National Semiconductor

LM1884 TV Stereo Decoder

General Description

The LM1884 is a decoder designed for television stereo. An L-R output is provided to drive further audio processing.

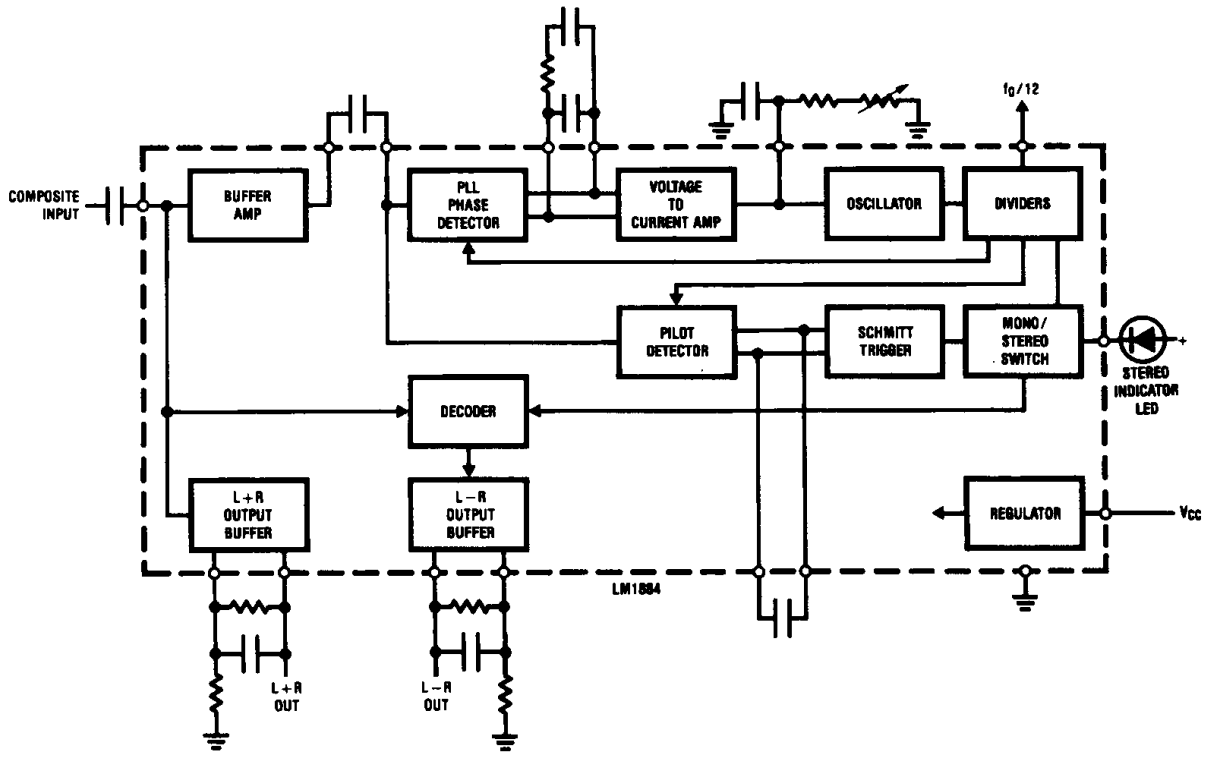
Features

- Low impedance L+R and L−R outputs
- Mono/Stereo switching and indication
- Low distortion—0.10% typical

Applications

- Stereo television sets
- Stereo adapters
- Cable television

Block Diagram



TL/H/6759–1

Order Number LM1884N
See NS Package Number N16A

Absolute Maximum Ratings $T_A = +25°C$ unless otherwise noted

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

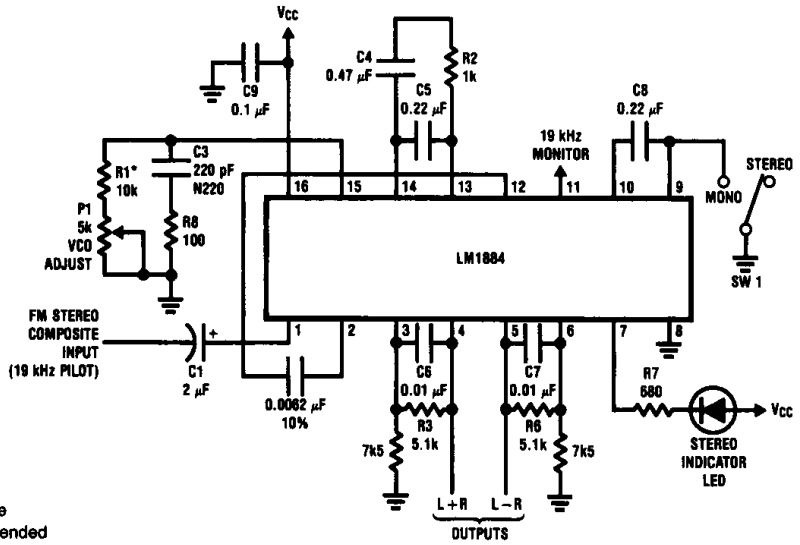
Power Supply Voltage	16V
Power Dissipation (Package Limitation)	1800 mW
Derate Above $T_A = +25°C$	15 mW/°C
Operating Temp. Range (Ambient)	−40°C to +85°C
Storage Temperature Range	−65°C to +150°C
Lamp Drive Voltage	
Max Voltage at Pin 7 with Lamp "Off"	16V
Lamp Current	100 mA
Lead Temperature (Soldering 10 sec.)	260°C

Electrical Characteristics

Parameters Guaranteed by Electrical Testing Test Circuit, $T_A = +25°C$, $V_{CC} = 12V$ unless noted

Parameter	Conditions	Min	Typ	Max	Units
DC	$V_{IN} = 0$				
Supply Current	$V_{CC} = 16V$	15	33.5	50	mA
Output Voltage	Pin 4	1.7	3.5	5.0	V
Output Voltage	Pin 5	1.7	3.8	5.0	V
Output Impedance	Pins 4, 5		100	300	Ω
Lamp Leakage	Lamp off, pin 7 voltage = 16V			0.1	mA
Lamp Saturation Voltage	Lamp on, pin 7 current = 100 mA			2.0	V
Audio Composite signal with 38 kHz subcarrier and 10% 19 kHz pilot, fmod = 1 kHz. Adjust P1 for 19 kHz ±10 Hz.					
L+R Channel Gain	$V_{IN} = 2.5Vpp$ L = R, pilot off, pin 4	0.8	1.0	1.2	
L+R Channel THD	$V_{IN} = 2.5Vpp$ L = R, pilot off, pin 4		0.1	1.0	%
Gain Ratio, L+R Channel to L−R Channel	$V_{IN} = 2.5Vpp$, L only	−2.0	0.0	2.0	db
Supply Rejection	100 mVrms, 1 kHz on supply, $V_{IN} = 0$	30	60		db
DC Output Shift, Mono to Stereo	Pilot off to on, pins 4, 5			±20	mV
Input Impedance	Pin 1	15	50	150	kΩ
PLL					
Pilot Level for Lamp On		12		20	mV
Pilot Level for Lamp Off		3		10	mV
Capture Range	Pilot = 25 mVrms	±0.5			%

Test Circuit

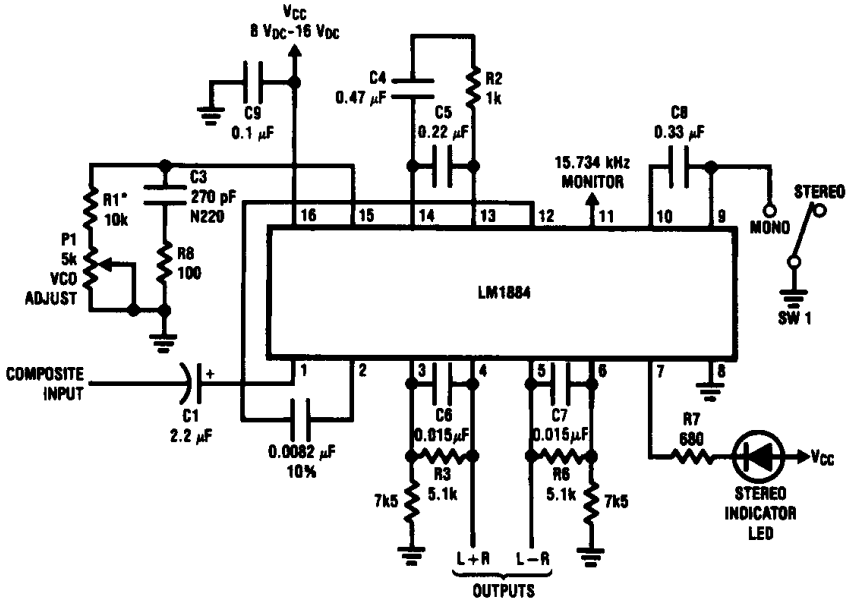


*Metal film, zero temperature coefficient resistor recommended

TL/H/6759-3

FIGURE 1

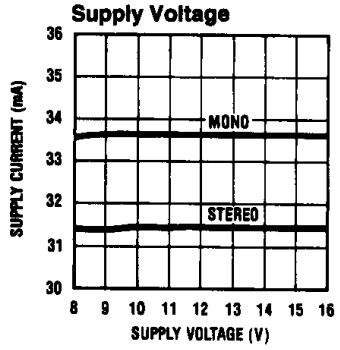
Typical Application



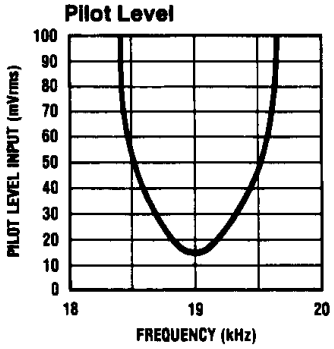
TL/H/6759–2

* Metal film, zero temperature coefficient resistor recommended

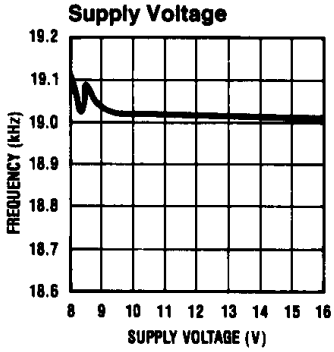
Supply Current vs Supply Voltage



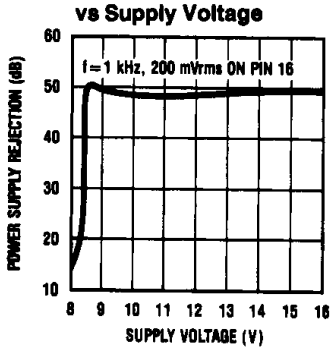
Capture Range vs Pilot Level



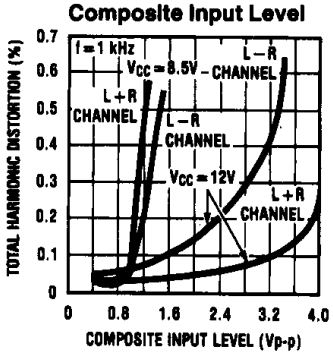
VCO Frequency vs Supply Voltage



Power Supply Rejection vs Supply Voltage



Total Harmonic Distortion vs Composite Input Level



TL/H/6759–4