LTC2208/LTC2208-14/LTC2217/ LTC2216/LTC2215 16-Bit/14-Bit 80Msps to130Msps ADCs

DESCRIPTION

Demonstration circuit 996 supports a family of 16-/14-bit 80Msps to 130Msps ADCs. Each assembly features one of the following devices: LTC®2208, LTC2208-14, LTC2217, LTC2216, LTC2215 high speed, high dynamic range ADCs.

This demonstration circuit only supports LVDS operation. For demonstration of CMOS output signaling, please see DC854.

Other members of this family include the LTC2207, a 105Msps 16-bit CMOS-only version of this device, as well as lower speed versions and single-ended clock versions. These 7mm × 7mm QFN devices are supported by Demonstration Circuits 918 and 919 (for single-ended clock input).

Several versions of the 996 demo board supporting the LTC2208 16-bit, LTC2217 16-bit and LTC2208-14 14-bit series of A/D converters are listed in Table 1. Depending on the required resolution, sample rate and input frequency, the DC996 is supplied with the appropriate ADC and with an optimized input circuit. The circuitry on the analog inputs is optimized for analog input frequencies below 70MHz or from 70MHz to 140MHz. For higher input frequencies, contact the factory for support.

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

Table 1. DC996 Variants

DC996 VARIANTS	ADC PART NUMBER	RESOLUTION	MAXIMUM SAMPLE RATE	INPUT FREQUENCY
996B-A	LTC2208	16-Bit	130Msps	1MHz to 70MHz
996B-B	LTC2208	16-Bit	130Msps	70MHz to 140MHz
996B-C	LTC2208-14	14-Bit	130Msps	1MHz to 70MHz
996B-D	LTC2208-14	14-Bit	130Msps	70MHz to 140MHz
996B-E	LTC2217	16-Bit	105Msps	1MHz to 70MHz
996B-F	LTC2217	16-Bit	105Msps	70MHz to 140MHz
996B-G	LTC2216	16-Bit	80Msps	1MHz to 70MHz
996B-H	LTC2216	16-Bit	80Msps	70MHz to 140MHz
996B-I	LTC2215	16-Bit	65Msps	1MHz to 70MHz
996B-J	LTC2215	16-Bit	65Msps	70MHz to 140MHz
996A-P	LTC2208	16-Bit	130Msps	>140MHz
996A-Q	LTC2208-14	14-Bit	130Msps	>140MHz

PERFORMANCE SUMMARY (T_A = 25°C)

PARAMETER	CONDITION	VALUE
Supply Voltage	Depending On Sampling Rate and the A/D Converter Provided, This Supply Must Provide Up To 700mA.	Optimized for 3.3V [3.15V⇔3.45V Min/Max]
Analog Input Range	Depending on PGA Pin Voltage	1.5V_{P-P} to 2.25V_{P-P}
Logic Input Voltages	Minimum Logic High Maximum Logic Low	2V 0.8V
Logic Output Voltages (Differential)	Nominal Logic Levels (100Ω Load) Minimum Logic levels (100Ω Load)	350mV/2.1V Common Mode 247mV/2.1V Common Mode
Sampling Frequency (Convert Clock Frequency)	See Table 1	
Convert Clock Level	50Ω Source Impedance, AC-Coupled or Ground Referenced (Convert Clock Input Is Capacitor Coupled On Board and Terminated with 50Ω.)	2V_{P-P}⇔2.5V_{P-P} Sine Wave or Square wave
Resolution	See Table 1	
Input frequency range	See Table 1	
SFDR	See Applicable Data Sheet	
SNR	See Applicable Data Sheet	

QUICK START PROCEDURE

Demonstration circuit 996 is easy to set up to evaluate the performance of the LTC2208/LTC2208-14/LTC2217 A/D converters. Refer to Figure 1 for proper measurement equipment setup and follow this procedure:

Setup

If a DC890 QuikEval™ II Data Acquisition and Collection System was supplied with the DC996 demonstration circuit, follow the DC890 Quick Start Guide to install the required software and for connecting the DC890 to the DC996 and to a PC.

DC996 Demonstration Circuit Board Jumpers

The DC996 demonstration circuit board should have the following jumper settings as default: (as per Figure 1).

Figure 1 shows DC996A, the DC996B is shown in Figure 7.

J2: Mode (V_{CC}) 2's Complement CDS Off

J3: SHDN: (Run) Dither (Off)

J4: Rand (Off) PGA 1x

J9: Unused power connector

Applying Power and Signals to the DC996 Demonstration Circuit

Apply 3.3V across the pins marked "+3.3V" and "PWR GND" on the DC996. The DC996 demonstration circuit requires up to 700mA depending on the sampling rate and the A/D converter supplied. If a DC890 is used to acquire data from the DC996, the DC890 must be provided with an external 6V ±0.5V 1A supply on turrets G7(+) and G1(–) or the adjacent 2.1mm power jack to support the power requirements of the Xilinx Spartan 3 FPGA active terminations used to terminate the LVDS repeaters on the DC996. The DC890 will not activate the LVDS mode unless the DC890 detects external power present.

If external power is not present the DC890 will not configure the FPGA for LVDS terminations as this would result in exceeding the USB 500mA limit. The DC890 contains an onboard electronic circuit breaker which will shut off the DC890 if external power is removed while the FPGA is configured for LVDS active terminations.

QUICK START PROCEDURE

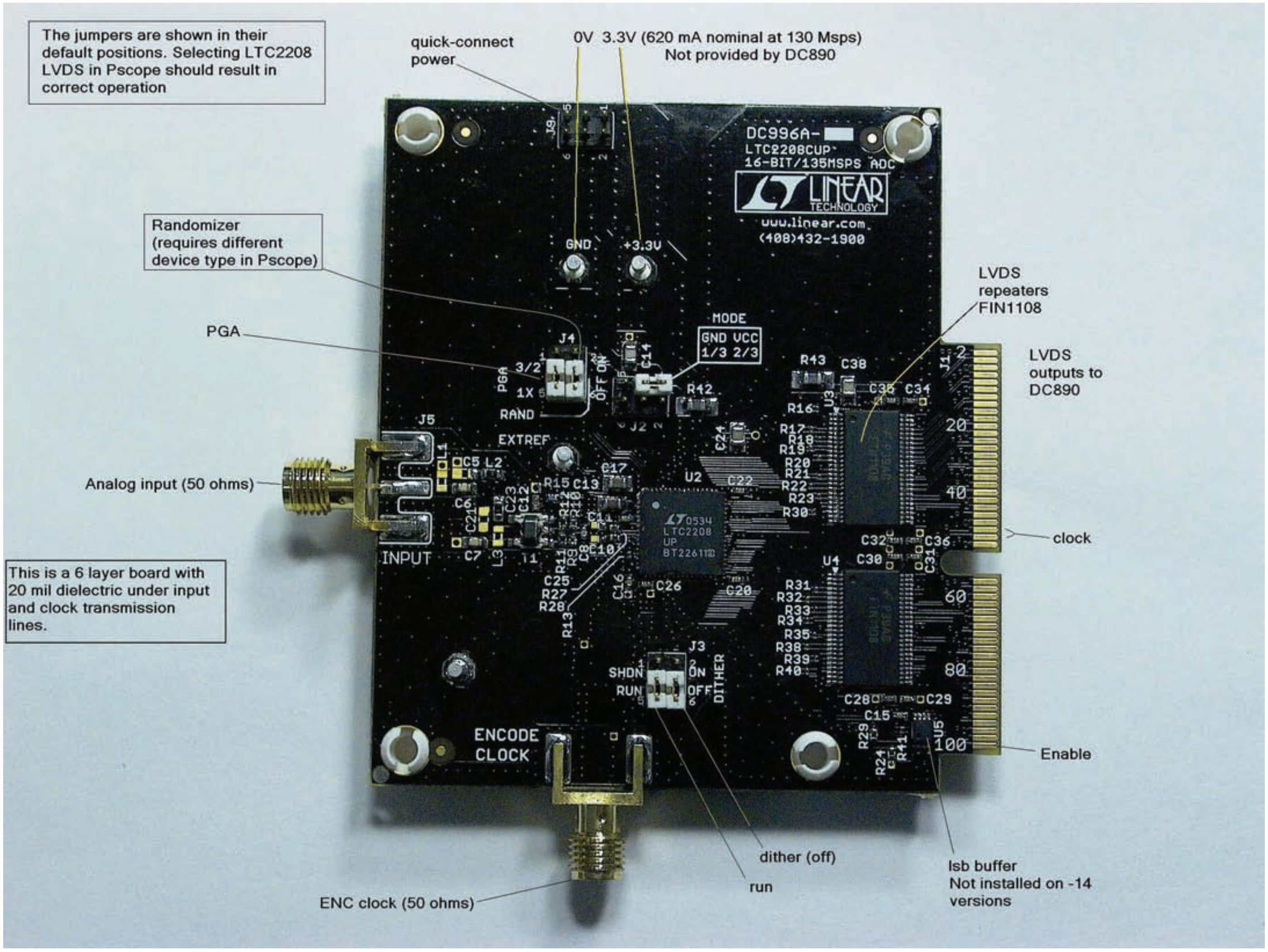


Figure 1. DC996A Setup (Zoom for Detail). See Figure 7 for DC996B

Encode Clock

Note: This is not a logic-compatible input. It is terminated with 50Ω. Apply an encode clock to the SMA connector on the DC996 demonstration circuit board marked "J7 ENCODE INPUT". This is a transformer-coupled input, terminated on the secondary side in two steps, 100Ω at the transformer with final termination at the ADC at 100Ω.

For the best noise performance, the ENCODE INPUT must be driven with a very low jitter source. When using a sinusoidal generator, the amplitude should often be as large as possible, up to $3V_{P-P}$ or 13dBm. Using bandpass filters on the clock and the analog input will improve the noise performance by reducing the wideband noise power of the signals. Data sheet FFT plots are taken with 10-pole LC filters made by TTE (Los Angeles, CA) to suppress signal generator harmonics, non-harmonically related spurs and broad band noise. Low phase noise Agilent 8644B generators are used with TTE bandpass filters for both the clock input and the analog input.

Apply the analog input signal of interest to the SMA connectors on the DC996 demonstration circuit board marked "J5 ANALOG INPUT". These inputs are capacitive coupled to Balun transformers ETC1-1-13, or directly coupled through flux-coupled transformers ETC1-1T.

QUICK START PROCEDURE

An internally generated conversion clock output is available on J1 which could be collected via a logic analyzer, or other data collection system if populated with a SAMTEC MEC8-150 type connector or collected by the DC890 Data Acquisition Board using the *PScope™ System Software* provided or downloaded from the Linear Technology website at http://www.linear.com/designtools/software/. If a DC890 was provided, follow the DC890 Quick Start Guide and the instructions below.

To start the data collection software if "PScope.exe", is installed (by default) in \Program Files\LTC\PScope\, double click the PScope Icon or bring up the run window under the start menu and browse to the PScope directory and select PScope.

If the DC996 demonstration circuit is properly connected to the DC890, PScope should automatically detect the DC996, and configure itself accordingly. If necessary the procedure below explains how to manually configure PScope.

Under the Configure menu, go to ADC Configuration. Check the Config Manually box and use the following configuration options:

- 16-Bit (or 14-Bit if using LTC2208-14)
- Alignment: Left-16
- Bipolar (2's complement)
- Positive clock edge
- Type: LVDS

If everything is hooked up properly, powered and a suitable convert clock is present, clicking the "Collect" button should result in time and frequency plots displayed in the PScope window. Additional information and help for PScope is available in the DC890 Quick Start Guide and in the online help available within the PScope program itself.

Analog Input Network

For optimal distortion and noise performance the RC network on the analog inputs should be optimized for the analog input frequencies of interest. At this point in time, the circuit in Figure 3 for input frequencies below 70MHz. For input frequencies from 70MHz to 140MHz, the circuit in Figure 2 is used. These two input networks cover a broad bandwidth and are not optimized for operation at a specific input frequency.

For higher frequencies, a single balun (ETC1-1-13) is populated on a DC996A board.

In almost all cases, filters will be required on both analog input and encode clock to provide data sheet SNR.

The filters should be located close to the inputs to avoid reflections from impedance discontinuities at the driven end of a long transmission line. Most filters do not present 50Ω outside the passband.

The DC996A board has provision for a bandpass filter prior to the balun. This may be populated if the board is customized for a given frequency band. (Figure 5)

In some cases, 3dB to 10dB pads may be required to obtain low distortion.

If your generator cannot deliver full-scale signals without distortion, you may benefit from a medium power amplifier based on a Gallium Arsenide Gain block prior to the final filter. This is particularly true at higher frequencies where operational amplifiers may be unable to deliver the combination of low noise figure and high IP3 point required. A high order filter can be used prior to this final amplifier, and a relatively lower Q filter used between the amplifier and the demo circuit.

For advice on drive circuits or for input frequencies greater than 220MHz, or for higher order bandpass filtering prior to the ADC, contact the factory for support.

QUICK START PROCEDURE

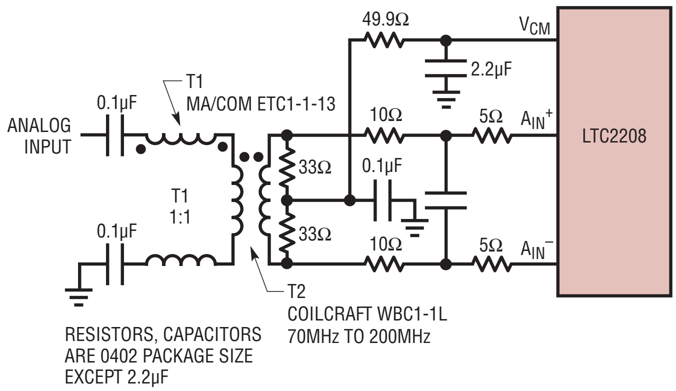


Figure 2. Analog Front-End Circuit For 70MHz+

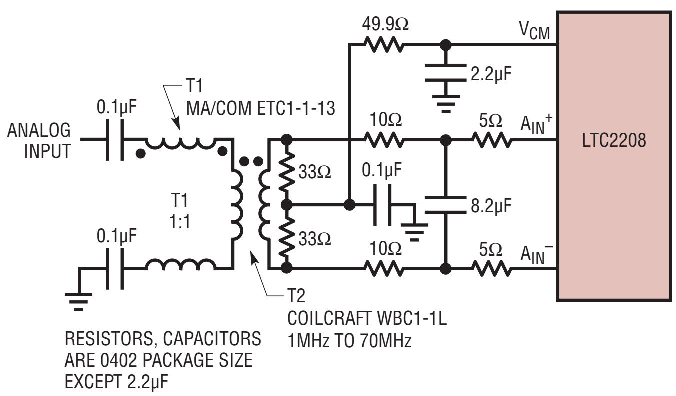


Figure 3. Analog Front-End Circuit For 1MHz < A_{IN} < 70MHz

For input frequencies less than 5MHz, or greater than 150MHz, other input networks may be more appropriate. Please consult the factory for suggestions on drivers and networks if your signal sources extend outside these ranges, or if you experience difficulties driving these suggested networks.

As this board has a black solder mask, in order to improve the thermal performance, Figure 4 is a picture of the top side in colors that are easier to digest. The dielectric under the input network (bluish pads) is 20 mils, otherwise, dielectric thickness is 6 mils.

This board is used only for 200MHz+ applications. The input network of Figure 5 is devised to be populated with a bandpass filter.

Gerber or PDF files of this board are available.

If the higher frequency board is ordered without requesting a bandpass filter, C6 is a counterpart to C7, providing a DC block, C23 is a 0Ω resistor.

If this is populated as a BP filter, The reactance of L1 and L3, and the series of C6 and C5 (and C21 and C23) should be between 50Ω and 33Ω. The reactance of L2 should match that of 1/2 C6^+C5.

The ratio of C5 to C6 will determine coupling be-tween the two resonators, with a high ratio giving a narrow pass band.

As an example, for center frequency of 260MHz; –3dB BW of 150MHz, C6, C23 = 27pF; C5, C21 = 68pF; L1, L3 = 18 nH; L2 = 7.5nH.

This has a flat passband over 80MHz. See Figure 6.

This filter is not intended as a band-defining filter, but simply to minimize noise BW prior to the ADC, and to minimize 2nd and 3rd originating in a drive amplifier. 2nd harmonic of 260 is down at 1.

QUICK START PROCEDURE

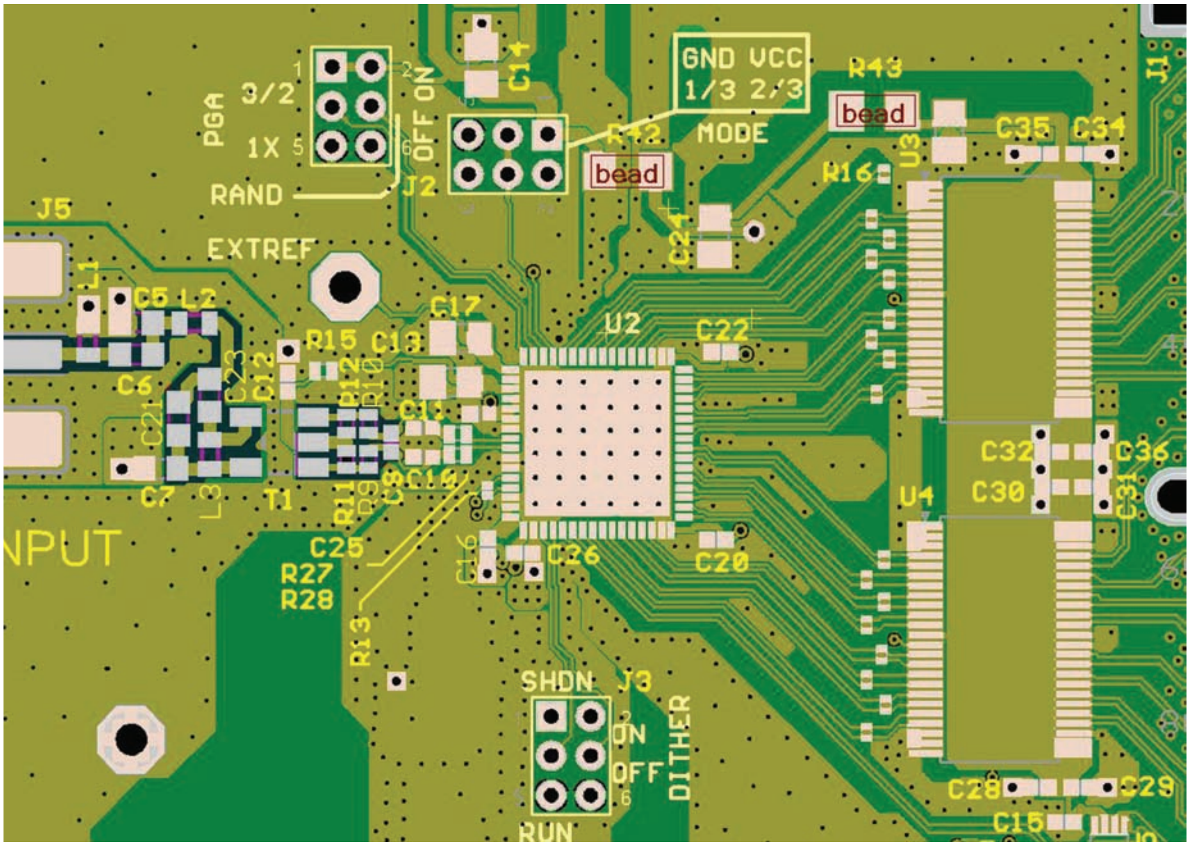


Figure 4. DC996A Artwork

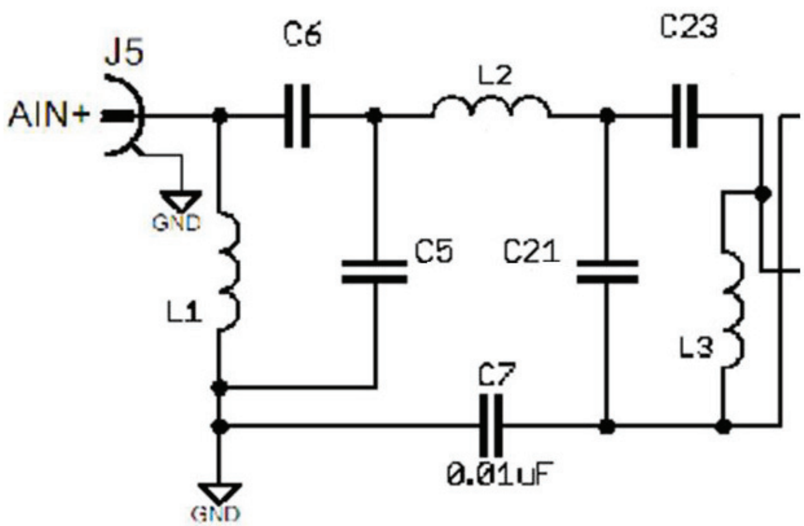


Figure 5. Input Filter for DC996A Board

QUICK START PROCEDURE

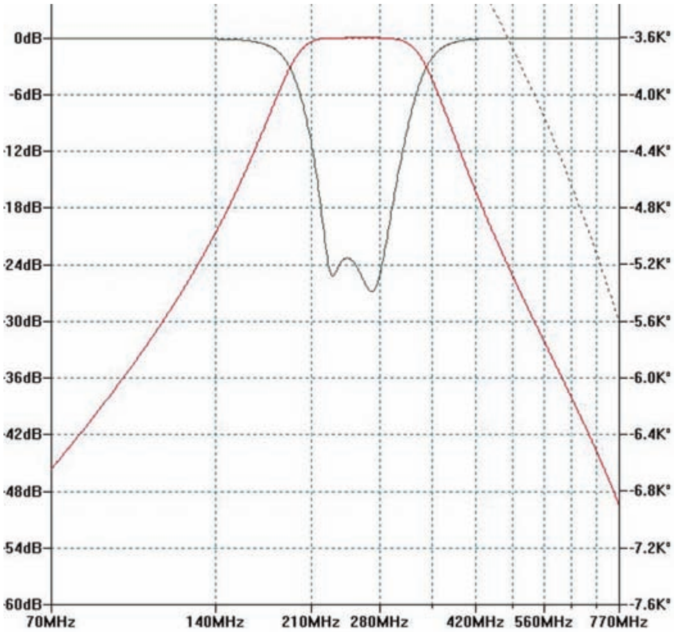


Figure 6. Input Filter Frequency Response for DC996A Board

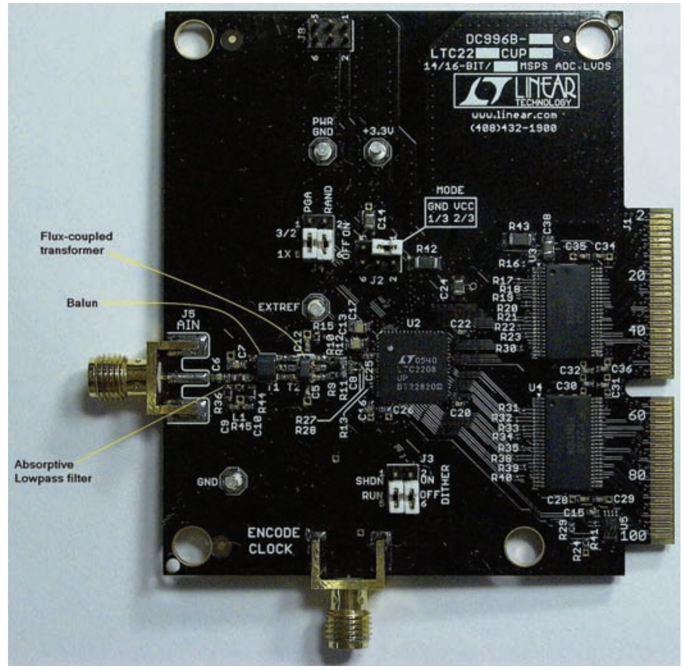


Figure 7. DC996B Board—Two Transformer Version

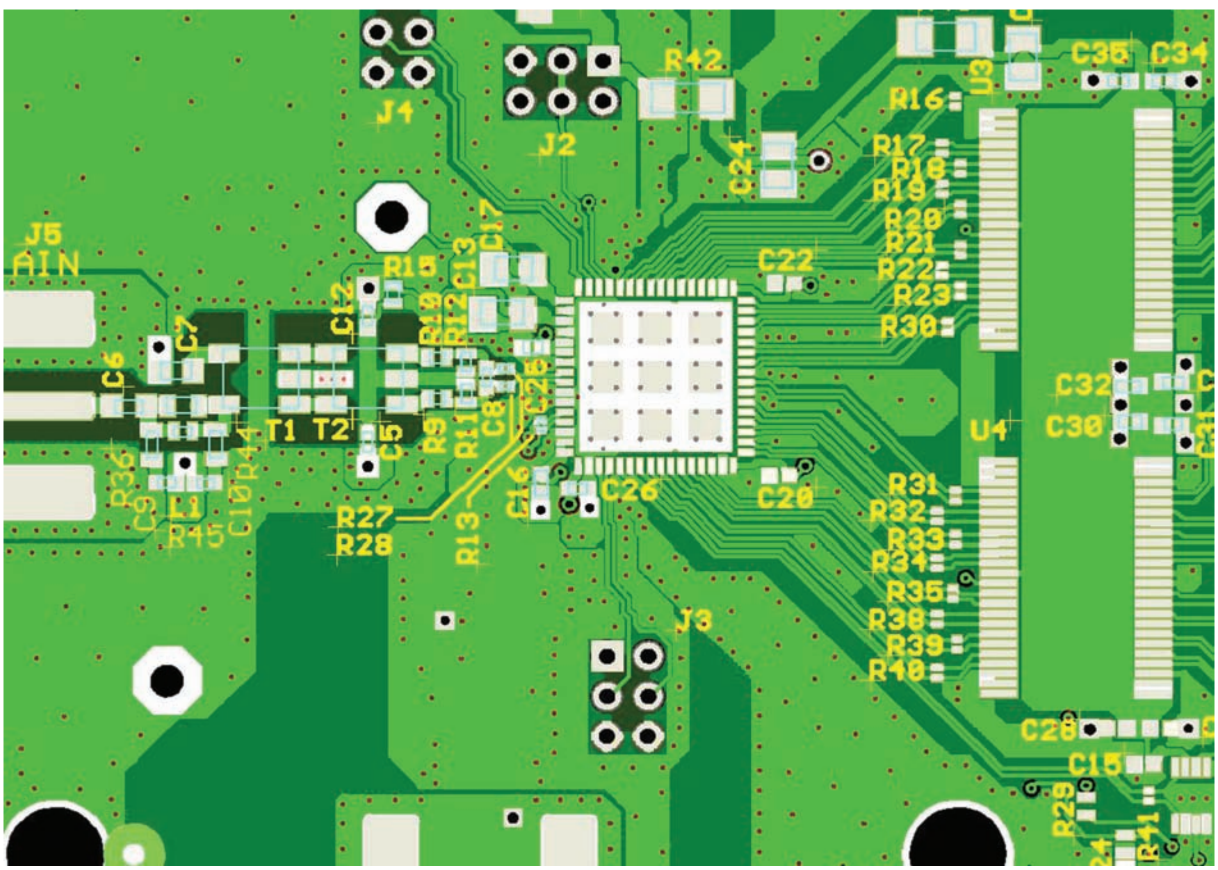


Figure 8. DC996B Artwork

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC996A General BOM				
1	0	C4 (Option)	CAP~NPO~1.8pF~50V~0.25pF~0402	AVX, 04025A1R8CAT2A
2	1	C8	CAP~NPO~1.8pF~50V~0.25pF~0402	AVX, 04025A1R8CAT2A
3	1	C12	CAP~X5R~0.01µF~16V~10%~0402	AVX, 0402YC103KAT
4	15	C15-16, C20, C22, C25-32, C34-36	CAP~X5R~0.1µF~10V~10%~0402	AVX, 0402ZD104KAT
5	0	C10, C11 (Option)		
6	6	C1-3, C6, C7, C23	CAP~X7R~0.01µF~16V~10%~0603	AVX, 0603YC103KAT
7	2	C18, C19	CAP~X7R~0.1µF~16V~10%~0603	AVX, 0603YC104KAT
8	0	C21 (Option)		
9	2	C13, C17	CAP~X5R~2.2µF~10V~20%~0805	AVX, 0805ZD225MAT
10	3	C14, C24, C38	CAP~X5R~4.7µF~10V~20%~0805	AVX, 0805ZD475MAT
11	0	C5 (Option)		
12	4	J2, J3, J4, J9	HEADER~3X2~2mm	COMM_CON/2202S-06G2
13	2	J5, J7	CONN~SMA 50Ω EDGE-LAUNCH	E.F. Johnson, 142-0701-851
14	0	L1 (Option)		
15	1	L2	RES~0Ω_JUMPER~0603	AAC, CJ06-000M
16	0	L3 (Option)		
17	19	R13, R16-23, R30-35, R38-41	RES~100Ω~5%~1/20~0201	VISHAY, CRCW0201100RJNED
18	1	R15	RES~100Ω~1%~1/16~0402	VISHAY, CRCW0402100RFKED
19	1	R24	RES~100k~1%~1/16~0402	VISHAY, CRCW0402100KFKED
20	2	R11-12	RES~33.2Ω~1%~1/16~0402	VISHAY, CRCW040233R2FKED
21	2	R1, R2	RES~49.9Ω~1%~1/16~0402	VISHAY, CRCW040249R9FKEA
22	6	R4, R5, R9, R10, R27, R28	RES~4.99Ω~1%~1/16W~0402	VISHAY, CRCW04024R99FKED
23	3	R25, R26, R29	RES~4990Ω~1%~1/16~0402	VISHAY, CRCW04024K99FKED
24	0	R3 (Option)		
25	2	R14, R37	RES~100Ω~1%~1/16W~0603	VISHAY, CRCW0603100RFKEA
26	3	R6-8	RES~1000Ω~1%~1/16W~0603	VISHAY, CRCW06031K00FKEB
27	2	R42, R43	FERRITE BEAD~SMT~1206	MURATA, BLM31PG330SN1L
28	2	T1, T2	XFRM~RF~SMT~1:1 BALUN	MACOM, MABA-007159-000000
29	1	U1 (Bal to 1298A)	IC~SERIAL_EEPROM~TSSOP8	MICROCHIP, 24LC025-I /ST
30	2	U3, U4	BUFFER~LVDS~OCTAL	FAIRCHILD, FIN1108MTDX
31	1	U5	BUFFER~LVDS~SINGLE	FAIRCHILD, FIN1101K8X
32	4	TP1, TP2, TP4, TP5	TURRET	MILL MAX, 2308-02-00-80-00-00-07-00
33	4	Z (STAND-OFF)	STAND-OFF, NYLON 0.25'" tall	KEYSTONE, 8831(SNAP ON)
34	5		SHUNT, 0.079" Center	SAMTEC, 2SN-BK-G
35	2		STENCIL, 20X20	STENCIL 996A, 20X20
DC996A-P				
1	1	U2 (DC996A-P)	IC~ADC~130Msps~16-BIT~QFN-64	LINEAR_TECH/LTC2208CUP#PBF
2	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996A
DC996A-Q				
1	1	U2 (DC996A-Q)	IC~ADC~130Msps~14-BIT~QFN-64	LINEAR_TECH/LTC2208CUP-14#PBF
2	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC996B General BOM				
1	5	C1-C3, C6-7	CAP~X7R~0.01µF~16V~10%~0603	AVX/0603YC103KAT
2	2	C13, C17	CAP~X5R~2.2µF~10V~20%~0805	AVX/0805ZD225MAT
3	3	C14, C24, C38	CAP~X5R~4.7µF~10V~20%~0805	AVX/0805ZD475MAT
4	15	C15-16, C20, C22, C25-C32, C34-C36	CAP~X5R~0.1µF~10V~10%~0402	AVX/0402ZD104KAT
5	0	C18, C19(Option)	CAP~X7R~0.1µF~16V~10%~0603	AVX/0603YC104KAT
6	1	C4 (Also C9-C10 options)	CAP~NPO~8.2pF~50V~0.25pF~0402	AVX/04025A8R2CAT2A
7	2	C5, C12	CAP~X5R~0.01µF~16V~10%~0402	AVX/0402YC103KAT
8	3	J2-4	HEADER~3 × 2~2mm	COMM_CON/2202S-06G2
9	0	J9 (Option)	HEADER~3 × 2~2mm	COMM_CON/2202S-06G2
10	2	J5, J7	CONN~SMA 50Ω EDGE-LAUNCH	AMPHENOL_CONNEX/132357
11	2	R42-R43	FERRITE BEAD~SMT~1206	MURATA/BLM31PG330SN1L
12	2	R9-R10	RES~10Ω~1%~1/16~0402	AAC/CR05-10R0FM
13	1	R15	RES~100Ω~1%~1/16~0402	AAC/CR05-1000FM
14	1	R37	RES~100Ω~1%~1/16W~0603	AAC/CR16-1000FM
15	19	R13, R16-R23, R30-R35, R38-R41	RES~100Ω~5%~1/20~0201	ACC/CR20-101JM
16	3	R6-8, R14	RES~1k~1%~1/16W~0603	AAC/CR16-1001FM
17	1	R24	RES~100k~1%~1/16~0402	AAC/CR05-1003FM
18	2	R1-R2	RES~49.9Ω~1%~1/16~0402	AAC/CR05-49R9FM
19	0	R3 (OPTION)	RES~100Ω~1%~1/16W~0603	AAC/CR16-1000FM
20	2	R11-R12	RES~33.2Ω~1%~1/16~0402	AAC/CR05-33R2FM
21	3	R25, R26, R29	RES~4990Ω~1%~1/16~0402	AAC/CR05-4991FM
22	2	R27-R28	RES~10Ω~5%~1/20~0201	PANASONIC, ERJ-1GEJ100C
23	2	R4-R5	RES~5.1Ω~1%~1/16~0402	AAC/CR05-5R1FM
24	1	T3	XFRM~RF~SMT~1:1 BALUN	M/A-COM, ETC1-1-13 (Leaded) M/A-COM, MABA-007159-000000 (PbF)
25	4	TP1-2, TP4-5	TURRET	MILL_MAX/2308-2
26	1	U1	IC~Serial_EEPROM~TSSOP8	MICROCHIP/24LC025-I /ST
27	2	U3, U4	BUFFER~LVDS~OCTAL	FAIRCHILD/FIN1108MTD
28	1	U5	BUFFER~LVDS~SINGLE	FAIRCHILD/FIN1101K8X
29	4	Z (STAND-OFF)	STAND-OFF, NYLON 0.25" tall	KEYSTONE, 8831(SNAP ON)
30	5		SHUNT, 0.079" Center	SAMTEC, 2SN-BK-G
31	2		STENCIL, 20 × 20	STENCIL 996B, 20X20
DC996B-A				
1	1	C8	CAP~NPO~4.7pF~50V~0.25pF~0402	AVX/04025A4R7CAT2A
2	2	C9-C10	CAVP~NPO~8.2pF~50V~0.25pF~0402	AVX/04025A8R2CAT2A
3	1	L1	IND~56nH~5%~0603	MURATA/LQP18MN56NG02D
4	2	R36, R44	RES~86.6~1%~1/16W~0603	AAC/CR16-86R6FM
5	1	R45	RES~86.6~1%~1/16~0402	AAC/CR05-86R6FM
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, ETC1-1-13 (Leaded) M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	XFRM~RF~SMT~1:1CT	M/A-COM, ETC1-1T (Leaded) M/A-COM, MABAES0060 (PbF)
8	1	U2 (D/C 0619)	ADC~16BIT~130MSPS (Lot# T23920.2)	LINEAR/LTC2208IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 996B-A

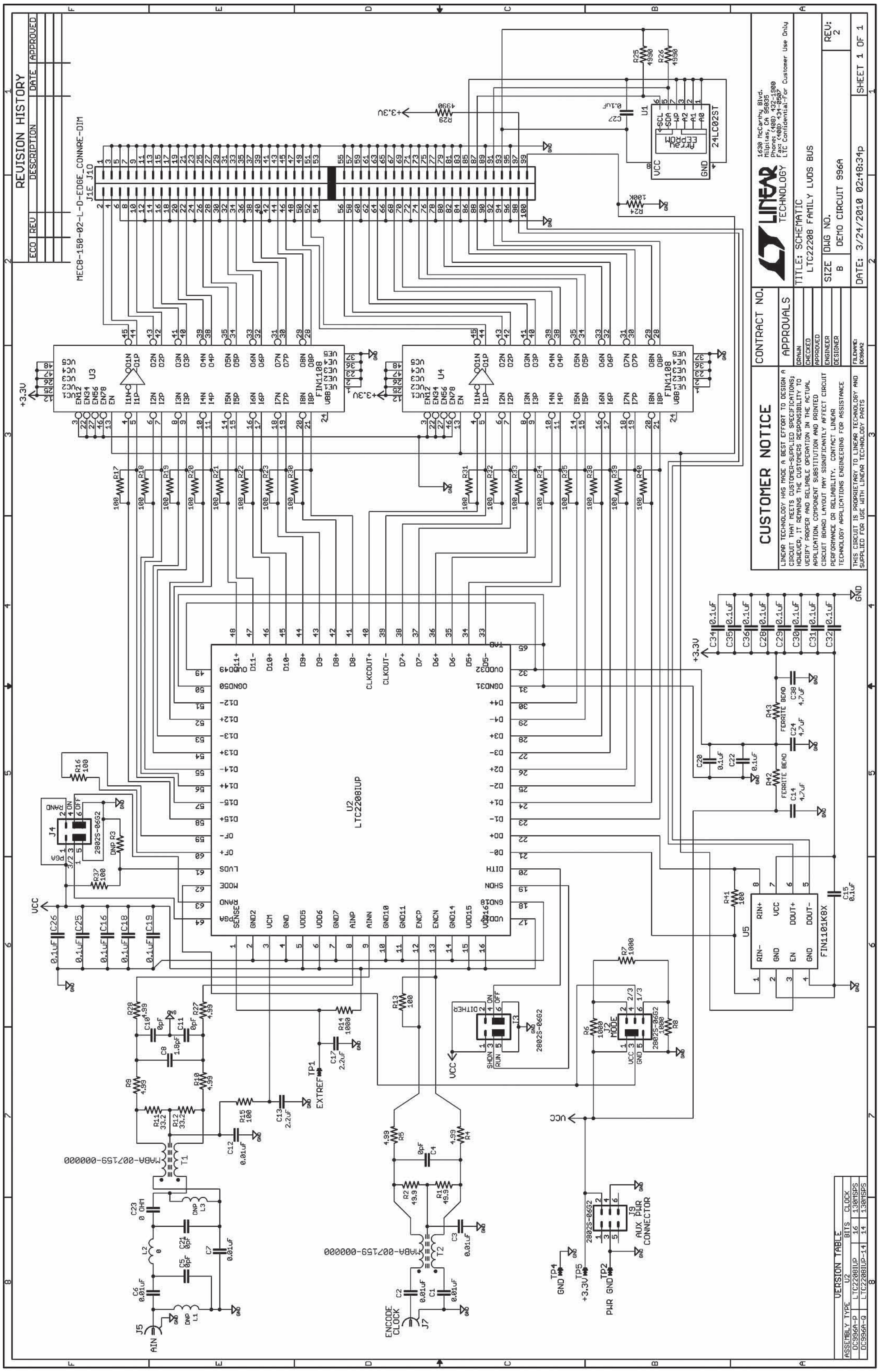
PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC996B-B				
1	1	C8	CAP~NPO~1.8pF~50V~0.25pF~0402	AVX/04025A1R8CAT2A
2	2	C9-C10	CAP~NPO~3.9pF~50V~0.25pF~0402	AVX/04025A3R9CAT2A
3	1	L1	IND~18nH~5%~0603	MURATA/LQP18MN18NG02D
4	2	R36, R44	RES~43.2Ω~1%~1/16W~0603	AAC/CR16-43R2FM
5	1	R45	RES~182Ω_JUMPER~0402	AAC/CR05-1820FM
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, ETC1-1-13 (Leaded) M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	TRANSFORMER, WBC1-1L	COILCRAFT, WBC1-1L
8	1	U2 D/C 0619	ADC~16-BIT~130Msps, Lot# T23920.2	LINEAR/LTC2208IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B-B
DC996B-C				
1	1	C8	CAP~NPO~4.7pF~50V~0.25pF~0402	AVX/04025A4R7CAT2A
2	2	C9-C10	CAP~NPO~8.2pF~50V~0.25pF~0402	AVX/04025A8R2CAT2A
3	1	L1	IND~56nH~5%~0603	MURATA/LQP18MN56NG02D
4	2	R36, R44	RES~86.6Ω~1%~1/16W~0603	AAC/CR16-86R6FM
5	1	R45	RES~86.6Ω~1%~1/16~0402	AAC/CR05-86R6FM
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, ETC1-1-13 (Leaded) M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	XFRM~RF~SMT~1:1CT	M/A-COM, ETC1-1T (Leaded) M/A-COM, MABAES0060 (PbF)
8	1	U2 (Lot #T23307.1)	ADC~14BIT~130MSPS (D/C 0604)	LINEAR/LTC2208IUP-14#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B-C
DC996B-D				
1	1	C8	CAP~NPO~1.8pF~50V~0.25pF~0402	AVX/04025A1R8CAT2A
2	2	C9-C10	CAP~NPO~3.9pF~50V~0.25pF~0402	AVX/04025A3R9CAT2A
3	1	L1	IND~18nH~5%~0603	MURATA/LQP18MN18NG02D
4	2	R36, R44	RES~43.2Ω~1%~1/16W~0603	AAC/CR16-43R2FM
5	1	R45	RES~182Ω_JUMPER~0402	AAC/CR05-1820FM
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, ETC1-1-13 (Leaded) M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	TRANSFORMER, WBC1-1L	Coilcraft, WBC1-1L
8	1	U2 (Lot #T23307.1)	ADC~14-BIT~130Msps (D/C 0604)	LINEAR/LTC2208IUP-14#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B-D
DC966B-E				
1	1	C8	CAP~NPO~4.7pF~50V~0.25pF 0402	AVX, 04025A4R7CAT2A
2	2	C9-10	CAP~NPO~8.2pF~50V~0.25pF 0402	AVX, 04025A8R2CAT2A
3	1	L1	IND~56nH~5% 0603	MURATA, LQP18MN56NG02D
4	2	R36, R44	RES~86.6Ω~1%~1/16W 0603	VISHAY, CRCW060386R6FKEA
5	1	R45	RES~86.6Ω~1%~1/16 0402	VISHAY, CRCW040286R6FKED
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	XFRM~RF~SMT~1:1CT	M/A-COM, MABAES0060 (PbF)
8	1	U2	ADC~16-BIT~105Msps	LINEAR, LTC2217IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 996B

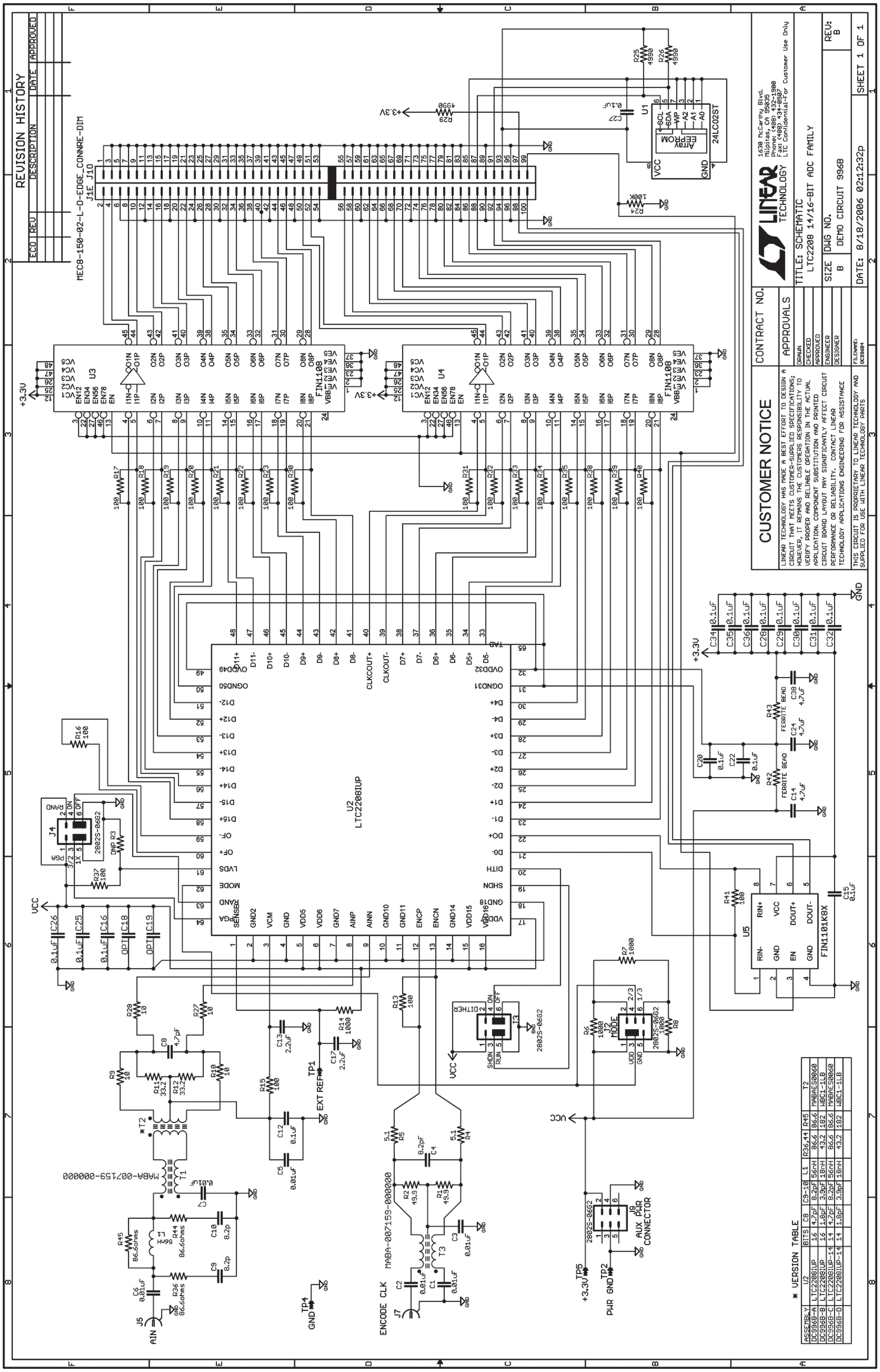
PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
DC966B-F				
1	1	C8	CAP~NPO~1.8pF~50V~0.25pF 0402	AVX, 04025A1R8CAT2A
2	2	C9-10	CAP~NPO~3.9pF~50V~0.25pF 0402	AVX, 04025A3R9CAT2A
3	1	L1	IND~18nH~5% 0603	MURATA, LQP18MN18NG02D
4	2	R36, R44	RES~43.2Ω~1%~1/16W 0603	VISHAY, CRCW060343R2FKEA
5	1	R45	RES~182Ω_JUMPER 0402	VISHAY, CRCW0402182RFKED
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	TRANSFORMER, WBC1-1TL	Coilcraft, WBC1-1TLC
8	1	U2	ADC~16-BIT~105Msps,	LINEAR, LTC2217IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B
DC966B-G				
1	1	C8	CAP~NPO~4.7pF~50V~0.25pF 0402	AVX, 04025A4R7CAT2A
2	2	C9-10	CAP~NPO~8.2pF~50V~0.25pF 0402	AVX, 04025A8R2CAT2A
3	1	L1	IND~56nH~5% 0603	MURATA, LQP18MN56NG02D
4	2	R36, R44	RES~86.6Ω~1%~1/16W 0603	VISHAY, CRCW060386R6FKEA
5	1	R45	RES~86.6Ω~1%~1/16 0402	VISHAY, CRCW040286R6FKED
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	XFRM~RF~SMT~1:1CT	M/A-COM, MABAES0060 (PbF)
8	1	U2	ADC~16-BIT~80Msps	LINEAR, LTC2216IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 996B
DC966B-H				
1	1	C8	CAP~NPO~1.8pF~50V~0.25pF 0402	AVX, 04025A1R8CAT2A
2	2	C9-10	CAP~NPO~3.9pF~50V~0.25pF 0402	AVX, 04025A3R9CAT2A
3	1	L1	IND~18nH~5% 0603	MURATA, LQP18MN18NG02D
4	2	R36, R44	RES~43.2Ω~1%~1/16W 0603	VISHAY, CRCW060343R2FKEA
5	1	R45	RES~182Ω_JUMPER 0402	VISHAY, CRCW0402182RFKED
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	TRANSFORMER, WBC1-1TL	Coilcraft, WBC1-1TLC
8	1	U2	ADC~16-BIT~80Msps,	LINEAR, LTC2216IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B
DC966B-I				
1	1	C8	CAP~NPO~4.7pF~50V~0.25pF 0402	AVX, 04025A4R7CAT2A
2	2	C9-10	CAP~NPO~8.2pF~50V~0.25pF 0402	AVX, 04025A8R2CAT2A
3	1	L1	IND~56nH~5% 0603	MURATA, LQP18MN56NG02D
4	2	R36, R44	RES~86.6Ω~1%~1/16W 0603	VISHAY, CRCW060386R6FKEA
6	1	T1 (Bal to 1098A-F)	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2 (Bal to 1098A-C)	XFRM~RF~SMT~1:1CT	M/A-COM, MABAES0060 (PbF)
8	1	U2	ADC~16-BIT~65Msps	LINEAR, LTC2215IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT 996B
DC966B-J				
1	1	C8	CAP~NPO~1.8pF~50V~0.25pF 0402	AVX, 04025A1R8CAT2A
2	2	C9-10	CAP~NPO~3.9pF~50V~0.25pF 0402	AVX, 04025A3R9CAT2A
3	1	L1	IND~18nH~5% 0603	MURATA, LQP18MN18NG02D
4	2	R36, R44	RES~43.2Ω~1%~1/16W 0603	VISHAY, CRCW060343R2FKEA
5	1	R45	RES~182Ω_JUMPER 0402	VISHAY, CRCW0402182RFKED
6	1	T1	BALUN~RF~SMT~1:1	M/A-COM, MABA-007159-000000 (PbF)
7	1	T2	TRANSFORMER, WBC1-1TL	Coilcraft, WBC1-1TLC
8	1	U2	ADC~16-BIT~65Msps,	LINEAR/LTC2215IUP#PBF
9	1		FAB, PRINTED CIRCUIT BOARD	DEMO CIRCUIT #996B

SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM



✱ VERSION TABLE

ASSEMBLY	U2	BITS	C8	C9-10	L1	R36,44	R45	T2
DC996B-A	LTC2208IUP	16	4.7pF	8.2pF	56nH	86.6	86.6	MABAES0060
DC996B-B	LTC2208IUP	16	1.8pF	3.9pF	18nH	43.2	182	WBC1-1LB
DC996B-C	LTC2208IUP-14	14	4.7pF	8.2pF	56nH	86.6	86.6	MABAES0060
DC996B-D	LTC2208IUP-14	14	1.8pF	3.9pF	18nH	43.2	182	WBC1-1LB

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