



DC426B DEMO BOARD QUICK START GUIDE

Description:

The DC426B demo circuit board is intended to demonstrate the capabilities of the LT[®]5511 high signal level upconverting mixer IC for 1900MHz infrastructure applications.

The LT5511 mixer IC is designed to meet the high linearity requirements of cable TV infrastructure downstream transmitters and wireless infrastructure transmit systems. The IC includes a differential LO buffer amplifier driving a double-balanced mixer. The LO, RF and IF ports can be easily matched to a broad range of frequencies for different applications. The high performance capability of the LO buffer allows the use of a single-ended source, thus eliminating the need for an LO balun.

The LT5511 mixer delivers +17dBm typical input 3rd order intercept at 950MHz, and +15.5dBm IIP3 at 1900MHz, with IF input signal levels of -5dBm. The input 1dB compression point is typically +6dBm.

The DC426B demo board is optimized to upconvert a 50MHz IF input to 1900MHz RF output with the LO injected from the high-side at 1950MHz.

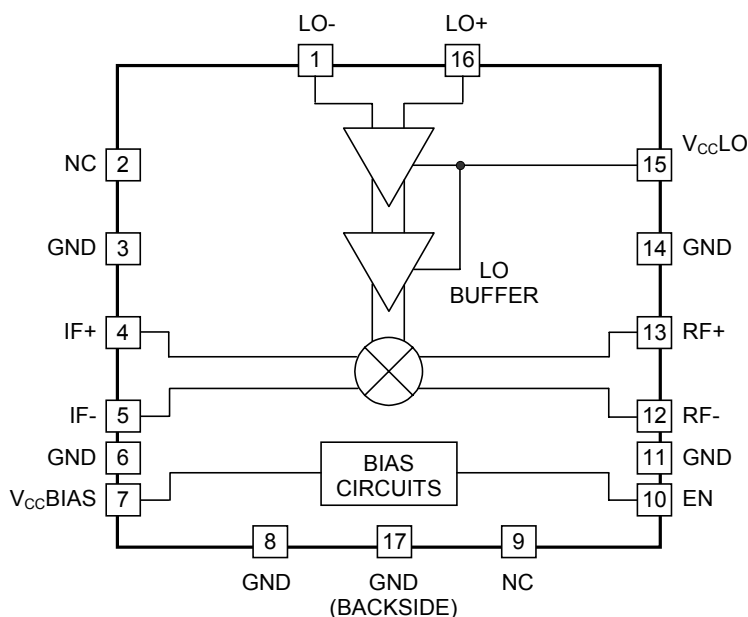


Figure 1. LT5511 IC Block Diagram

LT5511 Upconverting Mixer Single-Tone Measurements for 1900MHz Band.

1. Connect all test equipment as shown in Figure 2.
2. Set the Power Supply output voltage to 5V, and set the current limit to 100mA.
3. Set the dipswitch SW1 (Enable) to 1. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1950MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 to provide a 50MHz, -5dBm, CW signal to the demo board IFin port.
6. Set the Spectrum Analyzer's center frequency to 1900MHz. Perform mixer conversion gain, and 1dB compression measurements.
7. Set the Spectrum Analyzer's center frequency to 1950MHz. Perform mixer LO to RF suppression measurement.
8. Set the Spectrum Analyzer's center frequency to 1850MHz and 2050MHz. Perform input 2nd order distortion measurement. ($IIP2 = 2 * P1 - P2 - Gc$, where P1 is the power level of the desired output at 1900MHz, P2 is the largest 2nd order product at either 1850MHz or 2050MHz, and Gc is conversion gain. P1 and P2 are in units of dBm, and Gc is in dB.)

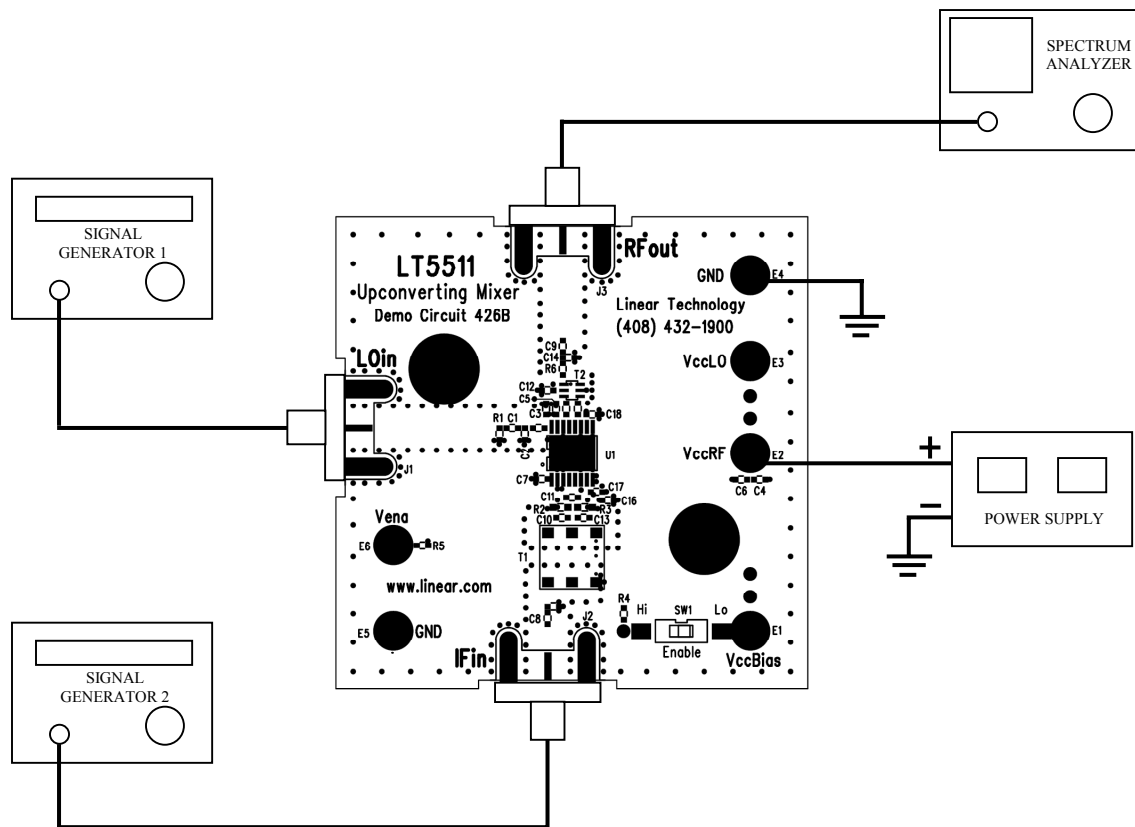


Figure 2. Test Set-Up for Mixer Single-Tone Measurements

LT5511 Upconverting Mixer Two-Tone Measurements for 1900MHz Band.

1. Connect all test equipment as shown in Figure 3.
Note: 1). A high quality combiner that provides 50-ohm termination on all ports and has good port-to-port isolation should be used.
2). The two 3dB attenuators on the inputs of the combiner are used to further improve source isolation.
2. Set the Power Supply output voltage to 5V, and set the current limit to 100mA.
3. Set the dipswitch SW1 (Enable) to 1. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1950MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 and #3 to provide two -5dBm CW signals to the demo board IFin port—one at 50MHz, and the other at 51MHz.
6. Set the Spectrum Analyzer's center frequency to 1899.5MHz. Perform input 3rd order distortion measurement. ($IIP3 = P1 + (P1 - P3) / 2 - Gc$, where P1 is the lowest power level of the two desired output tones at either 1899MHz or 1900MHz, P3 is the largest 3rd order product at either 1898MHz or 1901MHz, and Gc is conversion gain. P1 and P3 are in units of dBm, and Gc is in dB.)

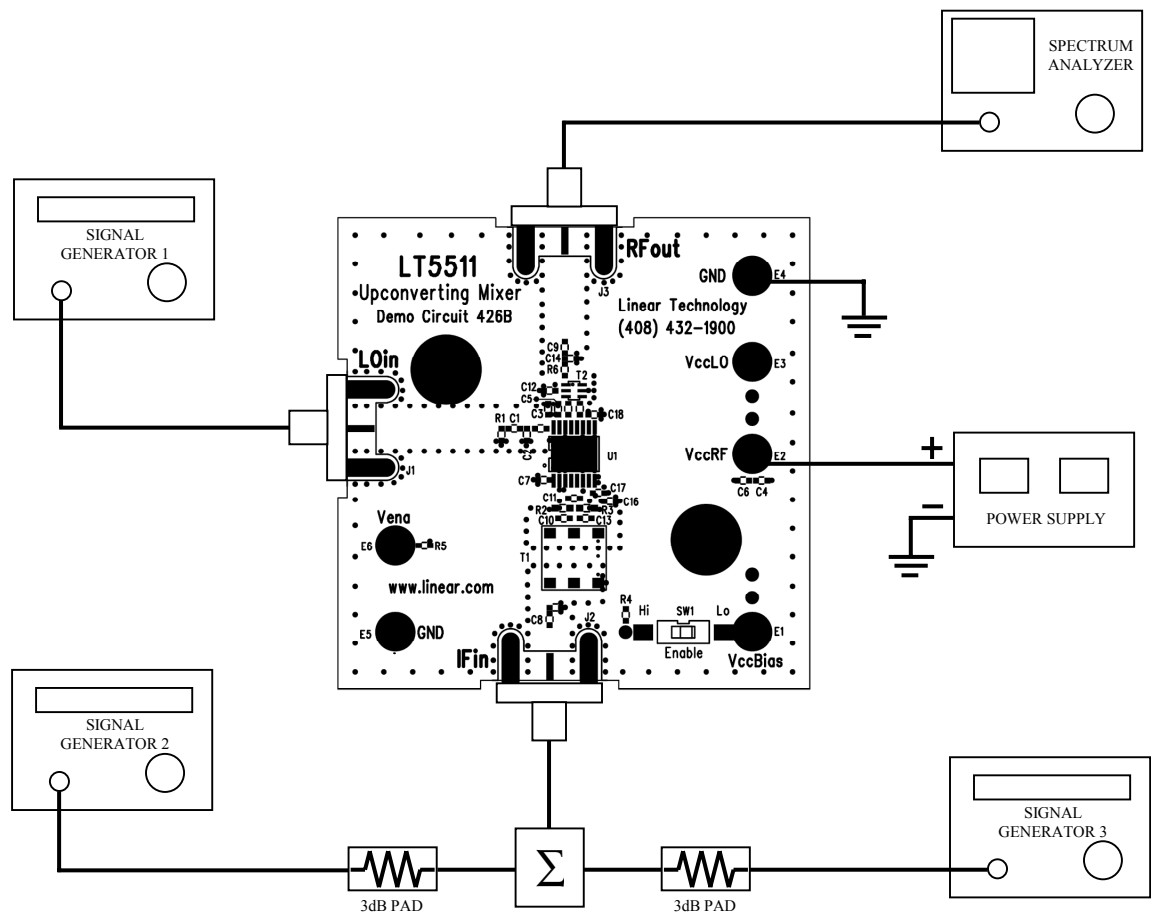
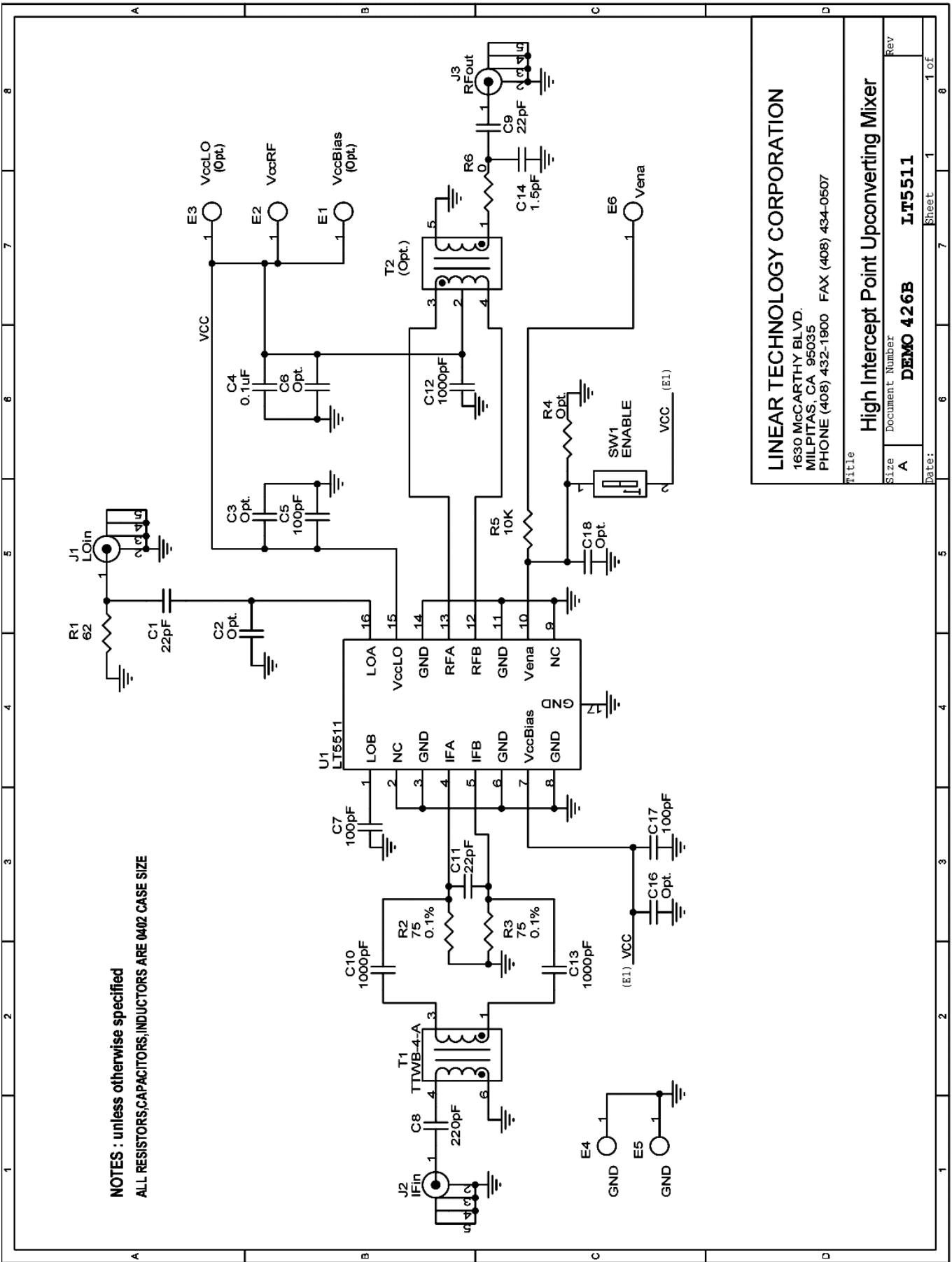


Figure 3. Test Set-Up for Mixer Two-Tone Measurements



LINEAR TECHNOLOGY CORPORATION

1630 MCCARTHY BLVD.
MILPITAS, CA 95035
PHONE (408) 432-1900 FAX (408) 434-0507

High Intercept Point Upconverting Mixer

Title	
Size	Document Number
A	DEMO 426B
Rev	LT5511
Date:	Sheet 1 of 1

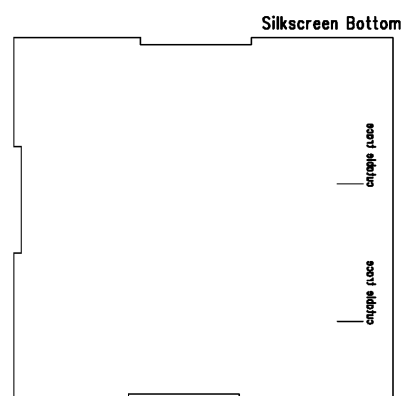
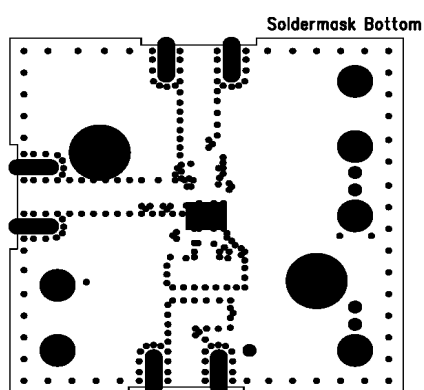
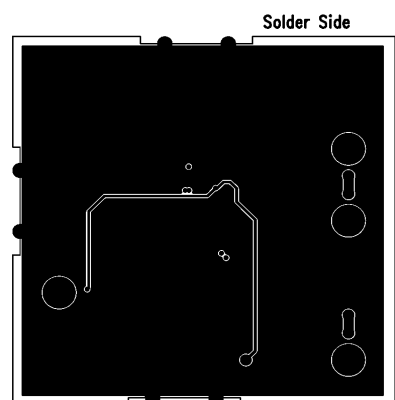
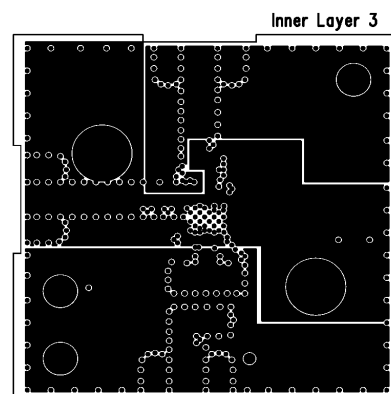
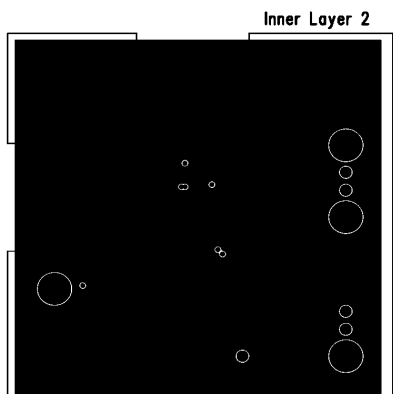
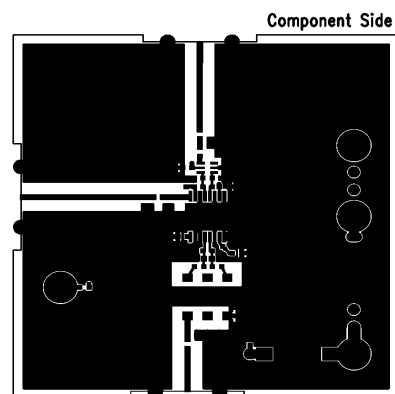
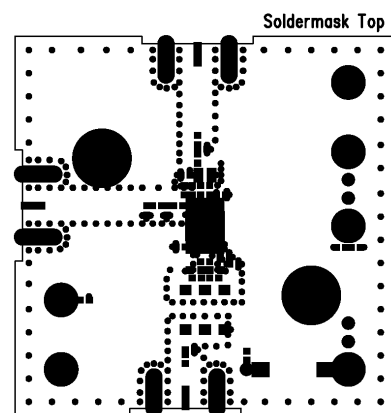
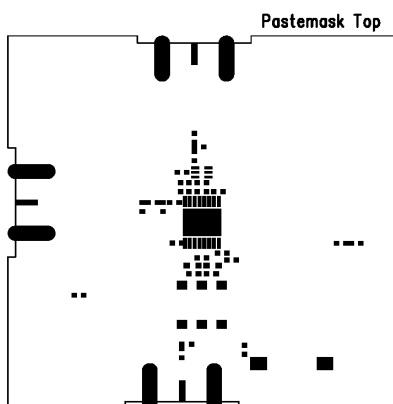
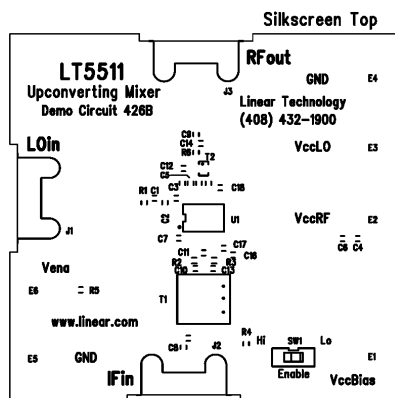
Item	Qty	Reference	Part Description	Manufacture / Part #
1	1	C14	CAP., CHIP NPO 1.5pF 50V	MURATA GRM36COG1R5B050AQ 0402
2	3	C1,C9,C11	CAP., CHIP NPO 22pF 50V	MURATA GRM36COG220J050AQ 0402
3	3	C5,C7,C17	CAP., CHIP NPO 100pF 25V	AVX, 04023A101JAT 0402
4	1	C8	CAP., CHIP NPO 220pF 25V	AVX, 04023A221JAT 0402
5	3	C10,C12,C13	CAP., CHIP X7R 1000pF 50V	AVX, 04025C102JAT 0402
6	1	C4	CAP., CHIP Y5V 0.1uF 16V	AVX, 0402YG104ZAT1A 0402
7	0	C2,C3,C6,C16,C18	Option	
8	4	E2,E4,E5,E6	TURRET, PAD	MILL-MAX 2501-2 PAD .092"
9	0	E1,E3	Option	
10	3	J1,J2,J3	CONN. SMA 50-OHM EDGE-LAUNCH	E.F. JOHNSON 142-0701-851
11	1	R1	RES., CHIP 62 5%	AAC CR05-620JM 0402
12	2	R2,R3	RES., CHIP 75 0.1%	IRC PFC-W0603R-03-75R0-B 0603
13	0	R4	Option	
14	1	R6	RES., CHIP 0	AAC CJ05-000M 0402
15	1	R5	RES., CHIP 10K 5%	AAC CR05-103JM 0402
16	1	T1	TRASFORMER, WIDEBAND RF	COILCRAFT, TTWB-4-A
17	0	T2	OPTION	
18	1	SW1	SWITCH, SMT 1-POS. SPST	APEM DMO1
19	1	U1	IC., LINEAR TECHNOLOGY	LINEAR TECH. LT5511EFE 16-TSSOP

APPROVED VENDOR LIST

VENDOR	PHONE NUMBER	PART TYPE	WEBSITE ADDRESS
AAC (was TAD)	(800) 508-1521	CHIP RESISTORS	
AAC (was TAD)	(714) 255-9186		
AAVID	(714) 556-2665	HEAT SINKS	
ALLEN BRADLEY	(800) 592-4888	CARBON RESISTORS	
AMP	(717) 564-0100	PC MOUNT BNC	
APEM	(718) 246-1007	SMD TOGGLE/PB SWITCH	
API DELEVAN	(716) 652-3600	INDUCTORS	
AVX	(843) 946-0362	CHIP CAPS	
AVX	(843) 946-0524	CHIP RESISTORS	
AVX	(207) 282-5111	TANTALUM CAPS	
AVX	(843) 946-0323	HIGH VOLTAGE CAPS	
BERG	(800) 237-2374	CONNECTORS	
BH ELECTRONICS	(952) 894-9590	INDUCTORS	
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BI TECHNOLOGIES	(714) 447-2345	RES./RES. NETWORKS	
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CONNEX	(805) 378-6464	BNC CONNECTORS	
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CORNELL DUBILIER	(508) 996-8561	CAPACITORS	
CTS	(219) 293-7511	RESISTOR ARRAYS	
CUI-STACK	(503) 643-4899	POWER CONNECTORS	
DALE (see Vishay)	(605) 665-1627	INDUCTORS	
DALE (see Vishay)	(605) 665-9301	SENSE RESISTORS	
DATA DISPLAY PRODUCT	(800) 421-6815	LEDS	
DIODES INC.	(805) 446-4800	DIODES	
ELECTRONIC CONCEPTS	(908) 542-7880	400V FILM CAPACITORS	
EPSON	(310) 787-6300	CRYSTALS	
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FAIRCHILD	(888) 522-5372	CRG (CUST. RESPONSE)	
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GENERAL SEMICONDUCTOR	(516) 847-3000	DIODES	
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HEWLETT PACKARD	(800) 235-0312	IR LED	

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IDT	(408) 727-6116	LOGIC IC
IR	(310) 322-3331	MOSFETS
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TOSHIBA	(949) 455-2000	LOGIC
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		ZENER/SM. SIGNAL
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VISHAY	(605) 665-9301	INDUCTORS, SENSE Rs
		CERAMIC CHIP
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