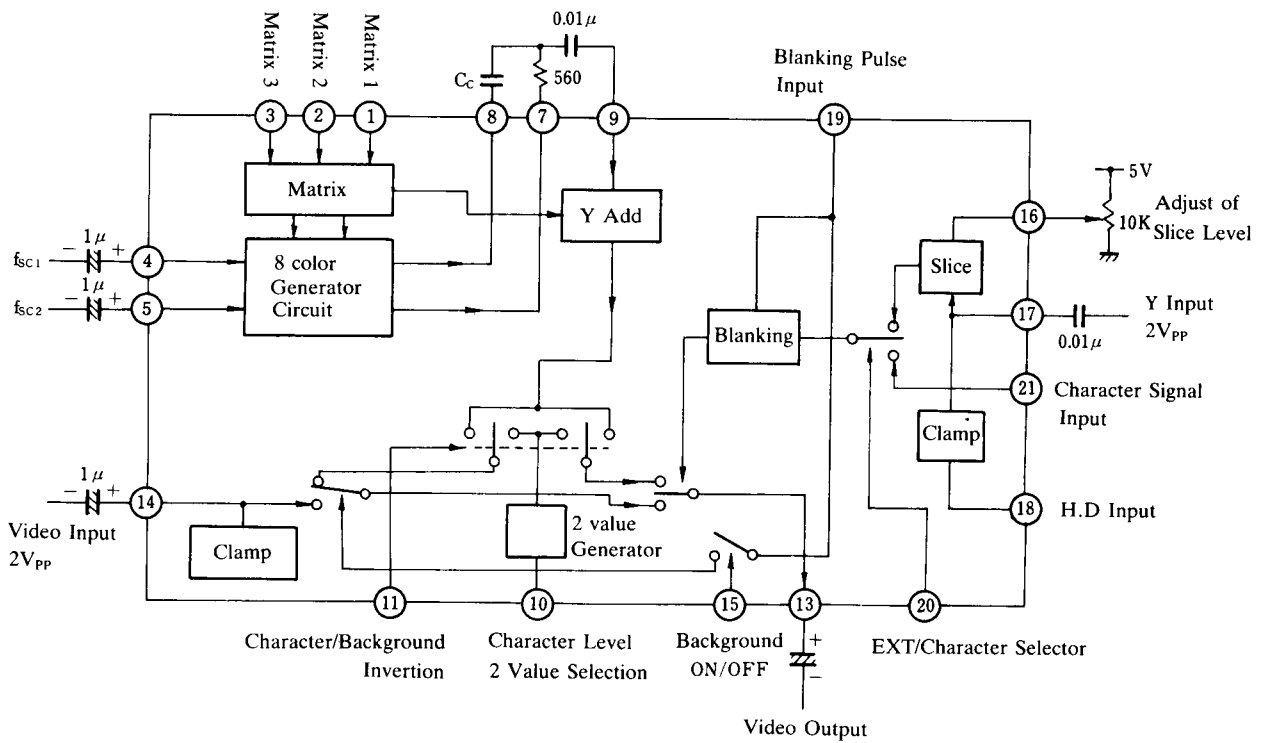
## ■ CONTROL SIGNAL AND FUNCTION

15 PIN	10 PIN	11 PIN	20 PIN	
L	L/H	L	L	Character superimposer (White/Black) on video through signal output.
H	L/H	L	L	Character superimposer (White/Black) on background (8 color).
H	L/H	H	L	Character superimposer (color) on background (White/Black).
L	L	H	L	Character superimposer (color) on video through signal.
L	L/H	L	H	Luminance modification. Strong bright point is White/Black.
H	L/H	L	H	Colored except strong bright point.
H	L/H	H	H	Colored at strong bright point and others is White/Black.
L	H	H	H	Colored at strong bright point and others is video through.

## ■ TEST CIRCUIT



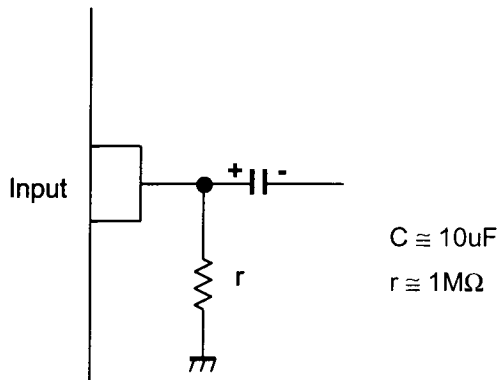
## ■ TYPICAL APPLICATION



# NJM2214

## ■ APPLICATION

This IC requires  $1M\Omega$  resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



**[CAUTION]**

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