LXE1710HV AUDIOMAX EVALUATION KIT USER'S GUIDE

Microsemi
INTEGRATED PRODUCTS

Rev. 0.3, 2002-01-25

Microsemi
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LXE1710HV Evaluation Board Quick Start Guide

The LXE1710HV Evaluation Board is a fully functional mono class-D amplifier. Connection to two single power supply, one speaker, and an audio source is all that is required to begin evaluating the amplifier. The amplifier will support continuous output power levels up to ***>360W*** into 4 ohm load (<1% THD+N).

Board Setting

1. Power and Ground Connections: The terminal J6 is for the power supply connection. PVDD is connected to the positive polarity of the power supply (+10V ~ +12V); the +VB is connected to the positive polarity of the power supply (+50V~+60V); the GND is connected to the common negative polarity of this two power supplies. Please make sure your power supply polarity connection and supply voltage is correct before you start to evaluate the board.

2. Speaker Connection: J4 is speaker output. Connect speaker "+" and "-" to "OUT+" and "OUT-" of J4. This evaluation board is designed for 4 and 8 OHMS speaker load. For 2-OHM speakers, the Idc of output filter inductors should be changed to high current level.

3. Audio Input Connections: RCA1 and J1 are the audio input connections for different input connectors. Both are different inputs, but single-ended input is available, just be careful, if the input audio source GND is not connected to the evaluation board GND, close the JUMPER JP1. When audio inputs are differential, the positive audio inputs are connected to IN+ pin, while the negative input is connected to IN- pin of the J1 header. For RCA connector, just plug and play.

4. SLEEP/MUTE Connections: JP8 is the jumper selection for ON/OFF of the MUTE function, and JP7 is the jumper for ON/OFF of the SLEEP function. To enable the amplifier, both jumpers should be set to "OFF" (SLEEP is OFF, default is left OPEN, and MUTE is OFF).

Audio Performance

1. 20Hz-300Hz Audio Bandwidth, less than ±0.5dB;
2. Lowest THD+N <0.03% Typical (100Hz, 8 ohms);
3. Maximum Efficiency > 90%;
4. Output Power:
   180W @8ohm, <1%THD+N; 270W @8ohm, 10%THD+N
   360W @4ohm, <1%THD+N; 480W@4ohm, 10%THD+N;
5. Differential Input To Minimize noise Effects;

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APPLICATION SCHEMATIC

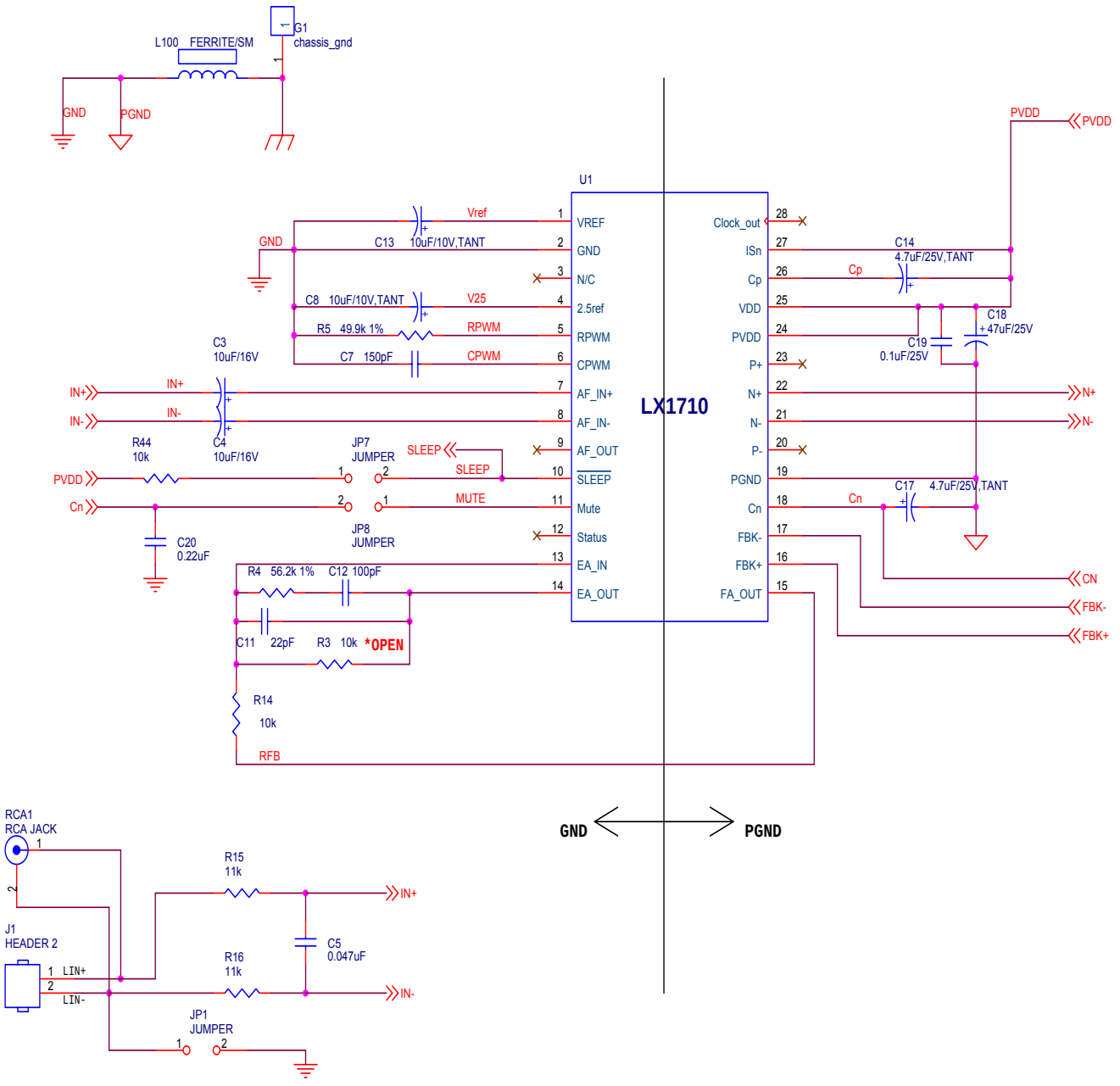

FIGURE 1 - LXE1710HV SCHEMATIC (PAGE 1)

APPLICATION SCHEMATIC (CONTINUED)

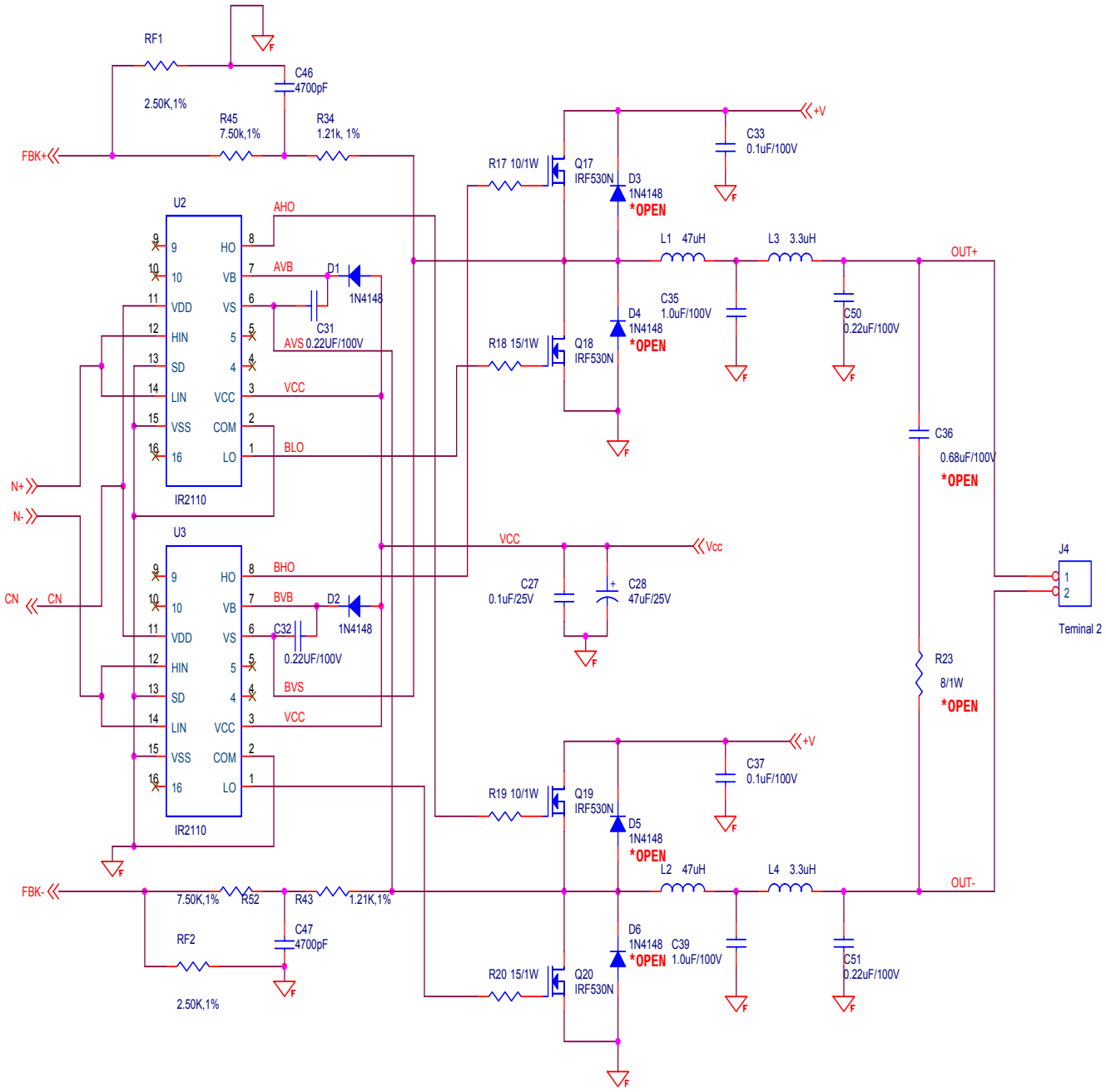

FIGURE 1 - LXE1710HV SCHEMATIC (PAGE 2)

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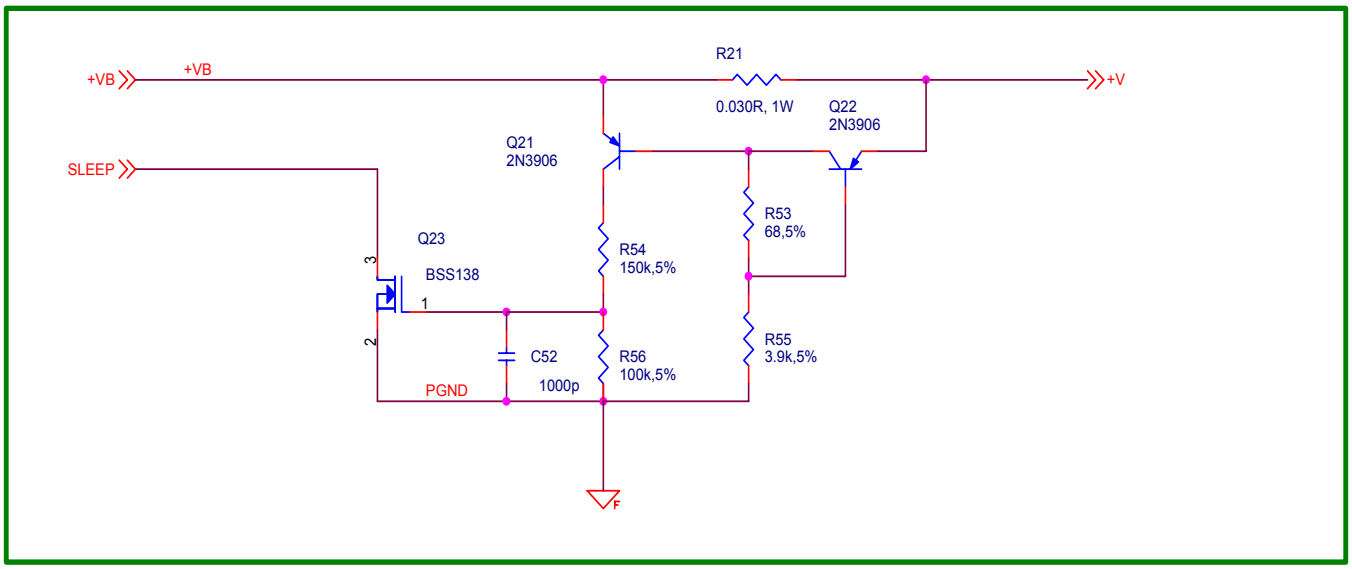
APPLICATION SCHEMATIC (CONTINUED)



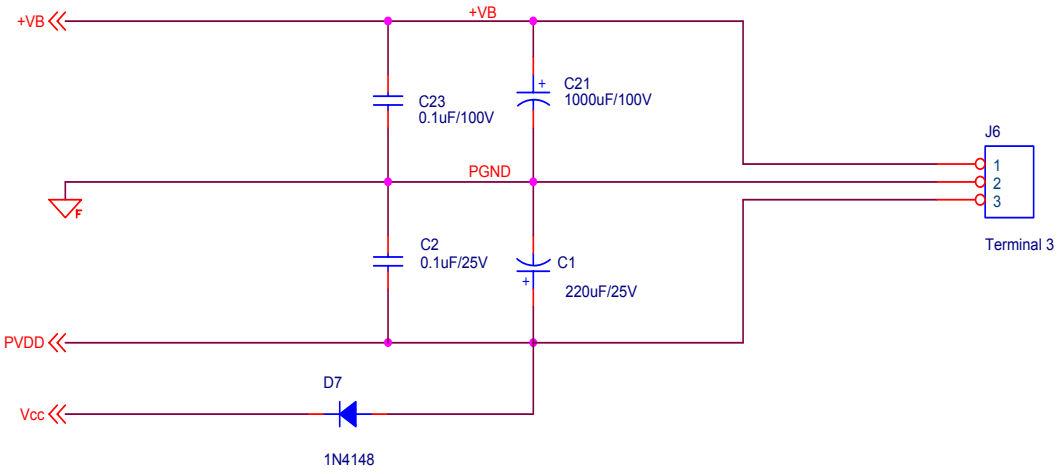


FIGURE 1 - LXE1710HV SCHEMATIC (PAGE 3)

ABSOLUTE MAXIMUM RATINGS

Unless otherwise specified, the following specifications apply over the operating ambient temperature $0°C \leq T_A \leq 70°C$

Parameter	Symbol	Test Conditions	LX1722			Units
			Min	Typ	Max	
Supply Voltage PVDD	PVDD		10		12	V
+VB	+VB		45		60	V
Quiescent Current	IQ	+VB = 60V, Output Open		70		mA
Sleep, Status		PVDD = 10V	-0.3		PVDD + 0.3	V
RPWM,CPWM, Mute		PVDD = 10V	-0.3		PVDD + 0.3	V
LIN+, LIN-, RIN+, RIN-	VIN	PVDD = 10V	-0.3		PVDD +0.3	V
LPREOUT, RPREOUT	VPRE	PVDD = 10V	-0.3		PVDD +0.3	V
Clock Frequency	FOSC	PVDD = 10V	200	250	500	KHz

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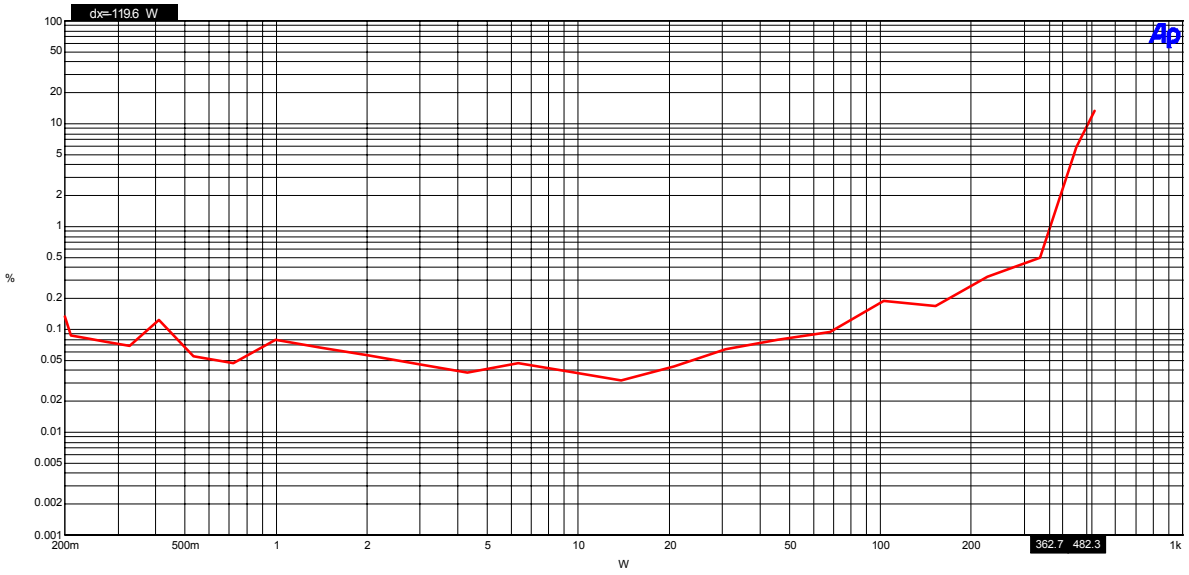
TEST RESULTS

MICROSEMI CORP. LXE1710HV mono 11/20/02 11:39:41
THD+N vs. Power



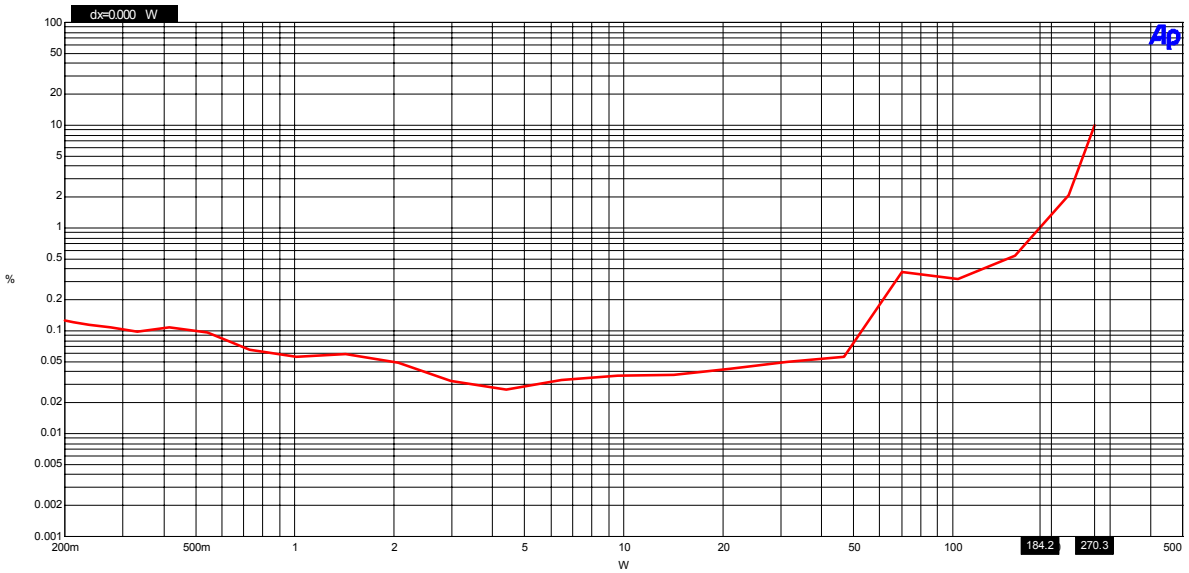
Color	Line Style	Thick	Data	Axis	Cursor1	Cursor2
Red	Solid	3	Anlr.THD+N Ratio	Left	..	..

PVDD=10V, +VB=60V
4OHM Load, f=100Hz, 10Hz~22KHz BPF

1710-hv-thdvspwr-4ohm.#2.at1

THD+N vs Power (4Ω)

MICROSEMI CORP. LXE1710HV mono 11/20/02 11:48:56
THD+N vs. Power



Color	Line Style	Thick	Data	Axis	Cursor1	Cursor2
Red	Solid	3	Anlr.THD+N Ratio	Left	..	..

PVDD=10V, +VB=60V
8OHM Load, f=100Hz, 10Hz~22KHz BPF

1710-hv-thdvspwr-8ohm.#2.at1

8Ω

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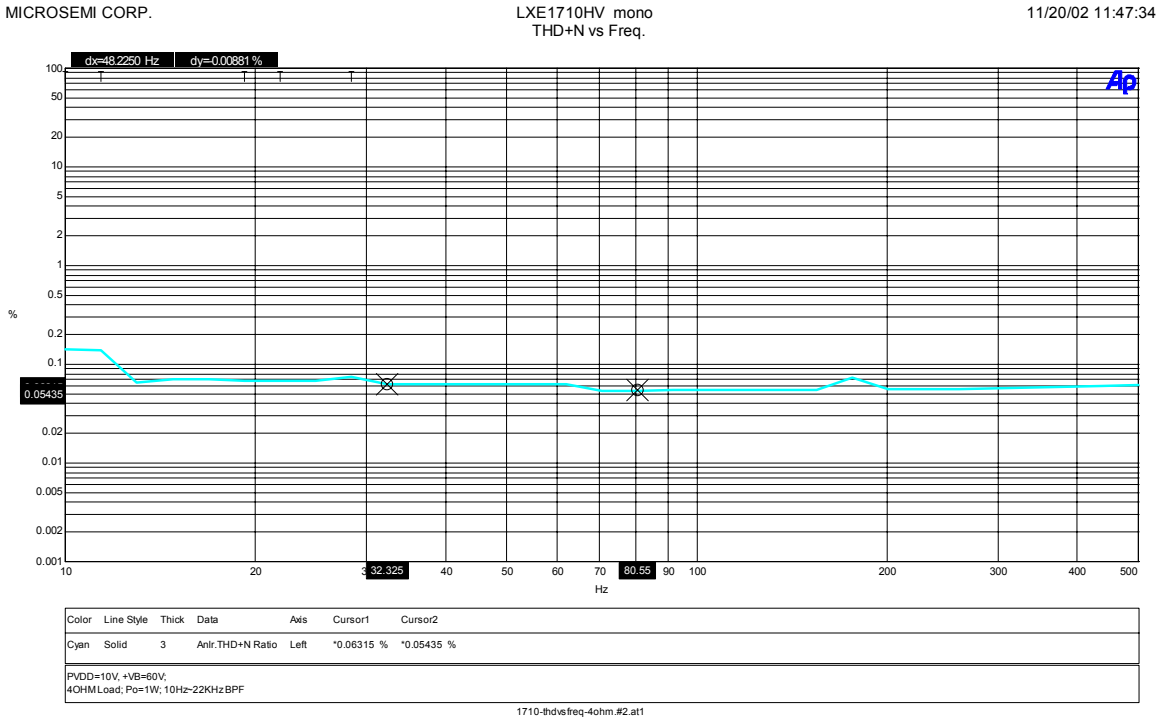
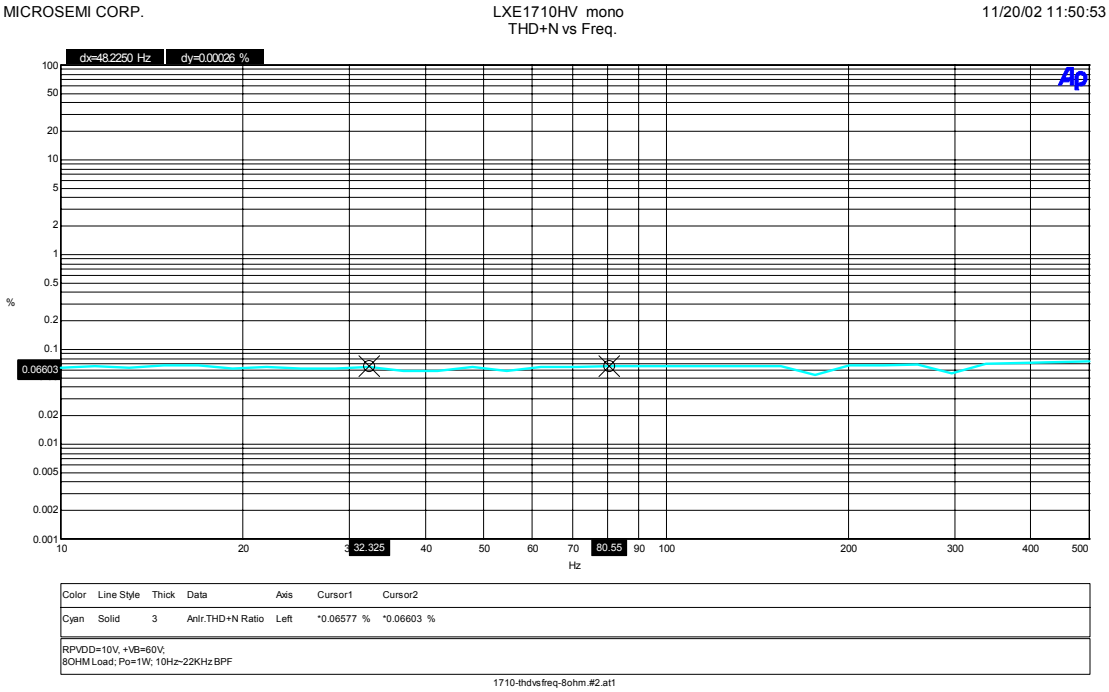
TEST RESULTS (CONTINUED)

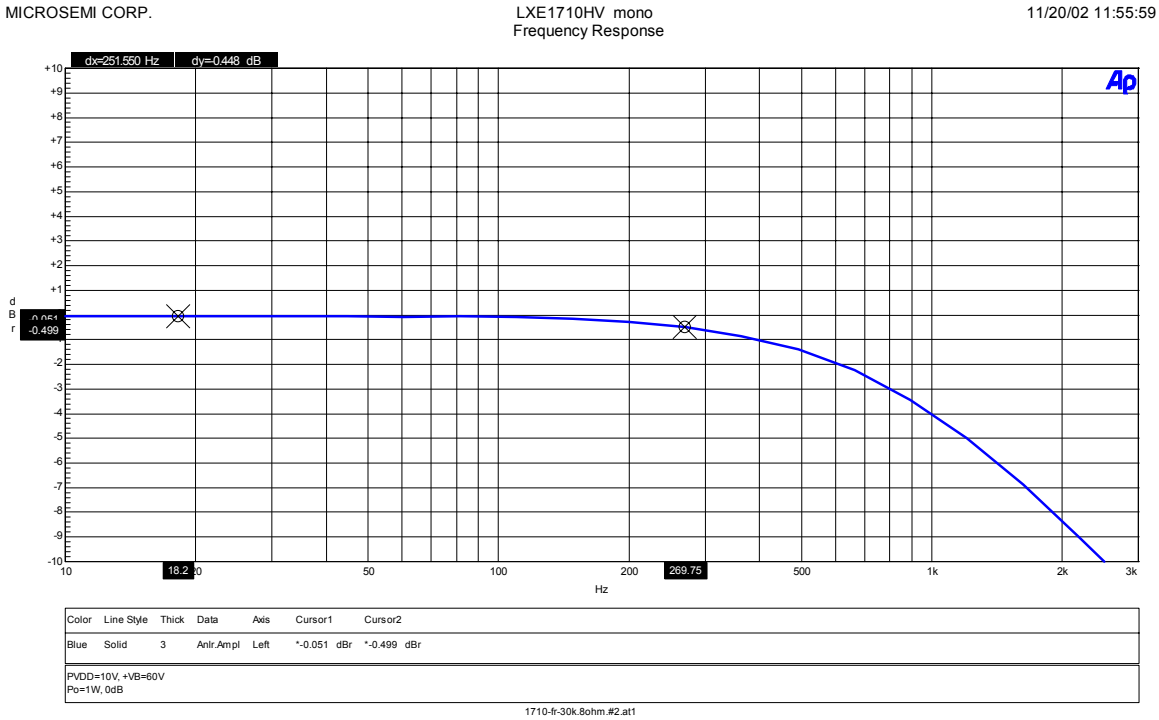


THD+N vs Frequency (4Ω)



8Ω

TEST RESULTS (CONTINUED)



Frequency Response

Efiiciency

BILL OF MATERIALS

MISCELLANEOUS COMPONENTS

Line Item	Part Description	Manufacturer & Part #		Case	Reference Designators	Qty
1	Microsemi IC Controller	MICROSEMI	LX1710	TSSOP	U1	1
2			IR2110		U2, U3	2
3	Diode		1N4148		D1 – D7	7
4	47µH				L1, L2	2
5	3.3µH				L3, L4	2
6			IRF530N		Q17-Q20	4
7			2N3906		Q21, Q22	2
8			BSS138		Q23	1
9	Jumper				JP1, JP, JP8	3
10	Header				J1	1
11	Terminal 2				J4	1
12	Terminal 3				J6	1
13	Chassis				G1	1
14	Ferrite / SM				L100	1
15	RCA connector				RCA1	1

CAPACITORS

Line Item	Part Description	Part Description	Case	Reference Designators	Qty
1	220µF, 25V			C1	1
2	0.1µF, 25V			C2, C19, C27	3
3	10µF, 16V			C3, C4	2
4	0.047µF			C5	1
5	150pF			C7	1
6	10µF, 10V, Tantalum			C8, C13	2
7	22pF			C11	1
8	100pF			C12	1
9	4.7µF, 2%, Tantalum			C17, C14	2
10	47µF, 25V			C18, C28	2
11	0.22µF			C20	1
12	1000µF, 100V			C21	1
13	0.1µF, 100V			C23, C33, C37	3
14	0.22µF, 100V			C31, C32, C50, C51	4
15	1.0µF, 100V			C35, C39	2
16	0.68µF, 100V			C36	1
17	4700pF			C46, C47	2
18	1000pF			C52	1

RESISTORS

Line Item	Part Description	Part Description	Case	Reference Designators	Qty
1	2.50K, 1%			RF1, RF2	2
2	10K			R3, R14, R44	3
3	56.2K, 1%			R4	1
4	49.9K, 1%			R5	1
5	11K			R15, R16	2
6	10/1W			R17, R19	2
7	15/1W			R18, R20	2
8	0.030R, 1W			R21	1
9	8/1W			R23	1
10	1.21K, 1%			R34, R43	2
11	7.50K, 1%			R45, R52	2
12	68Ohm, 5%			R53	1
13	150K, 5%			R54	1
14	3.9K, 5%			R55	1
15	100K, 5%			R56	1