

## LT6551 Quad Video Amplifier

#### DESCRIPTION

Demonstration circuit 866 is a Quad Video Amplifier featuring the LT6551. The Demo Circuit is designed to operate from a single power supply from 4.5V to 12V. The inputs and outputs are ac-coupled and include  $75\Omega$  terminations for video cables. The LT6551 has a fixed voltage-gain of two, thus with a terminated output cable, the net gain is nominally unity.

# Design files for this circuit board are available. Call the LTC factory.

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#### PERFORMANCE SUMMARY

#### Specification s are at $T_A = 25^{\circ}C$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP MAX	UNITS
V+	Input Supply Range		4.5	5 12.0	V
ZIN	Input Impedance	ac-coupled		75	Ω
ZOUT	Output Impedance	ac-coupled		75	Ω
A	Gain	Output terminated into $75\Omega$		0	dB
		Output terminated into hi-Z		+6	dB
BW	Bandwidth	-3dB, small-signal		60	MHz
	Crosstalk	10MHz		65	dB
V <sub>IN</sub>	Input signal swing	V+= 5V, no output clipping		±0.8	V
		V+= 9V, no output clipping		±1.5	V
Is	Power Supply Current	V+= 5V, no signal		40	mA

#### OPERATING PRINCIPLES

DC866 provides four identical channels of wideband signal amplification suitable for driving HDTV or highresolution RGB video display cables. Each amplifier section of the LT6551 provides a fixed gain of 2, and with series "back-termination" at the outputs (included on the board), results in unity gain transmission of a video signal to a destination load, with frequency response shown in Figure 2.

Each input is terminated to analog ground to properly load the input signal cable. AC-coupling is provided for both inputs and outputs, along with biasing circuitry, to provide single-supply operation. Figure 3 shows the typical crosstalk between adjacent channels. Figure 4 shows the material list of the components used by DC866, and Figure 5 shows the electrical interconnection.



### QUICK START PROCEDURE

Demonstration circuit 866 is easy to set up to evaluate the performance of the LT6551. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

- **1.** Prior to connecting the power supply, preset the output voltage to 5V, or to the desired level, if different.
- 2. With power off, connect the power supplies to V+ and GND using banana to clip-lead cables.
- **3.** If using a Network Analyzer, perform the THRU transmission cal with all cabling, adapters, impedance converters, etc. in place as the reference 0dB path.
- 4. Energize the power supply.
- **5.** Connect the Network Analyzer (if used) to the appropriate channels to measure frequency response and crosstalk as desired.
- **6.** For video-signal evaluation, connect a componentvideo signal source to the inputs and a monitor and/or video analyzer to the outputs.



Figure 1. Proper Measurement Equipment Setup





Figure 2. Typical Small-Signal Frequency Response

Figure 3. Typical Adjacent-Channel Crosstalk

Item	Qty	Ref - Des	Desc	Manufacturer's Part Number
1	4	C1,C2,C3,C4	CAP, 1206 22uF 20% 6.3V X5R	AVX 12066D226MAT
2	4	C5,C6,C7,C8	CAP, SVP 220uF 20% 6.3V ELEC	SANYO 6SVP220MX
3	1	C9	CAP, 0402 100nF 10% 16V X7R	AVX 0402YD104K
4	1	C10	CAP, 22uF 20% 20V OS-CON	SANYO 20SVP22M
5	2	E2,E1	TURRET	MILL-MAX 2501-2
6	8	J1,J2,J3,J4,J5,J6,J7,J8	CONN, BNC, 5 PINS	CONNEX 112404
7	4	R1,R2,R3,R4	RES, 0402 18.2K OHMS 1% 1/16W	AAC CR05-1872FM
8	4	R5,R6,R7,R8	RES, 0402 4.02K OHMS 1% 1/16W	AAC CR05-4021FM
9	4	R9,R10,R11,R12	RES, 0402 76.8 OHM 1% 1/16W	AAC CR05-76R8FM
10	4	R13,R14,R15,R16	RES, 0402 75 OHM 1% 1/16W	AAC CR05-75R0FM
11	4	R17,R18,R19,R20	RES, 0402 47K OHM 5% 1/16W	AAC CR05-473JM
12	1	U1	IC, LT6551CMS	LINEAR TECH LT6551CMS
13	4		STANDOFF, SNAP ON	KEYSTONE_8831

Figure 4. DC866 Bill of Material



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