

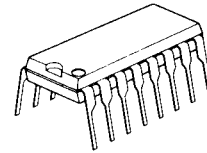
## SYNCHRONOUS SEPARATOR WITH AFC

### ■ GENERAL DESCRIPTION

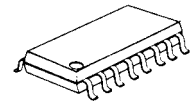
The **NJM2257** excutes Horizontal and Vertical synchronous signal separation, and odd / even field signal detection, from composit video signals.

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

### ■ PACKAGE OUTLINE



NJM2257D



NJM2257M

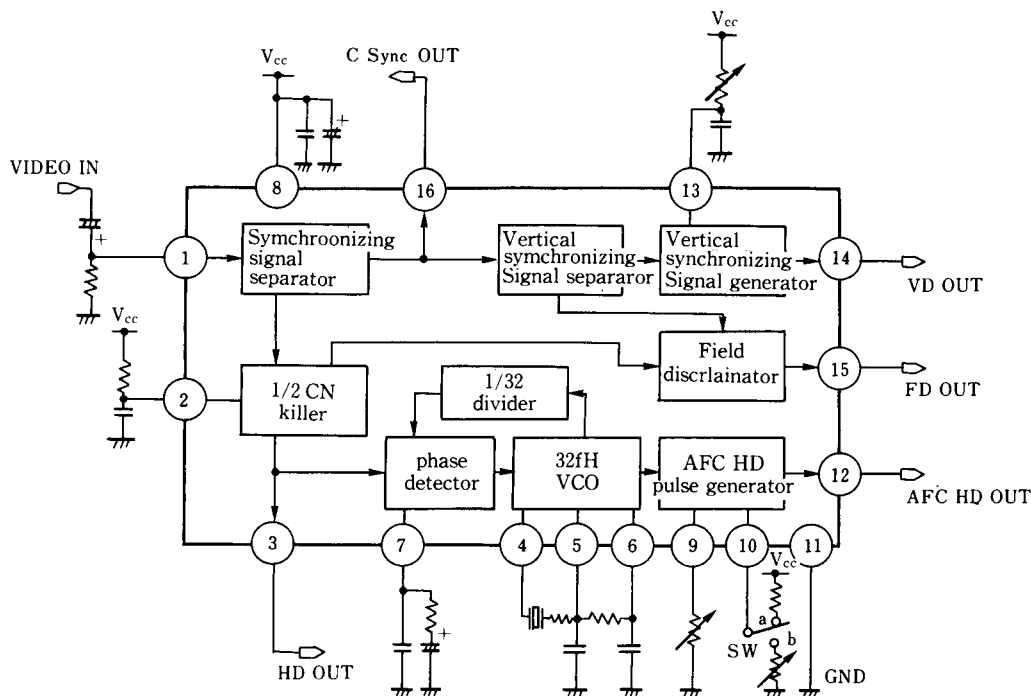
### ■ FEATURES

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

### ■ APPLICATION

- VTR, TV, AV components etc.

### ■ BLOCK DIAGRAM



# NJM2257

## ■ ABSOLUTE MAXIMUM RATINGS

(T<sub>a</sub> = 25°C)

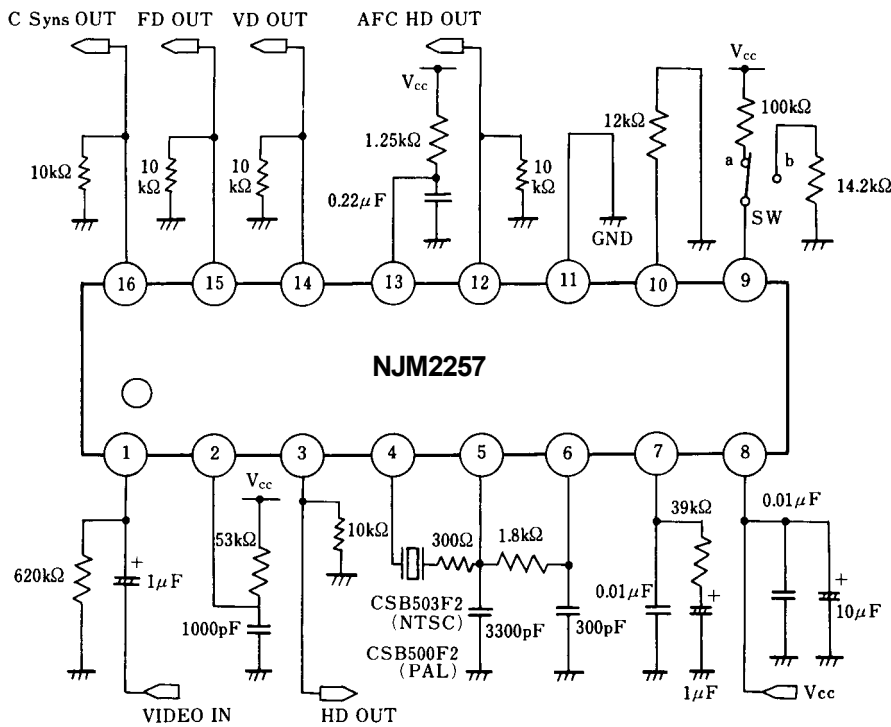
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	+7	V
Power Dissipation	P <sub>D</sub>	(DIP16) 500 (DMP16) 350	mW mW
Operating Temperature Range	T <sub>opr</sub>	-20 to +75	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C

## ■ ELECTRICAL CHARACTERISTICS

(V<sub>CC</sub> = 5V, T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I <sub>Q</sub>		-	23.0	30.0	mA
AFC Free Run Frequency	f <sub>OH</sub>		15.54	15.74	15.94	KHz
AFC HD pulse width	none adjust	T <sub>AHW1</sub> SW=a	3.5	4.0	4.5	μS
	adjust	T <sub>AHW2</sub> SW=b	2.5	4.0	5.5	
AFC HD Delet Time	T <sub>AHD</sub>		-1.0	0.5	2.0	μS
AFC Lock Range	Δf <sub>HL</sub>		500	700	-	Hz
AFC Cap Charange	Δf <sub>HP</sub>		400	600	-	Hz
AFC Output Voltage	H	V <sub>HAH</sub>	4.0	4.2	-	V
	L	V <sub>HAL</sub>	-	0	0.1	
Sync Sepa Sync. Separation Level	V <sub>HSR</sub>		-	0.16	0.18	V
Sync Sepa Delay Time	T <sub>HCD</sub>		0.05	0.20	0.35	μS
Sync Sepa Output Voltage	H	V <sub>HCH</sub>	4.0	4.2	-	V
	L	V <sub>HCL</sub>	-	0	0.1	
HD Output Palth Width	T <sub>HPW</sub>		4.0	5.5	7.0	μS
HD Output Delay Time	T <sub>HPD</sub>		0.35	0.6	0.8	μS
HD Output Voltage	H	V <sub>HHH</sub>	4.0	4.2	-	V
	L	V <sub>HHL</sub>	-	0	0.1	
V Sync Palth Width	V <sub>VW</sub>		170	190	210	μS
V Sync Delay Time	T <sub>VD</sub>		7.0	10.0	13.0	μS
V Sync Output Voltage	H	T <sub>VH</sub>	4.0	4.2	-	V
	L	V <sub>VL</sub>	-	0	0.1	
Field Distinction Delay Time	odd	T <sub>FOD</sub>	246	256	266	μS
	even	T <sub>FED</sub>	216	226	236	
Fideld Distinction Output Voltage	odd	V <sub>FOR</sub>	4.0	4.2	-	V
	even	V <sub>FER</sub>	-	0	0.1	

## APPLICATION CIRCUIT



## APPLICATION NOTES

It shows the characteristics by changing of the following resistor.

- The resistance 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<sup>+</sup>
  - 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 14.2kΩ, 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 joint 2 Pin
  - Please adjust the wide of following W is from 33 μs to 37 μs ( $W = -(C \cdot R) \ln 0.5$ )

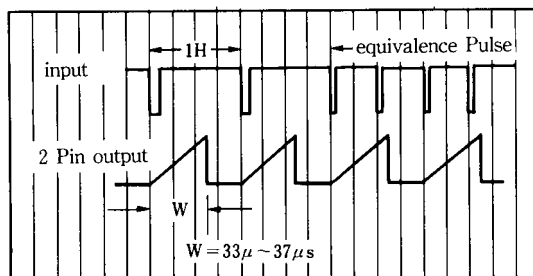
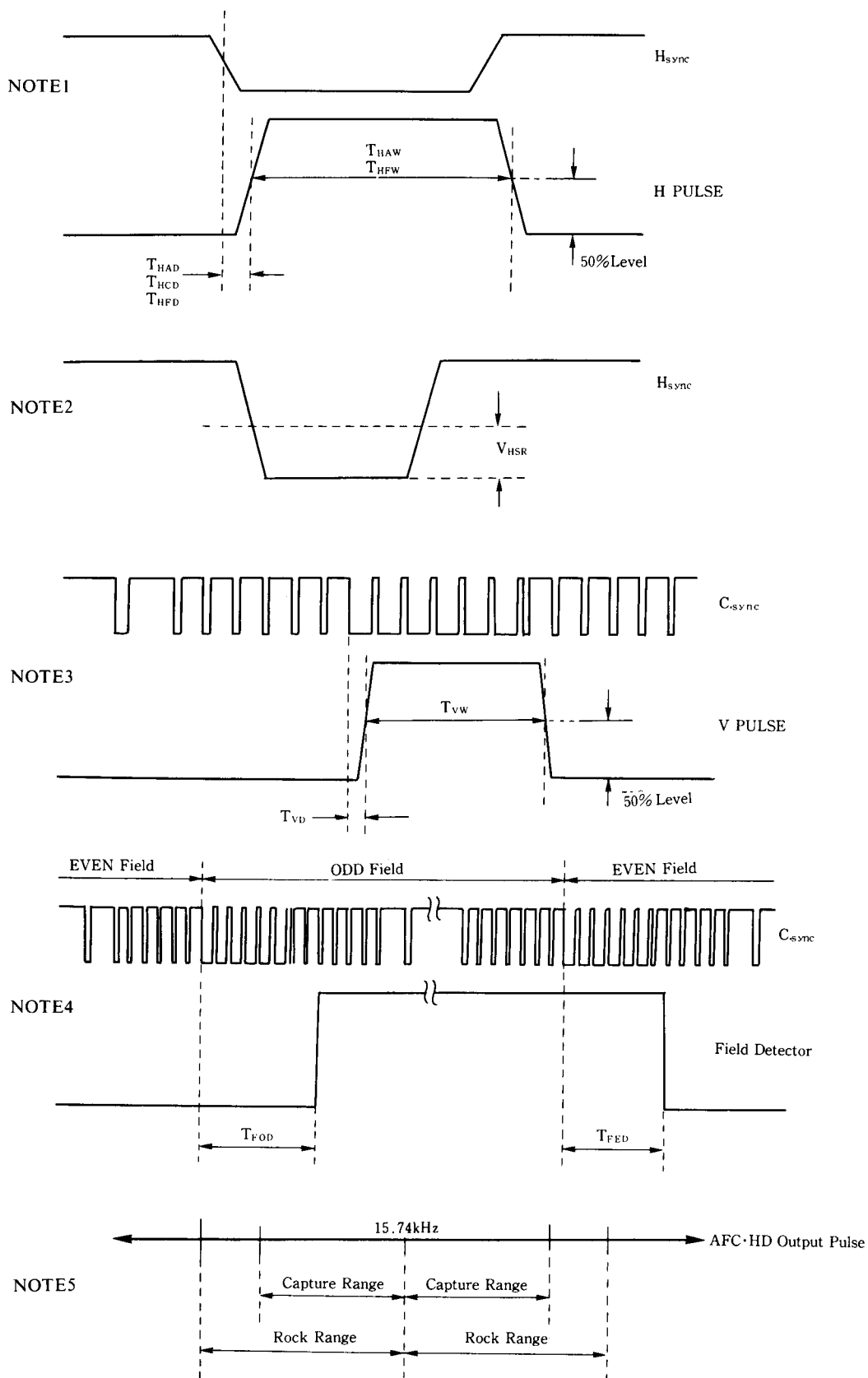


Fig 11 / O PULSE



## ■ 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 <sub>H</sub> Killer D Output	
4	VCO-OUT	VCO Output is to be given to Ceramic Oscillator	
5	VCO-FILTER 1	Decide the Volume to be transfered shall by decided of Ceramic Oscillator. (90°late)	

## ■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	FUNCTION	INSIDE EQUIVALENT CIRCUIT
6	VCO-FILTER 2	Decide the Volume to be transferred shall by decided of Cramic Oscillator. (90°late)	
7	L. P. F	L. P. F. of AFC	
8	V <sup>+</sup>	Supply Voltage	
9	VR-1	AFC-HD Output Can be adjusted by putting resistor between 9 to GND (9 to V <sub>CC</sub> 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 changeable at 9 pin adjustment mode.	
11	GND	Ground	

## ■ 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	Csyne-OUT	Synchronous Separation Output	

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## ■ PIN FUNCTION

PIN NO.	FUNCTION BLOCK	OPERATIONAL DESCRIPTION	NOTE
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	Leg Lead filter for phase detection	
⑧ Pin	$V_{CC}$	$V_{CC}$	
⑨ Pin	AFC HD output Switch (AFC HD pulse width adjustment)	The case that R is connected between 9pin and $V_{CC}$ ...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 → AFC HD Delay time gains Low Resistance → AFC HD Delay time loses
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

**[CAUTION]**

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