

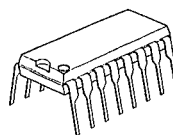
SYNCHRONOUS SEPARATOR WITH AFC

■ GENERAL DESCRIPTION

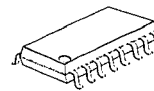
NJM2257 executes Horizontal and Vertical synchronous signal separation, and odd/even field signal detection, from composite video signals.

Built-in 1/2 fH Killer Function circuit can make stabilization of the Horizontal signal oscillation output during the Vertical period.

■ PACKAGE OUTLINE



NJM22570



NJM2257M

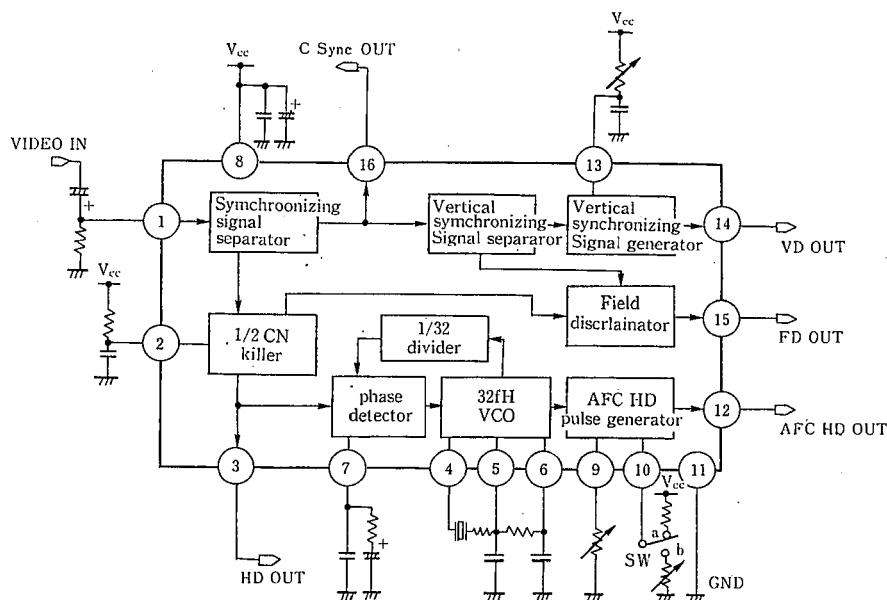
■ FEATURES

- Operating Voltage (+4.5~+5.3V)
- Internal AFC circuit (Horizontal sync. signal.)
- Internal 1/2fH Killer Function
- AFC output Pulse Delay time is Adjustable
- Vertical synchronous pulse width is Adjustable
- Internal Field Discriminator Function
- Package Outline DIP16, DMP16
- Bipolar Technology

■ APPLICATION

- VTR, TV, AV components etc.

■ BLOCK DIAGRAM



NJM2257

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	+7	V
Power Dissipation	P _D	(DIP16) 500 (DMP16) 350	mW
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

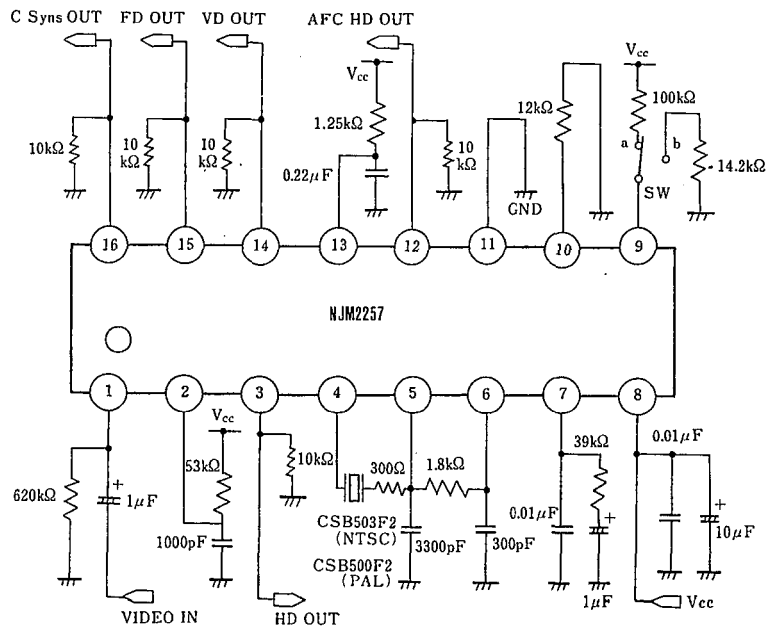
■ ELECTRICAL CHARACTERISTICS

(V_{cc}=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _Q		—	23.0	30.0	mA
AFC Free Run Frequency	f _{0H}		15.54	15.74	15.94	KHz
AFC HD pulse width	T _{AHW1}	SW=a	3.5	4.0	4.5	μS
	T _{AHW2}	SW=b	2.5	4.0	5.5	
AFC HD Delet Time	T _{AHD}		-1.0	0.5	2.0	μS
AFC Lock Range	Δf _{HL}		500	700	—	Hz
AFC Cap Charange	Δf _{HP}		400	600	—	Hz
AFC Output Voltage	H	V _{H_{AH}}	4.0	4.2	—	V
	L	V _{H_{AL}}	—	0	0.1	
Sync Sepa Sync. Separation Level	V _{HSR}		—	0.16	0.18	V
Sync Sepa Delay Time	T _{HCD}		0.05	0.20	0.35	μS
Sync Sepa Output Voltage	H	V _{H_{CH}}	4.0	4.2	—	V
	L	V _{H_{CL}}	—	0	0.1	
HD Output Palth Width	T _{HPW}		4.0	5.5	7.0	μS
HD Output Delay Time	T _{HPD}		0.35	0.6	0.8	μS
HD Output Voltage	H	V _{H_H}	4.0	4.2	—	V
	L	V _{H_L}	—	0	0.1	
V Sync Palth Width	T _{VW}		170	190	210	μS
V Sync Delay Time	T _{VD}		7.0	10.0	13.0	μS
V Sync Output Voltage	H	T _{V_H}	4.0	4.2	—	V
	L	V _{V_L}	—	0	0.1	
Field Distinction Delay Time	odd	T _{F_{OD}}	246	256	266	μS
	even	T _{F_{ED}}	216	226	236	
Field Distinction Output Voltage	odd	V _{F_{OR}}	4.0	4.2	—	V
	even	V _{F_{ER}}	—	0	0.1	

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■ APPLICATION CIRCUIT



■ APPLICATION NOTES

It shows the characteristics by changing of the following resistor.

- The resistor between 9 Pin and GND
High resistance—AFC HD pulse is wide
Low resistance—AFC HD pulse is narrow
- The resistor between 9 Pin and V⁺
At the resistor is 100Ω. AFC HD Delay adjustment is off, and AFC HD output width is 4μs (typ.)
- The resistor between 9 Pin and GND is fundamentally 14.2 kΩ, because the purpose of this resistor is pulse width adjusts 4μs
- The resistor between 10 Pin and GND
High resistance—AFC HD Delay time gains
Low resistance—AFC HD Delay time loses
- The resistor between 13 Pin and GND
High resistance—Vsync pulse is wide
Low resistance—Vsync pulse is narrow
- The resistor joined 2 Pin
Please adjust the wide of following W is from 33 μs to 37 μs ($W = -(C \cdot R) \ln 0.5$)

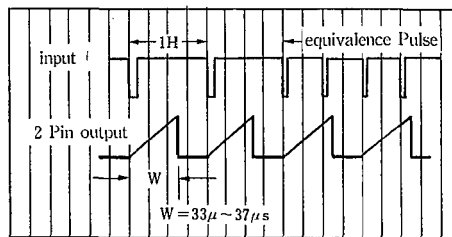
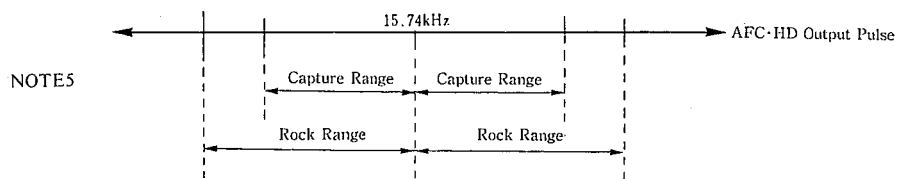
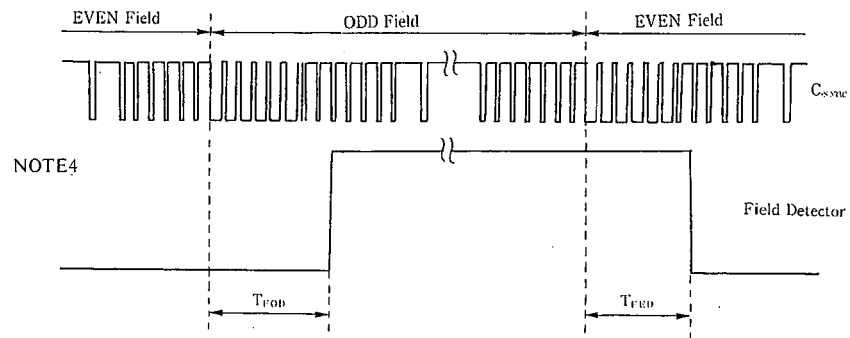
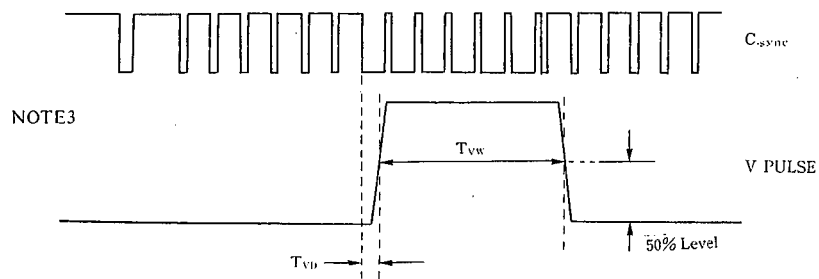
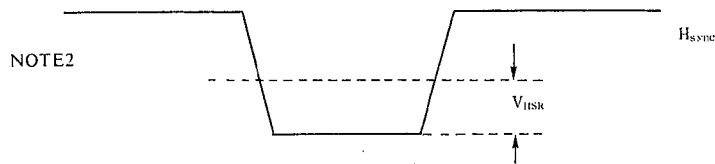
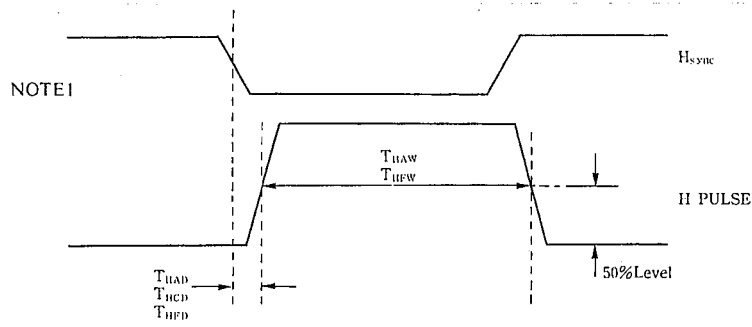


Fig 1 I/O PULSE



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■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
1	VIDEO-IN	Composit Video Signal Input	
2	MM-HT	HD & FD pulse are Controlled by setting mono multi	
3	HD-OUT	1/2 f _H Killer D Output	
4	VCO-OUT	VCO Output is to be given to Ceramic Oscillator	
5	VCO-FILTER 1	Decide the Volume to be transferred shall by decided of Ceramic Oscillator. (90°late)	

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■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
6	VCO-FILTER 2	Decide the Volume to be transferred shall by decided of Ceramic Oscillator. (90°late)	
7	L.P.F	L.P.F. of AFC	
8	V+	Supply Voltage	
9	VR-1	AFC-HD Output Can be adjusted by putting resistor between 9-GND (9 to V _{CC} no adjustment). The pulse width can be adjusted by making changeable of resistor (Adjusting mode)	
10	VR-2	AFC-HD Output delay adjustment by putting 10 pin resistor changeabl at 9 pin adjustment mode.	
11	GND	G raund	

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■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
12	AFC, HD-OUT	AFC-HD Output	
13	MM-VT	Pulse Width of Vsync-OUT is adjusted by setting mono multi time constant.	
14	Vsync-OUT	Vertical Synchronous Signal Output.	
15	FD-OUT discrimination	Field Distinction Signal Output.	
16	Csync-OUT	Synchronous Separation Output	

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■ PIN FUNCTION

PIN NO	FUNCTION BLOCK	OPERATIONAL DESCRIPTION	NDTE
① Pin	Signal Input	Video Signal input	Sync tip clump
② Pin	HD pulse control	HD pulse and FD pulse control by time constant of CR	
③ Pin	HD pulse output	1/2 f_H killer HD pulse output	In a period of vertical synchronizing, a f_H is converted to f_H
④ Pin	AFC Oscillation	Oscillation of 503KHz by a ceramic oscillator, and divided by 32 to get down to 15.74KHz	
⑤ Pin			
⑥ Pin			
⑦ Pin	AFC control	Lag Lead filter for phase detection	
⑧ Pin	Vcc	Vcc	
⑨ Pin	AFC HD output Switch (AFC HD pulse width adjustment)	The case that R is connected between 9pin and Vcc...Fixed output The case that R is connected between 9pin and GND...Adjustable AFC HD Delay Mode	high Resistance → Wide pulse width Low Resistance → Narrow pulse width
⑩ Pin	AFC HD Delay adjustment	The case that R is connected between 9pin and GND...Adjustable AFC HD Delay output	High Resistance → Low Resistance →
⑪ Pin	GND	GND	
⑫ Pin	AFC HD output	AFC HD pulse output	Positive polarity
⑬ Pin	VD pulse width adjustment	VD pulse width control by time constant of CR	
⑭ Pin	VD output	Vertical synchronizing signal output	Positive polarity
⑮ Pin	FD output	Field discriminating signal output	odd field → High Output even field → Low Output
⑯ Pin	C Sync. output	Composite Sync Signal output	Positive polarity

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MEMO

[CAUTION]

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