



RB-TK2150-1 SIX CHANNEL RB-TK2150-2 SIX CHANNEL TK2150 6 CHANNEL REFERENCE BOARD

Technical Information – Board Rev. 1.0 and Rev 1.1

Revision 1.0 – November 2002

GENERAL DESCRIPTION

The RB-TK2150 Six Channel Reference board is a platform to provide a simple and straightforward environment for the evaluation of the Tripath TK2150 amplifier chipset in a multichannel application. For additional documentation on the TK2150, please see the TK2150 Data Sheet, available on the Tripath website, www.tripath.com.

NOTE: There are two versions of the RB-TK2150 Six Channel Board, depending on nominal supply voltage.

RB-TK2150-1 Six Channel– Operating Supply Voltage +/-29V to +/-45V

RB-TK2150-2 Six Channel– Operating Supply Voltage +/-39V to +/-60V

APPLICATIONS

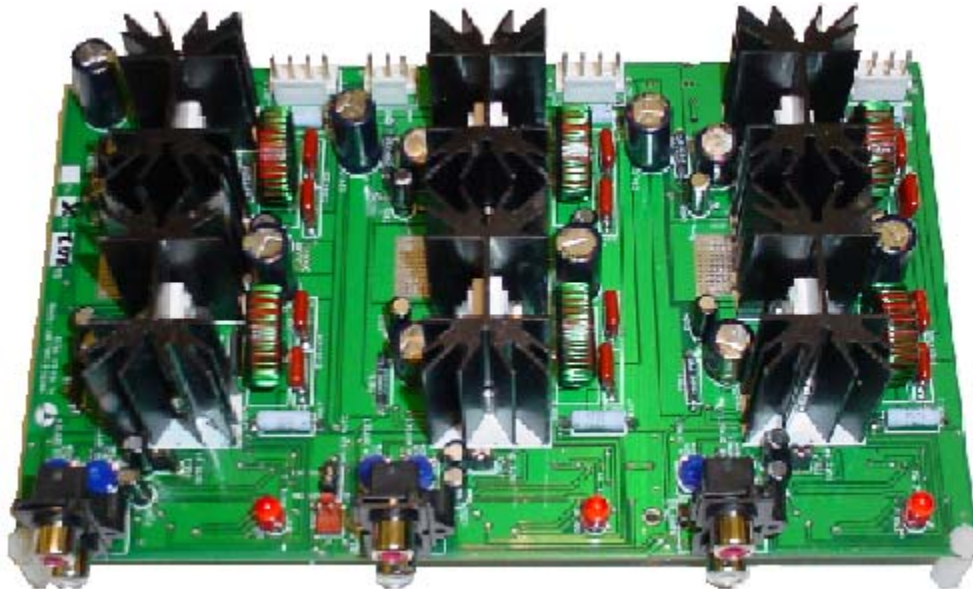
- 6Ω and 8 Ω stereo
- Home Theater Receivers
- Multi-channel Distribution
- Powered DVD Systems
- Mini/Micro Systems

BENEFITS

- Single Ended Outputs
- Simplifies thermal management
- Signal Quality comparable to high quality, linear amplifiers
- Simple building block for multi-channel design

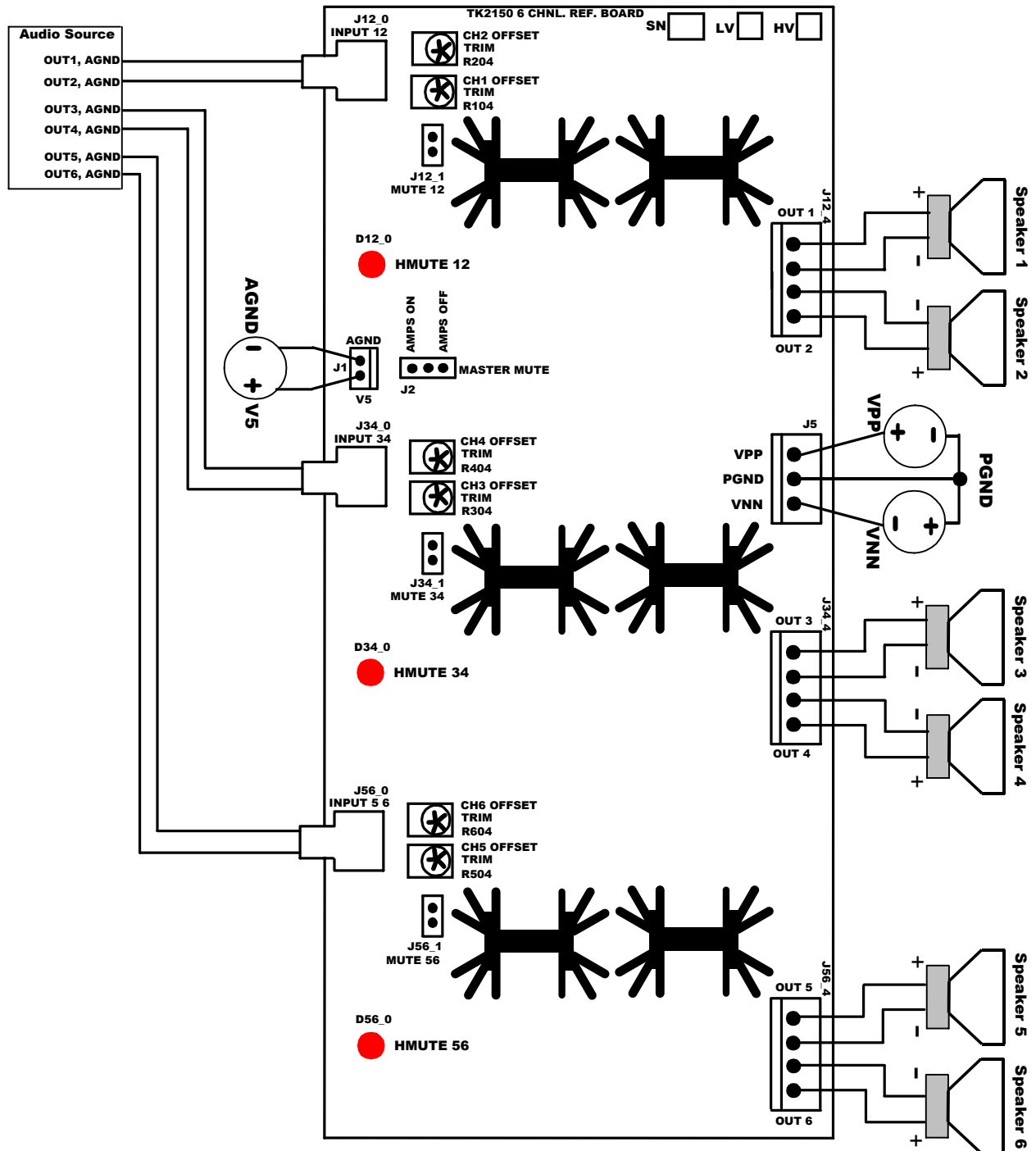
FEATURES

- Low Noise Floor: <175uV A-weighted *
<260uV A-Weighted**
- Low Distortion:
0.015% THD+N, 60W, 8Ω *
0.020% THD+N, 120W, 8Ω**
- High Efficiency:
93% @ 120W, 8Ω *
93% @ 220W, 8Ω **
- Over-Current Protection
- Over and Under Voltage Protection
- Over Temperature Protection on TP2150
*(RB-TK2150-1 Board, +/- 40V)
**(RB-TK2150-2 Board, +/- 54V)



OPERATING INSTRUCTIONS

BOARD CONNECTION DIAGRAM



POWER SUPPLIES

Three external power supplies are required to operate the RB-TK2150 Six Channel Board: VPP (referenced to PGND), VNN (referenced to PGND) and V5 (referenced to AGND). The V5 ground (AGND) must be kept separate from the VPP and VNN ground (PGND). PGND and AGND are joined at a single point on the board with a ferrite bead (L1).

There are two versions of the RB-TK2150 Six Channel Board. The "-1" or "LV" (low voltage) version operates from +/-29V to +/-45V, with +/-40V being the nominal supply voltage. The "-2" or "HV" (high

voltage) version operates from +/-39V to +/-60V with +/-54V being the nominal supply voltage. Operation outside these set minimum and maximum supply voltages will cause the TC2001 to shut off the output stages of the amplifiers. The removal of the under-voltage or over-voltage condition returns the TK2150 to normal operation. Please see the Over- and Under- Voltage Protection section of the TK2150 Data Sheet for a more detailed discussion of the rail supply range.

The V5 supply voltage is 5V and should be well regulated. Please see the TK2150 Data Sheet for minimum and maximum values.

The VPP and VNN power supply connection is made with a standard .156" Molex header (J5). The V5 connection is made with a standard .100" Molex header (J1). Please refer to the Board Connection Diagram for the header locations on the RB-TK2150 and the attached Bill-Of-Materials for the header part numbers.

The TP2150 has an internal hysteretic buck converter, which, in conjunction with a few components supply the VN10 voltage required by the TP2150 MOSFET Driver. These external components include a P-Channel FET, 100uF inductor, ultra-fast recovery rectifier diode, and a few resistors and capacitors. The diode may be replaced with a Schottky diode rated at least 200mA, 50nS and appropriately voltage rated.

OUTPUT

The output connections for each pair of channels of the RB-TK2150 Six Channel Board are made with a 4 pin .156" spaced Molex header (J12_4, J34_4, J56_4). The output of the TK2150 is single-ended; therefore each output has a signal output (labeled OUT 1, OUT 2 etc.) and a ground output (labeled PGND 1, PGND 2, etc. on the bottom of the board).

It should be noted that on the REV1.0 board, the outputs are mislabeled. OUT 1 should be swapped with OUT 2, OUT 3 should be swapped with OUT 4 and OUT5 should be swapped with OUT6. Once swapped, the output will match up to the input and offset trim labeling on the input section side.

Please refer to the Board Connection Diagram for the header locations on the RB-TK2150 Six Channel Board.

BRIDGED OUTPUT

The RB-TK2150 Six Channel is not optimized for bridge mode. Though the TK2150 is capable of supporting 400W-500W, bridged into 8Ω , the RB-TK2150 is not thermally optimized for full power, bridged mode testing. Also, the externally controlled current limit is optimized for single-ended operation and will trip before full power is achieved. If high power, bridge mode operation is needed, additional heat sinking may be required. In addition, higher current FETs will be likely be required depending on the supply voltage. Alternatively, the EB-TK2150 Six Channel board can be used, which is equipped with a larger heat sink and more capable fets for bridged mode operation.

INPUT

The input connection for each pair of channels of the board are made using a dual RCA connector. The dual RCA connectors are labeled INPUT 12, INPUT 34, and INPUT 56 (J12_0, J34_0, J56_0, respectively). Each dual RCA connectors share a common ground referenced to their respective TC2001. Please refer to the Board Connection Diagram for the connector locations on the RB-TK2150 Six Channel Board.

JUMPER SETTINGS

The board has both individual and global mute control via 2-pin headers. The individual mutes are located at J12_1, J34_1 and J56_1. Removing one of these jumpers will mute that pair of channels. Removing the jumper located at J2 (Master Mute) or placing a jumper in the "AMPS OFF" position will mute all 6 channels of the board. Please refer to the Board Connection Diagram for the mute jumper locations on the RB-TK2150 Six Channel Board. To minimize turn on/off pops, place the global mute jumper, located at J2, in the "AMPS OFF" position while bringing up/turning off, the power supplies.

INDICATOR LED'S

The RB-TK2150 has 3 red LEDs, D12_0, D34_0, and D56_0 labeled HMUTE 12, HMUTE34, and HMUTE56, respectively. An LED will glow red and the outputs associated with that LED will be muted when a fault occurs. The most likely causes for a fault are over-current, over-voltage or under-voltage. Please refer to the TK2150 Data Sheet for a complete description of HMUTE. Please refer to the Board Connection Diagram for the LED location on the RB-TK2150.

Please note that removing J2 or placing a jumper in the "AMPS OFF" position will cause all 3 HMUTE LEDs to be illuminated. In addition, removing one of the individual mute jumpers will cause the associated LED to be illuminated.

OUTPUT OFFSET NULL

There are six potentiometers, R104-R604, that are used to manually trim the output offsets to 0Vdc. Please refer to the Board Connection Diagram for the potentiometer locations on the RB-TK1250 Six Channel Board. The reference board is shipped with offsets nulled within +/-10mV.

As stated earlier, the REV1.0 board has the outputs mislabeled with respect to the Offset Trim labels for all six channels. Thus, adjusting the CH1 Offset Trim will change the DC offset on OUT 2 not OUT 1. Subsequent board revisions (after REV1.0) have corrected this mislabeling on the board.

GAIN SETTING

The gain of the RB-TK2150-1 is set to 13.3V/V. The gain of the RB-TK2150-2 is set to 19.95V/V. The gain of the TK2150 is the product of the TC2001 (control stage) gain and the TP2150 (power stage) gain. The control stage gain is set to .664V/V. The TP2150 (power stage) gain is determined from the maximum allowable feedback level for the modulator. Once the designer chooses the maximum supply voltages, the feedback level can be optimized and the power stage gain is set. From this point any minor gain adjustments can be made at the control stage. Before changing the gain of the RB-TK2150, please refer to the Amplifier Gain section of the TK2150 Data Sheet.

PERFORMING MEASUREMENTS ON THE RB-TK2150

The TK2150 operates by generating a high frequency switching signal based on the audio input. This signal is sent through a low-pass filter that recovers an amplified version of the audio input. The frequency of the switching pattern is spread spectrum in nature and typically varies between 100kHz and 1MHz, which is well above the 20Hz – 20kHz audio band. The pattern itself does not alter or distort the audio input signal, but it does introduce some inaudible components.

The measurements of certain performance parameters, particularly noise related specifications such as THD+N, are significantly affected by the design of the low-pass filter used on the output as well as the bandwidth setting of the measurement instrument used. Unless the filter has a very sharp roll-off just beyond the audio band or the bandwidth of the measurement instrument is limited, some of the inaudible noise components introduced by the TK2150 amplifier switching pattern will degrade the measurement by including out of band (audio) energy.

One feature of the TK2150 is that it does not require large multi-pole filters to achieve excellent performance in listening tests, usually a more critical factor than performance measurements. Though using a multi-pole filter may remove high-frequency noise and improve THD+N type measurements (when they are made with wide-bandwidth measuring equipment), these same filters degrade frequency response. The RB-TK2150 has a simple two-pole output filter with excellent performance in listening tests.

(See Application Note 4 for additional information on bench testing)

DESIGN FILES

Soft copy design files in Protel 2.8 format as well as gerber files with embedded apertures are available upon request.

Contact Information

TRIPATH TECHNOLOGY, INC

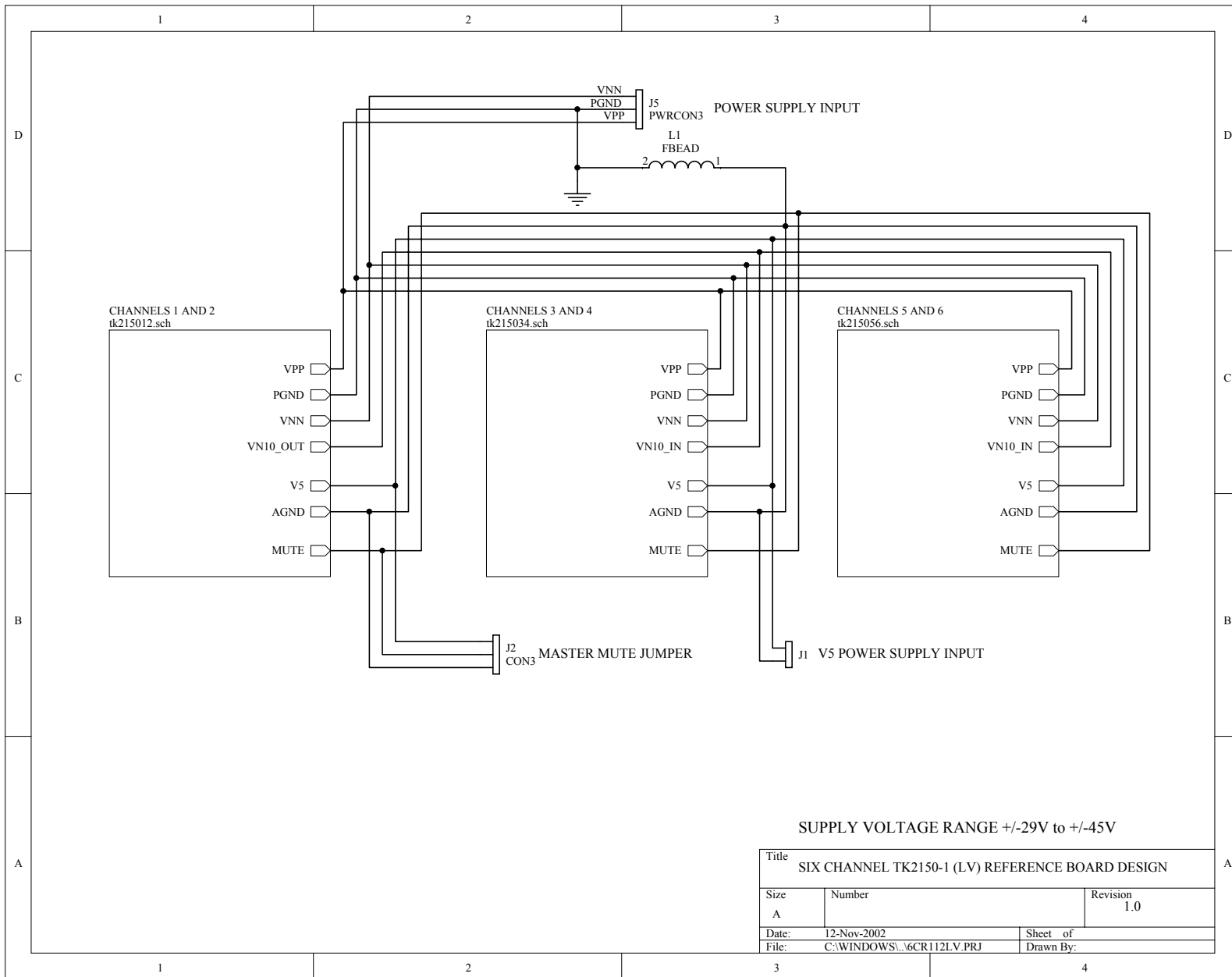
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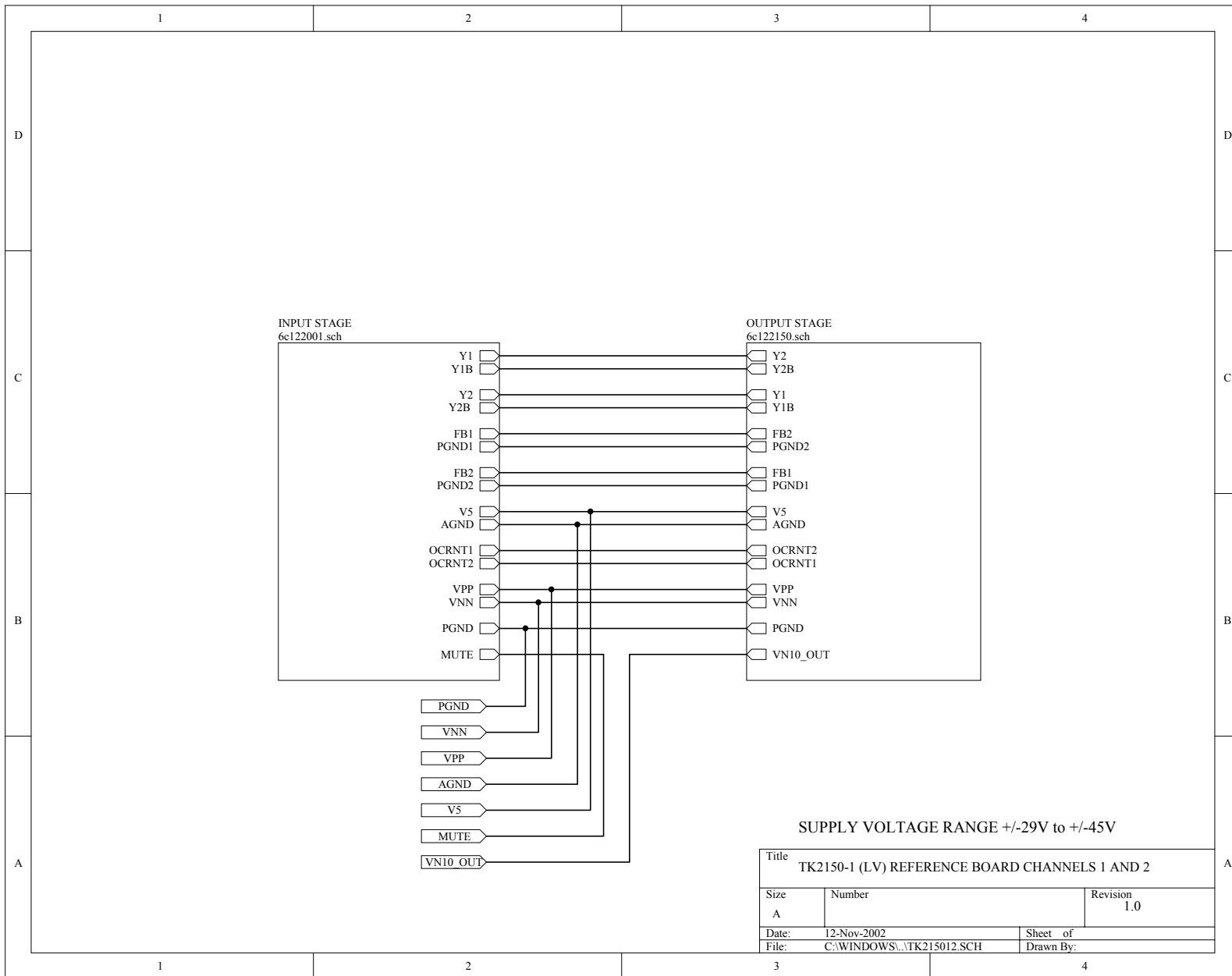
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For more Technical Information, please visit us @ www.tripath.com/data.htm



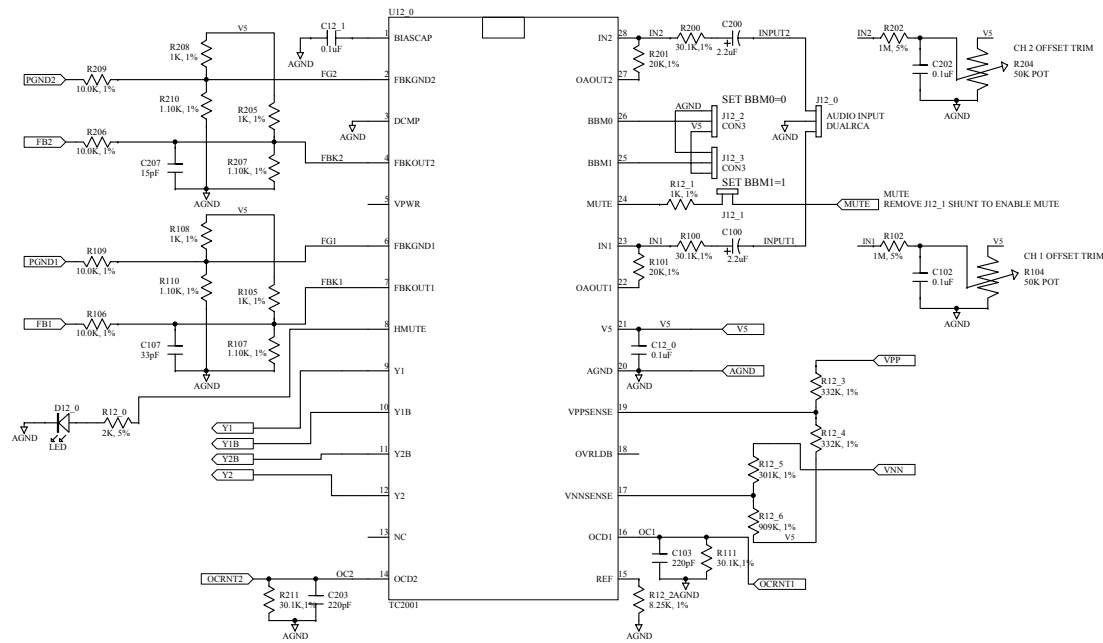
SUPPLY VOLTAGE RANGE +/-29V to +/-45V

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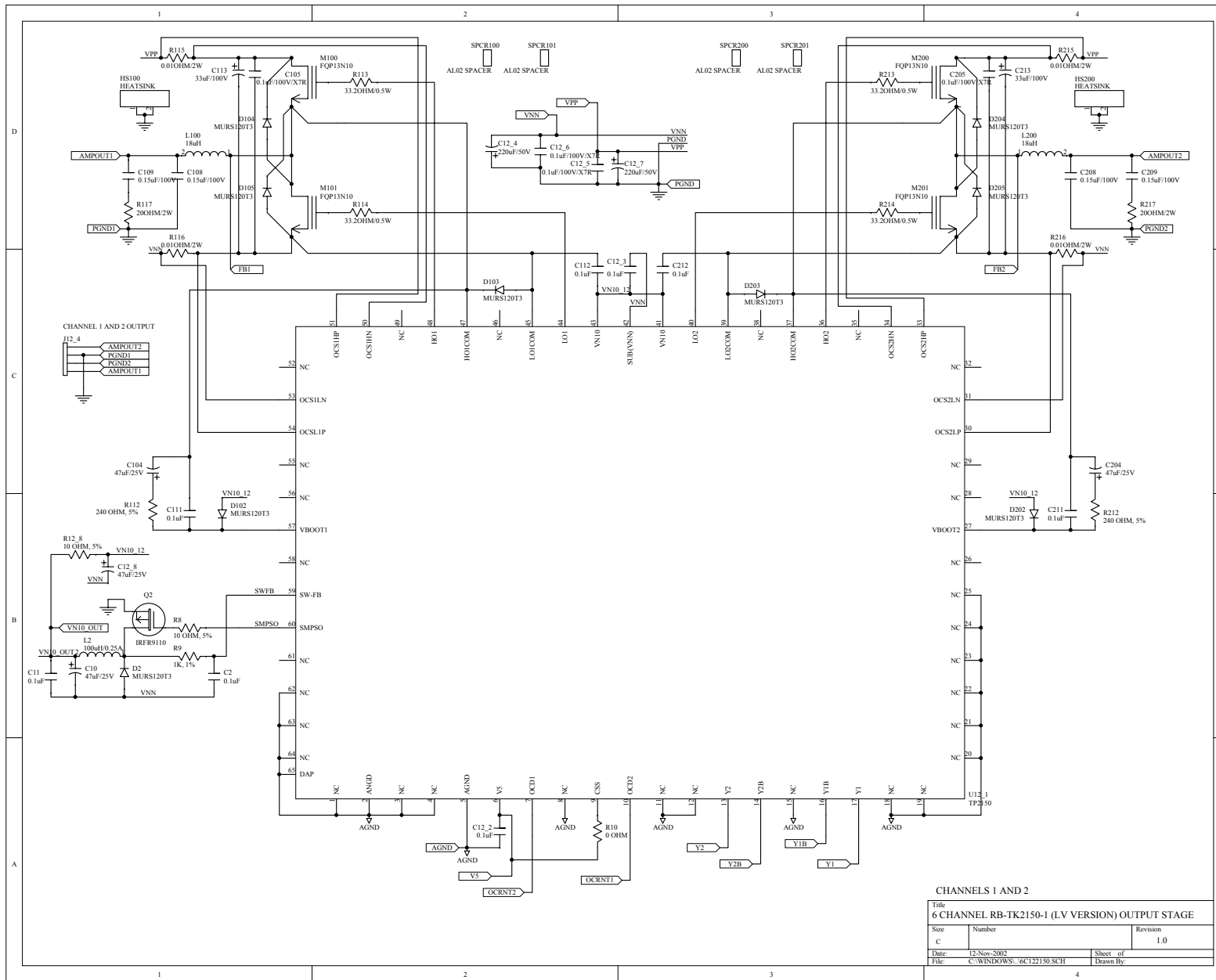
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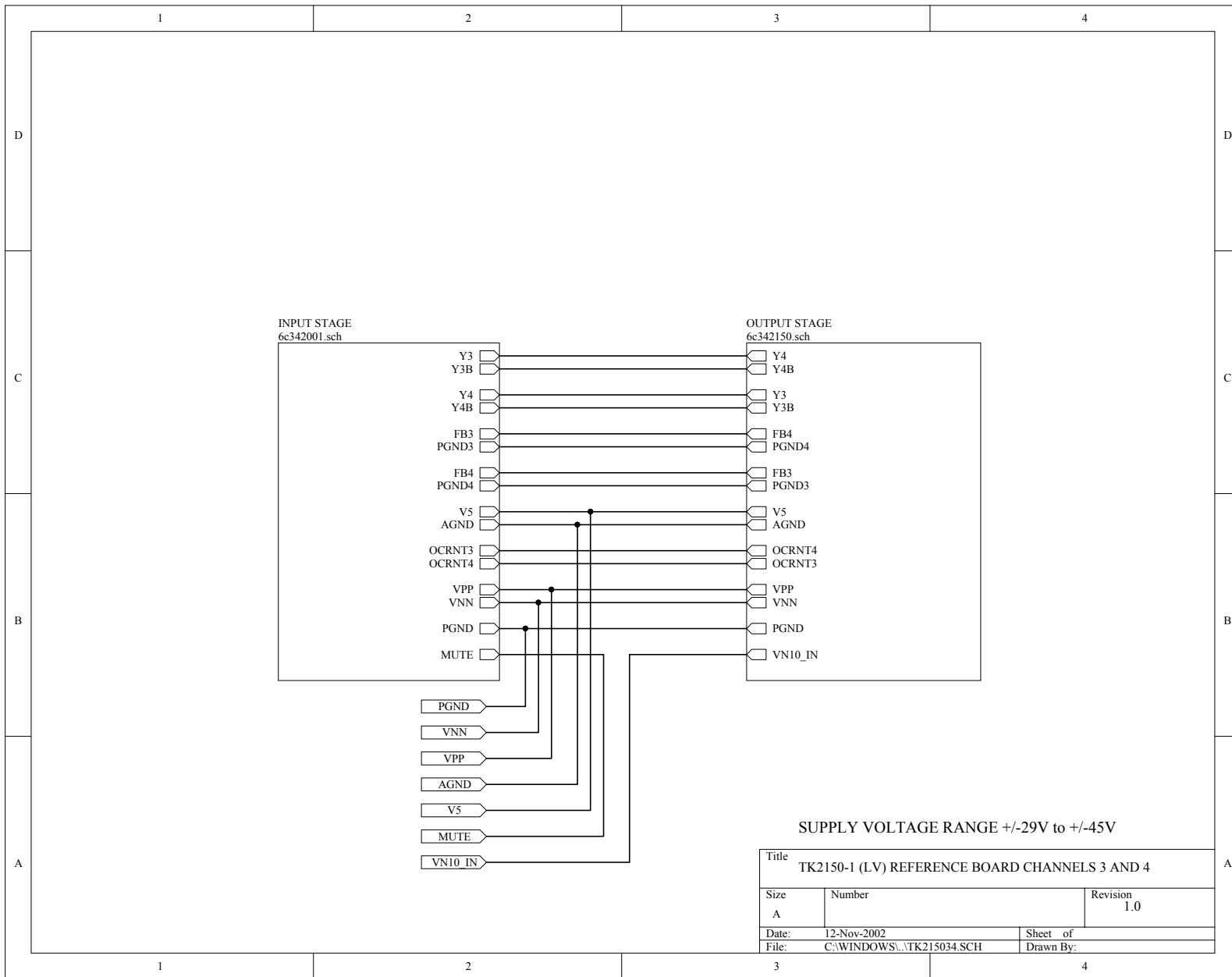
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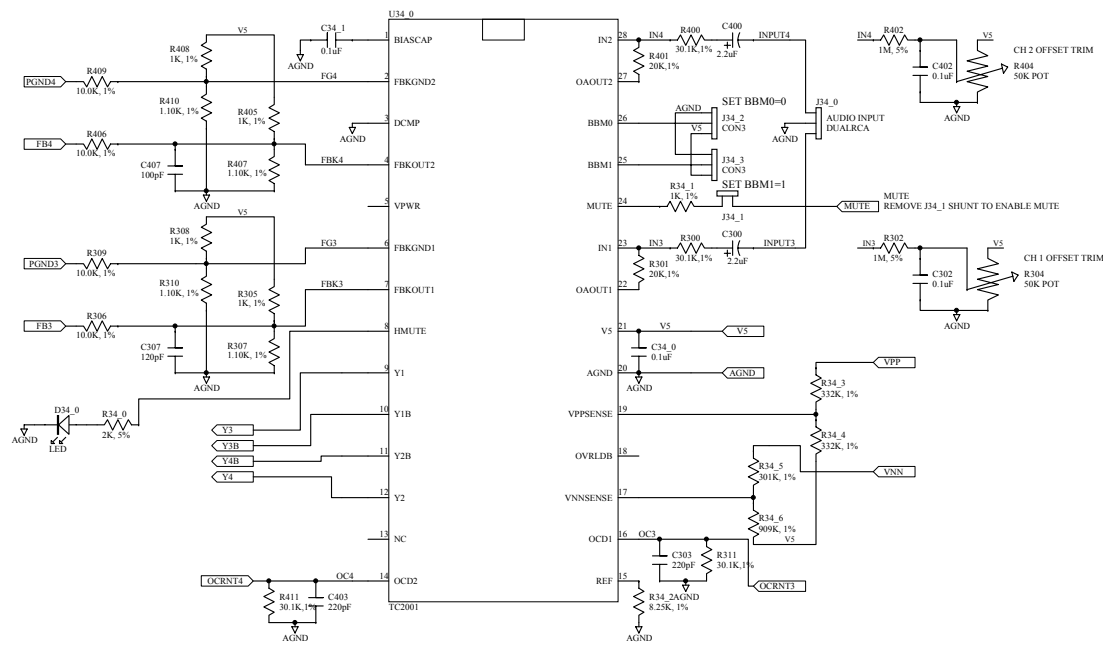


CHANNELS 1 AND 2

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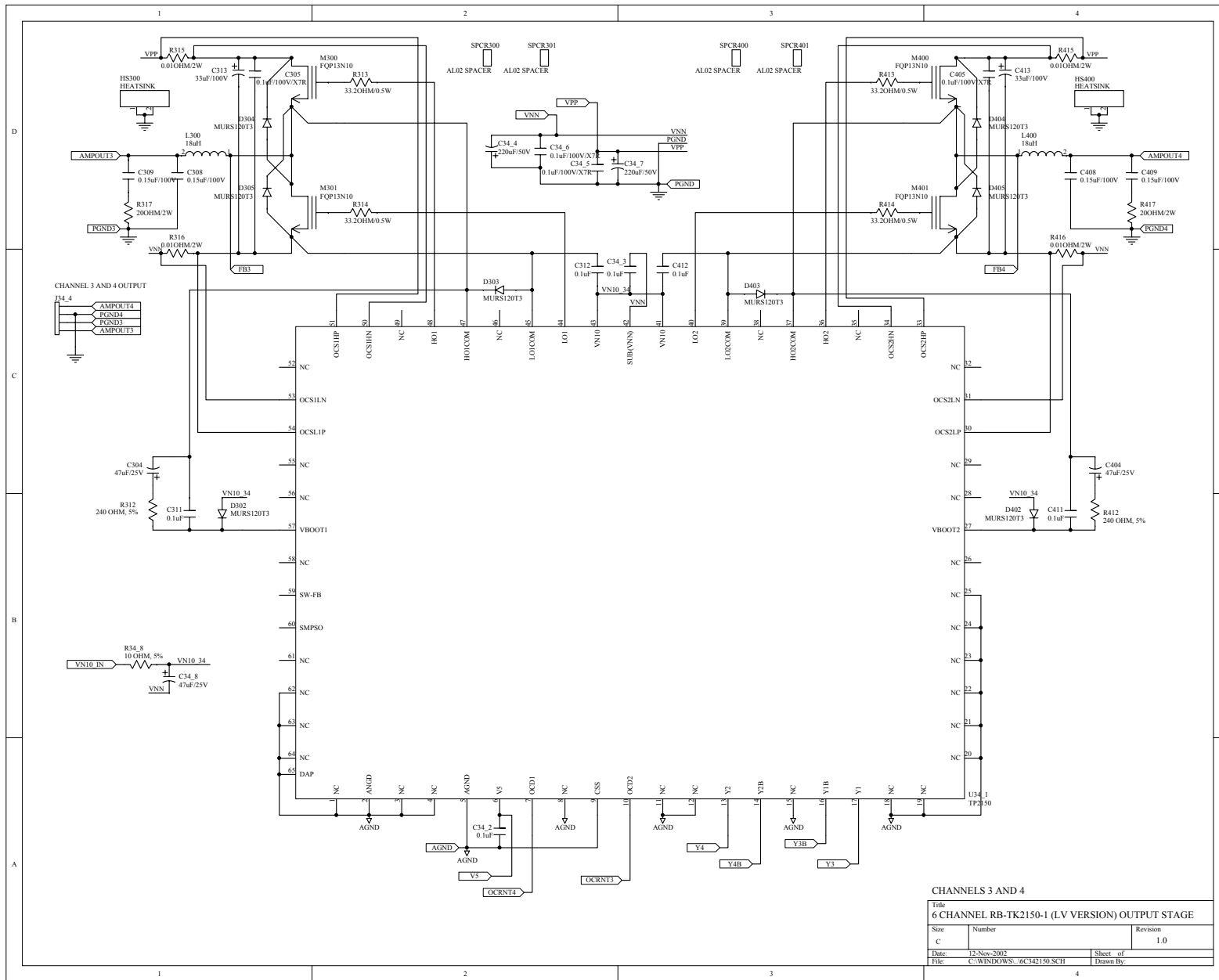




CHANNELS 3 AND 4

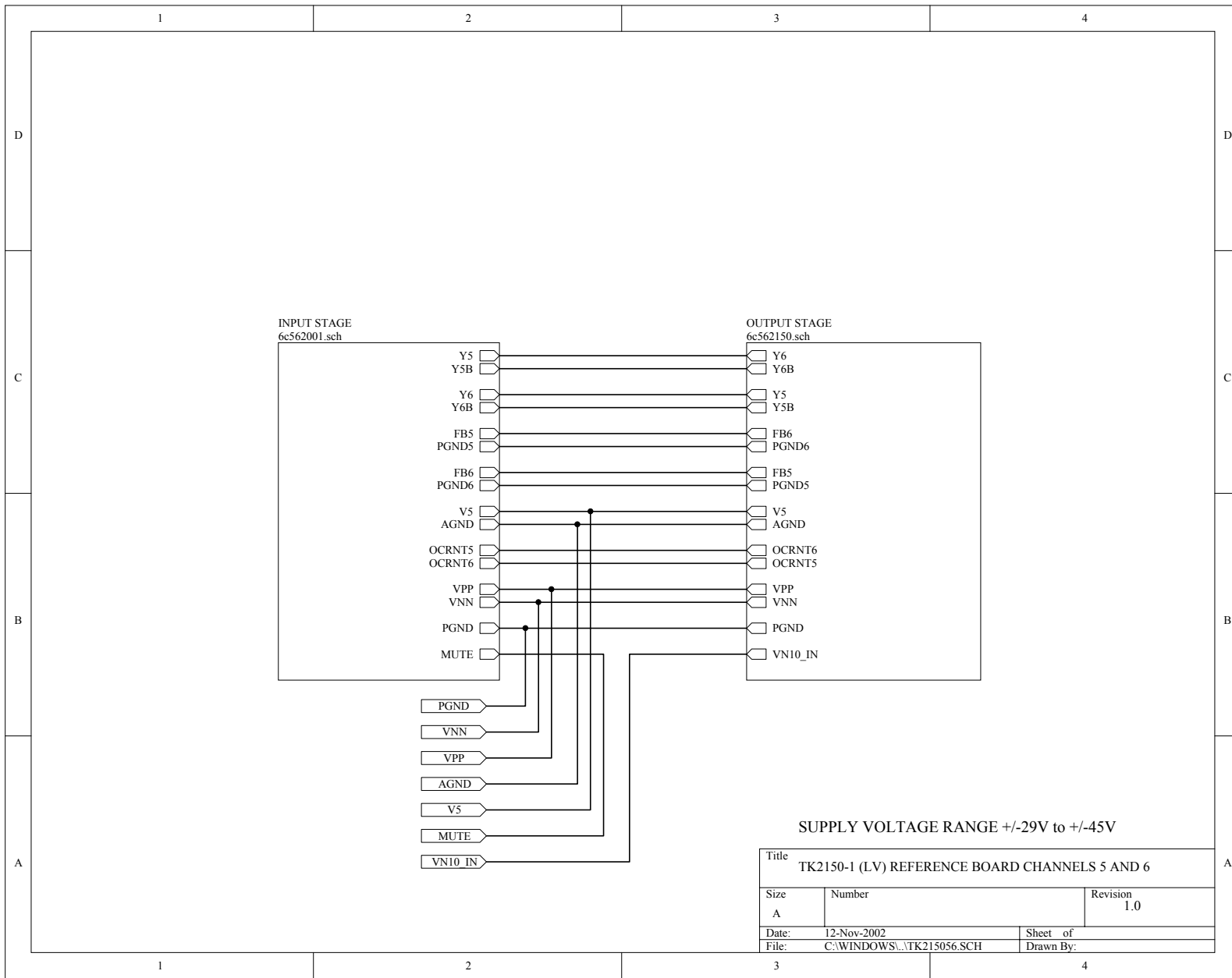
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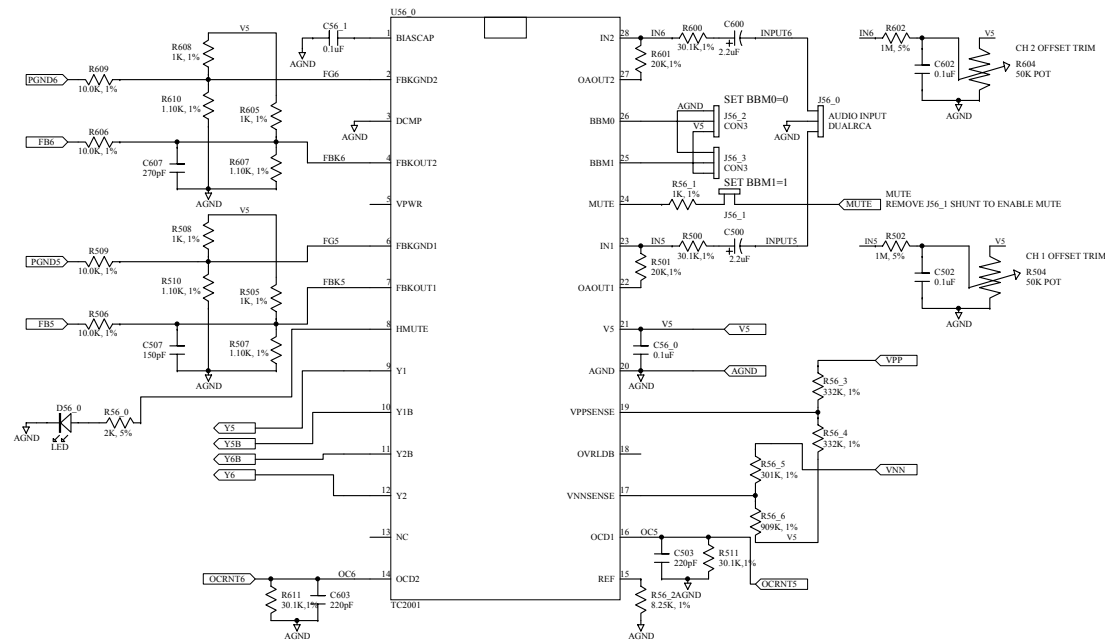
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CHANNELS 3 AND 4

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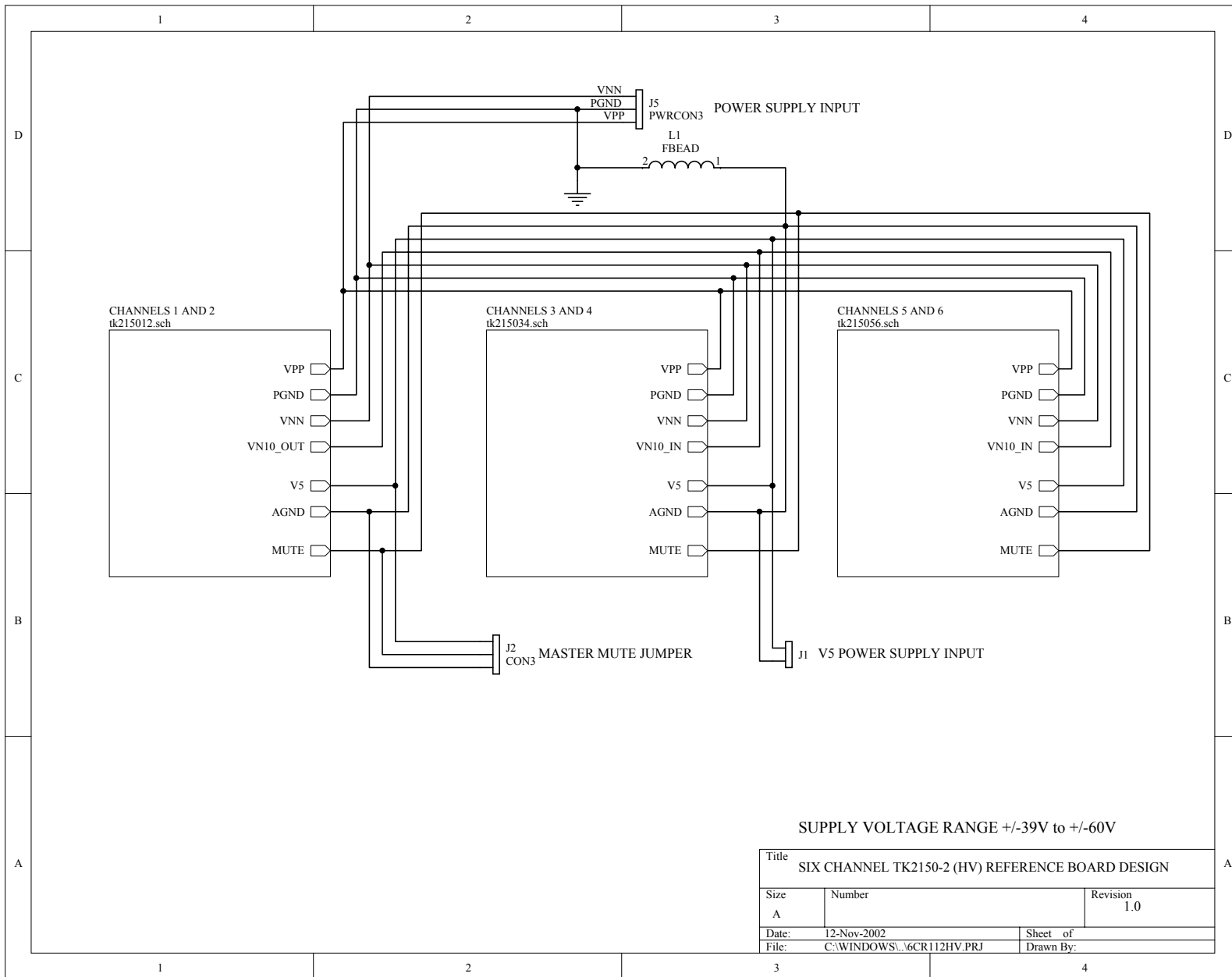
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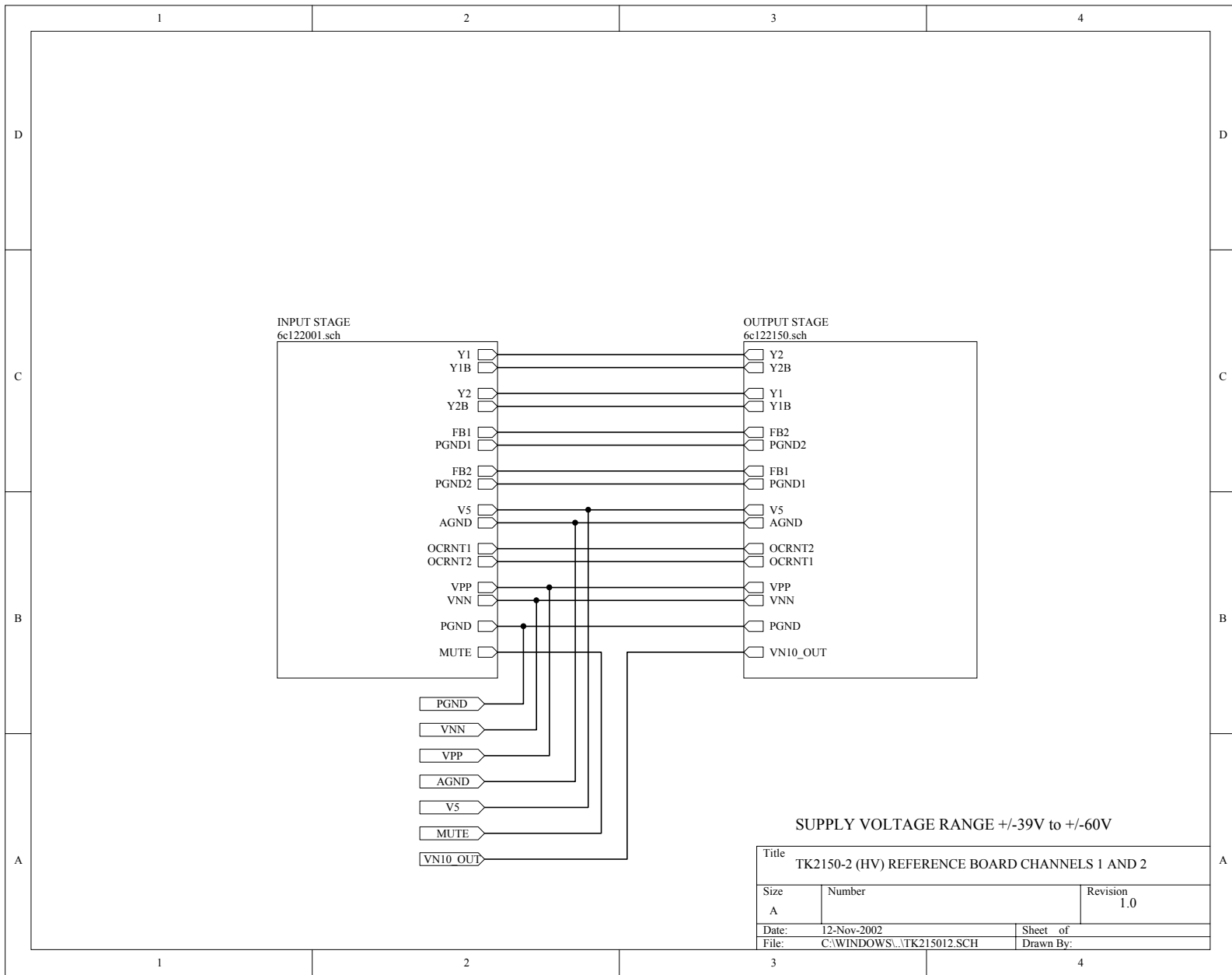
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1	0 OHM	R10	0805	*	*	*
12	0.01OHM/2W	R115 R116 R215 R216 R315 R316 R415 R416 R515 R516 R615 R616	RLVR1RG2	OHMITE	12FR010	DK 12FR010-ND
12	0.15uF/100V	C108 C109 C208 C209 C308 C309 C408 C409 C508 C509 C608 C609	COU22PL10	PANASONIC	ECQ-V1154JM	DK P4727-ND
32	0.1uF	C102 C11 C111 C112 C12_0 C12_1 C12_2 C12_3 C2 C202 C211 C212 C302 C311 C312 C34_0 C34_1 C34_2 C34_3 C402 C411 C412 C502 C511 C512 C56_0 C56_1 C56_2 C56_3 C602 C611 C612	0805	20% TOL.	*	*
12	0.1uF/100V/X7R	C105 C12_5 C12_6 C205 C305 C34_5 C34_6 C405 C505 C56_5 C56_6 C605	1210	KEMET	C1210C104K1RACTU	DK 399-1268-1-ND
12	1.10K, 1%	R107 R110 R207 R210 R307 R310 R407 R410 R507 R510 R607 R610	0805	*	*	*
4	10 OHM, 5%	R12_8 R34_8 R56_8 R8	0805	*	*	*
12	10.0K, 1%	R106 R109 R206 R209 R306 R309 R406 R409 R506 R509 R606 R609 C407	0805	*	*	*
1	100pF	L2	0805	NPO 5%	*	*
1	100uH/0.25A	C307	IND1UH	TOKO	187LY-101J	DK TK4300-ND
1	120pF	C507	0805	NPO 5%	*	*
1	150pF	C207	0805	NPO 5%	*	*
1	15pF	L100 L200 L300 L400 L500 L600	T80	AMERICAN CORES	AW800-06-57T-24-V	T80--2 CORE 57TURNS / 24AWG
6	18uH	R105 R108 R12_1 R205 R208 R305 R308 R34_1 R405 R408 R505 R508 R56_1 R605 R608 R9	0805	*	*	*
16	1K, 1%	R102 R202 R302 R402 R502 R602	0805	*	*	*
6	1M, 5%	C100 C200 C300 C400 C500 C600	C10UEL05	PANASONIC	ECA-1HHG2R2	DK P5564-ND
6	2.2uF	R101 R201 R301 R401 R501 R601	0805	*	*	*
6	20K,1%	R117 R217 R317 R417 R517 R617	PWR2W	PANASONIC	ERG-2SJ200	DK P20W-2BK-ND
6	200HM/2W	C103 C203 C303 C403 C503 C603	0805	NPO 5%	*	*
6	220pF	C12_4 C12_7 C34_4 C34_7 C56_4 C56_7	C100UEL06	PANASONIC	EEU-FC1H221	DK P10325-ND
6	220uF/50V	R112 R212 R312 R412 R512 R612	0805	*	*	*
6	240 OHM, 5%	C607	0805	NPO 5%	*	*
1	270pF	R12_0 R34_0 R56_0	0805	*	*	*
3	2K, 5%	R100 R111 R200 R211	0805	*	*	*
12	30.1K,1%					

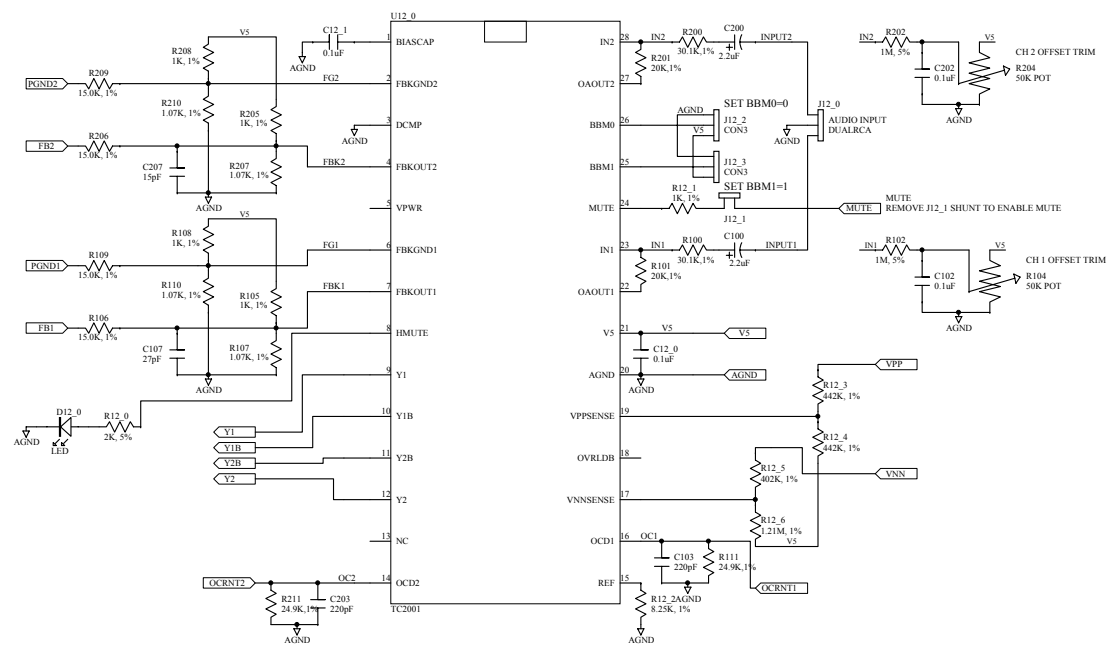
		R300 R311 R400 R411					
		R500 R511 R600 R611					
3	301K, 1%	R12_5 R34_5 R56_5	0805	*		*	*
12	33.2OHM/0.5W	R113 R114 R213 R214	2010	PANASONIC		ERJ-12SF33R2U	DK P33.2ACCT-ND
		R313 R314 R413 R414					
		R513 R514 R613 R614					
6	332K, 1%	R12_3 R12_4 R34_3	0805	*		*	*
		R34_4 R56_3 R56_4					
1	33pF	C107	0805	NPO 5%		*	*
6	33uF/100V	C113 C213 C313 C413	C100UEL06	PANASONIC		EEU-FC2A330	DK P10771-ND
		C513 C613					
10	47uF/25V	C10 C104 C12_8 C204	C10UEL05	PANASONIC		ECA-1EHG470	DK P5539-ND
		C304 C34_8 C404 C504					
		C56_8 C604					
6	50K POT	R104 R204 R304 R404	POTSTURN	BOURNS		3306P-1-503	DK 3306P-503-ND
		R504 R604					
3	8.25K, 1%	R12_2 R34_2 R56_2	0805	*		*	*
3	909K, 1%	R12_6 R34_6 R56_6	0805	*		*	*
12	AL02 SPACER	SPCR100 SPCR101	TO220SPACER	AAVID THERMALLOY		4170	*
		SPCR200 SPCR201					
		SPCR300 SPCR301					
		SPCR400 SPCR401					
		SPCR500 SPCR501					
		SPCR600 SPCR601					
1	CON2LPWR	J1	CON2B	WALDOM		22-23-2021	DK WM4200-ND
7	CON3	J12_2 J12_3 J2 J34_2	0805JMPR	*		*	*
		J34_3 J56_2 J56_3					
3	CON4	J12_4 J34_4 J56_4	PWR4	WALDOM		26-60-4040	DK WM4622-ND
3	DUALRCA	J12_0 J34_0 J56_0	DUALRCAVERT	CUI INC.		RCJ-2223	DK CP-1435-ND
1	FBEAD	L1	2010	*		*	*
12	FQP13N10	M100 M101 M200 M201	TO220	FAIRCHILD SEMI		FQP13N10	*
		M300 M301 M400 M401					
		M500 M501 M600 M601					
3	HDR2	J12_1 J34_1 J56_1	GJMPR001	*		*	*
6	HEATSINK	HS100 HS200 HS300	657HEATSINK	AAVID		529802B02500	MSR 532-529802B25
		HS400 HS500 HS600					
1	IRFR9110	Q2	DPAK	INTERNATIONAL RECT.		IRFR9110	DK IRFR9110-ND
3	LED	D12_0 D34_0 D56_0	LED1	RED LED		*	*
25	MURS120T3	D102 D103 D104 D105	SMB	ON SEMICONDUCTOR		MURS120T3	NWK 08F2006
		D2 D202 D203 D204					
		D205 D302 D303 D304					
		D305 D402 D403 D404					
		D405 D502 D503 D504					
		D505 D602 D603 D604					
		D605					
1	PWRCON3	J5	CON3	WALDOM		26-60-4030	DK WM4621-ND
3	TC2001	U12_0 U34_0 U56_0	SOP28	TRIPATH TECHNOLOGY		*	*
3	TP2150	U12_1 U34_1 U56_1	LQFP64	TRIPATH TECHNOLOGY		*	*

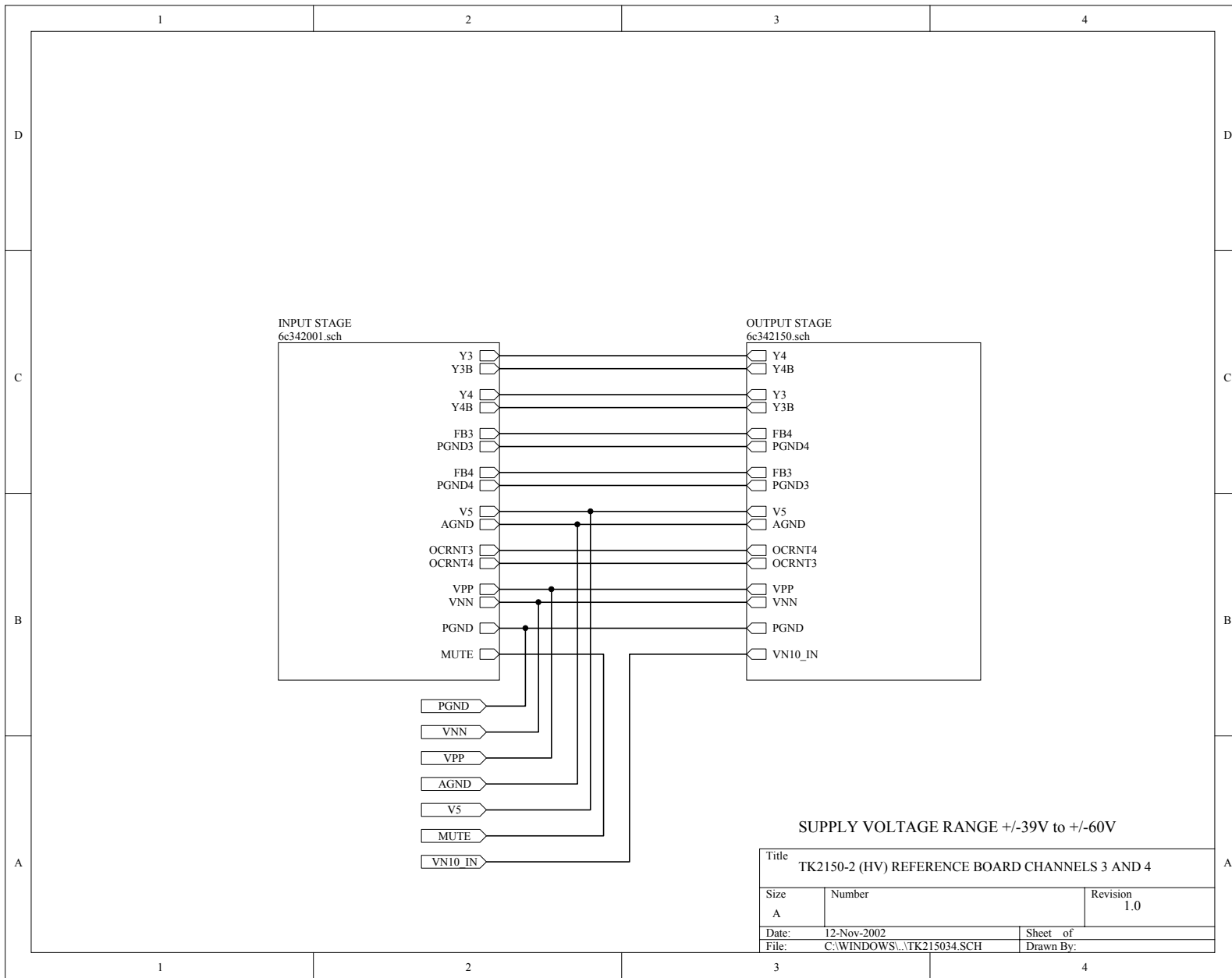


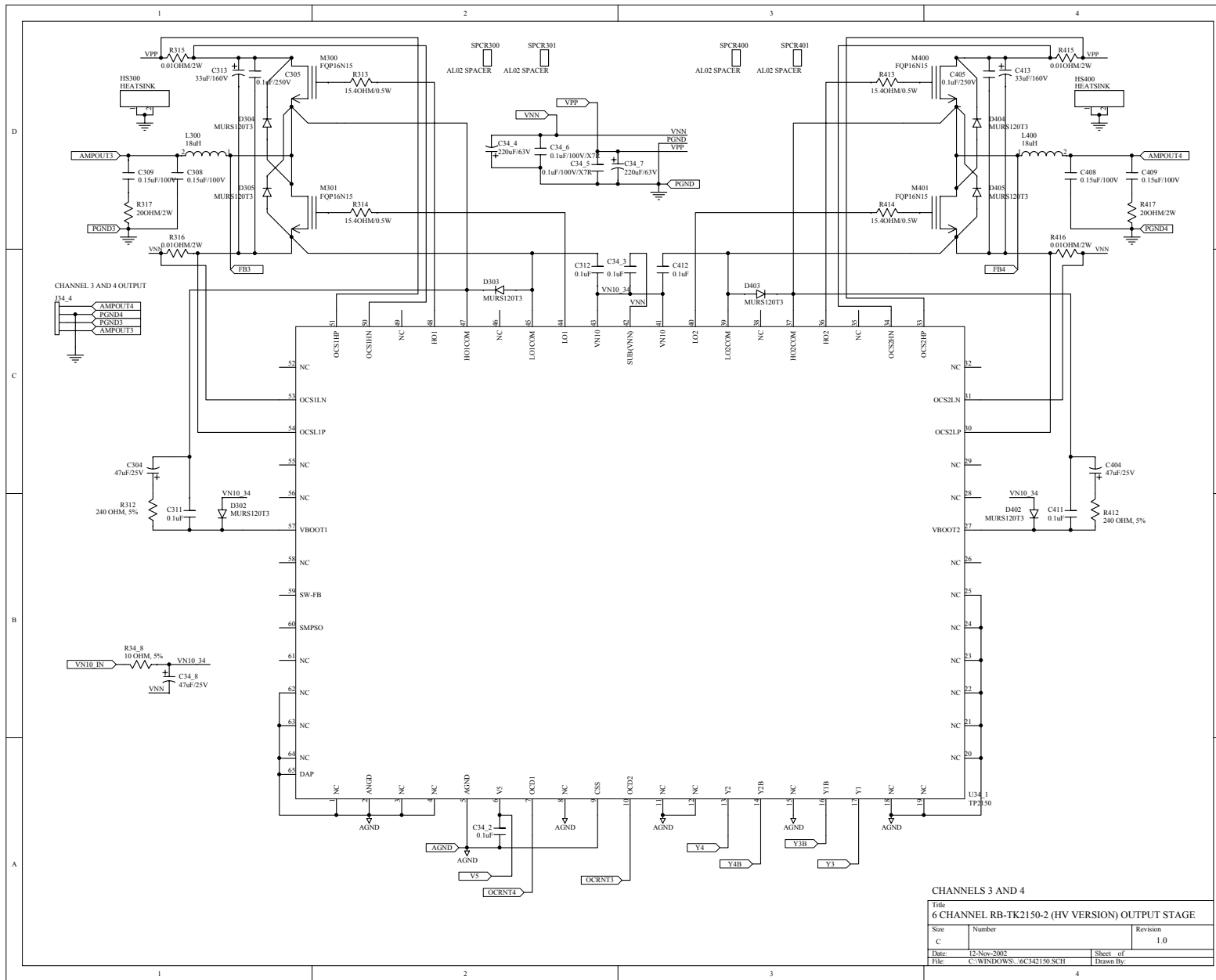
SUPPLY VOLTAGE RANGE +/-39V to +/-60V

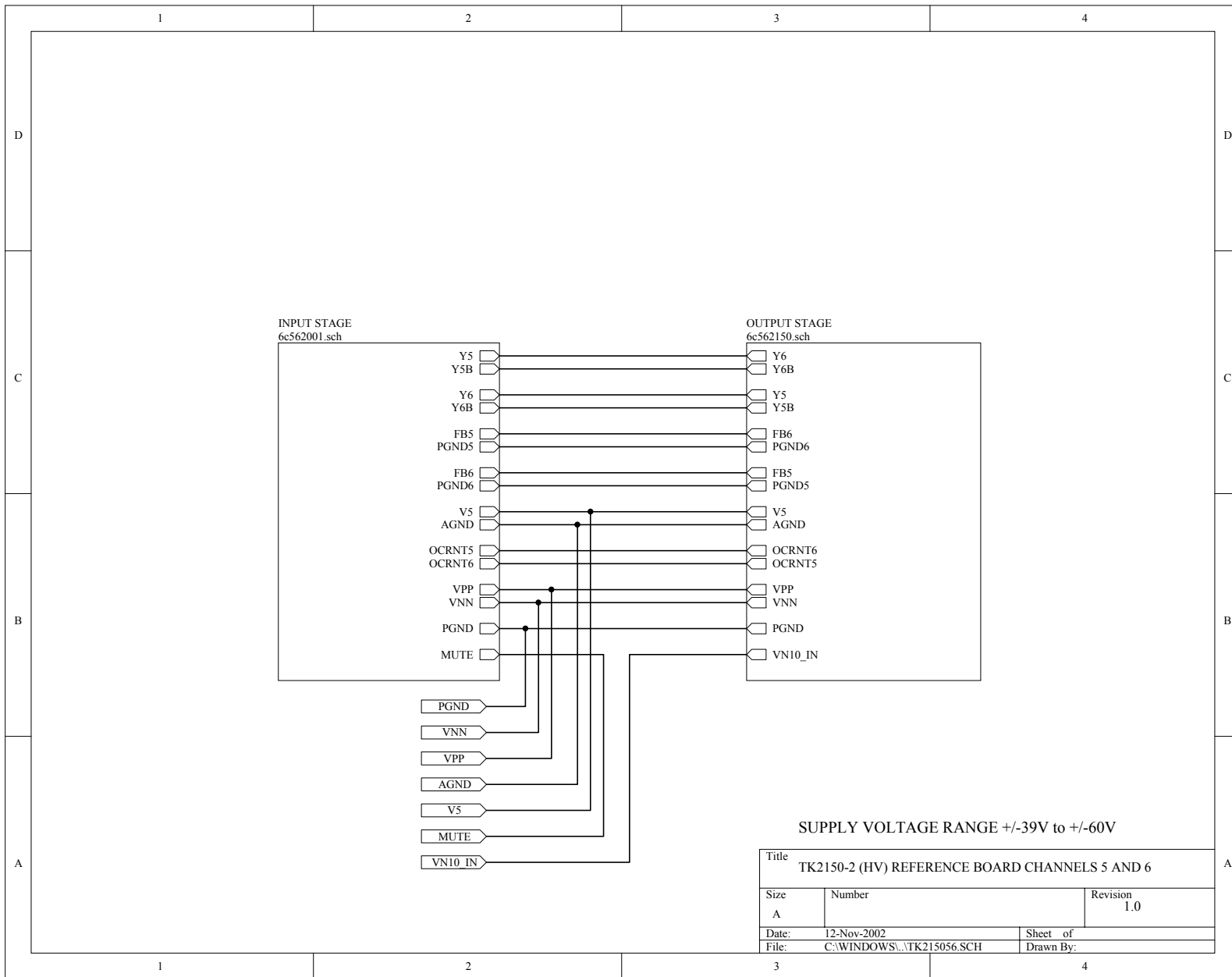
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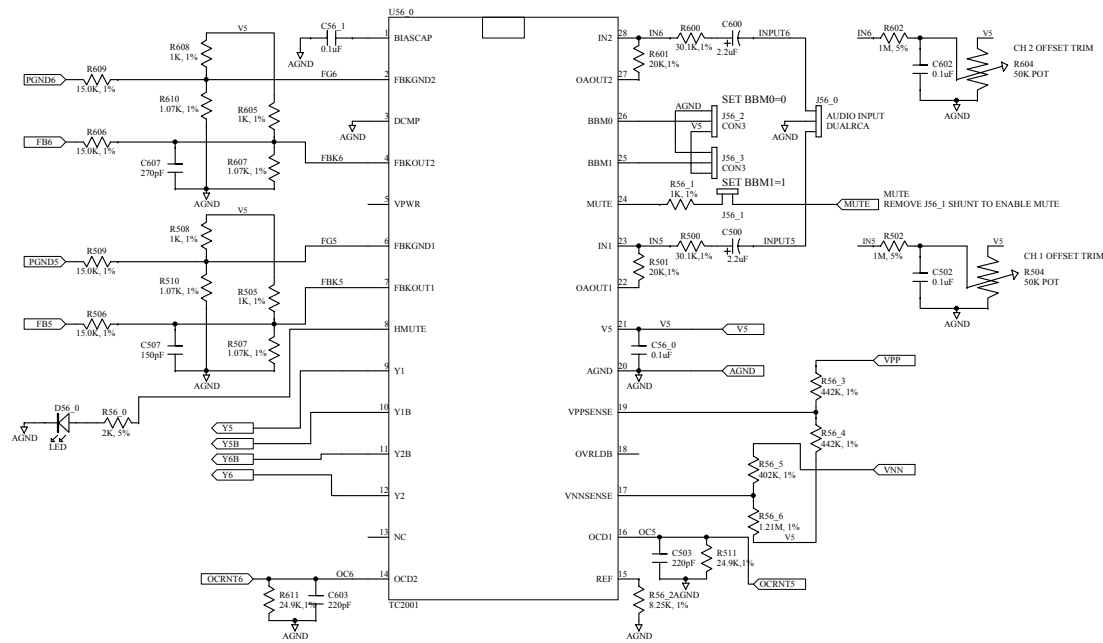








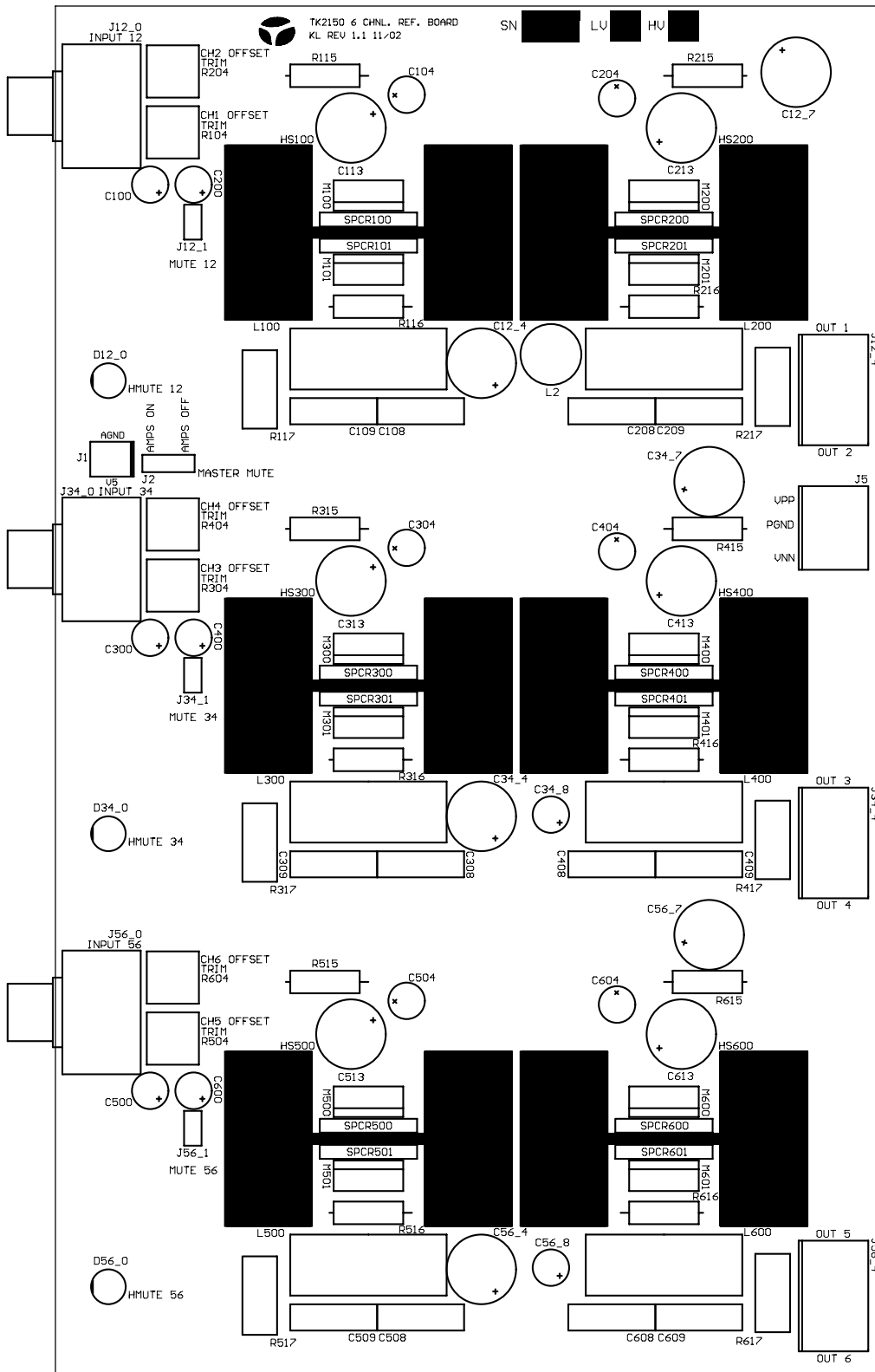




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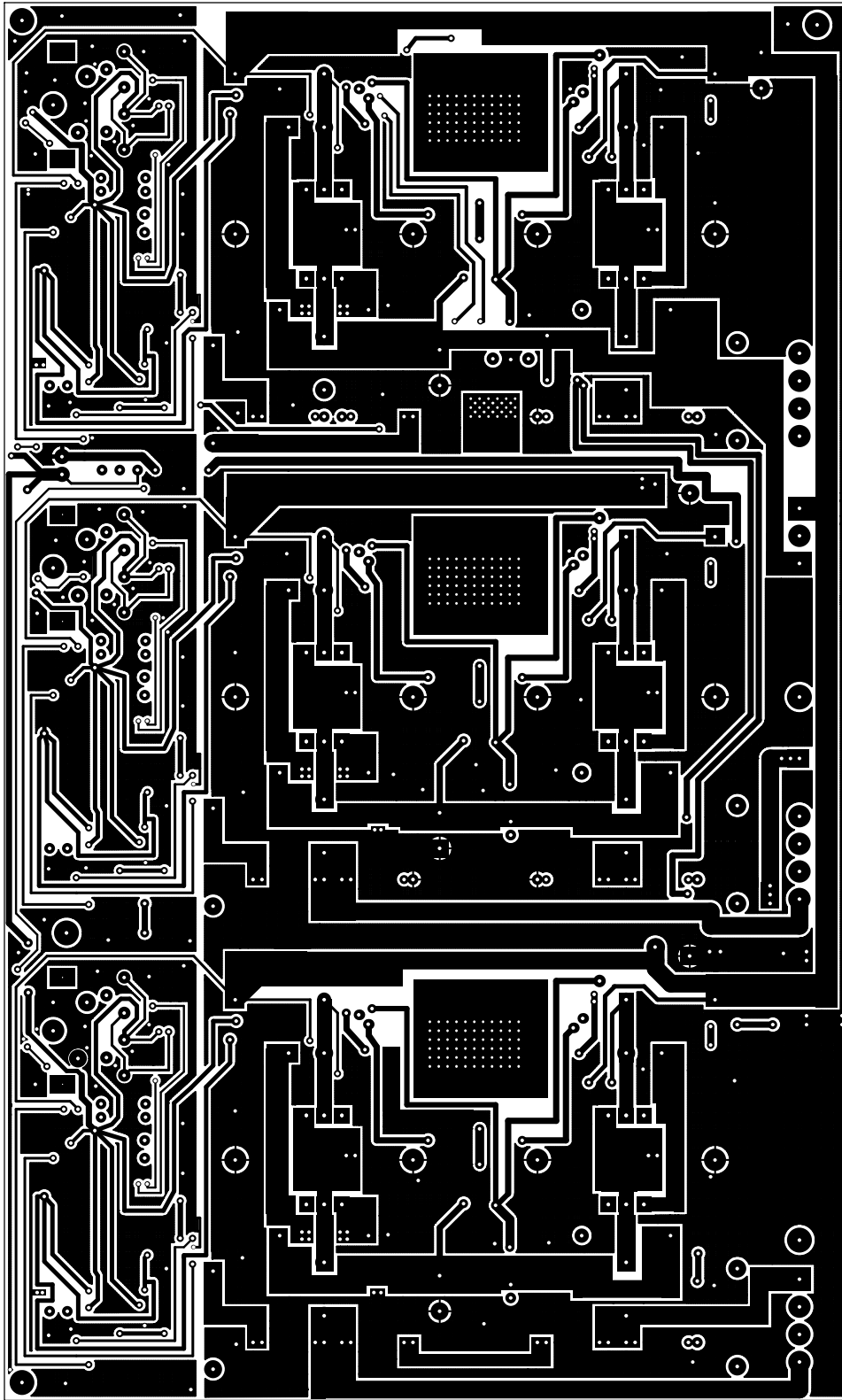
Used	Part Type	Designator	Footprint	Part Field 1	Part Field 2	Part Field 3
1	0 OHM	R10	0805	*	*	*
12	0.010HM/2W	R115 R116 R215 R216 R315 R316 R415 R416 R515 R516 R615 R616	RLVR1RG2	OHMITE	12FR010	DK 12FR010-ND
12	0.15uF/100V	C108 C109 C208 C209 C308 C309 C408 C409 C508 C509 C608 C609	COU22PL10	PANASONIC	ECQ-V1154JM	DK P4727-ND
32	0.1uF	C102 C11 C111 C112 C12_0 C12_1 C12_2 C12_3 C2 C202 C211 C212 C302 C311 C312 C34_0 C34_1 C34_2 C34_3 C402 C411 C412 C502 C511 C512 C56_0 C56_1 C56_2 C56_3 C602 C611 C612	0805	20% TOL.	*	*
6	0.1uF/100V/X7R	C12_5 C12_6 C34_5 C34_6 C56_5 C56_6	1210	KEMET	C1210C104K1RACTU	DK 399-1268-1-ND
6	0.1uF/250V	C105 C205 C305 C405 C505 C605	2420	PANASONIC	ECW-U2104KC9	DK PCF1271CT-ND
12	1.07K, 1%	R107 R110 R207 R210 R307 R310 R407 R410 R507 R510 R607 R610	0805	*	*	*
3	1.21M, 1%	R12_6 R34_6 R56_6	0805	*	*	*
4	10 OHM, 5%	R12_8 R34_8 R56_8 R8	0805	*	*	*
1	100pF	C407	0805	NPO 5%	*	*
1	100uH/0.25A	L2	IND1UH	TOKO	187LY-101J	DK TK4300-ND
1	120pF	C307	0805	NPO 5%	*	*
12	15.0K, 1%	R106 R109 R206 R209 R306 R309 R406 R409 R506 R509 R606 R609	0805	*	*	*
12	15.4OHM/0.5W	R113 R114 R213 R214 R313 R314 R413 R414 R513 R514 R613 R614	2010	PANASONIC	ERJ-12SF15R4U	DK P15.4ACCT-ND
1	150pF	C507	0805	NPO 5%	*	*
1	15pF	C207	0805	NPO 5%	*	*
6	18uH	L100 L200 L300 L400 L500 L600	T80	AMERICAN CORES	AW-940-06-46T-20-V	T94--2 CORE 46TURNS / 20AWG
16	1K, 1%	R105 R108 R12_1 R205 R208 R305 R308 R34_1 R405 R408 R505 R508 R56_1 R605 R608 R9	0805	*	*	*
6	1M, 5%	R102 R202 R302 R402 R502 R602	0805	*	*	*
6	2.2uF	C100 C200 C300 C400 C500 C600	C10UEL05	PANASONIC	ECA-1HHG2R2	DK P5564-ND
6	20K,1%	R101 R201 R301 R401 R501 R601	0805	*	*	*
6	200HM/2W	R117 R217 R317 R417 R517 R617	PWR2W	PANASONIC	ERG-2SJ200	DK P20W-2BK-ND
6	220pF	C103 C203 C303 C403 C503 C603	0805	NPO 5%	*	*
6	220uF/63V	C12_4 C12_7 C34_4 C34_7 C56_4 C56_7	C100UEL06	PANASONIC	EEU-FC1J221	DK P10346-ND
6	24.9K,1%	R111 R211 R311 R411	0805	*	*	*

6	240 OHM, 5%	R511 R611 R112 R212 R312 R412	0805	*	*	*
1	270pF	R512 R612 C607	0805	NPO 5%	*	*
1	27pF	C107	0805	NPO 5%	*	*
3	2K, 5%	R12_0 R34_0 R56_0	0805			
6	30.1K, 1%	R100 R200 R300 R400 R500 R600	0805	*	*	*
6	33uF/160V	C113 C213 C313 C413 C513 C613	C100UEL06	PANASONIC	EEU-EB2C330	DK P5901-ND
3	402K, 1%	R12_5 R34_5 R56_5	0805	*	*	*
6	442K, 1%	R12_3 R12_4 R34_3 R34_4 R56_3 R56_4	0805	*	*	*
10	47uF/25V	C10 C104 C12_8 C204 C304 C34_8 C404 C504 C56_8 C604	C10UEL05	PANASONIC	ECA-1EHG470	DK P5539-ND
6	50K POT	R104 R204 R304 R404 R504 R604	POTSTURN	BOURNS	3306P-1-503	DK 3306P-503-ND
3	8.25K, 1%	R12_2 R34_2 R56_2	0805	*	*	*
12	AL02 SPACER	SPCR100 SPCR101 SPCR200 SPCR201 SPCR300 SPCR301 SPCR400 SPCR401 SPCR500 SPCR501 SPCR600 SPCR601	TO220SPACER	AAVID THERMALLOY	4170	*
1	CON2LPWR	J1	CON2B	WALDOM	22-23-2021	DK WM4200-ND
7	CON3	J12_2 J12_3 J2 J34_2 J34_3 J56_2 J56_3	0805JMPR	*	*	*
3	CON4	J12_4 J34_4 J56_4	PWR4	WALDOM	26-60-4040	DK WM4622-ND
3	DUALRCA	J12_0 J34_0 J56_0	DUALRCAVERT	CUI INC.	RCJ-2223	DK CP-1435-ND
1	FBEAD	L1	2010	*	*	*
12	FQP16N15	M100 M101 M200 M201 M300 M301 M400 M401 M500 M501 M600 M601	TO220	FAIRCHILD SEMI	FQP16N15	*
3	HDR2	J12_1 J34_1 J56_1	GJMPR001	*	*	*
6	HEATSINK	HS100 HS200 HS300 HS400 HS500 HS600	657HEATSINK	AAVID	529902B02500	MSR 532-529902B25
1	IRFR9110	Q2	DPAK	INTERNATIONAL RECT.	IRFR9110	DK IRFR9110-ND
3	LED	D12_0 D34_0 D56_0	LED1	RED LED	*	*
25	MURS120T3	D102 D103 D104 D105 D2 D202 D203 D204 D205 D302 D303 D304 D305 D402 D403 D404 D405 D502 D503 D504 D505 D602 D603 D604 D605	SMB	ON SEMICONDUCTOR	MURS120T3	NWK 08F2006
1	PWRCON3	J5	CON3	WALDOM	26-60-4030	DK WM4621-ND
3	TC2001	U12_0 U34_0 U56_0	SOP28	TRIPATH TECHNOLOGY	*	*
3	TP2150	U12_1 U34_1 U56_1	LQFP64	TRIPATH TECHNOLOGY	*	*



FABRICATION NOTES
 THIS IS A DOUBLE SIDED BOARD
 MATERIAL: FR-4 OR EQUIVALENT
 0.062 +/- 0.007 THICKNESS
 2 OZ COPPER, ALL LAYERS
 SOLDERMASK OVER BARE COPPER, USE GREEN
 SILKSCREEN TO BE WHITE
 TOP SIDE SILKSCREEN MUST COVER TOP SOLDERMASK
 THUS, THE SOLDER ON VIAS AND PADS SHOULD NOT APPEAR
 IF THERE IS SILKSCREEN AT SAME POSITION
 NOTE: THERE ARE SIX SLOTS ON THIS BOARD
 110mil x 70mil

SLOTS SHOULD BE PLATED THRU
 FABRICATE PER IPC STANDARDS
 Board size is 4.75 x 7.85



FABRICATION NOTES

THIS IS A DOUBLE SIDED BOARD

MATERIAL: FR-4 OR EQUIVALENT

0.062 +/- 0.007 THICKNESS

2 OZ COPPER, ALL LAYERS

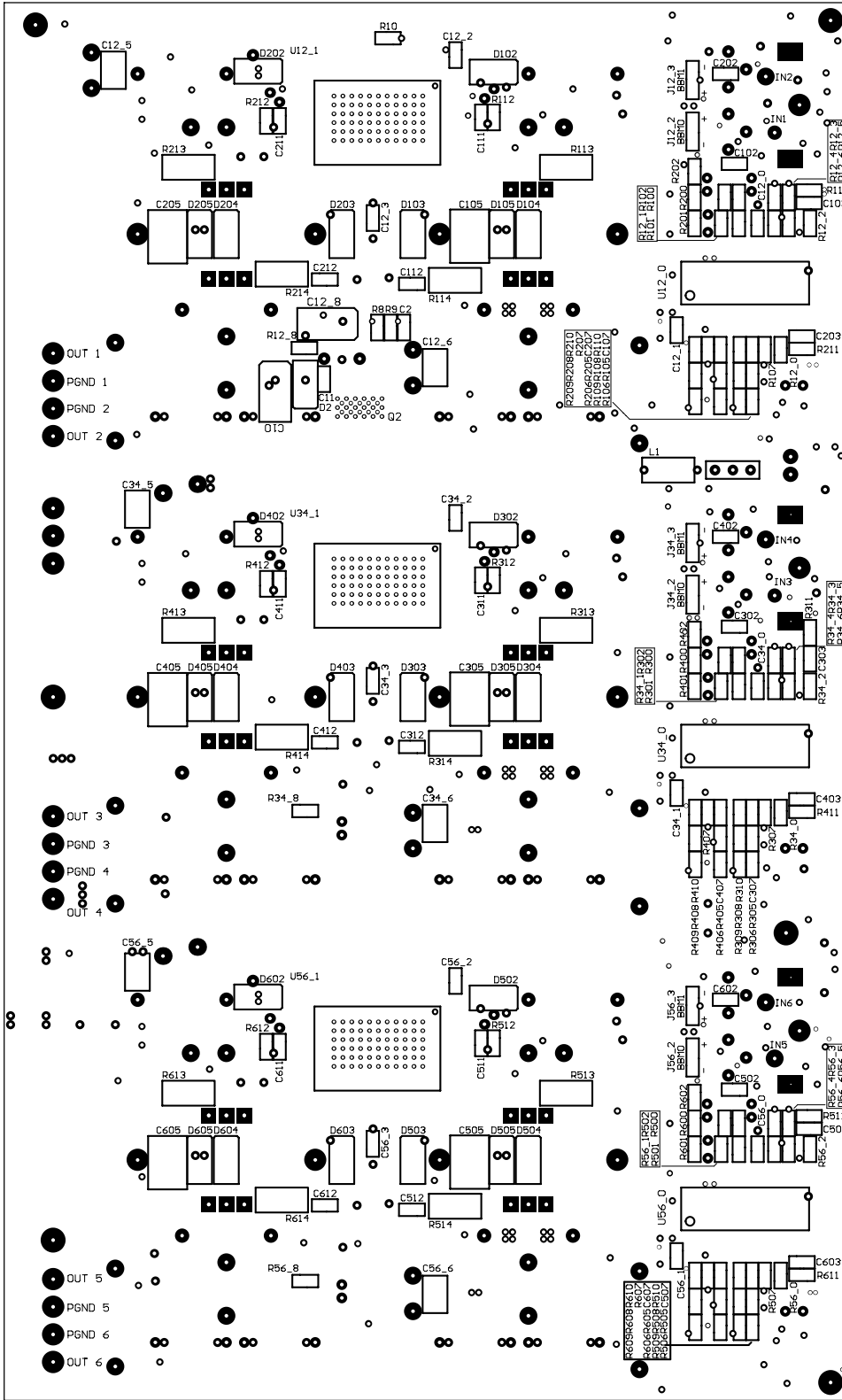
SOLDERMASK OVER BARE COPPER, USE GREEN

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 THEN, THE SOLDER ON VIAS AND PADS SHOULD NOT APPEAR
 TOP SIDE SILKSCREEN MUST COVER TOP SOLDERMARK

SILKSCREEN TO BE WHITE

SOLDERMASK OVER BARE COPPER, USE GREEN

3 OZ COPPER, ALL LAYERS

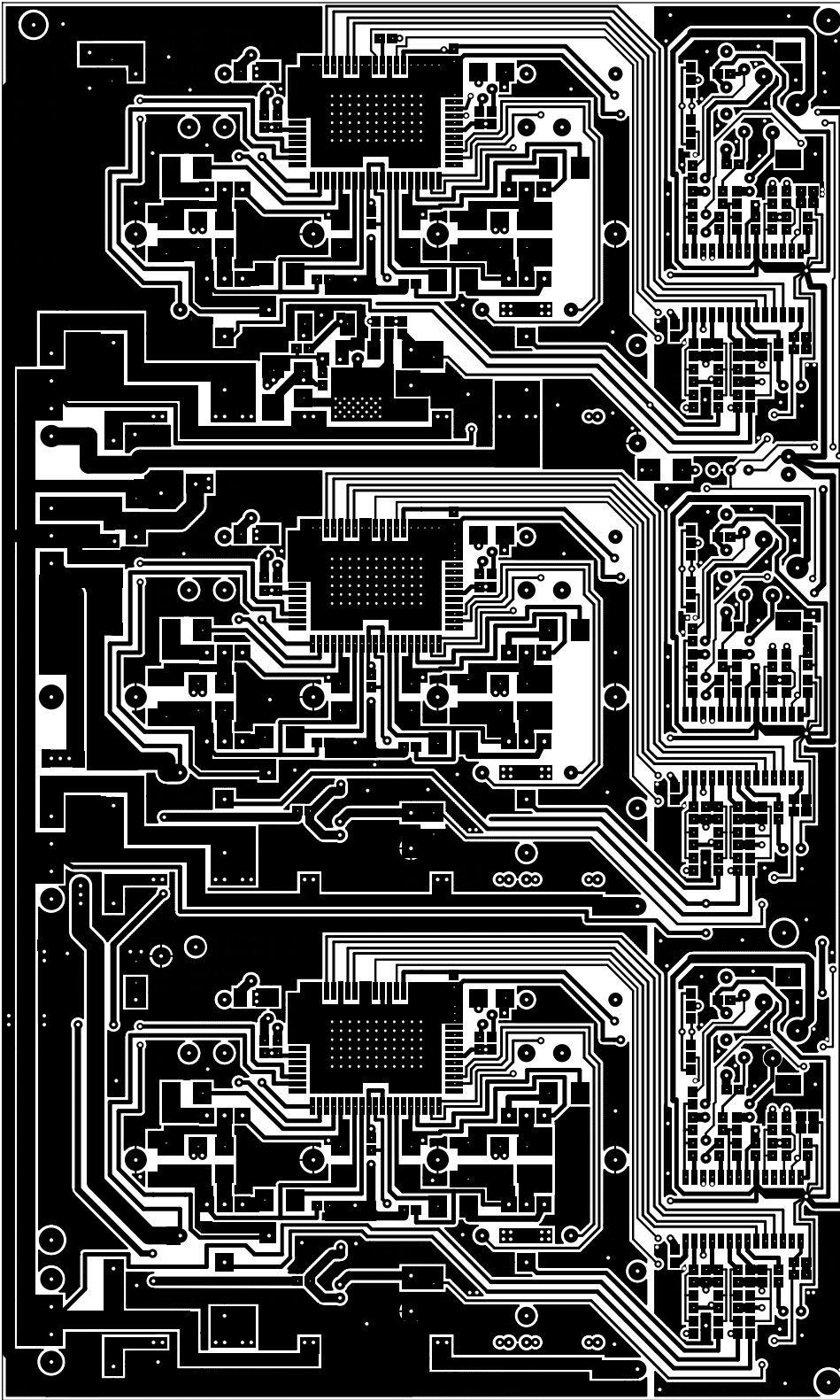
0.063 +/- 0.002 THICKNESS

MATERIAL: FR-4 OR EQUIVALENT

THIS IS A DOUBLE SIDED BOARD

FABRICATION NOTES

BOARD size is 4.75 x 7.88
 FABRICATE PER IPC STANDARDS
 SLOTS SHOULD BE PLATED THRU



Board size is 4.75 x 7.88
FABRICATE PER IPC STANDARDS
SLOTS SHOULD BE PLATED THRU

NOTE: THERE ARE SIX SLOTS ON THIS BOARD
110mil x 20mil
IF THERE IS SILKSCREEN AT SAME POSITION
THUS, THE SOLDER ON VIAS AND PADS SHOULD NOT APPEAR
TOP SIDE SILKSCREEN MUST COVER TOP SOLDERMASK
SILKSCREEN TO BE WHITE
SOLDERMASK OVER BARE COPPER, USE GREEN
3 OZ COPPER, ALL LAYERS
0.002 +/- 0.001 THICKNESS
MATERIAL: FR-4 OR EQUIVALENT
THIS IS A DOUBLE SIDED BOARD
FABRICATION NOTES