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 effecter 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

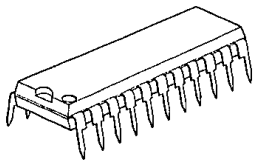
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage 4.7~5.3V

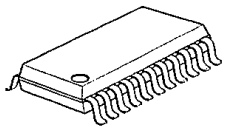
■ APPLICATION

- VCR, Video Camera

■ PACKAGE OUTLINE



NJM2214L



NJM2214M

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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	10	V
Power Dissipation	P_D	(SDIP22) 700 (DMP24) 700	mW
Operating Temperature Range	T_{opr}	−20～+75	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(Ta=25℃, V^+=5V)

PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Curent		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_{p-p}, R1=5K	−1	0	+1	dB
Frequency Characteristics		G_F	10,11,15,22(11,12,17)Pin =Low 2V_{p-p}, 4MHz, R1=5K	−1	0	+1	dB
Differential Gain		DG	10,11,15,22(11,12,17)Pin =Low 10STEP Stair wave, 2.2V_{p-p}, R1=5K	−3	0	+3	%
Differential Phase		DP	10 STEP Stair wave, 2.2V_{p-p}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_{p-p}
	Luminance	C_{1D}		1.56	1.66	1.76	V
	Phase	C_{1P}		—	—	—	degree
Yellow	Amplitude	C_{2A}		810	900	990	mV_{p-p}
	Luminance	C_{2D}		1.45	1.55	1.65	V
	Phase	C_{2P}	Phase: Ref. to Yellow	−10	0	10	degree
Cyan	Amplitude	C_{3A}		1160	1290	1420	mV_{p-p}
	Luminance	C_{3D}		1.26	1.36	1.46	V
	Phase	C_{3P}		106	116	126	degree

( ):DMP

■ ELECTRICAL CHARACTERISTICS

(Ta=25℃, V^+=5V)

PARAMETER		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Green	Amplitude	C_{4A}		1080	1200	1320	mV_{p-p}
	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_{p-p}
	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_{p-p}
	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_{p-p}
	Luminance	C_{7D}		0.66	0.76	0.86	V
	Phase	C_{7P}		170	180	190	degree
Black	Amplitude	C_{8A}		—	0	100	mV_{p-p}
	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 Seclection		V_{TH-20}	Pin 20(22)	1.0	1.5	2.0	V

(Note): f_{SC1},f_{SC2}=3.58MHz, 300mV_{PP} ( ):DMP

f_{SC1}: same phase of color burst signal.

f_{SC2}: 90 degree phase lag from f_{SC1}.

■ RELATION BETWEEN 8 COLOR OUTPUT AND MATRIX INPUT

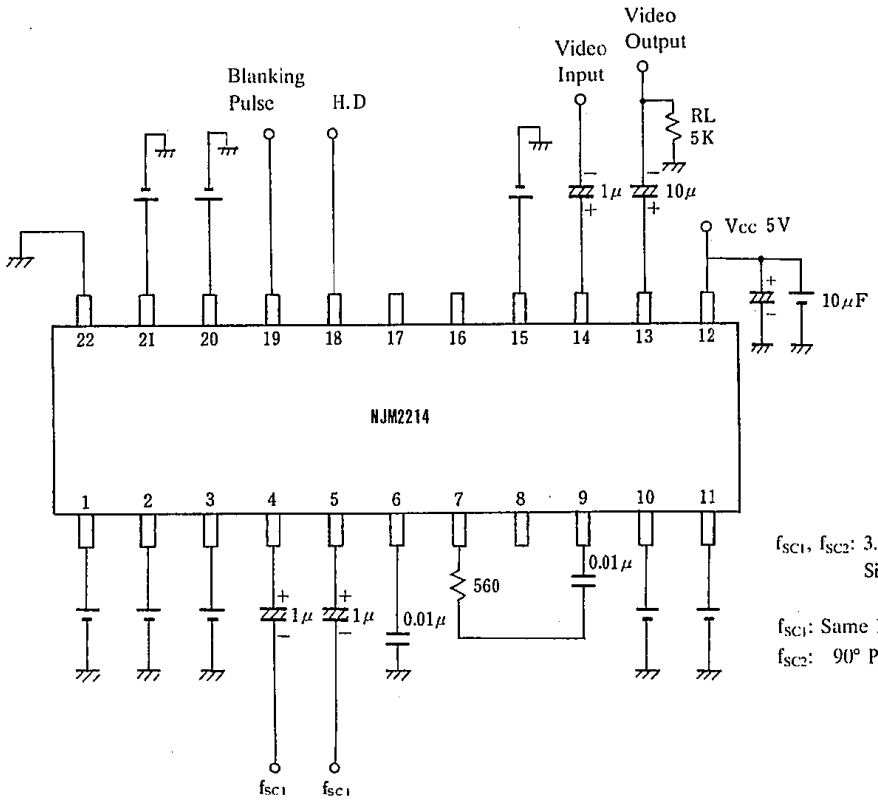
COLOR	MATRIX 1	MATRIX 2	MATRIX 3
White	L	L	L
Yellow	H	L	L
Cyan	L	H	L
Green	H	H	L
Magenta	L	L	H
Red	H	L	H
Blue	L	H	H
Black	H	H	H

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



f_{SC1}, f_{SC2}: 3.58MHz, 300mV_{PP} Sine Wave

f_{SC1}: Same Phase of Color Burst

f_{SC2}: 90° Phase lag from f_{SC1}

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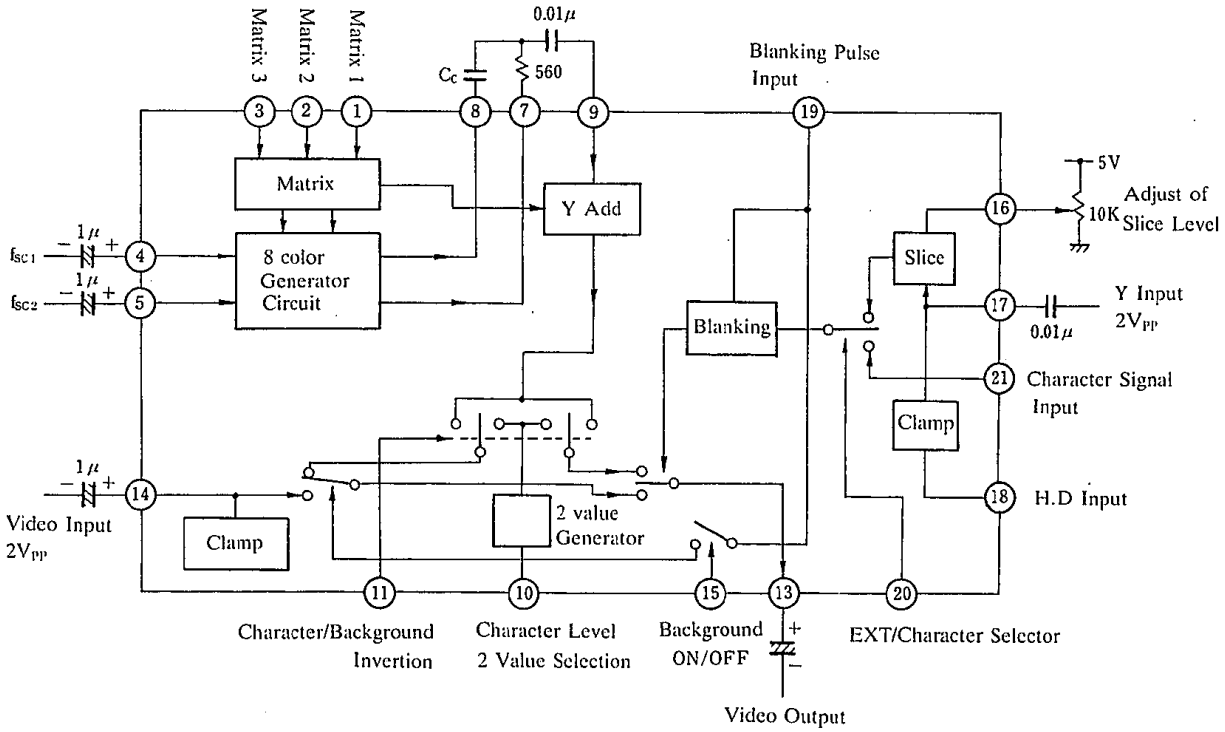
■ TYPICAL APPLICATION



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

■APPLICATION

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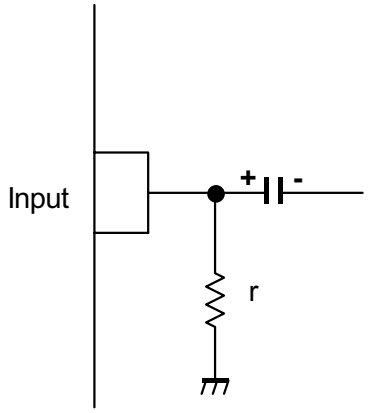

C ≅ 10uF

r ≅ 1MΩ