

# LTC6362

## Fully Differential Amplifier

### DESCRIPTION

The LTC<sup>®</sup>6362 is a low power, low noise differential op amp with rail-to-rail input and output swing that has been optimized to drive low power SAR ADCs. The amplifier may be configured to buffer a fully differential input signal or convert a single-ended input signal to a differential output signal. Demo circuit 1833A contains the LTC6362 amplifier configured as a unity gain amplifier with 1k $\Omega$  feedback and input resistors, where both inputs are AC-coupled by a 1 $\mu$ F capacitor. The differential outputs of the DC1833A can be configured with a first order RC network for driving

the differential inputs of an ADC. The LTC6362 differential output can be DC-coupled or AC-coupled (AC-coupled is the default configuration). Onboard jumpers configure the DC1833A for dual or single power supply. In addition, there are several optional surface mount pads that can be used to change the LTC6362 configuration.

**Design files for this circuit board are available at <http://www.linear.com/demo>**

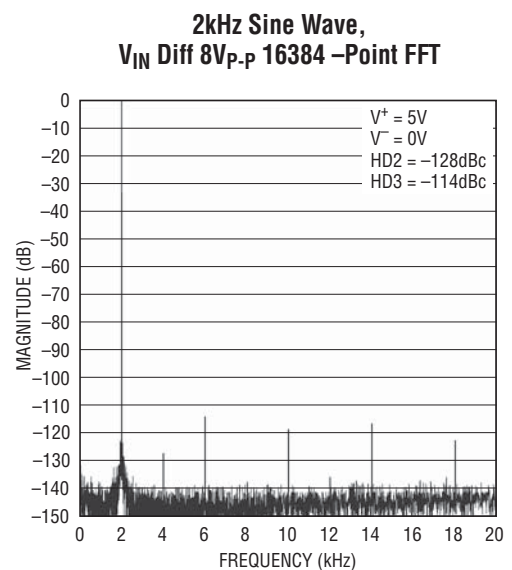
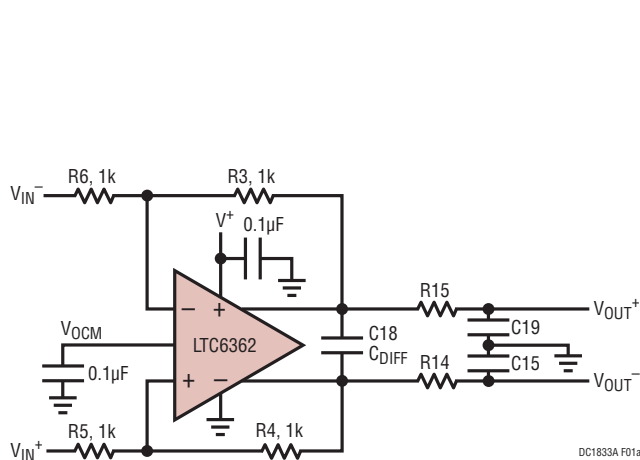
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### PERFORMANCE SUMMARY

This demo board is factory tested by measuring distortion with an 8V<sub>P-P</sub>, 2kHz differential input, as given in Table 1. (T<sub>A</sub> = 25°C)

**Table 1. LTC6362 Noise and Distortion**

Differential Input, Referred Noise Voltage Density		3.9nV/ $\sqrt{\text{Hz}}$
Distortion, 8V <sub>P-P</sub> Differential Input, V <sub>S</sub> = 5V, F <sub>IN</sub> = 2kHz, R <sub>LOAD</sub> = 1000 $\Omega$	2nd Harmonic	-128dBc
	3rd Harmonic	-114dBc



**Figure 1. Typical Application for an LTC6362**

# DEMO MANUAL DC1833A

## QUICK START PROCEDURE

Check to ensure that both jumpers, JP1 and JP2, are set as shown in Figure 2. Power the DC1833 from a single power supply,  $V^+ = 5V$  and  $V^- = 0V$ . For distortion measurements, a low noise, low distortion generator and an analyzer such

as Audio Precision SYS-2722 or Stanford Research SR1 should be used with the LTC6362 configured as shown in Figure 1, the resulting distortion for an  $8V_{p-p}$  sine wave input is shown in the FFT plot.

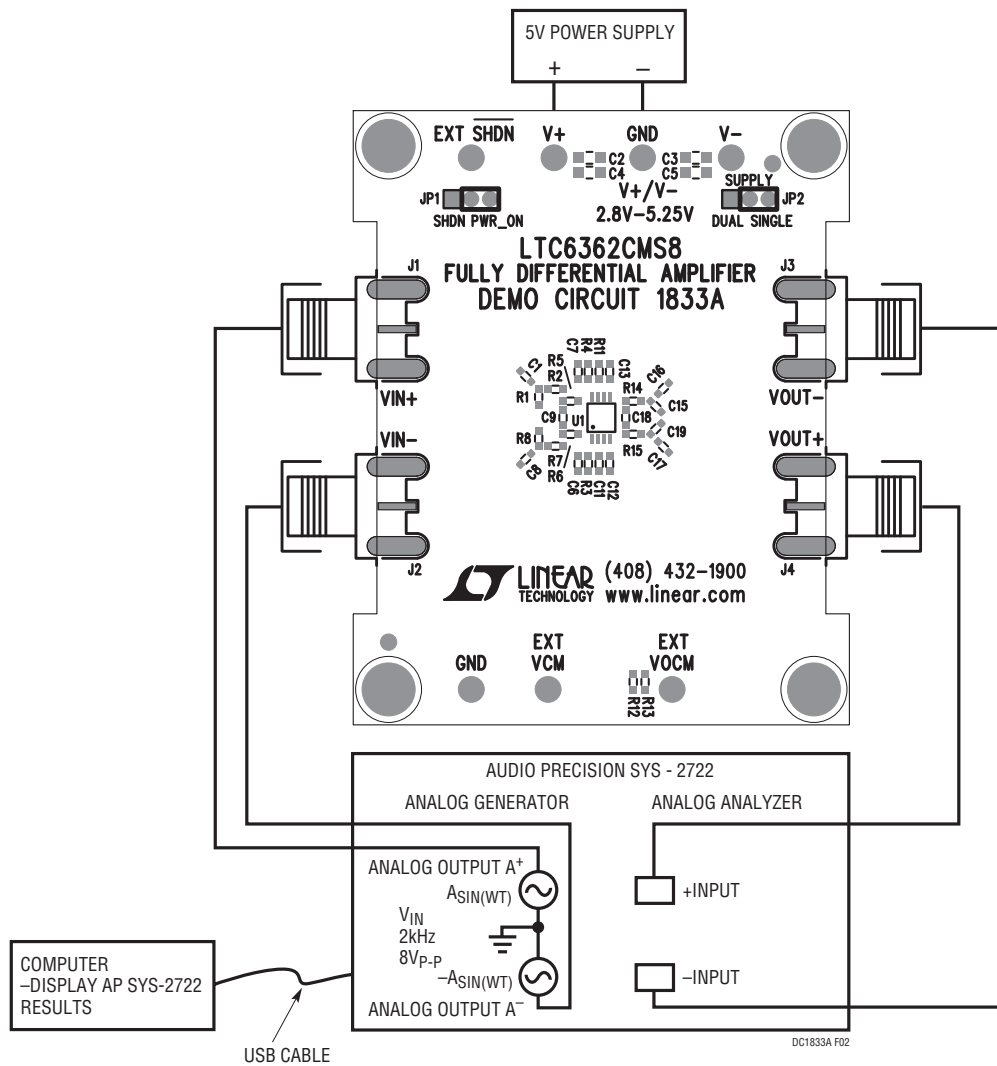


Figure 2. DC1833A Connection Diagram

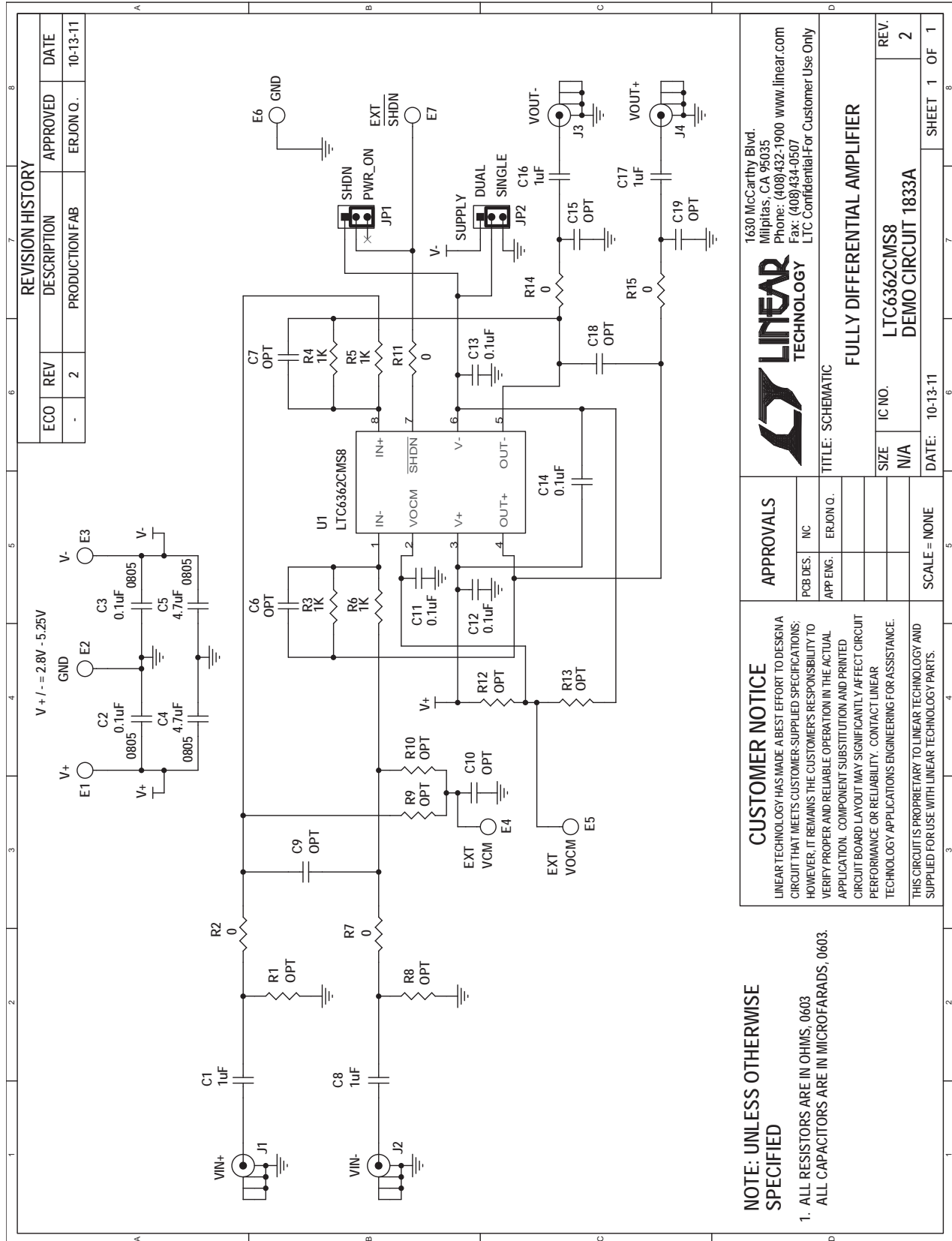


# DEMO MANUAL DC1833A

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>Required Circuit Components</b>				
1	4	C1, C8, C16, C17	CAP, CER X5R 1 $\mu$ F 16V, 0603	AVX, 0603YD105KAT
2	2	C2, C3	CAP, CER 0.1 $\mu$ F 25V 10% X7R, 0805	MURATA, GRM21BR71E104KA01L
3	2	C4, C5	CAP, CER X5R 4.7 $\mu$ F 16V, 0805	TAIYO YUDEN, EMK212ABJ475MG-T
4	0	C6, C7, C9, C10, C15, C18, C19 (OPT)	CAP, 0603	
5	4	C11, C12, C13, C14	CAP, CER X7R 0.1 $\mu$ F 16V, 0603	AVX, 0603YC104KAT
6	2	JP1, JP2	HEADER, 3PIN 1 ROW 0.079CC	SAMTEC, TMM-103-02-L-S
7	2	JP1, JP2	SHUNT, 0.079" CENTER	SAMTEC, 2SN-BK-G
8	4	J1 TO J4	CONN SMA 50 $\Omega$ EDGE LAUNCH	AMPHENOL/CONNEX 132357
9	7	E1 TO E7	TP, TURRET, 0.064"	MILL-MAX, 2308-2-00-80-00-00-07-0
10	0	R1, R8, R9, R10, R12, R13 (OPT)	RES, 0603	
11	5	R2, R7, R11, R14, R15	RES, CHIP 0, 1%, 0603	NIC, NRC06ZOTRF
12	4	R3, R4, R5, R6	RES, CHIP 1k, 1%, 0603	NIC, NRC06F1001TRF
13	1	U1	IC, FULLY DIFFERENTIAL AMPLIFIER	IC, LINEAR TECH. LTC6362CMS8
14	2		STENCIL FOR BOTH SIDES	STENCIL, DC1833A-2
15	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 1833A-2

**SCHEMATIC DIAGRAM**



REVISION HISTORY				
ECO	REV	DESCRIPTION	APPROVED	DATE
-	2	PRODUCTION FAB	ERJON O.	10-13-11

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**LINEAR TECHNOLOGY**  
 FULLY DIFFERENTIAL AMPLIFIER  
 LTC6362CMS8  
 DEMO CIRCUIT 1833A

**APPROVALS**

PCB DES.	NC
APP ENG.	ERJON O.

TITLE: SCHEMATIC

SIZE	IC NO.	REV.
N/A	LTC6362CMS8	2

SCALE = NONE

DATE: 10-13-11

SHEET 1 OF 1

**NOTE: UNLESS OTHERWISE SPECIFIED**

1. ALL RESISTORS ARE IN OHMS, 0603  
 ALL CAPACITORS ARE IN MICROFARADS, 0603.

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# DEMO MANUAL DC1833A

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