DEMO CIRCUIT 866
QUICK START GUIDE

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 75Ω 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°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V+	Input Supply Range		4.5	5	12.0	V
Z_{IN}	Input Impedance	ac-coupled		75		Ω
Z_{OUT}	Output Impedance	ac-coupled		75		Ω
A	Gain	Output terminated into 75Ω		0		dB
		Output terminated into hi-Z		+6		dB
BW	Bandwidth	-3dB, small-signal		60		MHz
	Crosstalk	10MHz		65		dB
V_{IN}	Input signal swing	V+= 5V, no output clipping			±0.8	V
		V+= 9V, no output clipping			±1.5	V
I_S	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 high-resolution 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.

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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 component-video signal source to the inputs and a monitor and/or video analyzer to the outputs.

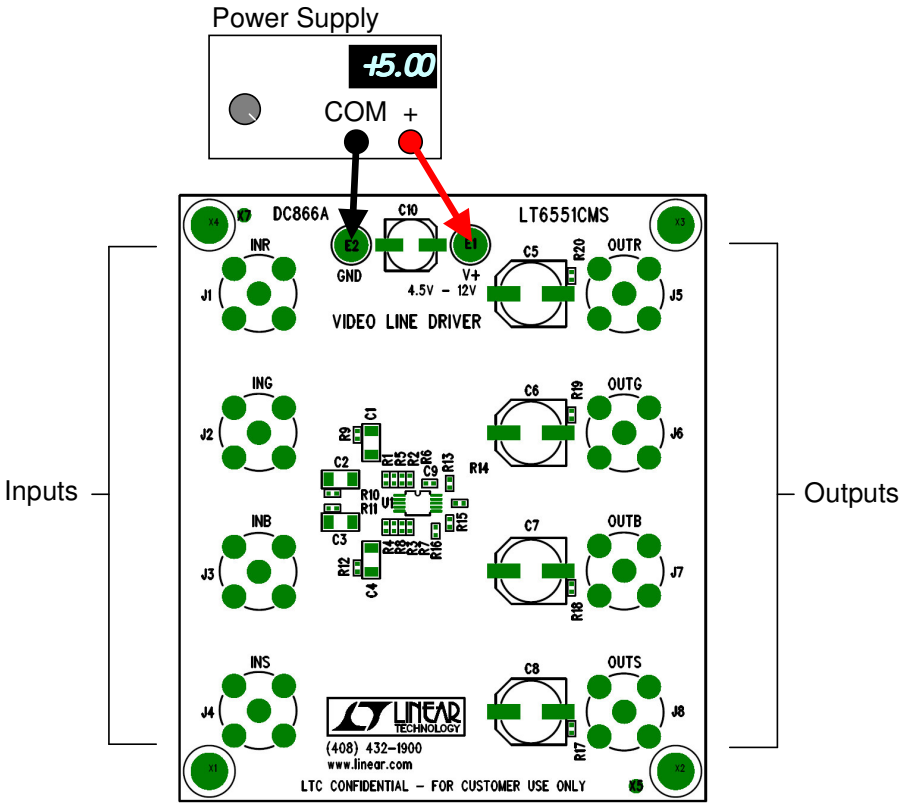

Figure 1. Proper Measurement Equipment Setup

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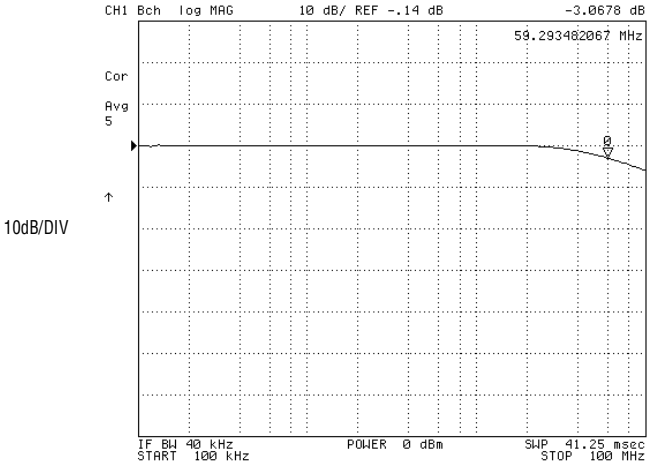

Figure 2. Typical Small-Signal Frequency Response

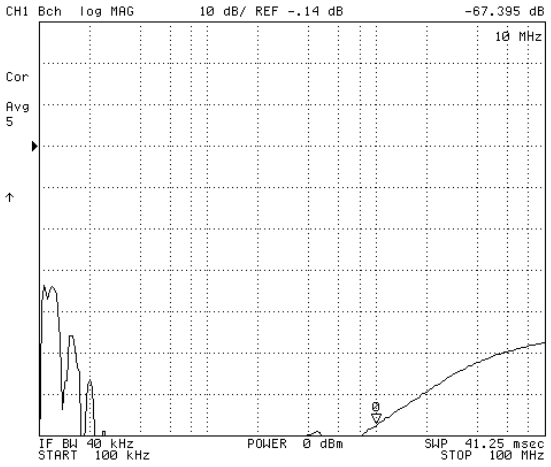

Figure 3. Typical Adjacent-Channel Crosstalk

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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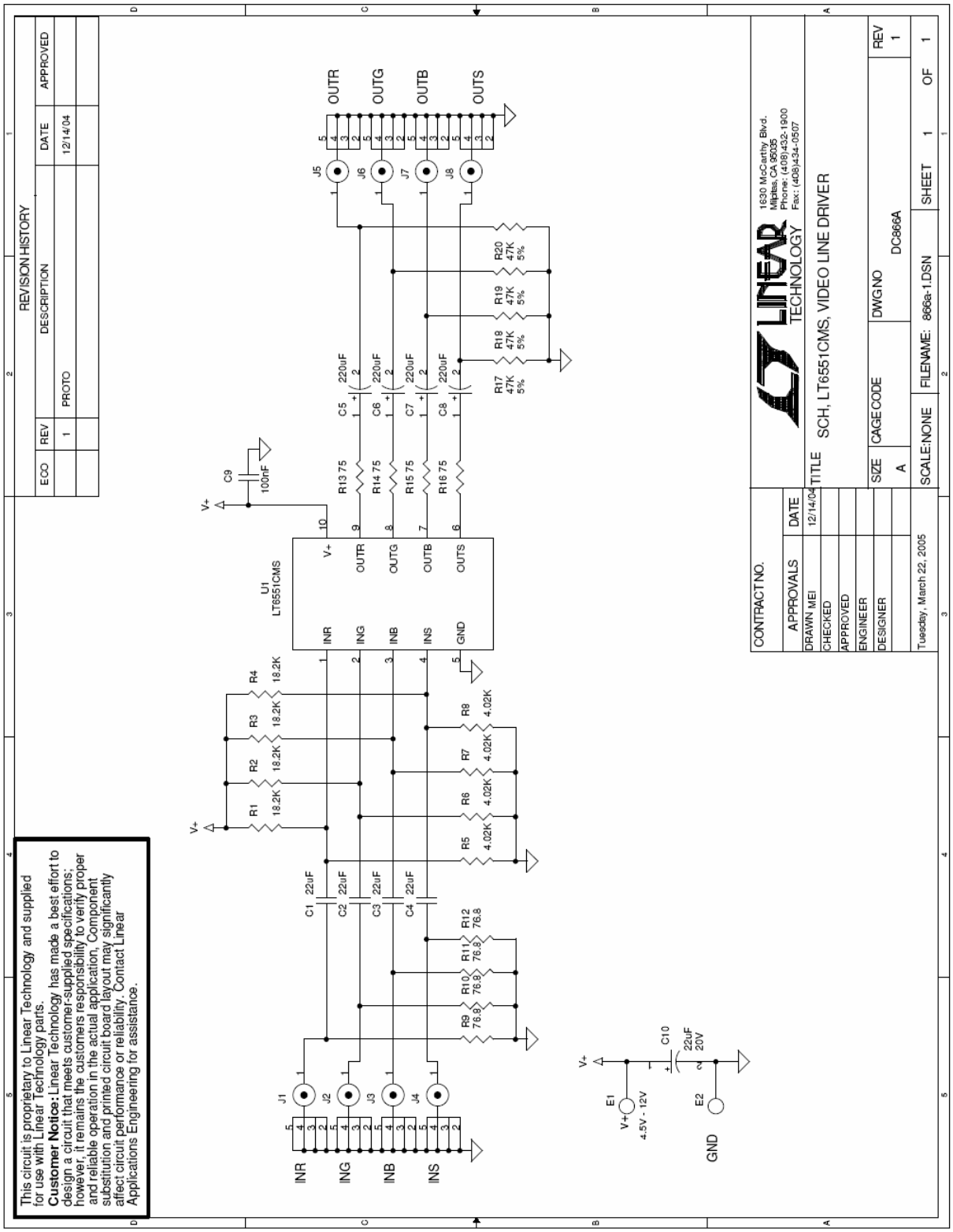

Figure 5. DC866 Electrical Schematic Diagram

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