

# LMH1981 Evaluation Board Instruction Manual

National Semiconductor  
Application Note 1599  
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## General Description

The LMH1981 Evaluation Board can be used to evaluate the LMH1981 Multi-Format Sync Separator and as a reference for designing the PCB layout.

## Power Supply

The board can be powered using a clean supply voltage of 3.3V to 5.0V connected to  $V_{CC}$  (J2) and GND (J3) via banana jacks. The LMH1981 supply voltage should be well-regulated within  $\pm 5\%$  variation of the voltage range and should not be shared directly with other digital circuitry.

## Video Input

A clean,  $75\Omega$  video source can be connected to the board via the video input BNC (J1), which is terminated with  $75\Omega$  load resistor on the board. Because the input can accept either SD or HD video inputs, an on-board chroma filter was not provided.

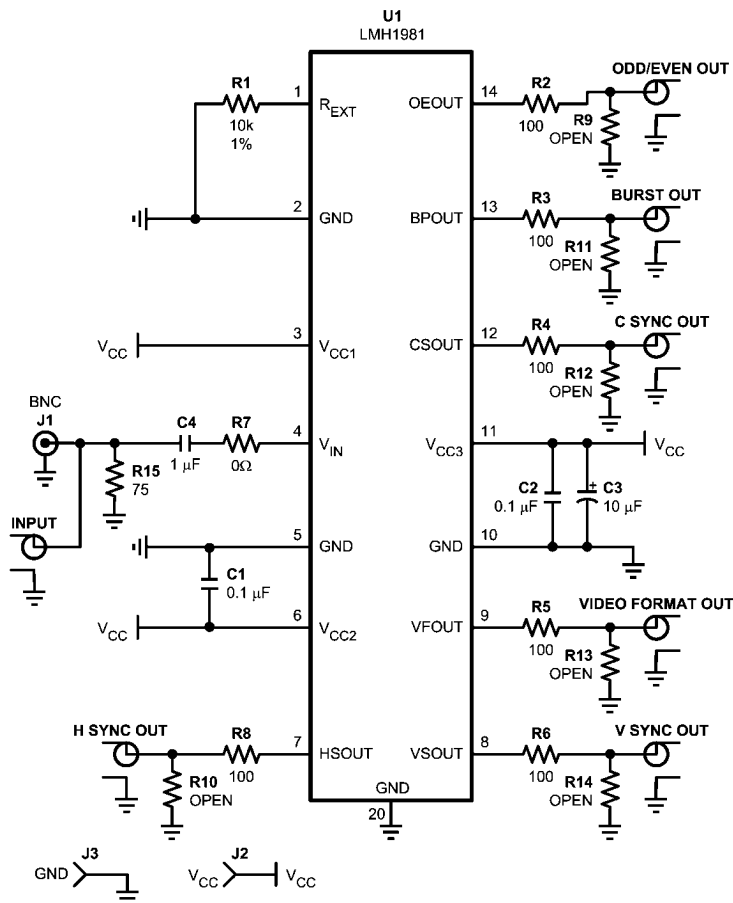
## Board Schematic

For SD composite video inputs, it is recommended to use a RC low-pass filter, especially when chroma levels extend below the 50% sync level and near the front porch, and also when the overall signal-to-noise ratio needs to be improved. Depending on the type of composite video signal being used, the cutoff frequencies set by R and C values are typically between 500 kHz and 2 MHz, which correspond to chroma attenuation between 17 dB and 6 dB for a 3.58 MHz (NTSC) subcarrier frequency.

For HD video inputs, it is recommended to remove or bypass any composite video filtering, as they will reduce the bandwidth of the HD tri-level sync signal and thus increase timing jitter seen at the HSync output.

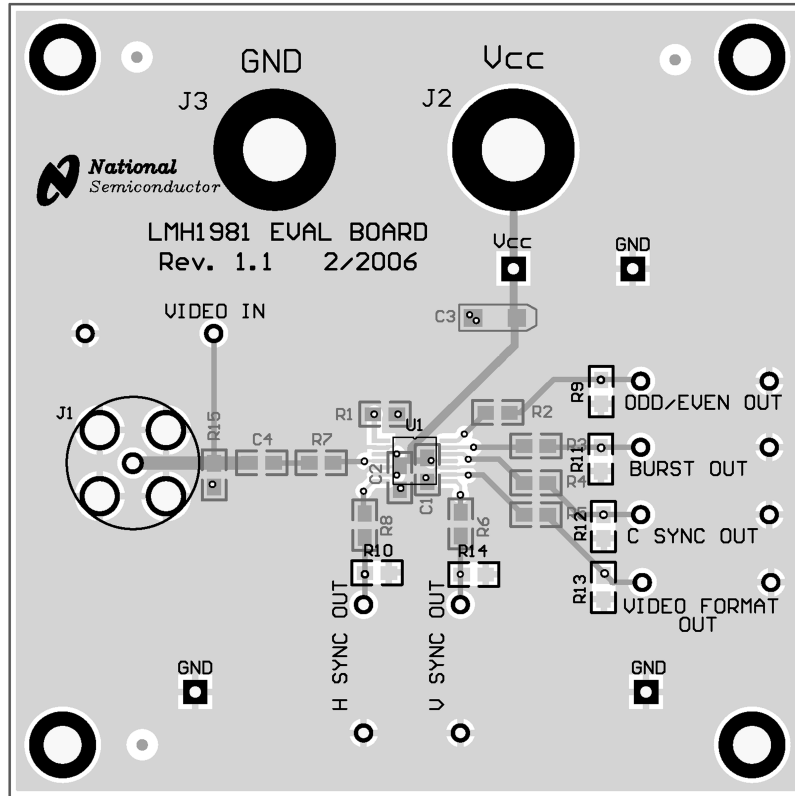
## Test Points

Test points and ground points are provided to measure the input and output signals using 10 M $\Omega$  oscilloscope probes with  $\sim 10$  pF load capacitance.



30012601

# Board Layout



30012602

## Bill of Material

Item	Part Number	Part Description	Qty	Ref Designator	Remark
1	551012810- 001	LMH1981 Eval Board Rev A	1		
2		IC LMH1981 TSSOP-14EP	1	U1	
3		Cer Cap 0.1uF 25V X7R 0805	2	C1,C2	
4		Cer Cap 1 $\mu$ F	1	C4	
5		Tant Cap 10 $\mu$ F 10V TANT-A (3216)	1	C3	
6		Res 10 k $\Omega$ 0.125W 1% 0805	1	R1	
7		Res 75 $\Omega$ 0.125W 1% 0805	1	R15	
8		Res 100 $\Omega$ 0.125W 1% 0805	6	R2-6,R8	
9		Res 0 $\Omega$ 0.125W 1% 0805	1	R7	
10		Res 10 k $\Omega$ 0.125W 1% 0805	6	R9-14	OPEN
11		BNC Amphenol 31 Series BNC 75 $\Omega$	1	J1	Newark Part # 93F7554
12		GND Kobiconn Banana Jack Black	1	J3	Mouser Part # 16BJ382
13		V <sub>CC</sub> Kobiconn Banana Jack Red	2	J2	Mouser Part # 16BJ381

# Notes

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