

## 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~+5.3V)
- Internal 8 Color Generating Circuit
- Package Outline SDIP22, DMP24
- Bipolar Technology

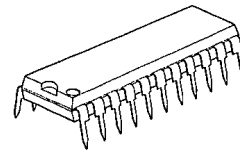
## ■ RECOMMENDED OPERATING CONDITION

- Operating Voltage 4.7~5.3V

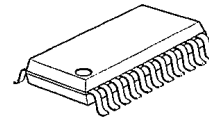
## ■ APPLICATION

- VCR, Video Camera

## ■ PACKAGE OUTLINE



NJM2214L



NJM2214M

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	10	V
Power Dissipation	P <sub>D</sub>	(SDIP22) 700 (DMP24) 700	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

## ■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V\*=5V)

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

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## ■ ELECTRICAL CHARACTERISTICS

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

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

(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)

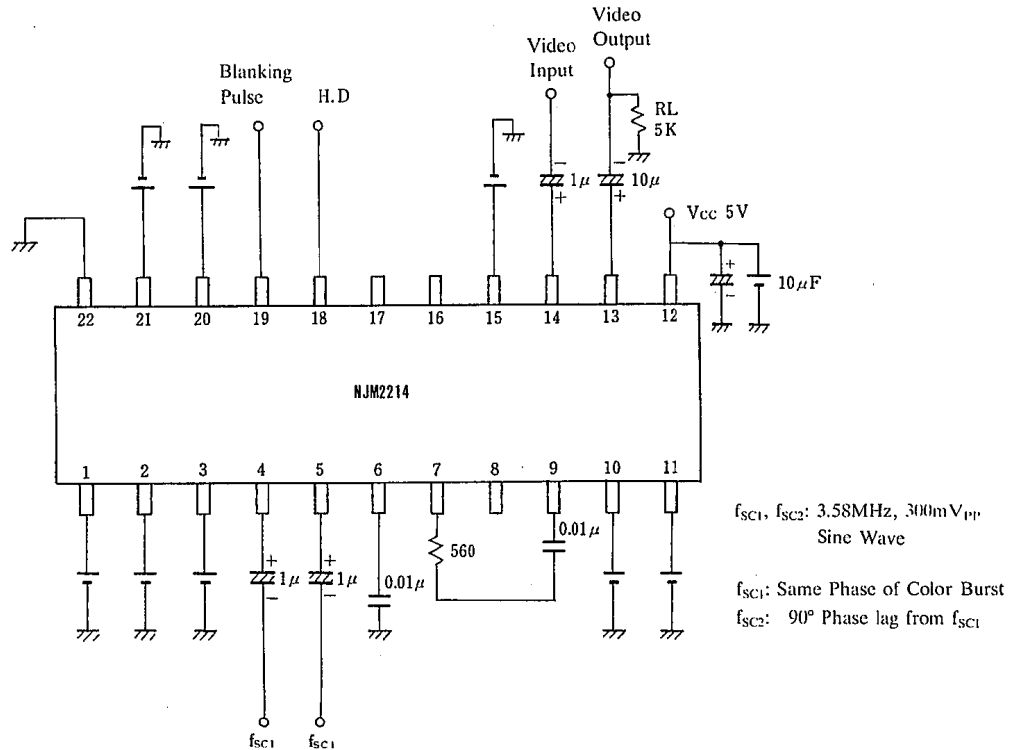
H=5V (DC)

■ 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.

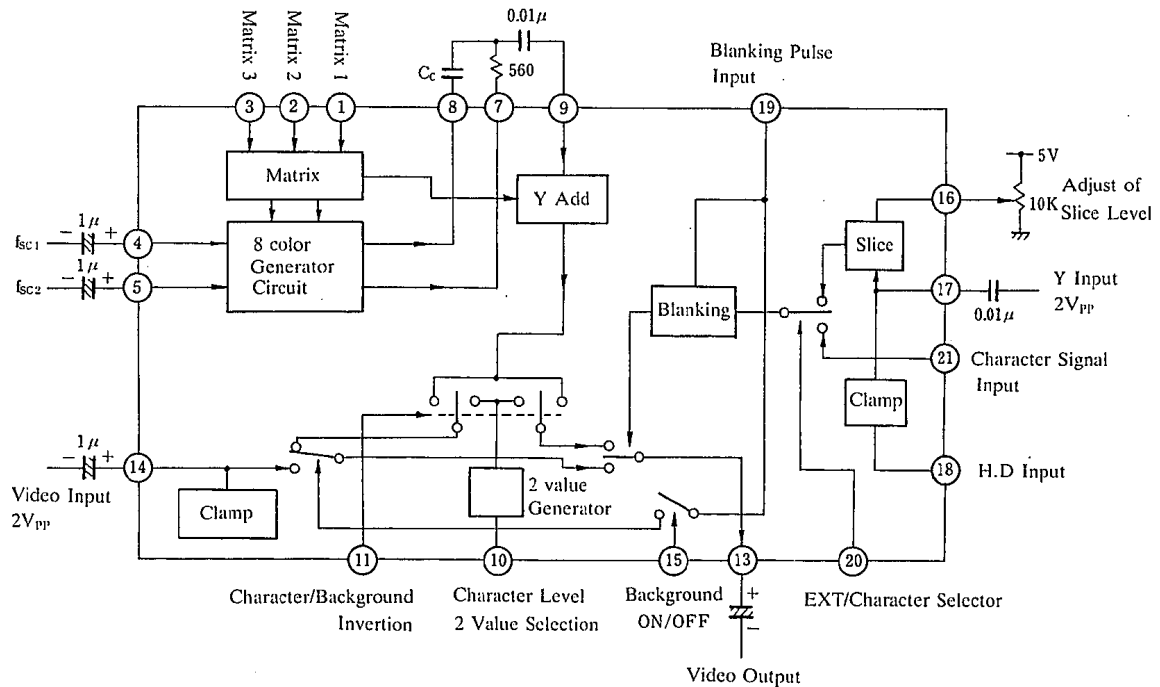


## TEST CIRCUIT



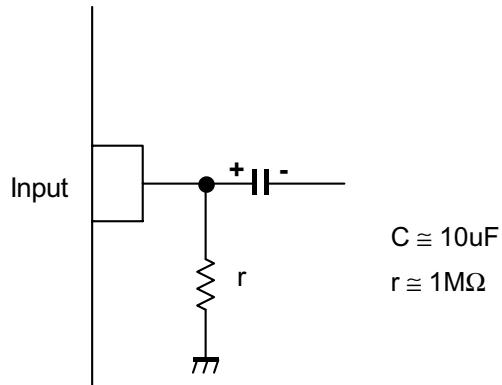
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## TYPICAL APPLICATION



## ■APPLICATION

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



### [CAUTION]

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