

# MN3814, MN3814S

## NTSC CCD Video Signal Delay Elements

### ■ Overview

The MN3814 and MN3814S are 4  $f_{SC}$  CMOS CCD signal delay elements whose wide bandwidth and low noise make them ideal for video signal processing applications.

They contain such components as a shift register clock driver, 906-stage CCD analog shift register, and resampling output amplifier.

They sample the input using the supplied clock signal with a frequency of 14.32 MHz, four times the NTSC color signal subcarrier frequency, and after adding in the attached filter delay, produce independent delays of 1 H (the horizontal scan period).

### ■ Features

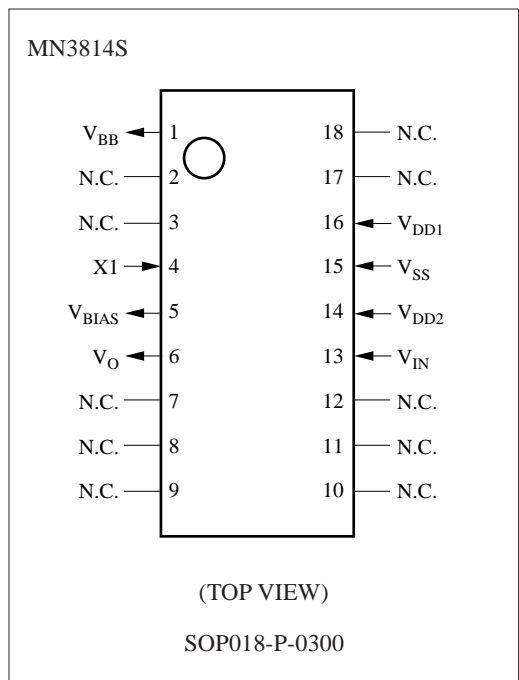
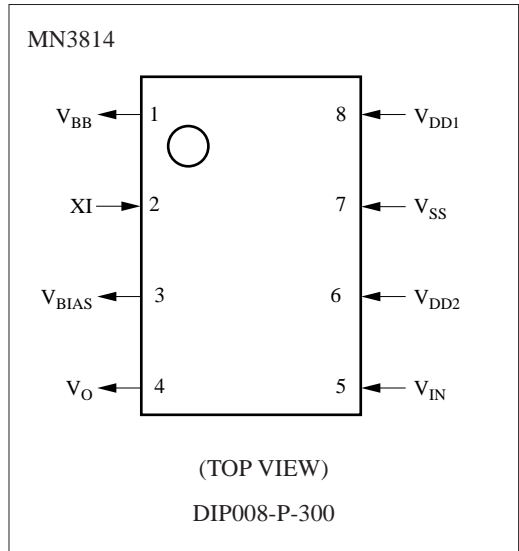
- High-precision 1 H delay for video signal
- CMOS process for low power consumption
- Low EMI levels from clock during driving
- Low clock leakage, which allows use of simpler filters

### ■ Applications

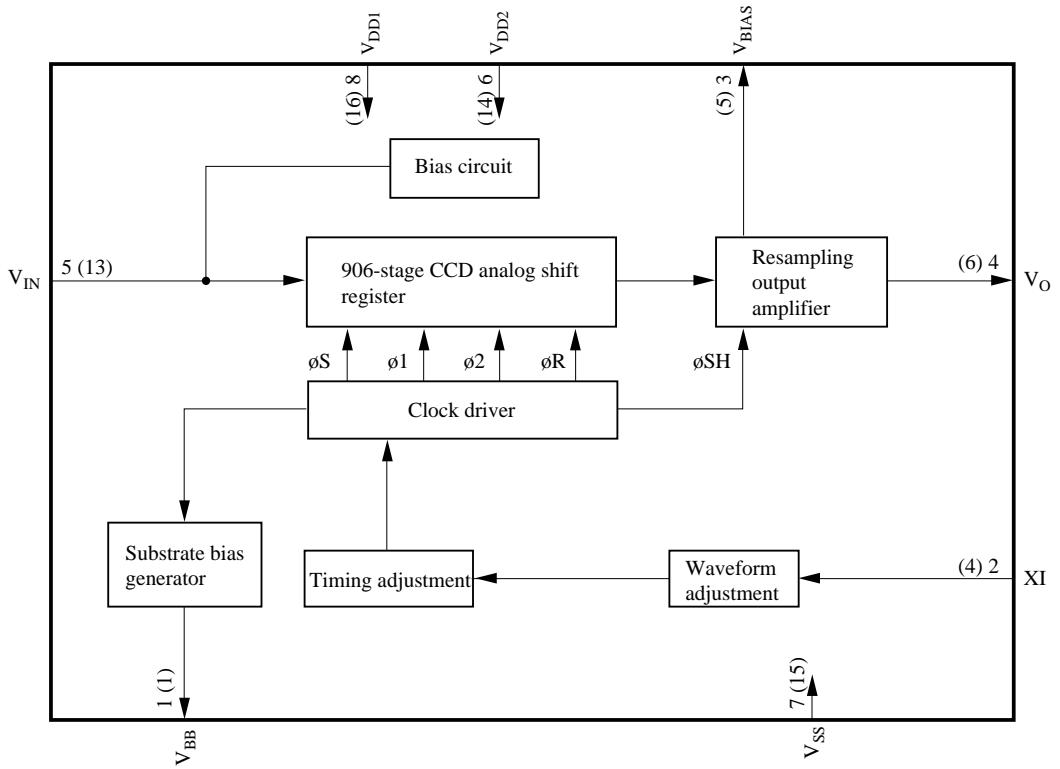
1 H delays of NTSC video signals, especially for:

- Comb filters
- Signal-to-noise ratio improvement
- Dropout compensation

### ■ Pin Assignment



■ Block Diagram



The numbers in parentheses are the pin numbers for the MN3814S.

## ■ Pin Descriptions

### ● MN3814

Pin No.	Symbol	Pin Name
1	$V_{BB}$	Substrate connection
2	XI	14.32 MHz clock input
3	$V_{BIAS}$	Output amplifier control
4	$V_O$	Signal output
5	$V_{IN}$	Signal input
6	$V_{DD2}$	9 volt power supply
7	$V_{SS}$	Ground
8	$V_{DD1}$	5 volt power supply

### ● MN3814S

Pin No.	Symbol	Pin Name
1	$V_{BB}$	Substrate connection
2	N.C.	No connection
3	N.C.	No connection
4	XI	14.32 MHz clock input
5	$V_{BIAS}$	Output amplifier control
6	$V_O$	Signal output
7	N.C.	No connection
8	N.C.	No connection
9	N.C.	No connection
10	N.C.	No connection
11	N.C.	No connection
12	N.C.	No connection
13	$V_{IN}$	Signal input
14	$V_{DD2}$	9 volt power supply
15	$V_{SS}$	Ground
16	$V_{DD1}$	5 volt power supply
17	N.C.	No connection
18	N.C.	No connection

### ■ Electrical Characteristics

$V_{DD1}=5.0V$ ,  $V_{DD2}=9.0V$ ,  $V_{ck}=0.3V_{P-P}$  (sine wave),  $V_{in}=0.5V_{P-P}$ ,  $f_{ck}=14.31818MHz$ ,  $T_a=25^{\circ}C$

Parameter	Symbol	Measurement Conditions	min	typ	max	Unit
Power supply current (1)	$I_{DD1}$	Average current for 5 volt power supply		26	50	mA
Power supply current (2)	$I_{DD2}$	Average current for 9 volt power supply		10	25	mA
Signal bandwidth	$B_W$	-3 dB for 200 kHz value	4.0	5.5		MHz
Insertion gain	IG	$f_{sig}=200kHz$	4	7	10	dB
Total harmonic distortion	THD	$f_{sig}=200kHz$		1	3	%
Signal-to-noise ratio	S/N	Signal output ( $V_{p-p}$ )/noise output (rms)	50	56		dB
Clock leakage	NC	Clock fundamental component output		-30	-15	dB
Delay time	$\tau_D$			63.33		$\mu s$
$V_O$ pin output impedance	$Z_O$			250	500	$\Omega$

■ Package Dimensions (Unit:mm)

