LTC6957-1/LTC6957-2
Low Phase Noise, Dual LVPECL or LVDS Output Buffer/Driver/Logic Converter

DESCRIPTION

Demonstration Circuit 1765A features the LTC®6957-1/LTC6957-2, a low phase noise, dual LVPECL or LVDS output buffer/driver/logic converter.

The DC1765A provides 0.5" spaced SMA connectors for the differential inputs and outputs. The inputs are terminated to on-board 50Ω resistors. The LVPECL outputs of the DC1765A-A are individually biased through 130Ω resistors to ground and then AC-coupled. The transmission lines are 50Ω, making the outputs suitable to drive 50Ω input impedance instruments. The LVDS outputs of the DC1765A-B are terminated with 100Ω differential and are DC-coupled. The DC1765A allows the user to take advantage of the shutdown and bandwidth selection features of the LTC6957. The DC1765A can operate with a single-ended or differential sine wave or square-wave input signal. Supply the DC1765A with 3.3V and it is ready to function. The DC1765A offers extra component population options to make it compatible with different logic signal types.

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

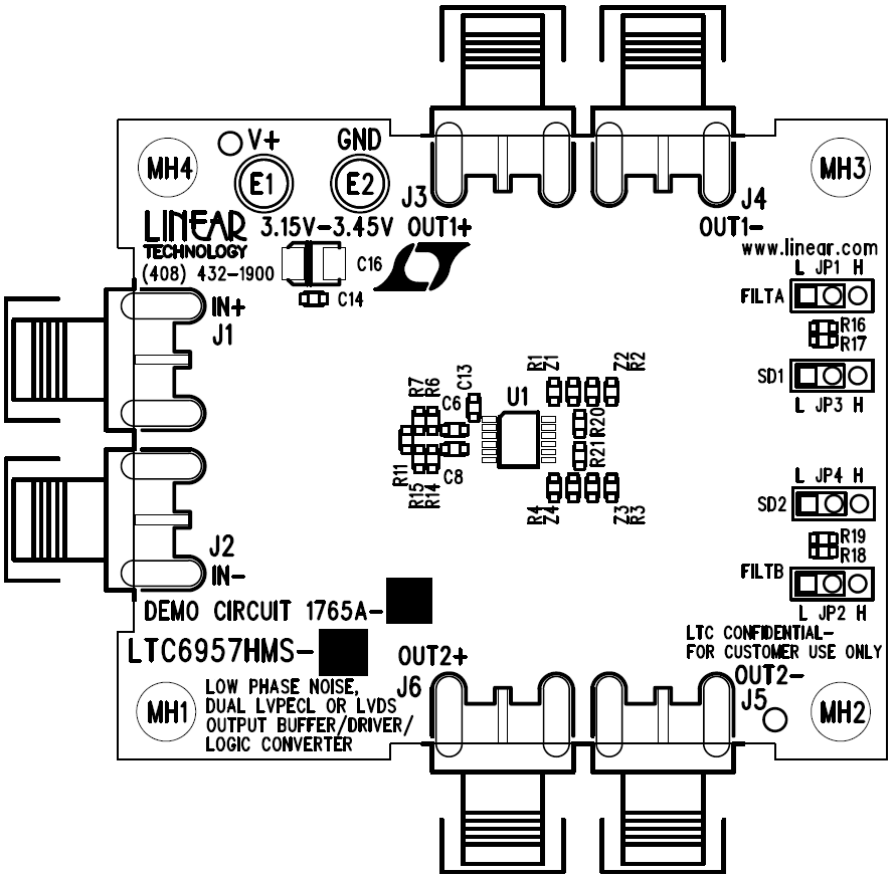


Figure 1. DC1765A Inputs and Outputs

QUICK START PROCEDURE

The DC1765A is very straightforward to operate. Refer to Figure 1 for the following discussion.

DC1765A Configuration

1. Apply a low-noise and low-spurious 3.3V supply between the V+ (E1) and GND (E2) turrets.
2. Connect a low phase-noise (or jitter) single-ended or differential input signal to IN+ (J1) and/or IN– (J2) SMA connectors. Refer to the LTC6957 data sheet for appropriate input signal types and levels.
3. Connect either of the outputs (OUT1, J3 and J4 or OUT2, J5 and J6) to a high-speed scope, spectrum analyzer or a signal analyzer to start the evaluation of the LTC6957.
4. Configure the input bandwidth of the LTC6957 with the use of FILTA (JP1) and FILTB (JP2) jumpers. Follow the instructions given in the LTC6957 data sheet to choose the correct bandwidth given an input signal.
5. Shut down an unused output by using jumper SD1 (JP3) to shutdown OUT1 or jumper SD2 (JP4) to shutdown OUT2.

DC1765A Reconfiguration

The DC1765A is flexible and allows the connectivity of a variety of input and output signal types. The DC1765A is configured as shown in the schematic diagram. However, the DC1765A allows the installation of different input and output configurations to adapt to a variety of logic signals. Refer to the Applications Information section of the LTC6957 data sheet for all possible connectivity options that can be implemented by modifying the DC1765A.

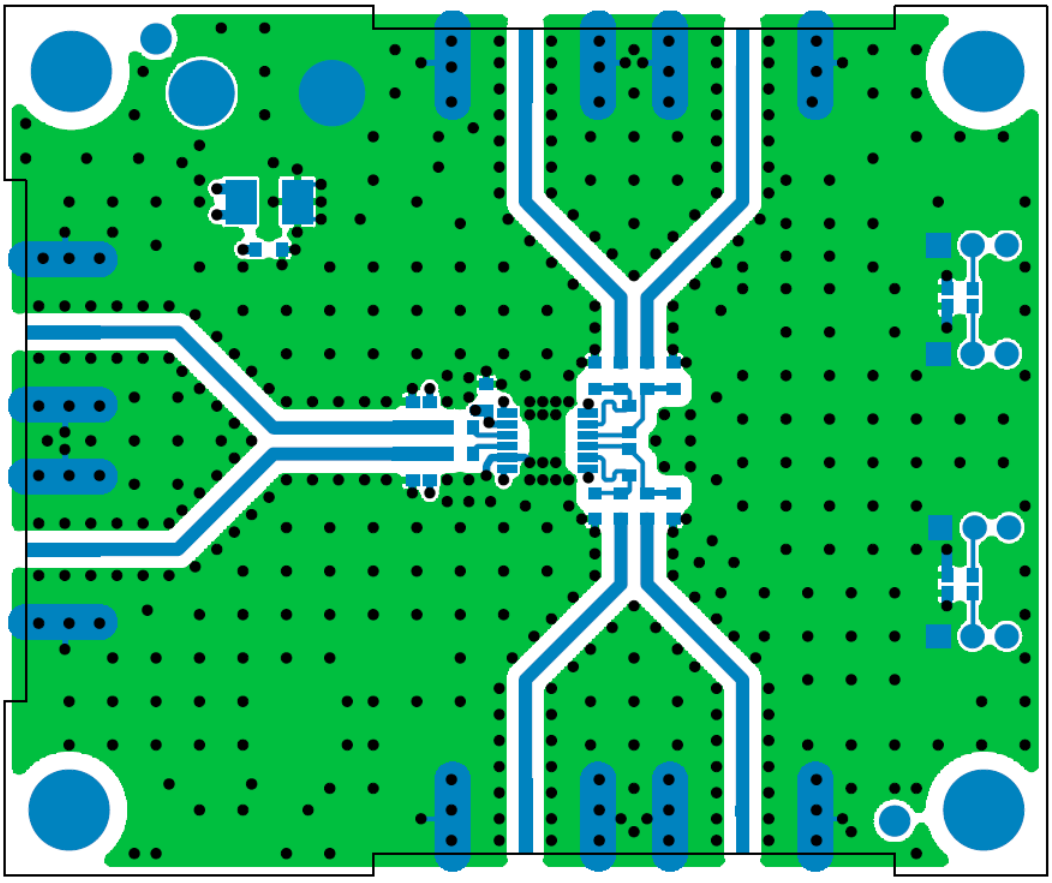
ASSEMBLY OPTIONS

Table 1. DC1765A Assembly Options

ASSEMBLY VERSION	PART NUMBER	OUTPUT TYPE
DC1765A-A	LTC6957HMS-1	LVPECL
DC1765A-B	LTC6957HMS-2	LVDS

LAYOUT TOP LAYER

The top metal layer of the DC1765A is shown here as an example of good PCB layout for the LTC6957-1/LTC6957-2.



PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC1765A General BOM				
1	2	C6, C8	CAP., X7R, 0.01µF 50V 10%, 0603	NIC, NMC0603X7R103K50TRP
2	1	C13	CAP., X7R, 0.1µF 50V 10%, 0603	TDK, C1608X7R1H104K
3	1	C14	CAP., X5R, 1µF 25V 10%, 0603	TDK, C1608X5R1E105K
4	1	C16	CAP., TANT, 22µF 10V, 3528	AVX, TPSB226K010R0400
5	2	E1, E2	TESTPOINT, TURRET 0.094"	MILLMAX, 2501-2-00-80-00-00-07-0
6	4	JP1, JP2, JP3, JP4	HEADER 1×3 079	SAMTEC, TMM-103-02-L-S
7	6	J1, J2, J3, J4, J5, J6	CONN., SMA 50Ω EDGE-LAUNCH	E.F. JOHNSON, 142-0701-851
8	0	R6, R11, R14	RES., OPT 0603	OPT
9	2	R7, R15	RES., CHIP, 49.9Ω 1% 0603	VISHAY, CRCW060349R9FKEA
10	4	R16, R17, R18, R19	RES., CHIP, 330k 1% 0603	VISHAY, CRCW0603330KFKEA
11	4	SHUNTS FOR JP1-JP4	SHUNT, .079" CENTER	SAMTEC, 2SN-BK-G
12	4		STAND-OFF, NYLON 0.500	KEYSTONE, 8833 (SNAP ON)
DC1765A-A				
1	1		DC1765A GENERAL BOM	DC1765A
2	4	Z1, Z2, Z3, Z4	CAP., X7R, 0.01µF 50V, 0603	NIC, NMC0603X7R103K50TRP
3	4	R1, R2, R3, R4	RES., CHIP, 130Ω, 0603	VISHAY, CRCW0603130RFKEA
4	0	R20, R21	RES., 0603	OPT
5	1	U1	IC, LTC6957HMS-1, MS12	LINEAR TECH., LTC6957HMS-1
DC1765A-B				
1	1		DC1765A GENERAL BOM	DC1765A
2	4	Z1, Z2, Z3, Z4	RES., CHIP, 0Ω, 0603	VISHAY, CRCW06030000Z0EA
3	0	R1, R2, R3, R4	RES., 0603	OPT
4	2	R20, R21	RES., CHIP, 100Ω 5%, 0603	VISHAY, CRCW0603100RJNEA
5	1	U1	IC, LTC6957HMS-2, MS12	LINEAR TECH., LTC6957HMS-2

SCHEMATIC DIAGRAM