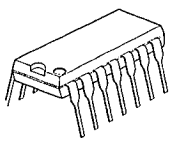
VIDEO SUPER IMPOSER

■ GENERAL DESCRIPTION

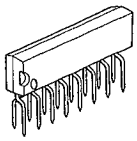
The NJM2207 is video signal superimposer, with synchronous separation circuit, vertical sinchronous reproduce circuit and two video high performance switches for switching from video signal to character signal and backgroud signal.

The NJM2207 is suitable for simply indicating the date time, TV channel and others.

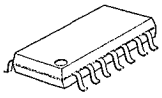
■ PACKAGE OUTLINE



NJM2207D



NJM2207S



NJM2207M

■ FEATURES

- Operating Voltage (+4.75V～+13V)
- With Synchronous Separation Circuit
- With Vertical Sinchronous Reproduce Circuit
- Package Outline DIP-14, DMP-14, ZIP-16
- Bipolar Technology

■ RECOMMENDED OPERATING CONDITION

- Operating Voltage 4.75～13V

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	17	V
Power Dissipation	P_D	(ZIP16) 500	mW
		(DIP14) 700	mW
		(DMP14) 300	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(Ta=25℃, V^+=5V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}		—	6.5	9	mA
Video Signal Processing Section (Video Input $2V_{PP}$, Source Resistance=75Ω)						
OFF-SET Voltage (Back-ground Input)	V_{BOS}	Cross Voltage In Ext. 10kΩ Resistor	—	—	0.1	V
OFF-SET Voltage (Char. Input)	V_{COS}	Cross Voltage In Ext. 10kΩ Resistor.	—	—	0.1	V
OFF-Voltage (Background Cont. Input)	V_{BL}		—	—	0.4	V
OFF-Voltage (Char. Cont Input)	V_{CL}		—	—	0.4	V
ON-Voltage (Background Cont. Input)	V_{BH}		2.0	—	—	V
ON-Voltage (Char. Cont. Input)	V_{CH}		2.0	—	—	V
Transfer Gain	G_V	R_L=5kΩ	−1	—	+1	dB
Frequency Response	Gf	f=10MHz, R_L=5kΩ	—	−0.2	—	dB
Crosstalk In Each Signal	C_T	Video Input (f=3.58MHz)	—	50	—	
		Background Input (f=3.48MHz)				
		Char. Input (f=3.68MHz)				
		Each Signal. is Sine-Wave R_L=5kΩ				
Video Differential Phase	DP	R_L=5kΩ	—	—	3	Deg
Video Differential Gain	DG	R_L=5kΩ	—	—	3	%

■ ELECTRICAL CHARACTERISTICS
SYNC. SEPARATION SECTION

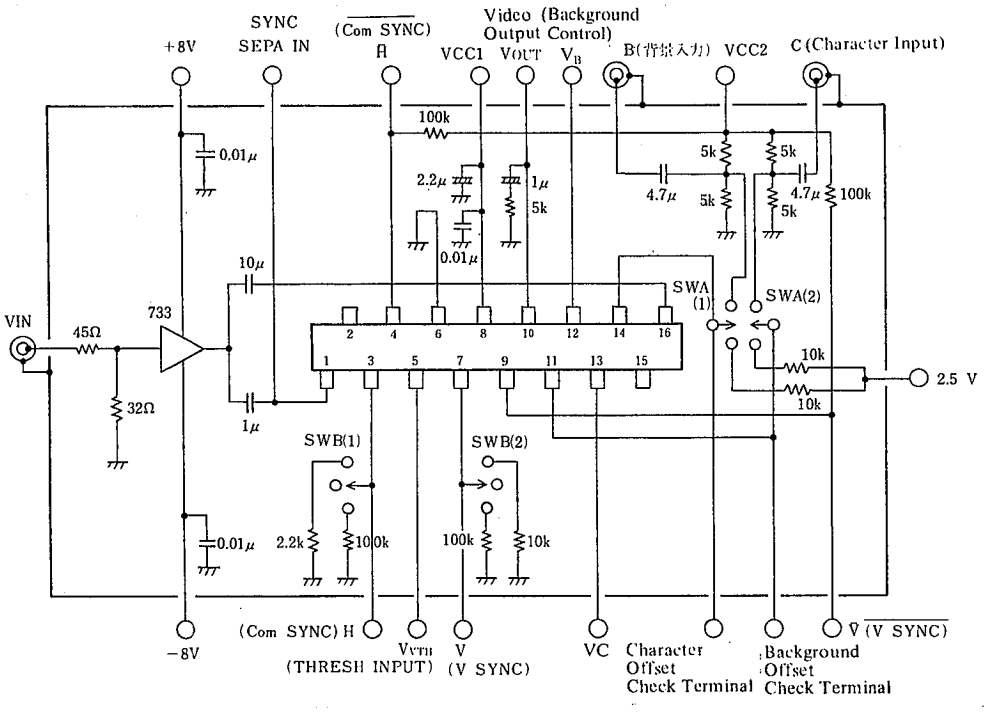
(Ta=25℃, V⁺=5V)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
*Sync. Sepa. Input Threshold Voltage	V_{ISP}	Source Resistance Rg=75Ω	100	140	180	mV
H-Sync. High Level	V_{HH1}	R_L=100kΩ Pin 3 (13)	4.0	—	—	V
H-Sync. High Level	V_{HH2}	R_L=2.2kΩ Pin 3 (13)	3.6	4.1	—	V
H-Sync. Low Level	V_{HL}	R_L=2.2kΩ Pin 3 (13)	—	—	0.1	V
H-Sync. High Level	$V_{\overline{H}H}$	R_L=100kΩ Pin 4 (14)	4.9	—	—	V
H-Sync. Low Level	$V_{\overline{H}L}$	R_L=100kΩ Pin 4 (14)	—	—	0.3	V
V-Sync.High Level	V_{VH1}	R_L=100kΩ Pin 7 (2)	4.0	—	—	V
V-Sync. High Level	V_{VH2}	R_L=10kΩ Pin 7 (2)	3.6	4.1	—	V
V-Sync. Low Level	V_{VL}	R_L=10kΩ Pin 7 (2)	—	—	0.1	V
V-Sync. High Level	$V_{\overline{V}H}$	R_L=100kΩ Pin 9 (4)	4.9	—	—	V
V-Sync. Low Level	$V_{\overline{V}L}$	R_L=100kΩ Pin 9 (4)	—	—	0.3	V
Schmitt Trigger						
Threshold High Level	V_{VTH}	Pin 5 Input Voltage (1)	1.9	2.1	2.3	V
Threshold Low Level	V_{VTL}	Pin 5 Input Voltage (1)	1.1	1.3	1.5	V

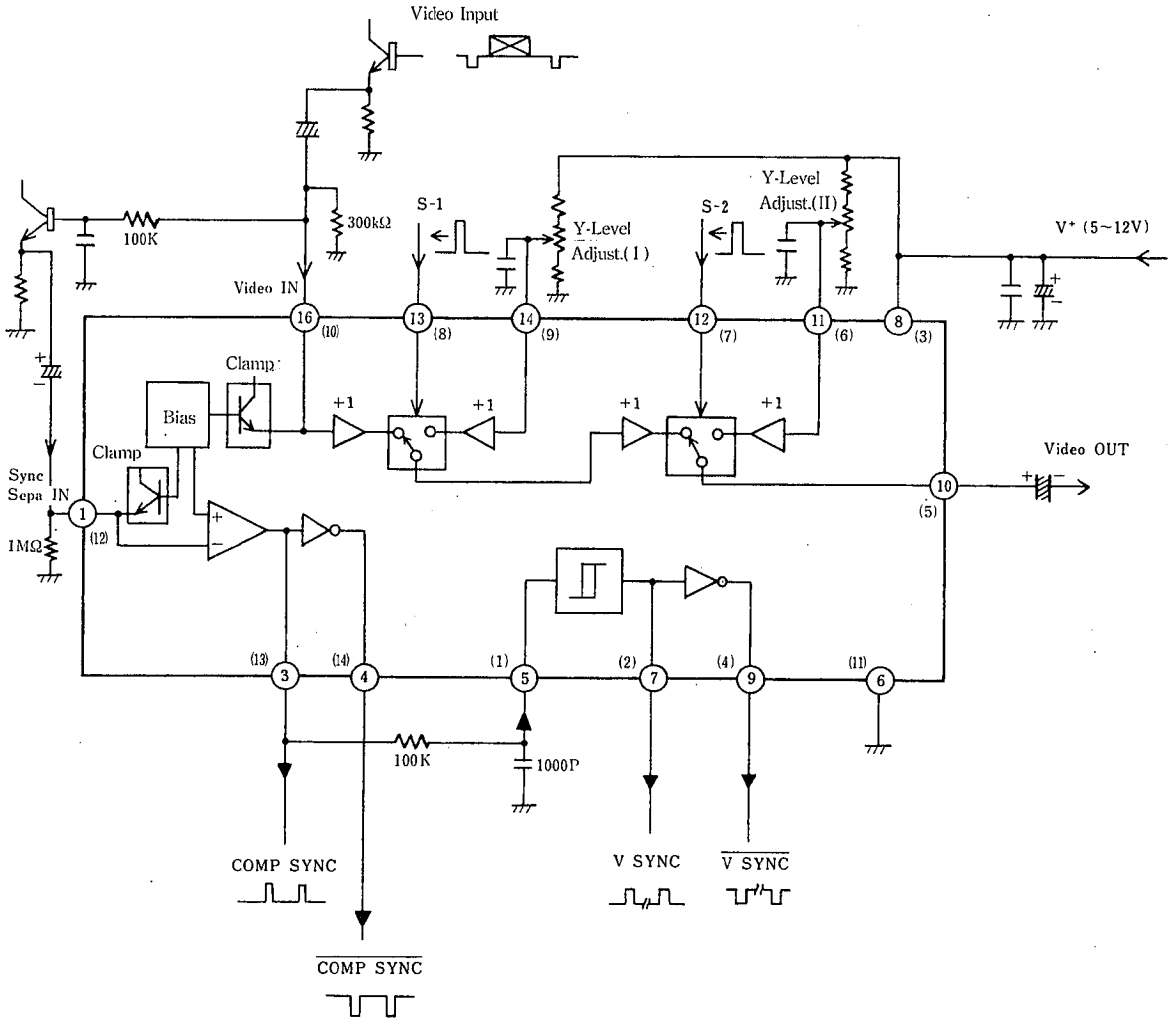
(Note) : ( ) to DIP-14/DMP-14

* A version (100mV Typ.)

■ TEST CIRCUIT



■ TYPICAL APPLICATION



Note 1: Pin Connection to ZIP-16 (Pin 2, Pin 15: NC). ( ) to DIP-14/DMP-14
Note 2: Syn. Sepa. Input Threshold voltage increases 40mV (typ.) when putting 1MΩ in to Pin 1 (Pin 12).

■ PRINCIPLE OF CHARACTER SUPERIMPOSER

Basic principle is shown at Fig. 1.

Usual TV has video (composite) signal output and input terminals to connect VCR or others. There is all information about picture on video composite signal (Ref. to Fig. 2). Its time signal of horizontal and vertical synchronous signal indicates the brighten place of TV tube. For brightening TV tube regardless video signal, the video input signal has to be switched to DC level (luminance level) on that scanning time. On this method, character is shown with background of usual picture.

Fig.1 Principle of Character Superimposer

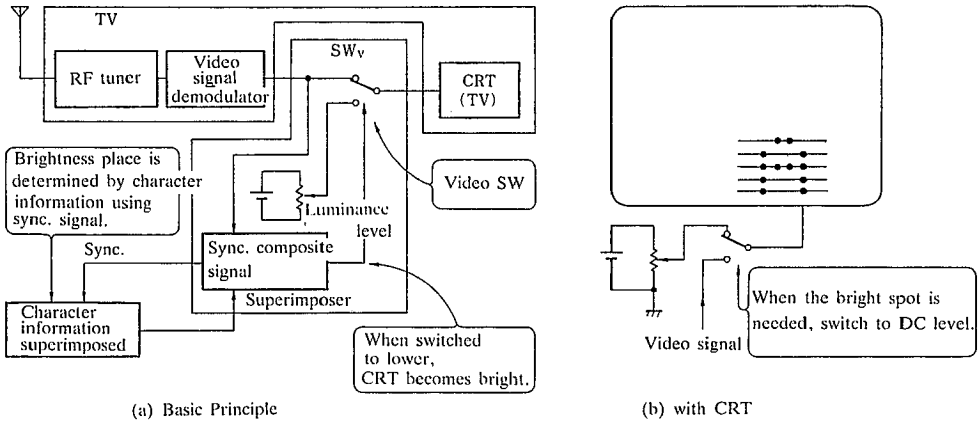
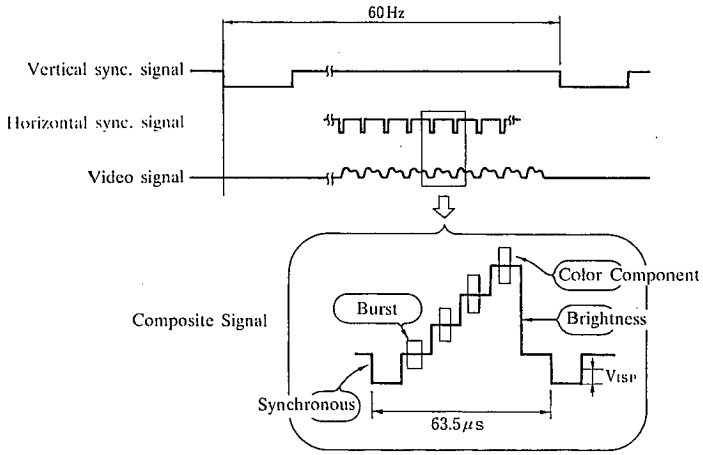


Fig.2 Composite Video Signal



■ CIRCUIT CONFIGURATION

Date superimposer circuit configuration on TV is shown at Fig. 3. The NJM2207 includes video switches which convert, usual video signal (horizontal and vertical synchronous signal, video) to signal, of superimposed character given by character generator.

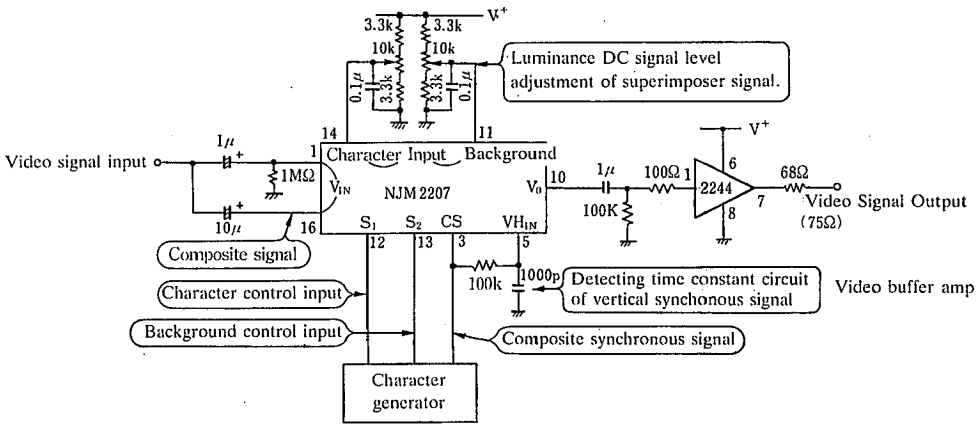


Fig.3 Typical circuit of date superimposer

5

MEMO