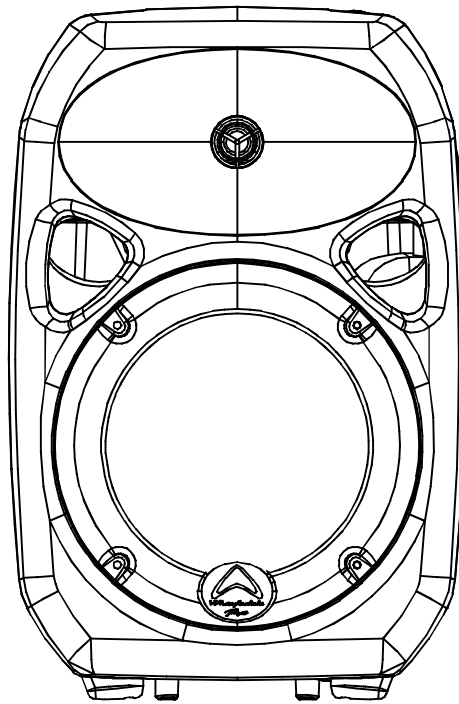


Titan™ 15 ACTIVE

Service Manual



SPECIFICATION	1
SPECIFICATION	2
ASSEMBLY SKETCH	3
SCHEMATIC DIAGRAM	4
SCHEMATIC DIAGRAM	5
SCHEMATIC DIAGRAM	6
SCHEMATIC DIAGRAM	7
SCHEMATIC DIAGRAM	8
SCHEMATIC DIAGRAM	9
SCHEMATIC DIAGRAM	10
ASSEMBLY PARTS LIST	11
ELECTRONIC PARTS LIST	12
ELECTRONIC PARTS LIST	13
ELECTRONIC PARTS LIST	14
ELECTRONIC PARTS LIST	15
ELECTRONIC PARTS LIST	16
ELECTRONIC PARTS LIST	17



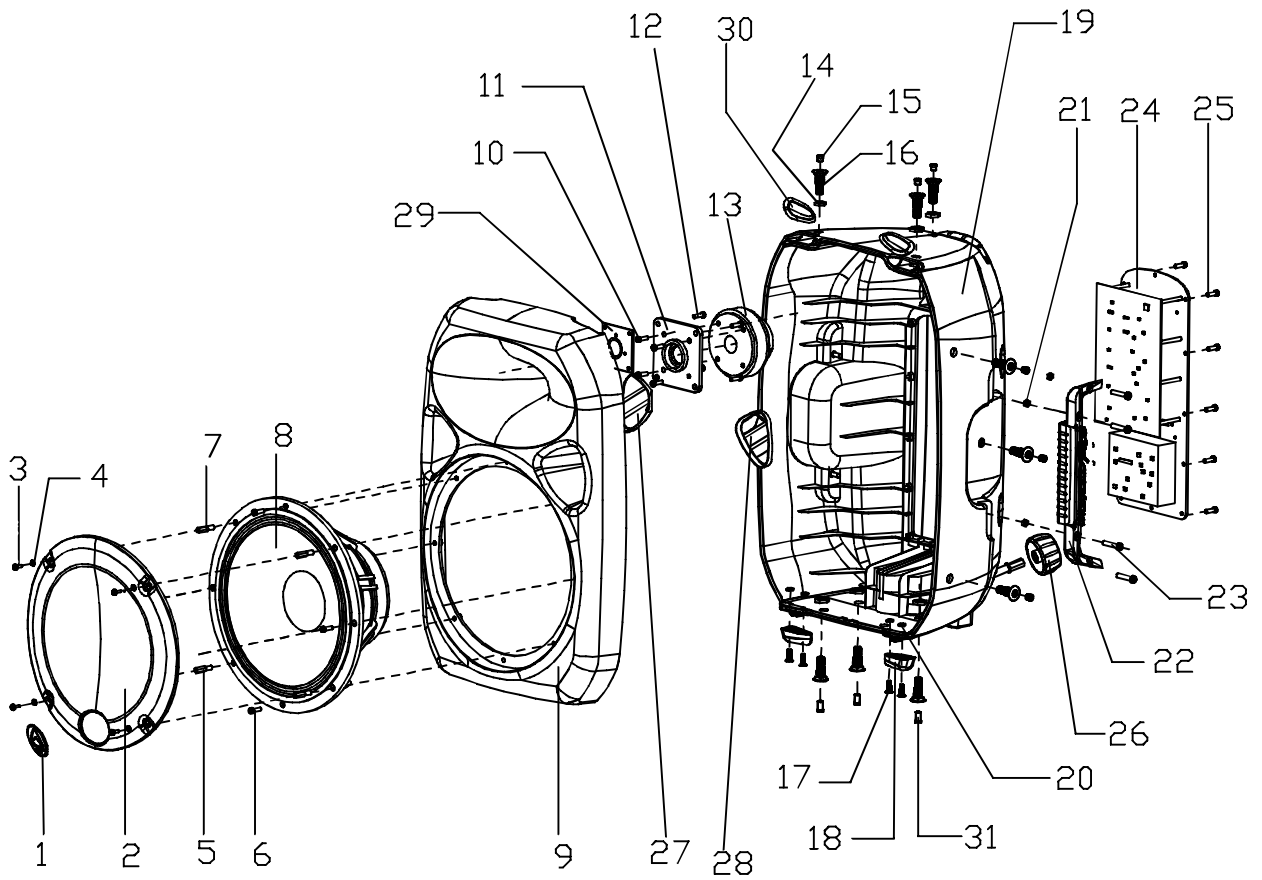
1. SPECIFICATIONS

System Type	Active 15 2-way Bi-Amplified system
Frequency Response (+/-3dB)	50-20kHz
Low Frequency Transducer	
Size (mm / inches)	381mm / 15 "
Coil Size (mm / inches)	75mm / 3.0 "
Impedance	4 Ω
High Frequency Transducer	
Type	Compression Driver
Coil Size (mm / inches)	51mm / 2 "
Exit Size (mm / inches)	25mm / 1 "
Diaphragm Material	Titanium
Impedance	8 Ω
High Frequency Coverage (H \times V)	90° \times 60°
Amplifiers	
Low-Frequency Power Amplifier (Class D)	Rated 350W RMS, 700W Peak
High-Frequency Power Amplifier (Class A/B)	Rated 70W RMS, 140W Peak
Electronic Crossover:	24dB per octave Linkwitz-Riley
Crossover Frequency	1.8kHz
Controls	High (\pm 10dB) 10kHz Shelving
Equalization:	Low (\pm 10dB) 100Hz Shelving
Bass Response Optimizer ("BRO \$) circuit	+5dB at 60Hz
Subsonic Filter	30Hz, Second-order filter
Amplifier Protection	
Power On Protection	Power switch on / off mute
Thermal Protection	Amplifier shutdown, auto reset
Low Line Voltage Shut Down	60% Nominal line voltage
Driver Protection	Independent LF and HF limiters
DC Protection	Yes
Short Protection	Yes
Clip Limiter:	Turns on approx 350W output
Limiter Indicator	Red LED
Power Indicator	Blue LED
Inputs	
Input A % type	Switchable balanced mic or line level input
Input Sensitivity	Mic: -36dBu (-38.2dBv or 12.28mVrms) Line: +4dBu (1.78dBv or 1.228Vrms)
Maximum Input Level	+22dBu
Input Connector	XLR / 1/4 " Combo jack
Input Impedance	Balanced: 20k Ω - Unbalanced: 10k Ω
Maximum Input Level	+22dBu

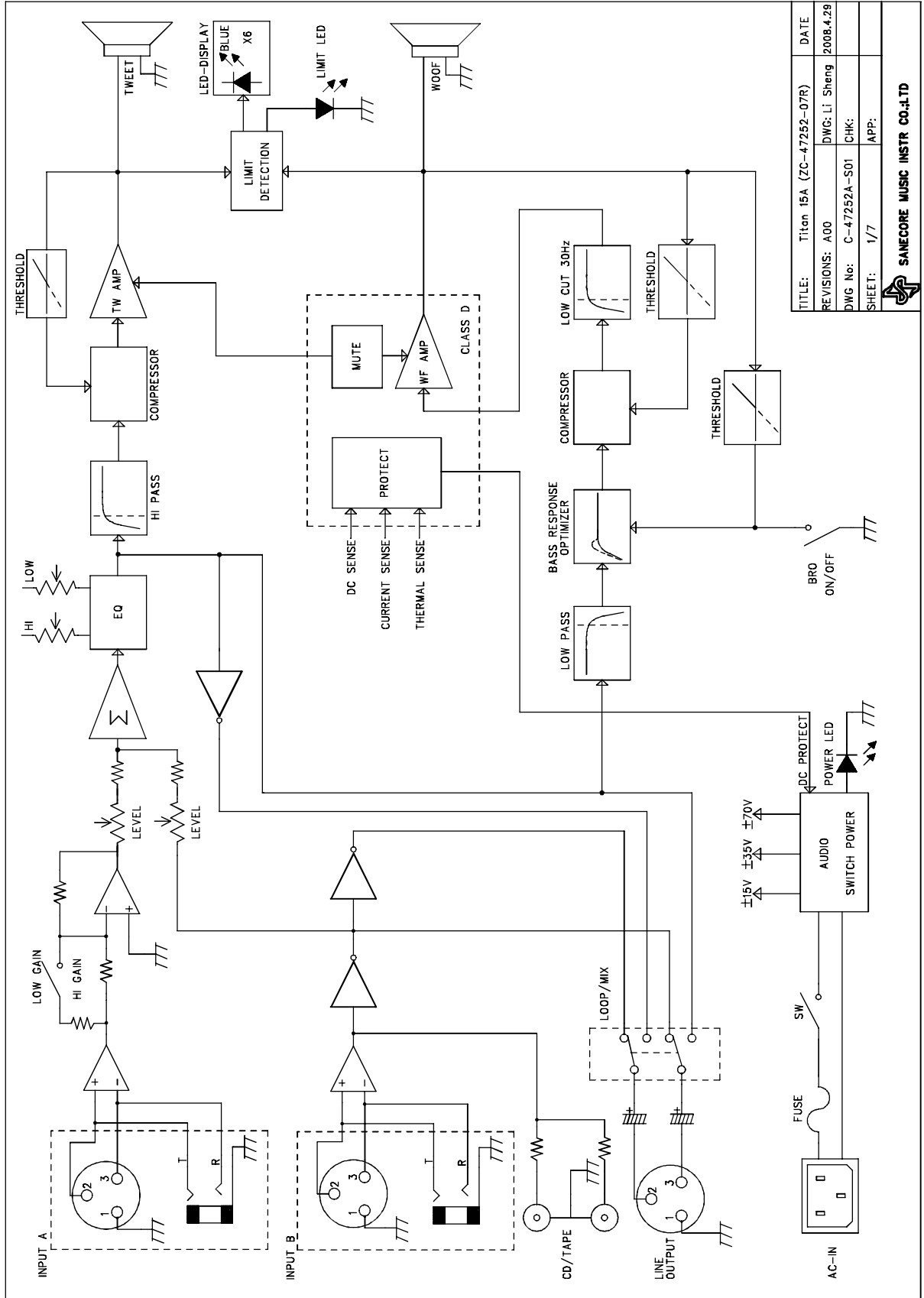
2. SPECIFICATIONS

Input B % type	Line level input
Input Sensitivity	XLR / 1/4 " Combo jack: 1.78dBv or 1.228Vrms RCA: 0dBu (-2.2dBv or 0.775Vrms)
Maximum Input Level	+22dBu
Input Connectors	Combo jack: 1/4 " - XLR / Summed dual RCA jacks
Line Output	
Line Output Connector	Switchable LOOP / MIX Balanced Male XLR Connector
Impedance Balanced:	Balanced: 1k Ω - Unbalanced: 500 Ω
Sensitivity	+4dBu (1.78dBv or 1.228Vrms)
AC Power details	
Power Supply	High Efficiency Switching Mode Power Supply
AC Power Options	AC100~120V / 220~240V, 50 / 60Hz
Power On Indicator	LED
Rigging / Bracket / Mounting Options	10 M8 threaded inserts including 4 M8 threaded inserts on bottom in OmniMount 60.0-type footprint Pole-mount receptacle with lock screw 2 carry handles (one on each side) Optional wall-mount bracket
Enclosure	
Enclosure Material	Injection Moulded Polypropylene
Colour	Grey or white
Dimensions (mm / inches):	
H	708.3mm / 27.9 "
W	477.8mm / 18.8 "
D	401.77mm / 15.8 "
Weight	
Net Weight (kg / lbs)	23.94kg / 52.67lbs
Gross Weight (kg / lbs)	26.94kg / 59.27lbs

3.ASSEMBLY SKETCH



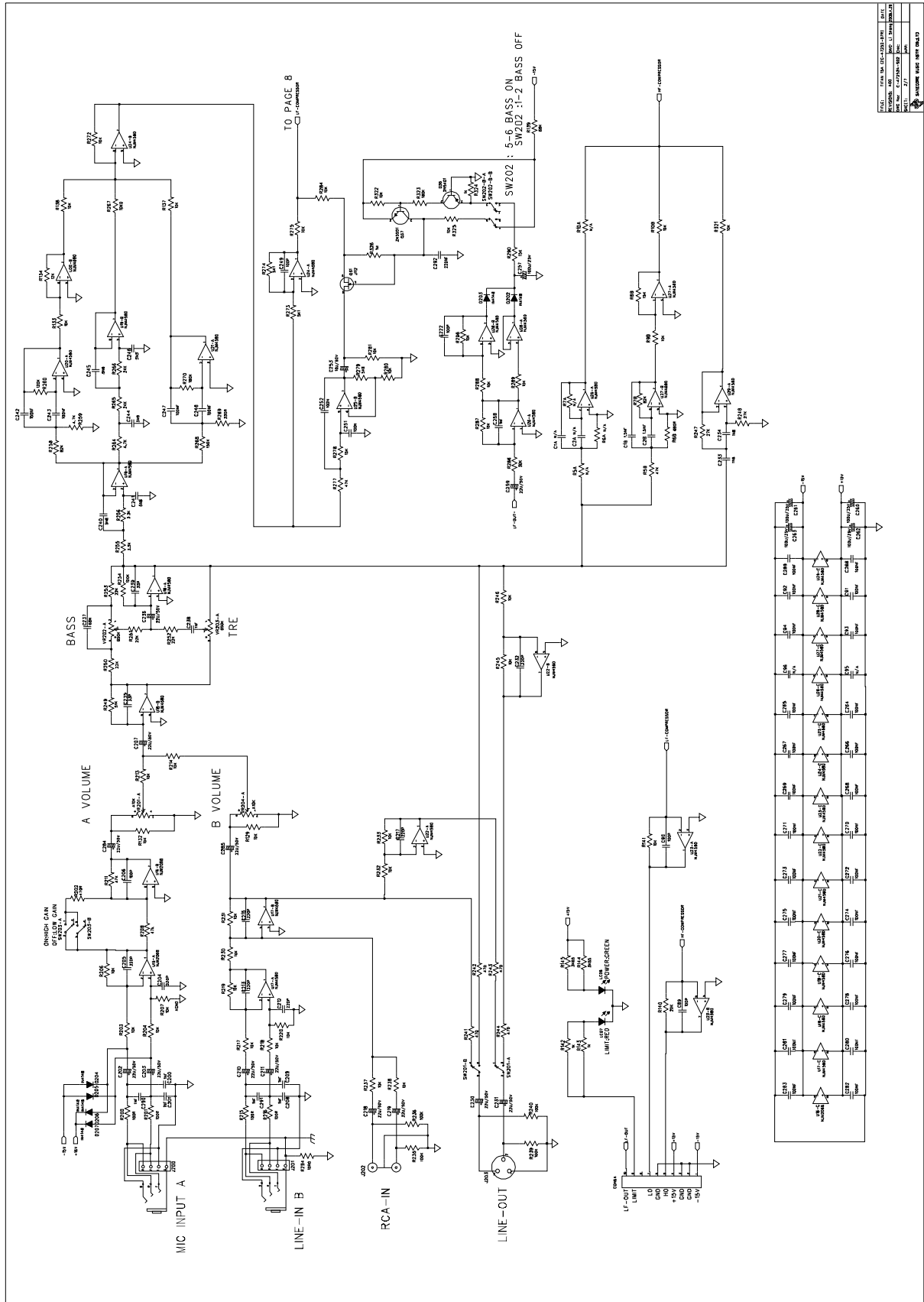
4. SCHEMATIC DIAGRAM



TITLE: Titan 15A (ZC-47252-07R)	DATE
REVISIONS: A00	DWG: Li Sheng 2008.4.29
DWG No: C-47252A-S01	CHK:
SHEET: 1/7	APP:

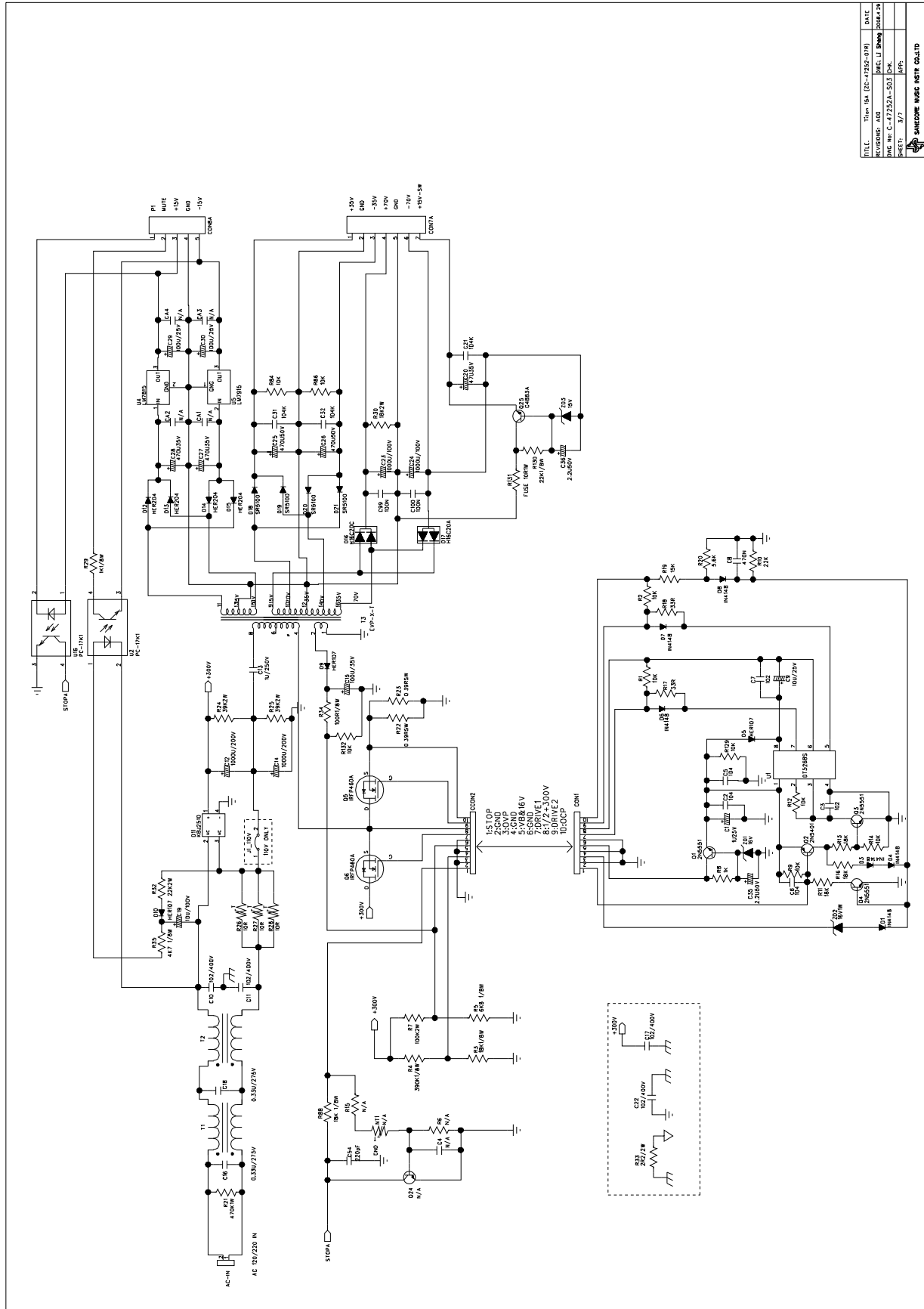


5. SCHEMATIC DIAGRAM



REV.	DATE	BY	CHKD.
1	10/10/10	10/10/10	10/10/10
2	10/10/10	10/10/10	10/10/10
3	10/10/10	10/10/10	10/10/10
4	10/10/10	10/10/10	10/10/10
5	10/10/10	10/10/10	10/10/10
6	10/10/10	10/10/10	10/10/10
7	10/10/10	10/10/10	10/10/10
8	10/10/10	10/10/10	10/10/10
9	10/10/10	10/10/10	10/10/10
10	10/10/10	10/10/10	10/10/10

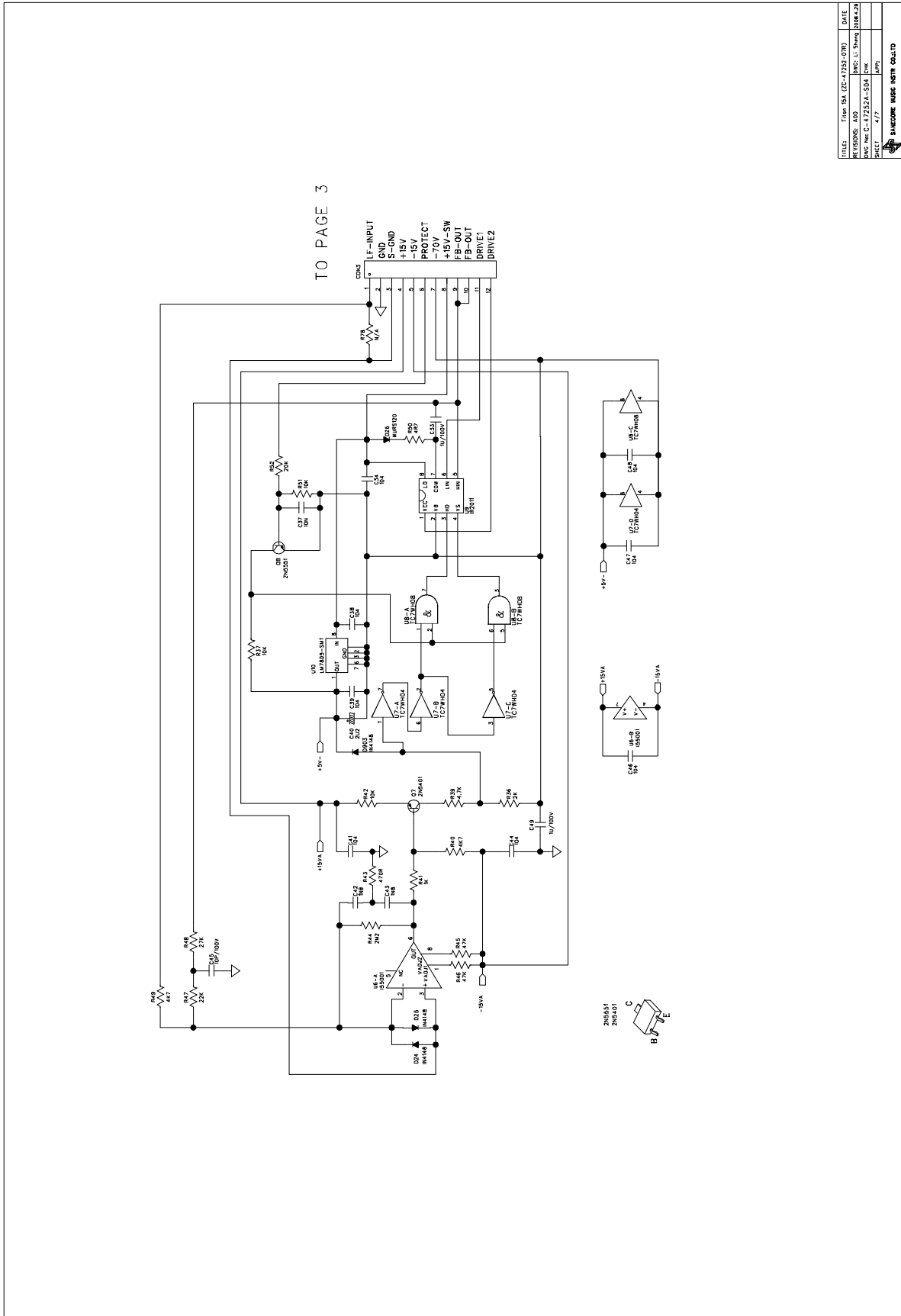
6. SCHEMATIC DIAGRAM



TITLE:	Titan 15A (2-47252-019)	D.A.T.
REVISED:	A00	DATE: 11/20/00
DESIGNER:	C. J. 252A-50.3	CHEK:
SHEET:	3/7	APP:

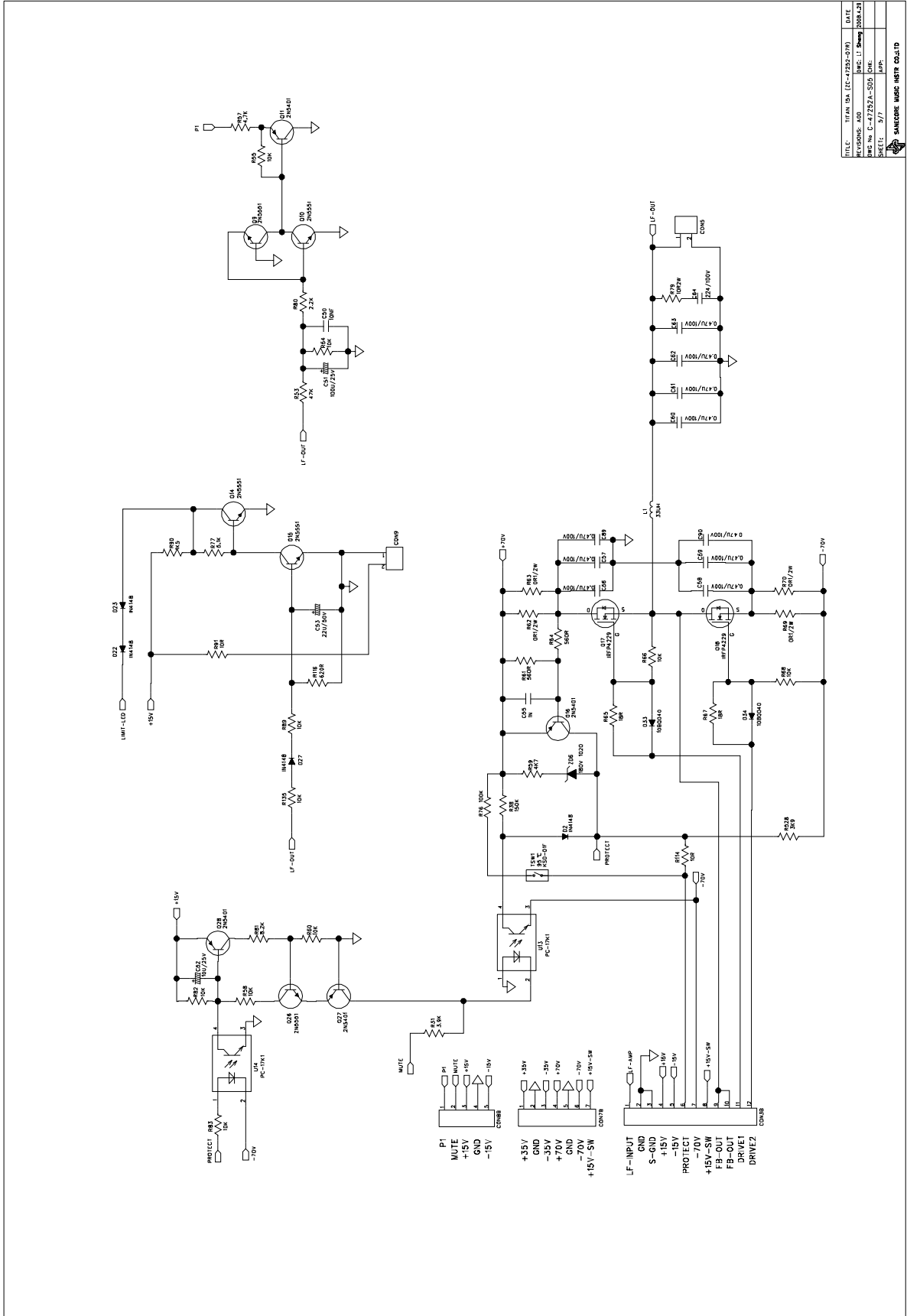
SAITEC WAREHOUSE CO., LTD.

7. SCHEMATIC DIAGRAM



FILE:	Titon 15A (2C-1732-078)	DATE
REVISED:	103	PREC. L1 200403 2004.29
Part No:	C-4722A-S04	Proc
Rev:	477	1003
SANGHVI MICRO INSTR. SOLTD		

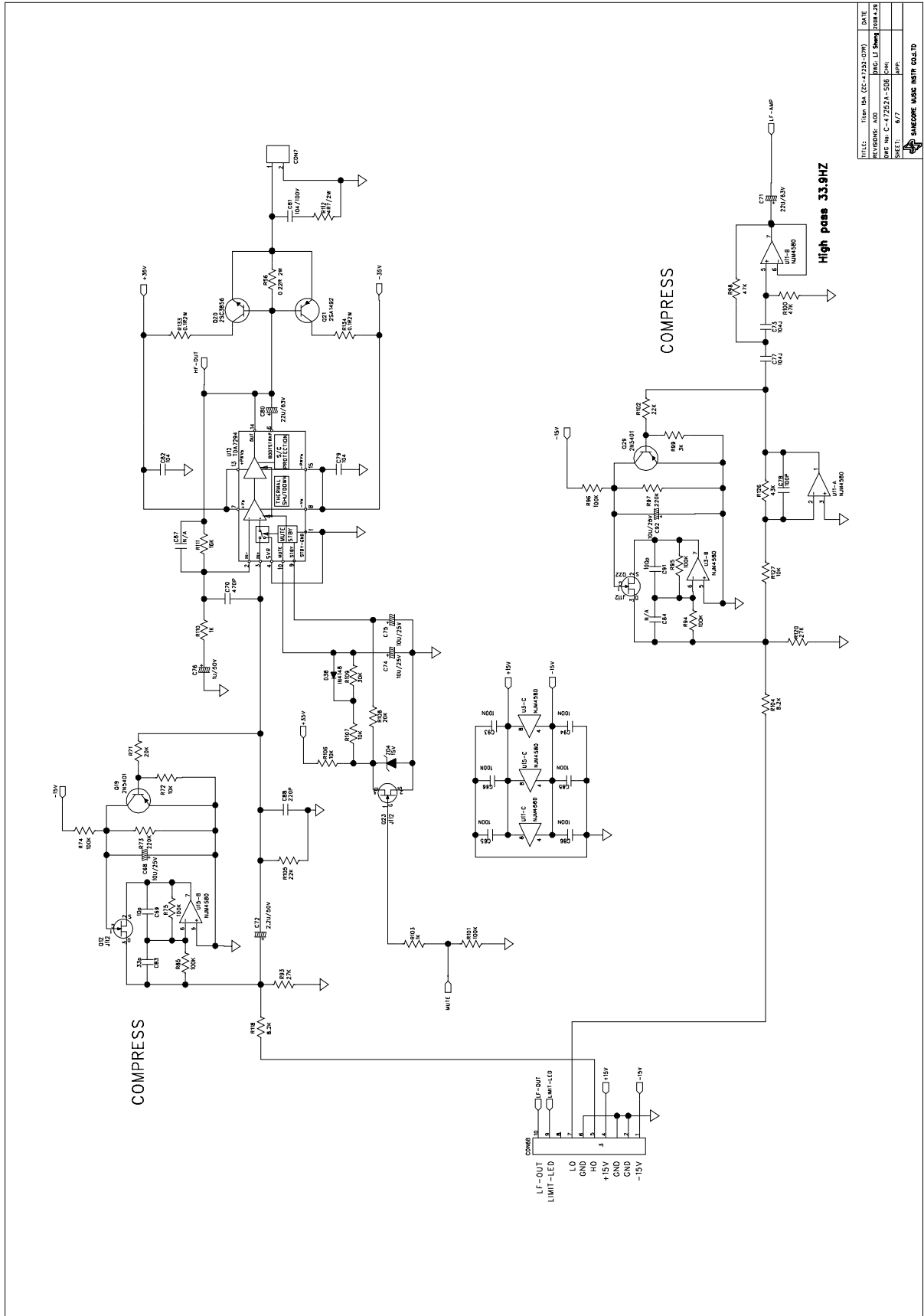
8. SCHEMATIC DIAGRAM



FILE:	TITAN 15A (C-1725-27A)	DATE:	
PROJECT:	TITAN 15A	DESIGNER:	U. B. B. B.
DATE:	11/11/2011	APP.:	
SHEET:	3/7		

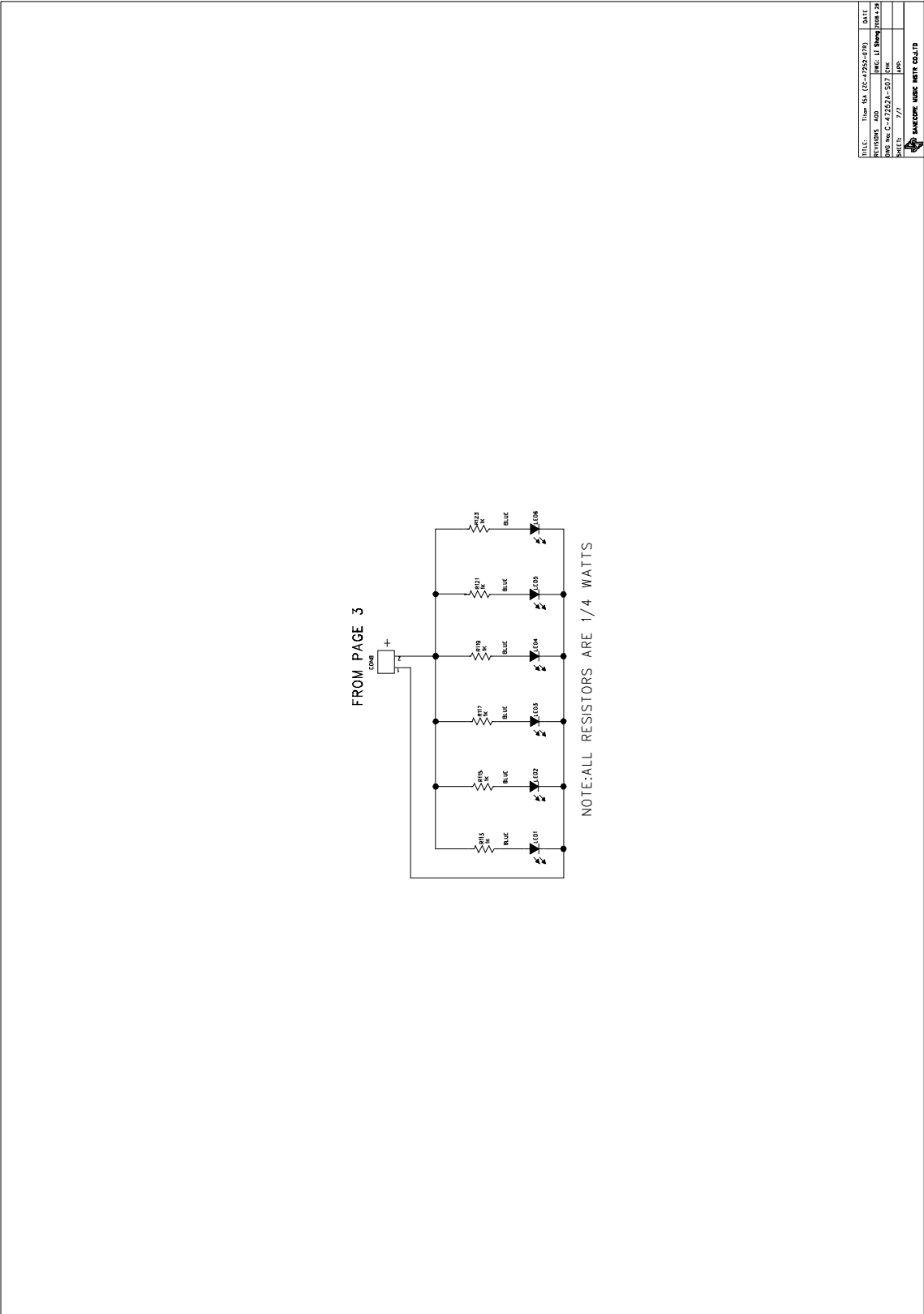
SAWABOR MADE IN THE U.S.A.

9. SCHEMATIC DIAGRAM



TITLE:	Titan 15A (CC-4232-07M)	DATE:
REVISED:	A00	ENG: LI Sheng
REF No:	C-4752A-S08	CHK:
SHEET:	6/7	APP:
SANGORE MUSIC INSTR CO., LTD		

10.SCHEMATIC DIAGRAM



11.ASSEMBLY PARTS LIST

R/N	P/N	PART NAME	DESCRIPTION	QTY
1	313-2104900001R	LOGO		1
2	310-2104900000R	GRILLE		1
3	537-4001080801AR	SCREW	M4×8	4
4	513-4012130800AR	LEVEL		4
5	565-0534100000R	COPPER NUT	M5	2
6	537-5001250801AR	SCREW	M5×25	4
7	565-0537100000R	COPPER NUT	M5	2
8	ZD-70401-01R	WOOFER		1
9	200-2105000003R	BAFFLE		1
10	537-6001100801AR	SCREW	M6×10	4
11	249-2010490001R	PANEL		1
12	559-5001300071R	SCREW	M5*30	4
13	ZD-70100-01R	TWEETER		1
14	500-1200951100R	NUT		10
15	274-0400900786R	PLUG		6
16	321-4201202286R	NUT	M12×M8×42	10
17	537-5001200801AR	SCREW	M5×19.5	4
18	231-5000000222R	FOOT		2
19	201-2010490003R	HOUSING		1
20	500-5080400300AR	NUT	M5	4
21	500-8012600800AR	NUT	M8	8
22	243-2104900000R	HANDLE		2
23	537-8000135801AR	SCREW		8
24	ZC-47252-07R	AMPLIFIER		1
25	537-4001200801AR	SCREW	M4×20	12
26	293-2010470002R	KNOB		1
27	232-2105000001R	RIGHT ELBOW		1
28	232-2105000002R	LEFT ELBOW		1
29	053-1472511658R	LED PCB		1
30	292-2010470002R	STACK CUP		2
31	534-8001200803AR	SCREW	M8×20	4

12.ELECTRONIC PARTS LIST

R/N	P/N	PART NAME	DESCRIPTION	QTY	LOCATION
1	031-2200512121R	FUSE	50T040H	1	
2	042-1003005001R	POWER SWITCH	RF-1003TV-5AC250V	1	
3	044-2600000000R	POWER SOCKET	RF-2004	1	
4	055-0305006133R	RIBBON CABLE	5PIN 24AWG UL1007 L=60mm	1	
5	055-0310025133R	RIBBON CABLE	10PIN 24AWG UL1007 L=250mm	1	
6	055-0402032311R	RIBBON CABLE	2pin 18AWG UL1617 L=320mm	1	
7	055-0407005111R	RIBBON CABLE	7PIN 18AWG UL1015 L=50mm	1	
8	060-0180120300R	RIBBON CABLE	18# C-022-8 L=120MM	1	
9	060-0180151004R	RIBBON CABLE	C-022-6 L=150 18#	1	
10	060-4180140112R	WIRE	1617 AWG18 L=140mm	1	
11	071-1100000000R	CABLE TIES	100MM YJ-100	8	
	088-1472520000R	AMP BOARD		1	
1	001-0229308050R	RESISTOR	0.22 Ω 2W J	1	R56
2	001-0393108050R	RESISTOR	39K 2W 5%	2	R24.25
3	001-0398810050R	RESISTOR	0.39R 5W 5%	2	R22.23
4	001-0470308050R	RESISTOR	4.7 Ω 2W J	1	R112
5	001-1000207051R	RESISTOR	10R FMF 1W 5%	1	R131
6	001-1000308050R	RESISTOR	10 Ω 2W J	1	R79
7	001-1001105050R	RESISTOR	100 Ω 1/4W J	1	R34
8	001-1004208050R	RESISTOR	100K2W 5%	1	R7
9	001-1008708050R	RESISTOR	0.1 Ω 2W 5%	6	R62.63.69.70.133.134
10	001-1803308050R	RESISTOR	18K 2W 5% T66	1	R30
11	001-2203208010R	RESISTOR	22K 2W 1%	1	R32
12	001-2209308050QR	RESISTOR	2R2 2W 5%	1	R33
13	001-4703107050R	RESISTOR	470K 1W 5%	1	R21
14	004-3307000000R	RESISTOR	10D-20	3	R26.27.28
15	006-0104051143AR	CAPACITOR	1UF/50V 20%	1	C76
16	006-1004061194R	CAPACITOR	10uF/100V	1	C19
17	006-1006051243R	CAPACITOR	10UF/25V # 5*12	5	C52.68.74.75.92
18	006-1014061153AR	CAPACITOR	100UF/25V 6.3*11 20%	3	C29.30.51
19	006-1014081153AR	CAPACITOR	100UF/35V 8*11 20%	1	C15
20	006-1021174293R	CAPACITOR	1000U/100V/20%	2	C23.24
21	006-1024304109R	CAPACITOR	1000UF/200V 20% ECOSZDA102DA	2	C12.14
22	006-2201061173R	CAPACITOR	22uF/63V 20%	2	C71.80
23	006-2204051143AR	CAPACITOR	22UF/25V 20%	1	C53
24	006-2291051163R	CAPACITOR	2.2UF/50V 10%	2	C36.72
25	006-4700051251R	CAPACITOR	47uF 35V	1	C20
26	006-4714102053AR	CAPACITOR	470UF/35V 10*20 20%	2	C27.28
27	006-4714132063R	CAPACITOR	470UF/50V 20% 13*20	2	C25.26

13.ELECTRONIC PARTS LIST

28	008-1021040005R	CAPACITOR	102PF 400V M	4	C10.11.17.22
29	013-2240320503R	CAPACITOR	220NF100V 7.5*5.0*8.0 ±5%	1	C64
30	013-3304025005R	CAPACITOR	334/275V J	2	C16% 18
31	014-1040311028R	CAPACITOR	MKS2 100nF 100V 10%	6	C21.31.32.81.99.100
32	014-1050411006R	CAPACITOR	1UF/250V 10%	1	C13
33	016-4741112201R	CAPACITOR	0.47UF/100V P=15mm	10	C56& 63.89.90
34	017-0190000000R	IC	NJM7815FA TO-220F(JRC)	1	U4
35	017-1830000000R	IC	KIA7915 TO-220 KEC	1	U5
36	017-2700000000R	IC	TDA7294 ST	1	U12
37	018-0101492116R	TRANSISTOR	2SA1492 TO-3P	1	Q21
38	018-0303856116R	TRANSISTOR	2SC3856 TO-3P	1	Q20
39	018-0304883113R	TRANSISTOR	2SC4883A (SANKEN) TO-220F	1	Q25
40	018-2800112115R	FIELD EFFECT TRANSISTOR	J112G TO-92	3	Q12.22.23
41	018-4404229225R	FIELD EFFECT TRANSISTOR	IRFP4229 PBF TO-247AC	2	Q17.18
42	018-7000460125R	FIELD EFFECT TRANSISTOR	IRFP460A TO-247AC	2	Q5.6
43	022-1040041316R	TRANSFORMER	EC40	1	T3
44	026-3334000170R	INDUCTOR	33UH	1	L1
45	034-1119992508R	BRIDGE RECTIFIER	RBV2510	1	D11
46	056-0102224400R	JACK	JS3962-2P-WAFER	2	CON5.7
47	056-0103003300R	JACK	2PIN 3.96PH	1	AC-IN
48	056-4102220000R	JACK	JS-1001-02	1	CON9
49	056-4105221100R	JACK	DJ2802-05	2	CON8A .CON8B
50	056-4110000000R	JACK	10PIN 2.54	1	CON6A
51	056-6107004150R	JACK	7pin PH=3.96mm	2	CON7A .CON7B
52	066-0095010000R	SWITCH	TO-2P	1	TSW1
53	067-2200107000R	DIODE	HER107 JAL	2	D9.10
54	067-2200207000R	DIODE	HER204	4	D12.13.14.15
55	067-2201620000R	DIODE	F16C20C TO-220	1	D16
56	067-2201620001R	DIODE	F16C20A TO-220	1	D17
57	067-2205100000R	DIODE	SB/SR5100 DIP	4	D18.19.20.21
58	067-3304744000R	DIODE	IN4744A 15V-1W	1	ZD3
59	071-1100000000R	CABLE TIES	100MM YJ-100	1	
60	080-0210012016R	INDUCTOR	13.6MH 0.8MM 230V AC	2	T1.2
61	082-0100000000R	PHOTOCOUPLER	PC-17K1 KODENSHI	4	U2.13.14.16
	088-1472520001R	AMP BOARD		1	
1	002-1000022050R	RESISTOR	10 Ω 5% 1/10W 0805	1	R114
2	002-1001032050R	RESISTOR	100 Ω 0805 ±5% 1/8W	1	R91
3	002-1002032010R	RESISTOR	1K 1/8W 1% 0805	3	R29.103.110
4	002-1003032010R	RESISTOR	10K Ω 1/8W 1% 0805	14	R54.55.58.60.66.68.72.52 8.89.106.107.127.132. 135

14.ELECTRONIC PARTS LIST

5	002-1004032010R	RESISTOR	100K Ω 1/8W 1% 0805	8	R74.75.76.85.94.95.96.101
6	002-1502032050R	RESISTOR	1.5K 0805 \pm 5% 1/8W	1	R90
7	002-1504032050R	RESISTOR	150K 0805 \pm 5% 1/8W	1	R38
8	002-1603032050R	RESISTOR	16K 0805 \pm 5% 1/8W	1	R111
9	002-1800042050R	RESISTOR	18R 0805 1/8W 1%	2	R65.67
10	002-1803032010R	RESISTOR	18K 1/8W 0805 1%	2	R3.88
11	002-2003032010R	RESISTOR	20K Ω 1/8W 1% 0805	2	R71.108
12	002-2202032010R	RESISTOR	2.2K 1/8W 1% 0805	1	R80
13	002-2203032010R	RESISTOR	22K 1/8W 1% 0805	3	R102.105.130
14	002-2204032050R	RESISTOR	220K 0805 \$ 5% 1/8W	2	R73.97
15	002-2703032010R	RESISTOR	27K 1/8W 1% 0805	2	R93.120
16	002-3003032010R	RESISTOR	30K Ω 1/8W 1% 0805	1	R109
17	002-3012032010R	RESISTOR	3K01 0805 1/8W 1%	1	R99
18	002-3902032010R	RESISTOR	3.9K Ω 1/8W 1% 0805	1	R31
19	002-4024022010R	RESISTOR	0805 390K 1/10W J	1	R4
20	002-4303032050R	RESISTOR	0805 43K 5% 1/8W	1	R126
21	002-4702032010R	RESISTOR	4.7K 1/8W 1% 0805	4	R35.57.59.83
22	002-4703032050R	RESISTOR	47K 0805 \$ 5% 1/8W	3	R53.98.100
23	002-5102032010R	RESISTOR	5.1K Ω 1/8W 1% 0805	2	R77.82
24	002-5601032010R	RESISTOR	560 Ω 1/8W 1% 0805	2	R61.64
25	002-6801032010R	RESISTOR	680 Ω 1/8W 1% 0805	1	R116
26	002-6802032050R	RESISTOR	6.8K 0805 \$ 5% 1/8W	1	R5
27	002-8202032010R	RESISTOR	8.2K 1/8W 1% 0805	3	R81.104.118
28	007-1001032060R	CAPACITOR	100PF 50V 5% 0805	2	C78.91
29	007-1001052093R	CAPACITOR	10PF 100V 5% 0805 COG	1	C69
30	007-1002062060R	CAPACITOR	1nF CP50V 10% 0805	1	C55
31	007-1003062090R	CAPACITOR	103/100V 0805 10%	1	C50
32	007-1004052060R	CAPACITOR	100nF 50V 5% 0805	10	C65.66.73.77.79.82.85.86.93.94
33	007-2201062060R	CAPACITOR	220PF CP50V 10% 0805	2	C88.54
34	007-3300052060R	CAPACITOR	33pF 50V NPO 5% 0805	1	C83
35	007-4701062060R	CAPACITOR	470PF CP50V 10% 0805	1	C70
36	017-5270000001R	IC	NJM4580M NJM-DMP8	3	U3.11.15
37	018-2905401227R	TRANSISTOR	2N5401S SOT-23 KEC	6	Q11.16.19.27.28.29
38	018-2905551227R	TRANSISTOR	2N5551S SOT-23 KEC	5	Q9.10.14.15.26
39	053-1472520400R	PCB		1	
40	067-2204148110R	DIODE	ST LL4148 SMD1206	5	D2.22.23.27.38
41	067-3300015114R	DIODE	15V ST	1	ZD4
42	067-3305279000R	DIODE	IN5279B	1	ZD6
43	067-6600040110R	DIODE	10BQ040 SMB	2	D33.34

15.ELECTRONIC PARTS LIST

	088-1472525000R	LED BOARD		1	
1	001-1002105050R	RESISTOR	1K 1/4W J	6	R113.115.117.119.121.123
2	019-0379132200R	POWER LED	φ3mm	6	LED1& 6
3	053-1472511658R	PCB	64*64mm 1.6T 10Z	1	
4	055-1302044444R	RIBBON CABLE	L=440MM ±10 UL1007#26	1	CON8& CON9
	088-1472525501R	AMP BOARD		1	
1	002-1002032010R	RESISTOR	1K 1/8W 1% 0805	1	R41
2	002-1003032010R	RESISTOR	10K Ω 1/8W 1% 0805	2	R37.42
3	002-2003032010R	RESISTOR	20K Ω 1/8W 1% 0805	1	R52
4	002-2003403010R	RESISTOR	2K 0805 1% 0.125W	1	R36
5	002-2203032010R	RESISTOR	22K 1/8W 1% 0805	1	R47
6	002-2205032010R	RESISTOR	2.2M 1/8W 1% 0805	1	R44
7	002-2703032010R	RESISTOR	27K 1/8W 1% 0805	1	R48
8	002-4701032010R	RESISTOR	470 Ω 1/8W 1% 0805	1	R43
9	002-4702032010R	RESISTOR	4.7K 1/8W 1% 0805	3	R39.40.49
10	002-4703032010R	RESISTOR	47K Ω 1/8W 1% 0805	2	R45.46
11	002-4709032010R	RESISTOR	4.7 Ω 1/8W 1% 0805	1	R50
12	002-6802032050R	RESISTOR	6.8K 0805 \$ 5% 1/8W	1	R51
13	007-1001052093R	CAPACITOR	10PF 100V 5% 0805 COG	1	C45
14	007-1003062090R	CAPACITOR	103/100V 0805 10%	1	C37
15	007-1004052060R	CAPACITOR	100nF 50V 5% 0805	8	C34.38.39.41.44.46.47.48
16	007-1014063090R	CAPACITOR	1U/100V 10% 1206	2	C33.49
17	007-1802052060R	CAPACITOR	1.8NF 50V 5% 0805 X7R	2	C42.43
18	010-2251602010R	CAPACITOR	T450A12251CMAP1	1	C40
19	017-5220000001R	IC	L78L05ABD SO-8 ST	1	U10
20	017-7070000000R	IC	IR2011S PBF 8PIN	1	U9
21	017-7110000000R	IC	ISL5001IBZ SO-8 intersil	1	U6
22	017-7120000000R	IC	TC7WH08FU(TE12LF) 8PIN SMD	1	U8
23	017-7130000000R	IC	TC7WH04FU 8PIN	1	U7
24	018-2905401227R	TRANSISTOR	2N5401S SOT-23 KEC	1	Q7
25	018-2905551227R	TRANSISTOR	2N5551S SOT-23 KEC	1	Q8
26	019-0012003103R	DIODE	MURS120T3 (Pk:SMB) ON	1	D26
27	053-1407001610R	PCB	FR-4 1.6 10Z 150*80	1	
28	067-2204148110R	DIODE	ST LL4148 SMD1206	3	D24.25.903
	088-1472527200R	POWER BOARD		1	
1	006-1001051163R	CAPACITOR	SM10uF 50V 10%	1	C253
2	006-1011061143R	CAPACITOR	SM 100uF 25V 10%	5	C257.260.261.262.263
3	006-2201051163R	CAPACITOR	SM 22uF 50V 10%	13	C202.203.207.210.211.218.219.230.231.236.259.284.285

16.ELECTRONIC PARTS LIST

4	017-1124000000R	IC	IR2153D DIP-8 IR	1	U1
5	018-2800112115R	FIELD EFFECT TRANSISTOR	J112G T0-92	1	Q31
6	019-0311122001R	POWER LED	204HD/E-A RED ϕ 3	1	LED7
7	019-0322122001R	POWER LED	LED 204GD/E-A GREEN ϕ 3	1	LED8
8	020-1032120325R	POTENTIOMETER	RD16K12D0094-10K15Ax2	2	VR201.204
9	020-5052119425R	POTENTIOMETER	RD 16K124A068-50KCBX2SII	2	VR-202.203
10	040-1400000000R	SWITCH	JPS2281EA	2	SW201.201
11	048-3000000000R	POWER SOCKET	NYS143 J3Y1 3pin	1	J203
12	049-2507222016R	JACK SOCKET	LA1113 7PIN	2	J200.201
13	051-0500000000R	POWER SOCKET	RCA JK0200560N	1	J202
14	056-4110000000R	JACK	10PIN 2.54	1	CON6A
15	057-2545011241R	JACK	24P	1	CON1
16	067-2200107000R	DIODE	HER107 JAL	1	D5
	088-1472527201R	POWER BOARD		1	
1	002-1000022050R	RESISTOR	10 Ω 5% 1/10W 0805	1	R294
2	002-1001032050R	RESISTOR	100 Ω 0805 \pm 5% 1/8W	4	R200.201.215.216
3	002-1002032010R	RESISTOR	1K 1/8W 1% 0805	4	R8.142.143.324
4	002-1003032010R	RESISTOR	10K Ω 1/8W 1% 0805	44	R1.2.9.14.129.132.133.137.138.141.203.204.206.207.220.213.214.217.218.219.230.231.232.233.237.238.245.246.267.272.275.280.281.284.287.288.289.296.321.322.325.9B.10B
5	002-1004032010R	RESISTOR	100K Ω 1/8W 1% 0805	5	R235.236.239.240.254
6	002-1005022005R	RESISTOR	1M 0.1W 0.5% 25PPM 0805	1	R326
7	002-1203032010R	RESISTOR	12K 1/8W 1%	1	R134
8	002-1204032050R	RESISTOR	120K 0805 \pm 5% 1/8W	1	R260
9	002-1503032010R	RESISTOR	15K 1/8W 1% 0805	4	R19.278.290.8B
10	002-1504032050R	RESISTOR	150K 0805 \pm 5% 1/8W	1	R268
11	002-1803032010R	RESISTOR	18K 1/8W 0805 1%	3	R11.13.16
12	002-1804022010R	RESISTOR	0805 180K 1/10W 1%	2	R270.323
13	002-2003032010R	RESISTOR	20K Ω 1/8W 1% 0805	1	R140
14	002-2203032010R	RESISTOR	22K 1/8W 1% 0805	3	R10.251.252
15	002-2400032011R	RESISTOR	24K 1/8W 0805 1%	2	R265.266
16	002-2703032010R	RESISTOR	27K 1/8W 1% 0805	2	R247.248
17	002-3003032010R	RESISTOR	30K Ω 1/8W 1% 0805	1	R286
18	002-3300032050QR	RESISTOR	33R 1/8W 5%	2	R17.18
19	002-3301032010R	RESISTOR	330 Ω 1/8W 1% 0805	1	R269
20	002-3302032010R	RESISTOR	3.3K 1/8W 1% 0805	2	R255.256
21	002-3651012010R	RESISTOR	3.65K 1% 0805	2	R144.145
22	002-4701032010R	RESISTOR	470 Ω 1/8W 1% 0805	5	R202.241.242.243.244

17.ELECTRONIC PARTS LIST

23	002-4702032010QR	RESISTOR	4.7K 1/8W 1% 0805	2	R259.264
24	002-4703032010R	RESISTOR	47K Ω 1/8W 1% 0805	4	R208.211.277.5B
25	002-5102032010R	RESISTOR	5.1K Ω 1/8W 1% 0805	2	R273.274
26	002-5102032100R	RESISTOR	51K \pm 5%1/8W 0805	1	R249
27	002-5602032010R	RESISTOR	5.6K Ω 1/8W 1% 0805	2	R20.279
28	002-6801032010R	RESISTOR	680 Ω 1/8W 1% 0805	1	R6B
29	002-6802032050R	RESISTOR	6.8K 0805 \pm 5% 1/8W	2	R250.253
30	002-6803032010R	RESISTOR	68K 1/8W 1% 0805	1	R139
31	002-8203032050R	RESISTOR	82K 0805 \pm 5% 1/8W	2	R258.7B
32	006-2250040561R	CAPACITOR	2.2UF/50V 4*5.5MM K	1	C35
33	007-1001062060R	CAPACITOR	100PF CP50V 10% 0805	5	C89.90.206.222.249
34	007-1002052060QR	CAPACITOR	SMD 1nF 50V 5% 0805	1	C3
35	007-1002062060R	CAPACITOR	1nF CP50V 10% 0805	9	C7.200.201.208.209.238.258.290.291
36	007-1004062060R	CAPACITOR	100nF CP50V 10% 0805	35	C2.5.6.91.93.94.242.243.247.248.251.252.264& 283.288.289.92
37	007-1004079040R	CAPACITOR	1U/50V,20%,4*5MM	1	C1
38	007-1005079040R	CAPACITOR	10UF 25V \pm 20% 4*5.4mm	1	C9
39	007-1502052060QR	CAPACITOR	1N5/50V 5%	2	C1B.C2B
40	007-1802052060R	CAPACITOR	1.8NF 50V 5% 0805 X7R	2	C233.234
41	007-2201062060R	CAPACITOR	220PF CP50V 10% 0805	7	C204.205.212.213.215.217.232
42	007-2204062060R	CAPACITOR	220nF 50V 10% 0805	1	C292
43	007-3300052060R	CAPACITOR	33pF 50V NPO 5% 0805	2	C235.239
44	007-3302062060R	CAPACITOR	3.3NF/50V 0805 10%	1	C246
45	007-3902052060QR	CAPACITOR	3N9/50V 5%	1	C244
46	007-4704062070R	CAPACITOR	470NF/50V 0805 20%	1	C8
47	007-5602052060R	CAPACITOR	5.6NF 50V 5% 0805	3	C240.241.245
48	007-6803052060R	CAPACITOR	68NF 50V 10% 0805	1	C237
49	017-1370000000R	IC	NJM2068M SO-8B(JRC)	1	U16
50	017-5270000001R	IC	NJM4580M NJM-DMP8	12	U17& 25.27.28.29
51	018-2905401227R	TRANSISTOR	2N5401S SOT-23 KEC	2	Q2.37
52	018-2905551227R	TRANSISTOR	2N5551S SOT-23 KEC	4	Q1.3.4.36
53	053-1472521300R	PCB	141.8X142.8X1.6(mm)	1	
54	067-2204148110R	DIODE	ST LL4148 SMD1206	12	D1.3.4.6.7.8.202.203.204.205.206.207
55	067-3300016111R	DIODE	ZMM16 16V 0.5W LL34	2	ZD1.2
56	089-0500000012R	SWITCH	SS-22F20-G12	1	SW203
57	221-1472410000R	LED HOLDER	M5*22.5mm WHITE	2	D305.306