

#### FEATURES

- Basic Line Driver Circuit
- Independent outputs for THAT1646 and THAT1606 ICs
- COMBO (XLR & TRS) Line Input Connector
- XLR and ¼" TRS Output Connectors
- DAC Input Connector with 3rd order low pass filter
- Generous Prototyping Area

#### APPLICATIONS

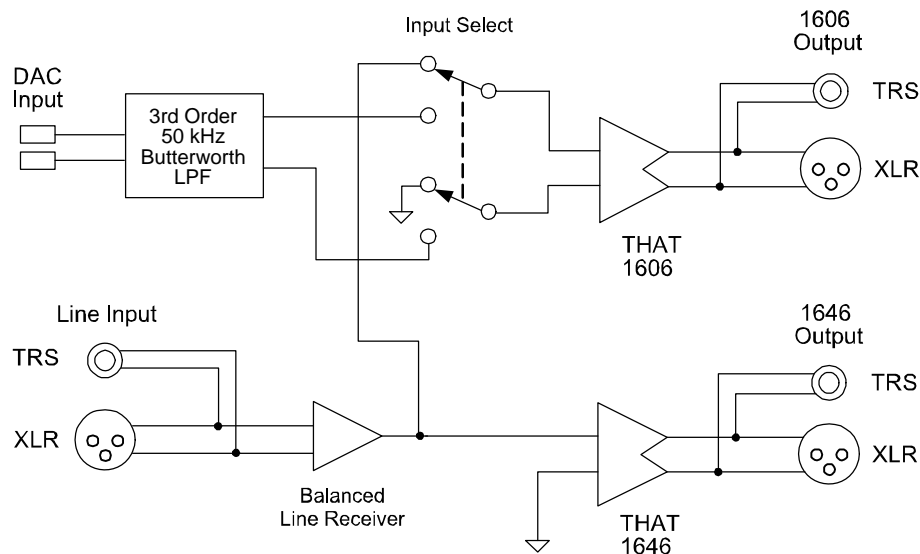
- Verification of 1606/1646 Performance
- Line Driver Evaluation
- Prototyping 1606/1646 Applications
- PCB Layout Reference Design

#### Description

The THAT 1606/1646-DEMO Demonstration System simplifies evaluating the performance of the 1646 and 1606 OutSmarts Line Driver ICs. Completely assembled and tested, the 1606/1646-DEMO comes with both XLR and TRS connectors for line input and output. In addition, a DAC input is supplied on a 3-pin header for easy connection to a digital to analog converter differential output. The DAC input passes the signal through a 50kHz 3rd order low-pass filter that can be optionally connected to the 1606 IC.

To facilitate prototyping specific applications, spare circuit board area is perforated with plated-through holes. This makes the board particularly useful for experimentation. Power connections are made through 5-way binding posts, so no special cables are required to power the board. It runs from  $\pm 4V$  to  $\pm 18V$  supplies.

With a 1606/1646-DEMO and standard audio cables, an engineer can start testing the performance of basic 1646 and 1606 circuitry and begin trying out additional circuit ideas in minutes.



THAT 1606/1646 Demo Block Diagram

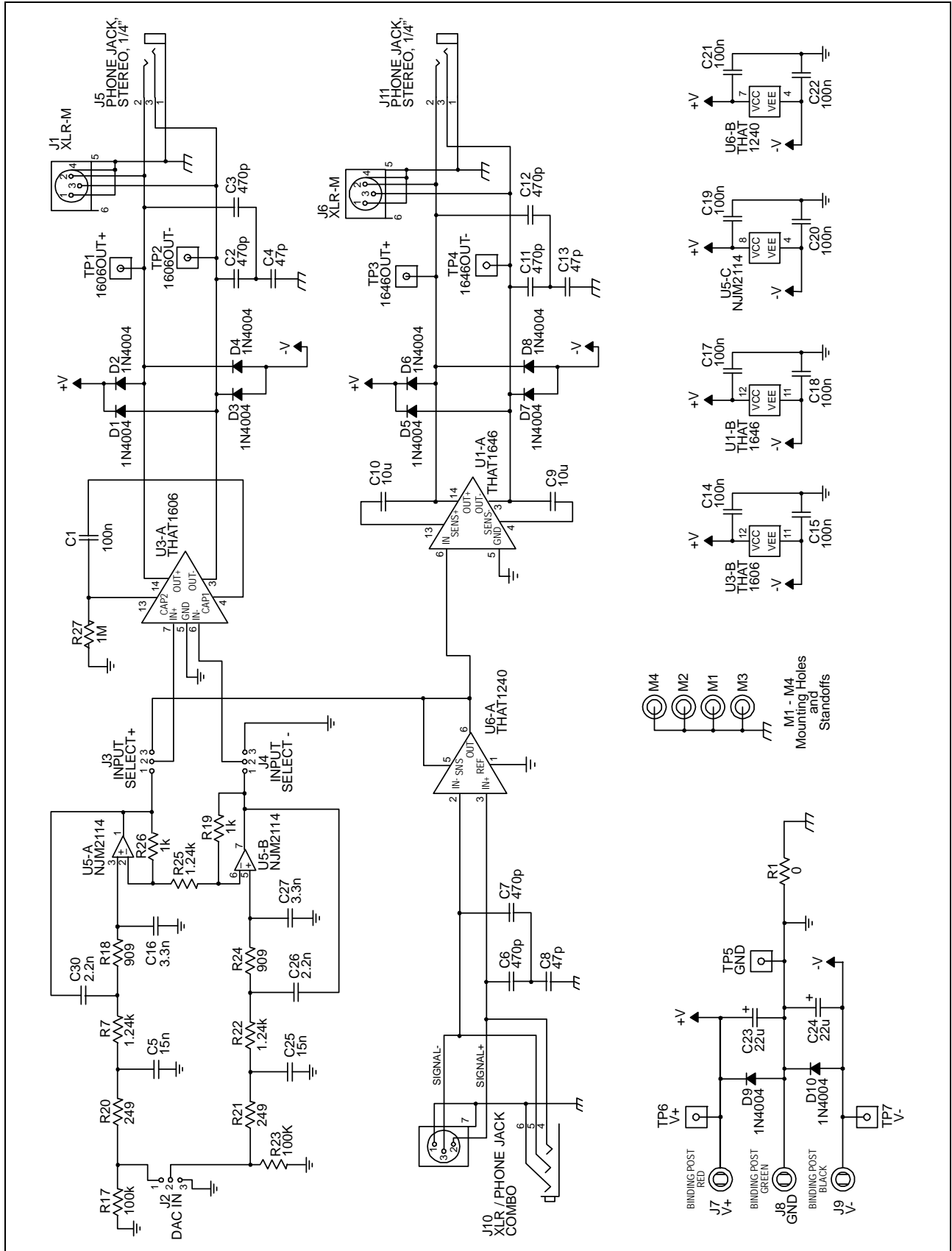
<b>Input/Output Connections</b>		
<b>Connector</b>	<b>PCB Label</b>	<b>Function</b>
J7	V+	Positive voltage from power supply <sup>1</sup>
J8	GND	Ground connection from power supply
J9	V-	Negative voltage from power supply <sup>1</sup>
J10	Line Input	Balanced analog input
J5	1606 Output	Differential analog output from THAT 1606
J1	1606 Output	Differential analog output from THAT 1606
J11	1646 Output	Differential analog output from THAT 1646
J6	1646 Output	Differential analog output from THAT 1646

1. Nominal power supply voltages are +/- 15V. The allowable power supply voltage range is +/- 18V to +/- 4V.

<b>Jumper Configuration</b>			
<b>Connector</b>	<b>PCB Label</b>	<b>Selection</b>	<b>Function Selected</b>
J3	Input Select	IN +	Analog input from line input
		DAC	Analog input from DAC input
J4	Input Select	IN -	Analog input from line input
		DAC	Analog input from DAC input

Note: J3 and J4 must be configured to select the same analog signal source

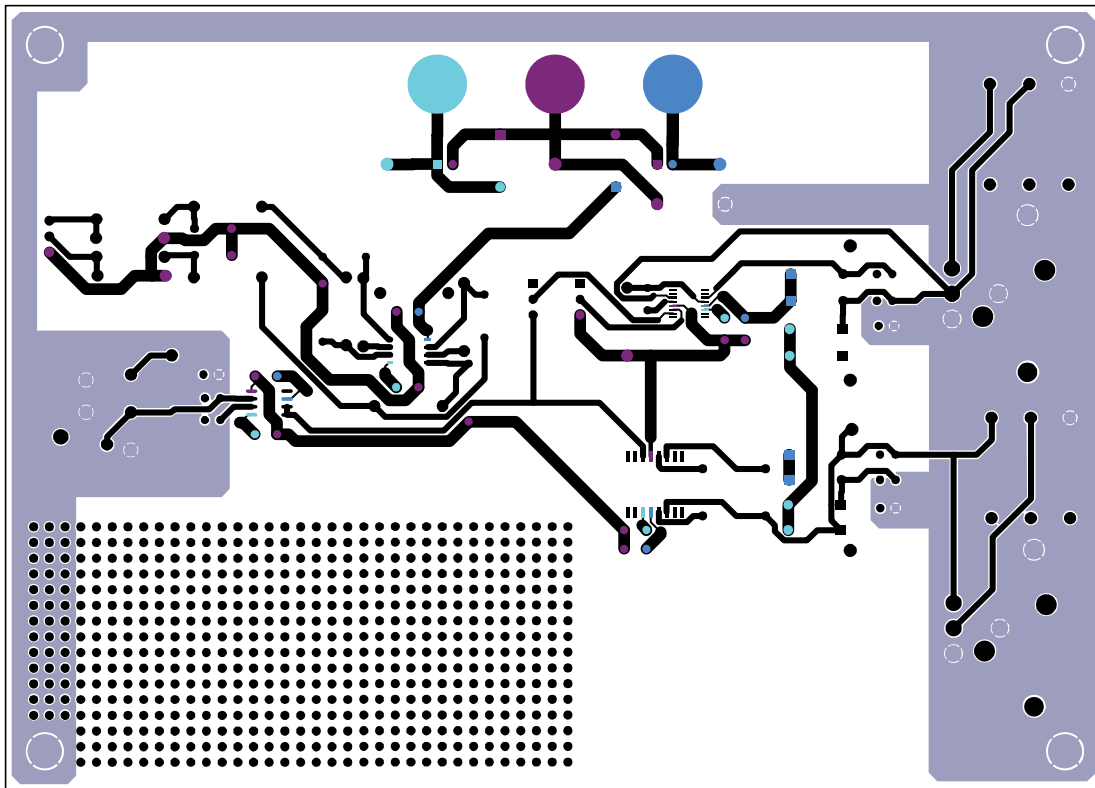
### SCHEMATIC DIAGRAM



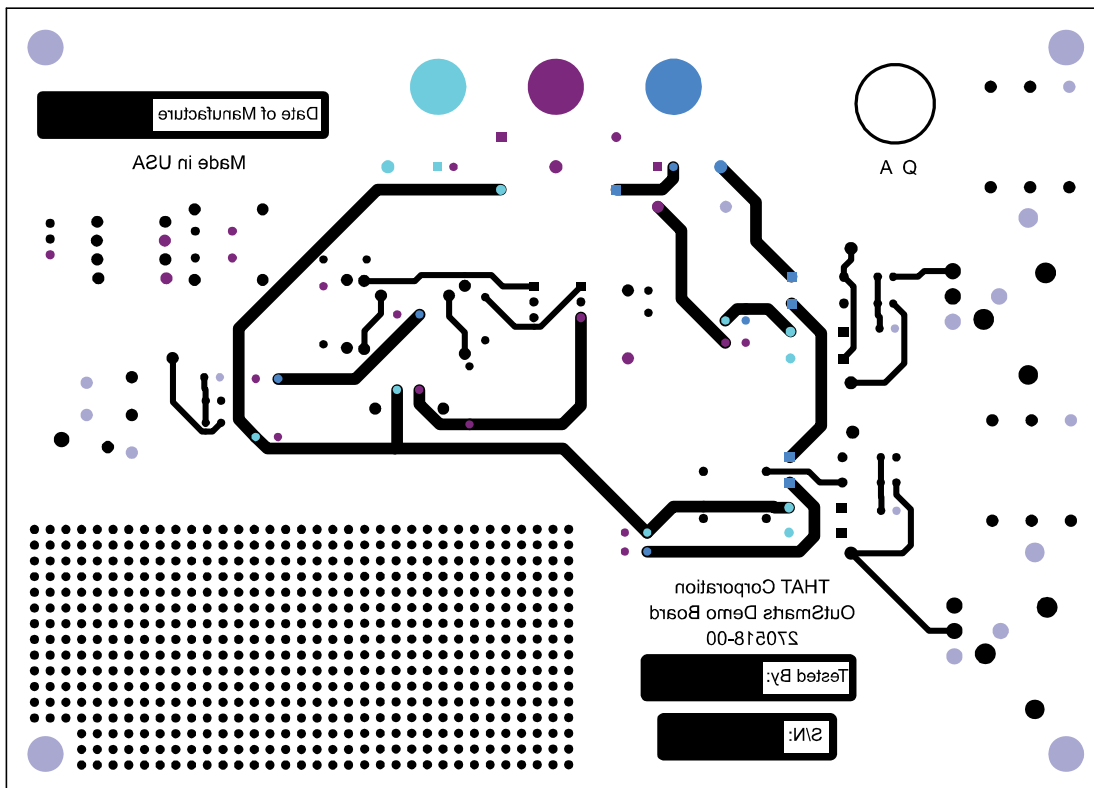
**BILL OF MATERIALS**

Item	Qty	Ref	Value	Description	MFR	MFR PN
1	9	C1, C14, C15, C17, C18, C19, C20, C21, C22	100 nF	CAP, 50V, 5%, DC FILM CAP	Mallory	168104J50A-F
2	2	C9, C10	10 uF	CAP, CER, 50V, Z5U 20% RADIAL	AVX Corp	MR085E106MAA
3	2	C5, C25	15 nF	CAP, 250V, 5%, MY	Mallory	167153J250A-F
4	2	C26, C30	2200 pF	CAP, 50V, 5%, CER, AXIAL	Kemet	C412C222J5G5CA7200
5	2	C23, C24	22 uF	CAP, MINI ALUM ELECT, 50V, KA	Panasonic	ECE-A1HKA220
6	2	C16, C27	3300 pF	CAP, 50V, 5%, CER, AXIAL	Kemet	C430C332J5G5CA7200
7	6	C2, C3, C6, C7, C11, C12	470 pF	CAP, 50V, CERAMIC, C0G, 5%	BC Comp.	K471J15C0GF5TL2
8	3	C4, C8, C13	47 pF	CAP, 50V CERAMIC C0G 5%	BC Comp.	K470J15C0GF5TL2
9	10	D1, D2, D3, D4, D5, D6, D7, D8, D9, D10	1N4004	DO-204AL Vr/400V Io/1A	Vishay	1N4004-E3
10	1	J9		BLACK BINDING POST	Pomona	3760-0
11	1	J7		RED BINDING POST 15A 2500 VDC	Pomona	3760-2
12	1	J8		GREEN BINDING POST	Pomona	3760-5
13	2	J3, J4		HEADER, 1X3, 0.1 THRU	Samtec	TSW-103-07-G-S
14	1	J2		CONN, HDR, VERT, 3POS, .100, TIN	Tyco	640454-3
15	2	J5, J11		JACK, STEREO, 1/4", PHONE, TRS	Neutrik	NMJ6HCD3
16	1	J10		XLR 1/4" TRS PHONE JACK COMBO CONN	Neutrik	NCJ6FI-H
17	1	R1	0	RES, 5%, THRU	Xicon	291-0-RC
18	2	R19, R26	1.00 k	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-1K00
19	2	R17, R23	100 k	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-100K
20	3	R7, R22, R25	1.24 k	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-1K24
21	1	R27	1.00 M	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-1M00
22	2	R20, R21	249	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-249R
23	2	R18, R24	909	RES, 1/4W, 1%, METAL FILM	YAGEO	MFR-25FBB-909R
24	2	J1, J6		XLR, MALE, QG CONNECTOR, THRU, RT ANG	Switchcraft	PQG3MRA112
25	7	TP1, TP2, TP3, TP4, TP5, TP6, TP7		SM BLK TERM TEST POINT	Kobicon	151-203-RC
26	1	U6		IC, BALANCED LINE RECV, SO8	THAT	1240S08-U
27	1	U3		IC, DIFFERENTIAL LINE DRIVER, 16QSOP	THAT	1606Q16-U
28	1	U1		IC, BALANCED LINE DRIVER, S016W	THAT	1646W16-U
29	1	U5		IC, HIGH PERF, LOW-NOISE, DUAL OPAMP, DMP8	NJR	NJM2114M

### PCB LAYOUT

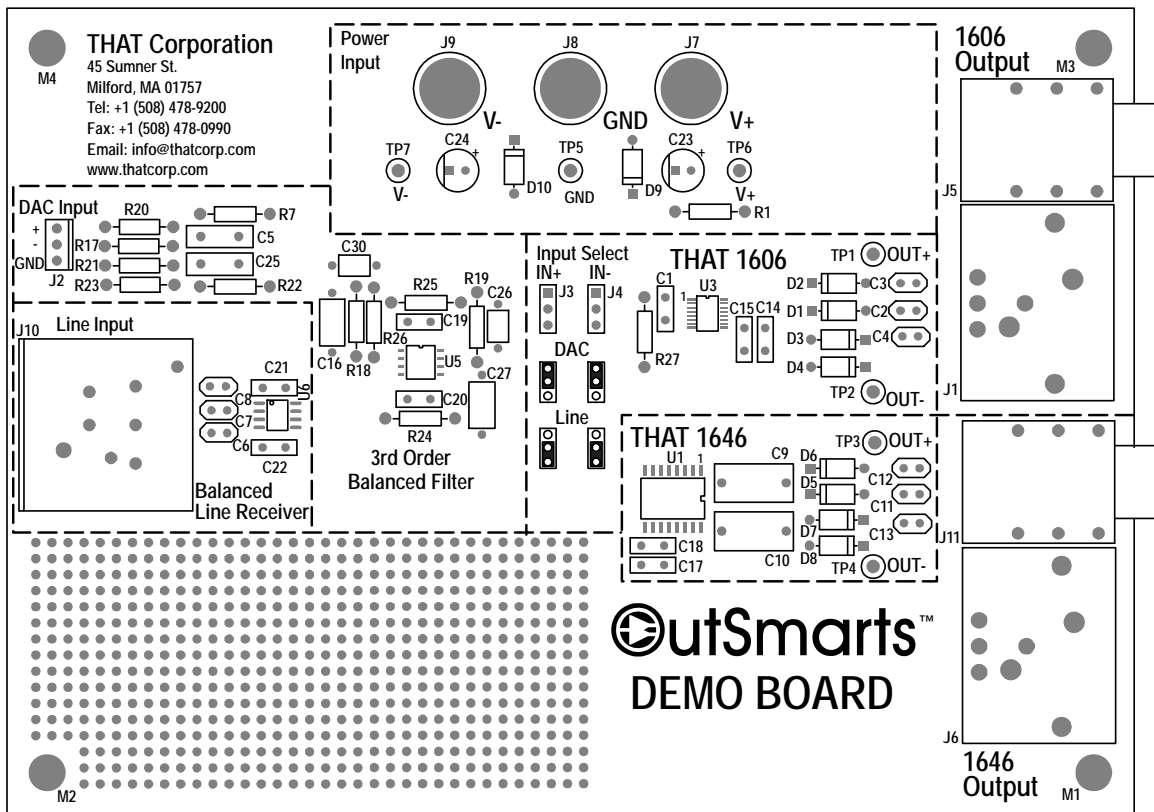


Layer 1 - Top



Layer 2 - Bottom (Top Down View)

### PCB LAYOUT (Continued)



Assembly Drawing