

S E R V I C E M A N U A L

MODEL : PC-X270 (C)

AM/FM RADIO CASS
CD PORTABLE SYSTEM

MATESTAR ELECTRONICS LTD.
PERFORMANCE SPECIFICATIONS

Date : 7 May , 2003
Model : PC-X270
Band : AM / FM (PLL RADIO)
CD CASSETTE System
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GENERAL TEST CONDITION

Output Load 3 ohm non-reactive
Reference Output : 250 mW
Input Signal Source : IRE LOOP for AM
75 ohm dummy for FM
Modulation : 30% 400 Hz for AM
22.5 KHz Deviation 1 KHz for FM
75KHz Modulation for FM MPX
Remarks DC : 12V
AC : 120V 60Hz

* * * Subject to change without notice .

Prepared by

Approved by

PERFORMANCE SPECIFICATIONS

MODEL NO : PC-X270

Amplitude Modulation (AM) Section								
	Test Item		Unit	Nominal	Limit	#1	#2	
A.01	Tuning Range		LOW	KHz	520	+/-5		
			HIGH	KHz	1710	+/-5		
A.02	I.F. Frquency		600KHz	KHz	450	+/-5		
A.03	Sensitivity (AM Loop ANT.) (LOW TP)		600KHz	dB/m	58	68		
	S/N 20dB (MID TP)		1000KHz	dB/m	58	66		
	(HIGH TP)		1400KHz	dB/m	58	66		
A.04	Image Rejection		1000KHz	dB	/	/		
			1400KHz	dB	37	30		
A.05	S/N Ratio at 100dB/m Input		600KHz	dB	35	30		
			1000KHz	dB	35	30		
			1400KHz	dB	35	30		
A.06	I.F. Rejection		(MW)600KHz	dB	48	40		
A.07	AM Whistle Modulation		910/1350KHz	%	--	15		
A.08	Selectivity (+/-10KHz) (ACA)		600KHz	dB	/	/		
			1000KHz	dB	/	/		
A.09	AGC Figure of Merit (126dB)		1000KHz	dB	40	35		
A.10	Audio Response -6dB (AM:1000KHz)		LOW	Hz	70	125		
			HIGH	KHz	2K5	2K		
A.11	Distortion	30% at Ref.	1000KHz	%	1	3		
		60% at Ref.	1000KHz	%	5	10		
A.12	Modulation Hum (AC)		1000KHz	dB	50	40		
A.13	Overload (M=80% THD=10%)		1000KHz	mV/m		>100		
A.14	Min. Volume Hum and Noise			mV	0.7	1.2		
A.15	10% THD Power(Mod:80%)(1-CH Load Only)(AC)			W		5		
A.16	Max. Vol. Audio Power Output (80% Mod)		1000KHz	W	/	/		
A.17	6dB Bandwidth at 20dB S/N		1000KHz	KHz	4	+/-3		
A.18	Auto Search Threshold		600KHz	dB/m	60	68		
			1000KHz	dB/m	60	66		
			1400KHz	dB/m	60	66		
A.19	OSC Dropout Voltage Max. Power (DC)		1000KHz	V	8.4	10.8		
	Fial Out Valtage (AC)		1000KHz	%		70		

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Frequency Modulation (FM) Sectionn							
	Test Item		Unit	Nominal	Limit	#1	#2
F.01	Tuning Range		LOW	MHz	87.9	+/-0.1	
			High	MHz	107.9	+/-0.1	
F.02	Frequency Step		200/100Hz	KHz			
F.03	I.F Frequency		90.1MHz	MHz	10.7	+/-0.09	
F.04	Sensitivity at -30dB S/N (MONO)		90.1MHz	dB/uM	20	28	
			98.1MHz	dB/uM	20	28	
			106.1MHz	dB/uM	20	28	
F.05	3 dB Limit Sens		98.1MHz	dB	15	25	
F.06	Stereo Threshold (Dev 75KHz)		98.1MHz	dB	15	25	
F.07	Overload		98.1MHz	dB		110	
F.08	Image Rejection		90.1MHz	dB	/	/	
			106.1MHz	dB	25	18	
F.09	I.F. Rejection		90.1MHz	dB	50	40	
F.10	AM Suppression		98.1MHz	dB	30	24	
F.11	Spurious Suppression		98.1MHz	dB			
F.12	Selectivity at 98.1MHz +/-400KHz		98.1MHz	dB	/	/	
F.13	Audio Response -6dB		98.1MHz	Hz/KHz	60/4K5	100/4K	
F.14	Channel Separation (1KHz)		98.1MHz	dB	30	20	
F.15	Total Harmonic Distortion (60dB)		Mono Ref	22.5KHz	%	1	3
			Max Pow	75KHz	%	10	30
F.16	Signal to Noise Ratio (Input 60dB) STEREO S/N(INPUT 60dB) W/F B.P.F		90.1MHz	dB			
			98.1MHz	dB	45	40	
			106.1MHz	dB			
			98.1MHz	dB	40	30	
F.17	Auto Search Threshold		98.1MHz	dB	25	30	
			106.1MHz	dB	/	/	
F.18	Modulation Hum (AC)		98.1MHz	dB	45	40	
F.19	AFC Holding Range		98.1MHz	KHz	/	/	
F.20	Min. Volume Hum & Noise		98.1MHz	mV	0.7	1.2	
F.21	10% THD Power(Dev 75KHz)(1-CH Load Only)(AC)		98.1MHz	W		5	
F.22	Max Power		98.1MHz	W	/	/	
F.23	OSC Dropout Voltage Max. Power (DC) (AC)		98.1MHz	V	8.4	10.8	
			98.1MHz	%		70	

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MODEL NO : PC-X270

AUX SCETION:								
	Test Item		Unit	Nominal	Limit	#1	#2	
C.01	THD 10% Power Output (AC) (1-CH Load Only)	1KHz	W		5			
C.02	Noise Level (Volume Max.)		mV	5	15			
C.03	Noise Level (Volume Min.)		mV	0.7	1.2			
C.04	Distortion	1KHz	%	1	4			
C.05	S/N Ratio	1KHz	dB	55	45			
C.06	Separation	1KHz	dB	35	25			
C.07	Mute Effect	1KHz	dB	55	45			
C.08	Aux Cross Talk CD (Tuner) W/B.P.F	1K/10K	dB	55	50			
C.09	Function Level Deference (450mV/500mV) (1KHz 0dB) 22.5KHz Mod. (30% Mod)	IN	dB	0	+/-5			
		CD	dB	0	+11			
		FM	dB	0	-10			
		MW	dB	0	-10			
		1KHz -4dB INPUT	Tape play	dB	0	0		
		Recording CD -10dB	Tape R/P	dB	0	+/-5		
C.10	Frequency Response	100Hz	dB	+/-3	+5/-3			
		1KHz	dB	0	0			
		2KHz	dB	+/-1	+/-3			
		10KHz	dB	+/-1	+/-3			

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CD SECTION : PC-X270

Test Items		Unit	Nominal	Limit	#1	#2
1	Flat (Bass off)	100Hz	dB	0	-3	
		10KHz	dB	+2	-3	
	Rock (Bass off)	100Hz	dB	+10	+13	
		10KHz	dB	+5	+1	
	Jazz (Bass off)	100Hz	dB	-4	-6	
		10KHz	dB	-3	-5	
	Pop (Bass off)	100Hz	dB	0	-10	
		10KHz	dB	0	-8	
Classic (Bass off)	100Hz	dB	+1	-5		
	10KHz	dB	+4	-10		
2	HPS VR 50%	100Hz	dB	+10	+5	
3	Frequency Response TCD-782	100Hz	dB	+3	-3	
		10KHz	dB	+3	-3	
		20KHz	dB	+3	-8	
4	Signal to Noise Ratio (Unweighted)	1KHz	dB	60	50	
5	Dynamic Range	1KHz	dB	60	50	
6	Channel Separation	1KHz	dB	45	30	
7	Total Harmonic Distortion TCD-782	1KHz(0dB)	%	25	33	
8	Total Harmonic Distortion TCD-782	1KHz(-10dB)	%	1	3.5	
9	Channel Unbalance TCD-782	1KHz	dB		< 3	
10	Short Access Time TCD-782		Secs	2	4	
11	Long Access Time (Stop to TR24) TCD-782	444	Secs	5	13	
12	Interruption	TCD725B	um	0.8	0.6	
13	Black Dot	TCD725B	um		65	
14	Finger Printo	TCD725B	um	65		
15	Output Power at 10% THD T112(AC)(1-CH Load Only)	1KHz	W		5	
16	Max. Vol. Audio Power Output (0dB)	1KHz	W			
17	Skip Test (Madonna,Bass/Surr ON)	TR 17	Vol.Max.		NO SKIP	
18	Min Volume Noise (SP OUT)	TCD-782	mV		< 3.5	
19	Max. Volume Noise	TCD-782	mV	5	12	
20	Eccentricity	TCD-782	um	0.74	0.63	
21	Vertical Deviation	TCD-782	mm	8.6	10.8	
22	Dropout Voltage 0dB	(DC)	1 KHz	V	8.6	10.8
		(AC)	1 KHz	%		70

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CASSETTE SECTION : PC-X270

	Test Items	TAPE			Unit	Nomina	Limit	#1	#2
T.01	Playback S/N Ratio (Unweighted)-12	A	B		dB	45	35		
T.02	Playback THK-T118 (at Ref O/P)	A	B		%	1	3		
T.03	Channel Separation (PB Only)-T141	A	B	1KHz	dB	40	30		
T.04	Track Crosstalk (PB Only)-T121	A	B	1KHz	dB	40	30		
T.05	Tape Speed Deviation-T111	A	B	3KHz	KHz	4.75CM/S	+3		
T.06	L/R CH. Difference	A	B		dB	0	+3		
T.07	Wow and Flutter-JIS weighted-T111	A	B	P/B Only	%		0.35		
				R/P	--	--	0.5		
T.08	Winding Time C-60 Type	A	B	F.Few	Secs		< 170		
				Play	Secs		< 170		
T.09	Torque	A	B	Rewind	gm-cm		35-70		
				F.F	gm-cm	75	55		
				1KHz	gm-cm	75	55		
T.10	P/R Dist. at Standard O/P	A		1KHz	%	2	7		
T.11	R/P Difference (CD-10dB 1KHz)	A		1KHz	dB	+3	-3		
T.12	R/P Separation (W/1KHz BPF)	A	B	1KHz	dB	35	30		
T.13	R/P Cross Talk (W/1KHz BPF)	A	B	1KHz	dB	45	40		
T.14	R/P S/N Ratio (W/1KHz BPF)	A		1KHz	dB	60	35		
T.15	R/P Erase Ratio (W/1KHz BPF)	A		1KHz	dB	60	35		
T.16	R/P Channel Balance	A				0	+3		
T.17	R/P Freq. Response 1KHz Ref			125Hz	dB	+1	+3		
				6K3	dB	+1	+3/-6		
T.18	Min. Volume Hum	A		Play	mV		< 3.5		
T.19	Max. Volume Hum & Noise	A			mV	30	80		
T.20	Output Power at 10% THD-T112 0dB(AC) (1-CH Load Only)	A	B	1KHz	W		5		
T.21	AC Bais FREQ.				KHz	65	+0.5		
T.22	ALC Effect-65dB(-45dB INPUT)	A	B		dB	0	5		

IC & TRANSISTOR VOLTAGES**MODEL : PC-X270****IC901 LA9242M(CD P/B MODE)**

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v)	2.57	2.57	2.61	2.61	2.55	2.50	2.55	2.50	2.50	2.57	2.57	2.57	2.50	2.50	2.70	2.52
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Voltage (v)	2.50	2.50	2.50	2.50	2.50	0	2.50	2.50	2.50	2.50	3.01	2.50	2.5	2.2	2.3	0
Pin No.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Voltage (v)(play)	0	5.05	0	0.8	0	4.0	0	0.4	2.20	2.47	2.50	2.56	0	2.50	2.61	0
Pin No.	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Voltage (v)(play)	0.05	2.41	4.06	0	0.02	4.92	0	5.05	2.50	2.50	2.35	2.37	2.20	3.22	0.21	5.05

IC902 LC78622E(CD P/B MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v)	0	0	1.47	0	1.60	5.05	0.32	0.02	2.56	2.50	0.02	0.60	0	0	0.05	1.40
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Voltage (v)	0	5.05	0	0	2.40	5.05	5.06	0	0	0	0.04	5.05	0.04	0.04	2.35	0
Pin No.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Voltage (v)(play)	0	0.01	0.02	4.25	1.70	0.01	0.01	1.70	4.25	0.02	5.04	2.12	2.11	0	0.1	0.15
Pin No.	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Voltage (v)(play)	0.1	2.50	0.04	2.50	1.85	0	0	0	4.0	5.0	0	2.21	2.34	0	0	0

IC903 LA6541D (CD P/B MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v)	8.6	0.8	2.74	2.55	4.24	3.64	0	0	0	3.80	4.00	2.56	2.64	5.05	8.01	5.00
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Voltage (v)	4.92	2.60	2.56	4.00	3.84	0	0	0	3.96	3.90	2.56	2.50	2.56	8.6		

IC701 LC587008 (CD P/B MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v)(stop)	2.2	2.2	1.75	3.10	4.3	4.3	0	0	4.27	2.2	0	4.3	0	0	0.6	0.6
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Voltage (v)	4.8	4.4	2.17	1.3	1.5	2.89	0	4.3	1.7	2.2	4.6	4.6	4.8	1.3	0.05	0.05
Pin No.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Voltage (v)(play)	0.05	0	4.3	4.3	2.4	4.3	1.6	1.55	0	3.9	0	4.7	4.1	0	0	0
Pin No.	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Voltage (v)(play)	0	1.5	0	0	0	0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
Pin No.	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Voltage (v)(play)	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2

IC101 LA1823 (RADIO MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AM Voltage (v)	1.24	1.24	4.9	4.9	2.70	0	0	4.8	4.9	1.24	1.24	0.5	4.3	0.36	0.15	1.26
FMS Voltage (v)	1.24	1.24	4.9	4.9	2.54	0	0	0	4.9	1.24	1.24	1.0	4.1	4.2	4.2	1.26
FM Voltage (v)	1.24	1.24	4.9	4.9	2.54	0	0	4.8	4.9	1.24	1.24	0.16	4.1	4.2	4.2	1.26
Pin No.	17	18	19	20	21	22	23	24								
AM Voltage (v)	1.26	1.24	0.66	4.9	4.9	4.9	0	0								
FMS Voltage (v)	1.26	1.24	1.06	4.9	4.9	4.9	0	0.8								
FM Voltage (v)	1.26	1.24	1.1	4.9	4.9	4.9	0	0.8								

IC102 LC72131 (RADIO MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AM Voltage (v)	2.40	0	0.12	0.12	0.12	4.74	0.15	0.02	0	0	0	0	0	0	2.4	0
FMS Voltage (v)	2.40	0	0.12	0.12	0.12	4.74	4.2	4.2	0	0	0	0	0	0	0	2.4
FM Voltage (v)	2.40	0	0.12	0.12	0.12	4.8	4.2	4.2	0	0	0	0	0	0	0	2.4
Pin No.	17	18	19	20	21	22	備注 : FM MO在88.1MHz時測得。 FM ST在87.9MHz時測得。									
AM Voltage (v)	4.9	0.95	0.95	1.5	0	2.4										
FMS Voltage (v)	4.9	0.9	0.9	2.2	0	2.4										
FM Voltage (v)	4.9	0.9	0.9	2.2	0	2.4										

IC201 BA3126N (TAPE MODE)

Pin No.	1	2	3	4	5	6	7	8	9
Voltage (v)P/R	0	0	0	0/4.2	0	6.8/6.5	0	0	0

IC501 LC75342 (TAPE/EQ at FLAT MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v)	0.12	0.12	0	0	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	0	0
Pin No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Voltage (v)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	0	5.3	7.0	0.12		

IC203 BA3308 (R/B MODE)

Pin No.	1	2	3	4	5	6	7	8	9
Voltage (v)	1.81	0	1.82	0	1.01	5.7	1.82	0	1.82

IC202 BA3416L (TAPE MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Voltage (v) P/B	0	0	0	0	0.62	0.62	0.07	0	0	6.9	1.91	7.32	3.2	3.3	0	0
Voltage (v) P/A	0	0	0	0	0.62	0.62	0	0	0	6.9	0.68	7.3	3.2	3.3	0	0
Pin No.	17	18														
Voltage (v) P/B	0	0														
Voltage (v) P/A	0	0														

IC301 BA5417 (P/B MODE)

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Voltage (v) P/B	0	13.3	7	13.7	7	13.3	0	7.8	7.5	0.58	0	0	0.58	0	0

Transistors (TUN MODE)

Transistor No.	Q101			Q107			Q108		
Pin Name	B	C	E	B	C	E	B	C	E
Voltage (V)	5.5	8.6	4.9	7.9	8.73	8.75	0.7	0.1	0

Transistors (CD MODE)

Transistor No.	Q906			Q907		
Pin Name	B	C	E	B	C	E
Voltage (v)	7.8	8.5	8.7	0.7	0.1	0

Transistors (FM MODE)

Transistor No.	Q401			Q402			Q403			Q404		
Pin Name	B	C	E	B	C	E	B	C	E	B	C	E
POWER ON(V)	13.1	13.8	13.9	0.6	0.2	0	5.6	13.9	5.0	9.4	13.5	8.7

Transistor No.	Q406			Q407			Q506		
Pin Name	B	C	E	B	C	E	B	C	E
POWER ON (v)	0.67	0.13	0	7.2	7.9	7.96	9.4	13.7	8.8

Transistor No.	Q408			Q409			Q410		
Pin Name	B	C	E	B	C	E	B	C	E
LAMP ON(V)	0.67	0.1	0	12.2	12.9	13.0	5.6	11.0	4.92

Transistors (CD P/B 100Hz MODE)

Transistor No.	Q303			Q304			Q501			Q502		
Pin Name	B	C	E	B	C	E	B	C	E	B	C	E
MAX VOL(V)	0.6	0	0	8.1	8.2	8.7	5.8	5.2	5.2	5.8	5.2	5.2
MIN VOL(V)	0	8.0	0	5.1	8.1	8.7	0	5.2	5.2	0	5.2	5.2

Transistor No.	Q512			Q301			Q302		
Pin Name	B	C	E	B	C	E	B	C	E
MUTE ON(CD,TUN)	0	3.2	0	0.64	0	0	0.64	0	0
MUTE OFF(V)	0.6	0	0	0	0	0	0	0	0

Transistors (TAPE MODE)

Transistor No.	Q214		
Pin Name	B	C	E
Voltage (V)	8.3	13.0	7.7

Transistor No.	Q205			Q208			Q801			Q802			Q803		
Pin Name	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
Voltage(V) PLAY	/	/	/	0	7.6	0	/	/	/	/	/	/	0.1	4.7	0
Voltage(V) REC.	0.6	0.1	0	4.7	6.8	4.2	1.0	5.8	0.4	0.6	0	0	0.6	0	0

Transistors (TAPE MODE)

Transistor No.	Q203			Q204		
Pin Name	B	C	E	B	C	E
Voltage (V) PLAY	0.6	0	0	/	/	/
Voltage (V) REC.	0	4.2	0	6.0	6.7	6.8

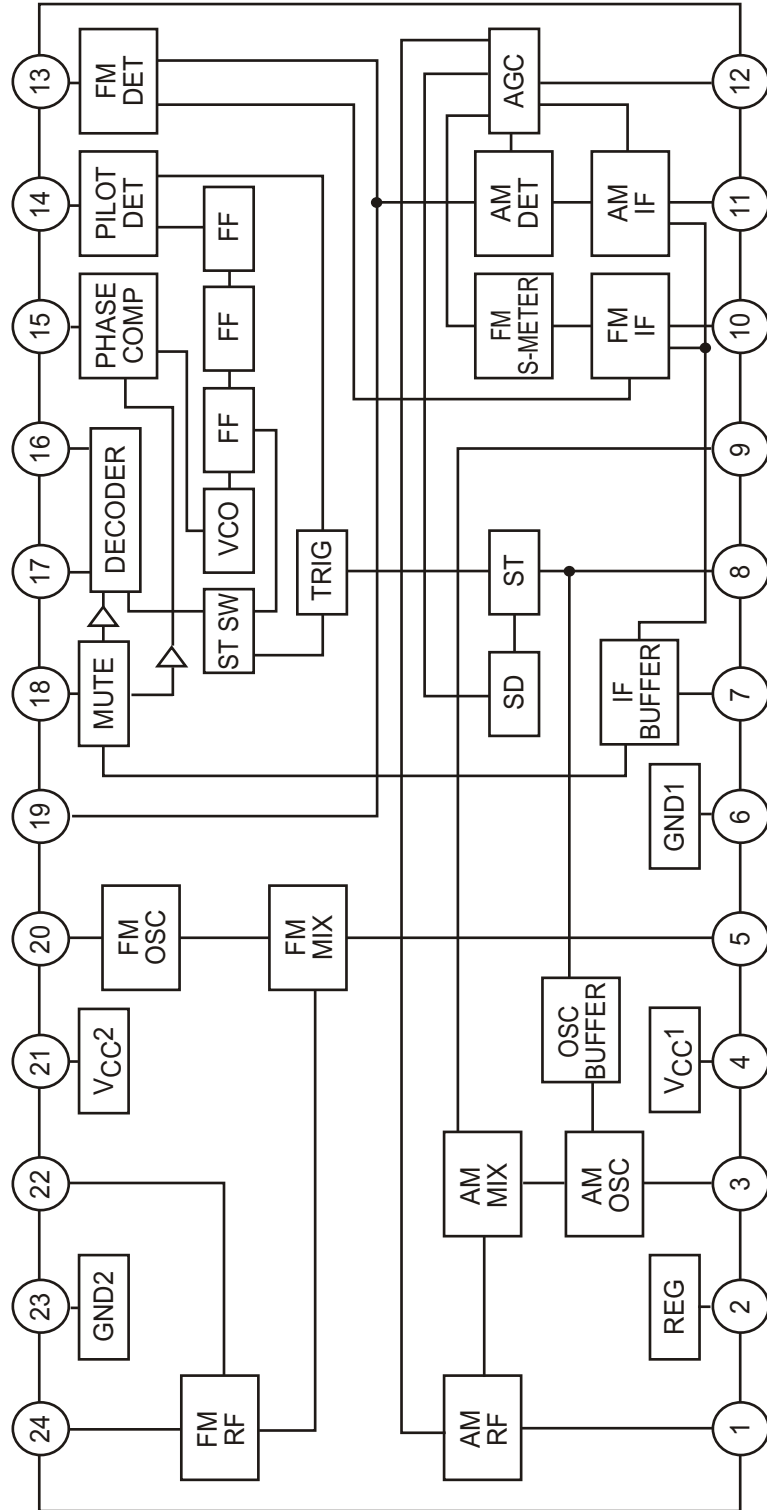
Transistors (TUN MODE)

Transistor No.	Q105			Q106		
Pin Name	B	C	E	B	C	E
Voltage(V) AM	/	/	/	0.6	0	0
Voltage(V) FM	1.3	2.3	0.6	0.6	0.1	0

Transistor No.	Q904			Q903			Q908			Q914		
Pin Name	B	C	E	B	C	E	B	C	E	B	C	E
Voltage(V) PLAY	0	0	0	0	0	0	7.8	4.98	8.5	3.3	1.8	4.0
Voltage(V) STOP	0.6	0	0	0.6	0	0	7.9	5.0	8.5	4.2	1.5	4.8

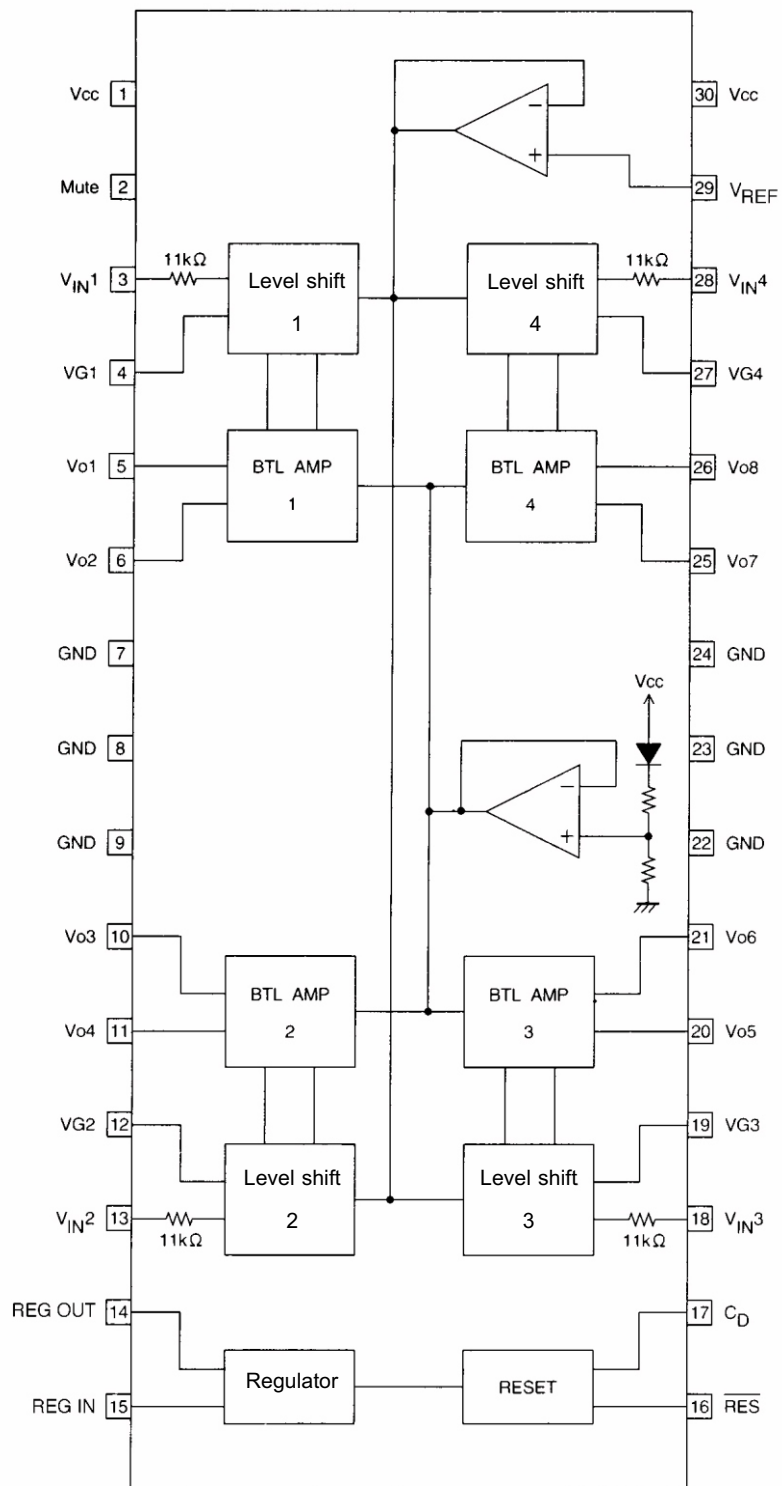
Transistor No.	Q705			Q706			Q707			Q708		
Pin Name	B	C	E	B	C	E	B	C	E	B	C	E
POWER ON (V)	0	4.4	0	4.9	0	4.3	4.3	0	2.5	0	4.3	0

Block Diagram



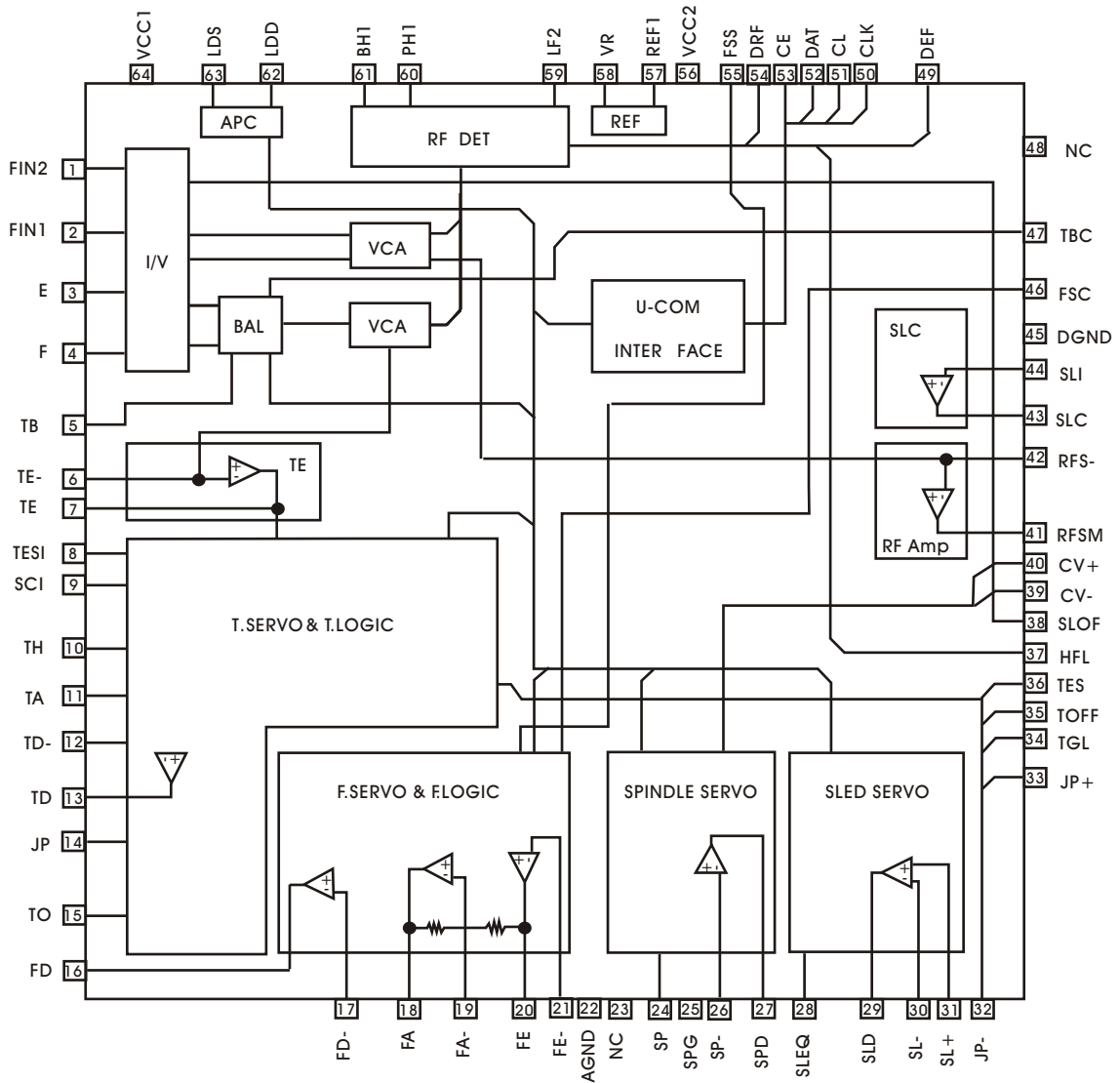
LA6541D

Block diagram



LA9242M

Equivalent Circuit Block Diagram



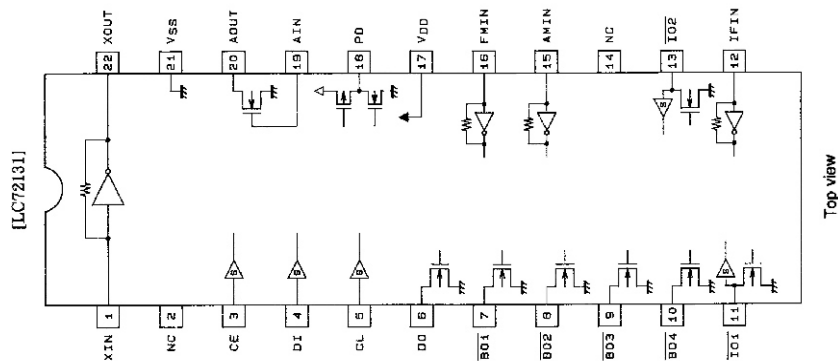
PIN FUNCTION

1	FIN2	11	TA	21	FE-	31	SL+	41	RFSM	51	CL	61	BH1
2	FIN1	12	TD-	22	AGND	32	JP-	42	RFS-	52	DAT	62	LDD
3	E	13	TD	23	NC	33	JP+	43	SLC	53	CE	63	LDS
4	F	14	JP	24	SP	34	TGL	44	SLI	54	DRF	64	Vcc1
5	TB	15	TO	25	SPG	35	TOFF	45	DGND	55	FSS		
6	TE-	16	FD	26	SP-	36	TES	46	FSC	56	Vcc2		
7	TE	17	FD-	27	SPD	37	HFL	47	TBC	57	REF1		
8	TESI	18	FA	28	SLEQ	38	SLOF	48	NC	58	VR		
9	SCI	19	FA-	29	SLD	39	CV-	49	DEF	59	Lf2		
10	TH	20	FE	30	SL-	40	CV+	50	CLK	60	Ph1		

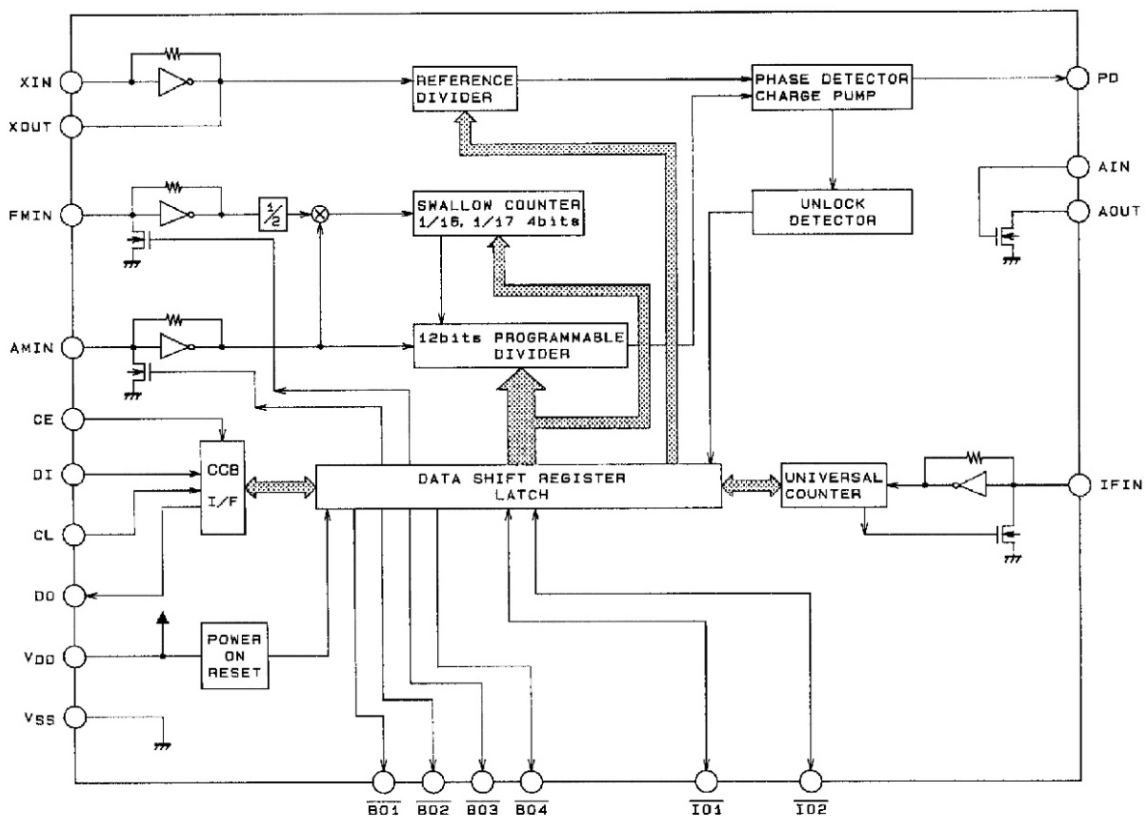
LC72131 (IC102)

AM/FM PLL FREQUENCY SYNTHESIZER

Pin Assignments

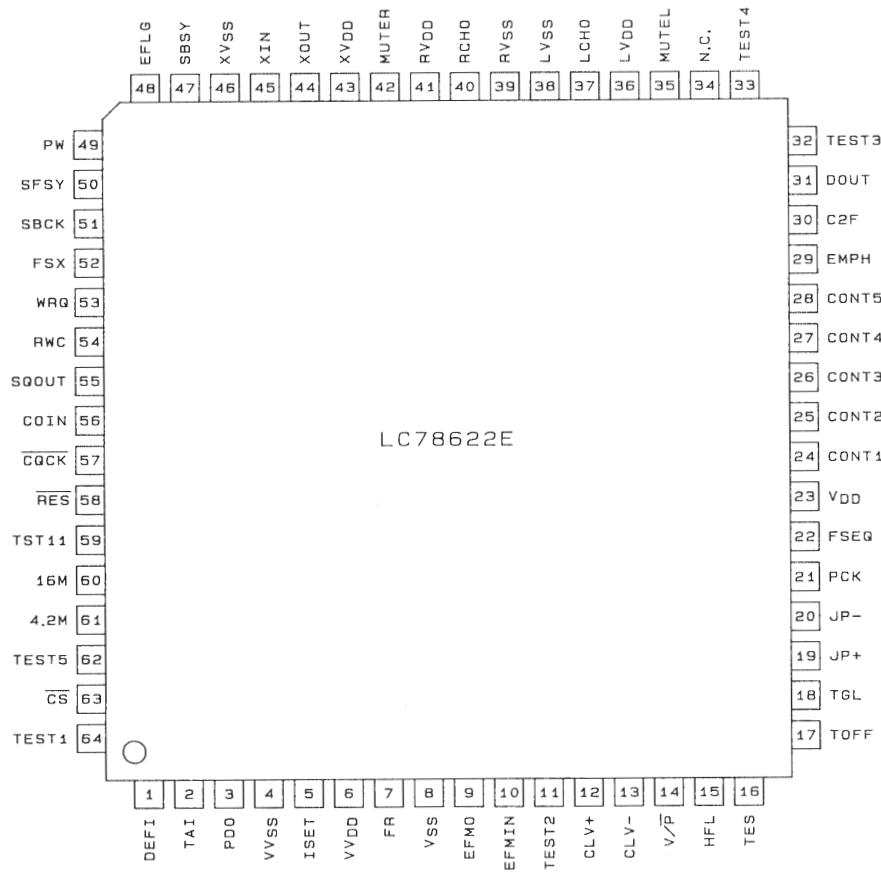
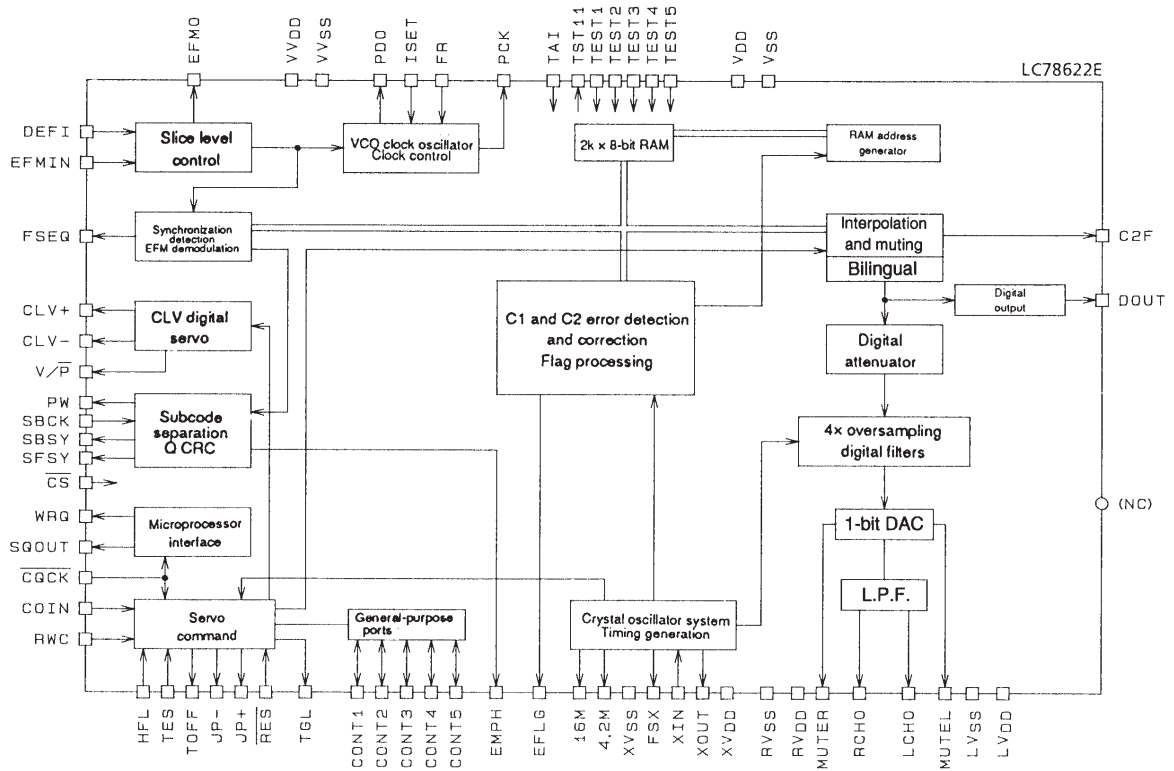


Block Diagram



LC78622E

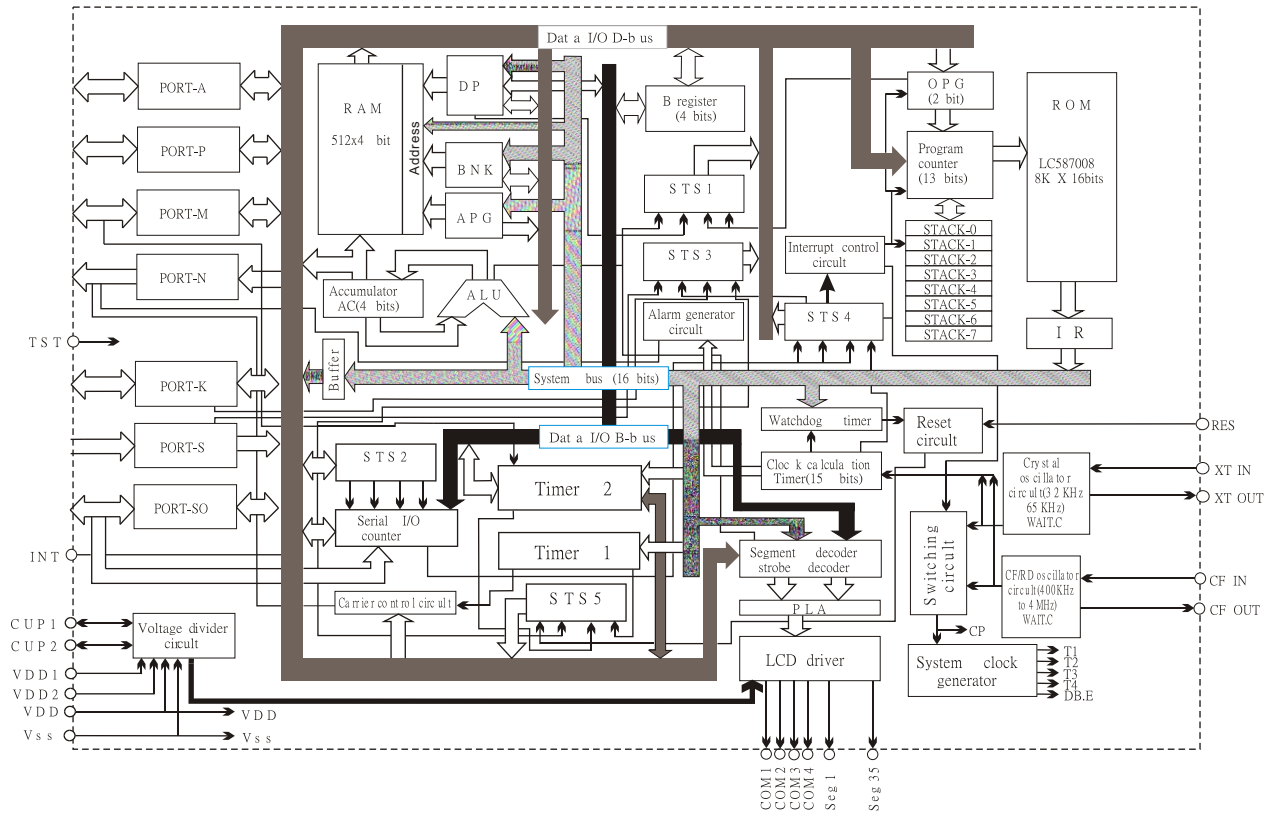
Equivalent Circuit Block Diagram



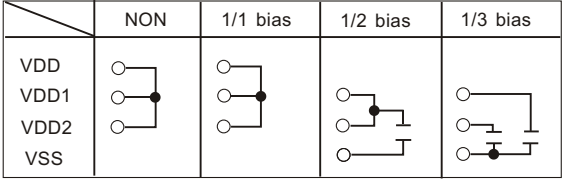
LC587008

Single-Chip 4-Bit Microprocessors
with LCD Driver, 2 KB RAM, and 16 KB
ROM on chip

System Block Diagram for the LC587008



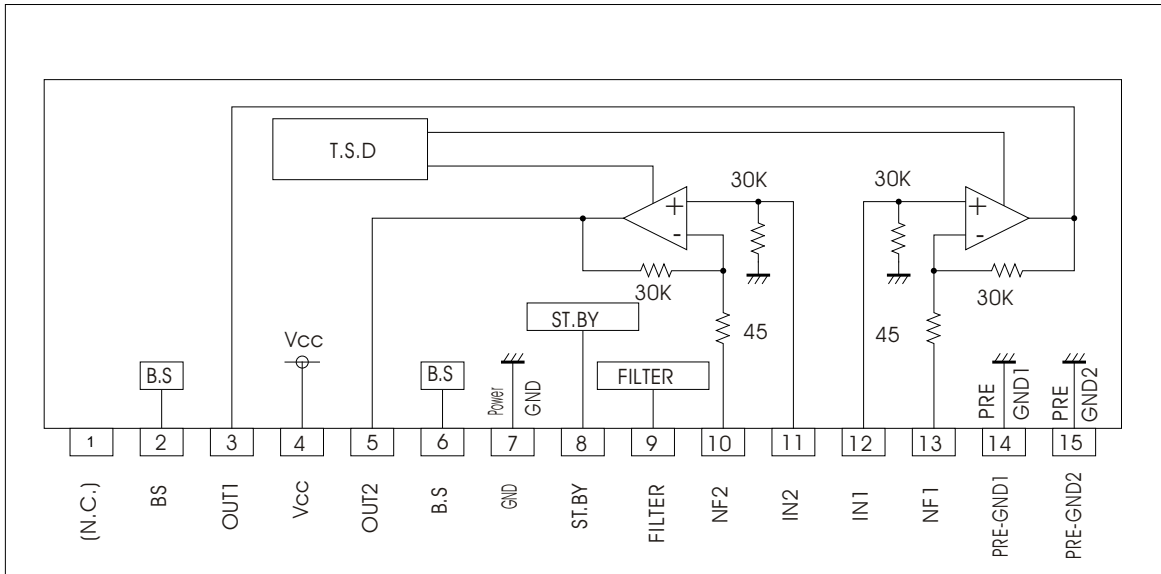
Pin Functions

Pin	I/O	QIP-80 Pin No.	Function	Option	At reset
V _{DD} V _{SS}	— —	24 23	Power supply		
V _{DD 1} V _{DD 2}	— —	22 21	LCD drive power supply 		
CUP1 CUP2	— —	3 4	Switching pin used to supply the LCD drive voltage to the V _{DD 1} and V _{DD 2} PINS <ul style="list-style-type: none"> Connect a nonpolarized capacitor between CUP1 and CUP2 when 1/2 or 1/3 bias is used Leave open when a bias other than 1/2 or 1/3 is used. 		
CFIN	Input	25	System clock oscillator connections <ul style="list-style-type: none"> Ceramic resonator connection (CF specifications) RC component connection (RC specifications) External signal input pin (CFOUT is left open) 	<ul style="list-style-type: none"> CF specifications RC specifications External Specifications Not used 	
CFOUT	Output	26	This oscillator is stopped by the execution of a STOP or SLOW instruction.		
XTIN	Input	20	Reference calculation (clock specifications, LCD alternating frequency), system clock oscillator <ul style="list-style-type: none"> 32 kHz crystal resonator connection 65 kHz crystal resonator connection 	<ul style="list-style-type: none"> 32k specifications 65k specifications 38k specifications Not used 	
XTOUT	Output	19	This oscillator is stopped by the execution of a STOP instruction.		
S1 S2 S3 S4	Input	27 28 29 30	Input-only ports <ul style="list-style-type: none"> Input pins used to read data into RAM Built-in 7.8 ms and 1.95 ms chatter rejection circuits Built-in pull-up/pull-down resistors Note: The 7.8 ms and 1.95 ms times are the times when $\phi 0$ is 32.768 kHz.	<ul style="list-style-type: none"> Transistor to hold a low or high level Selection of either pull-up or pull-down resistor 	<ul style="list-style-type: none"> The pull-up or pull-down resistor are on. Note: These pins go to the floating state when reset is cleared.
K1 K2 K3 K4	I/O	31 32 33 34	I/O ports <ul style="list-style-type: none"> Input pins used to output read data into RAM Output pins used to output data from RAM Built-in 7.8 ms and 1.95 ms input-mode chatter rejection circuits. The selection of 7.8 or 1.95 ms is linked to that for the S ports. Note: The 7.8 ms and 1.95 ms times are the times when $\phi 0$ is 32.768 kHz.	<ul style="list-style-type: none"> Transistors to hold a low or high level Selection of either pull-up or pull-down resistor 	<ul style="list-style-type: none"> The pull-up or pull-down resistors are on. Note: These pins go to the floating state when reset is cleared. <ul style="list-style-type: none"> Input mode Output latch data is set high.
M1 M2 M3 M4	I/O	35 36 37 38	I/O ports <ul style="list-style-type: none"> Input pins used to read data into RAM Output pins used to output data from RAM M4 is used as the external clock input pin in Tm2 mode 3. *The minimum period for the external clock is twice the cycle time. <ul style="list-style-type: none"> Built-in pull-up/pull-down resistors 	The same as K1 to K4	The same as K1 to K4
A1 A2 A3 A4	I/O	11 12 13 14	I/O ports <ul style="list-style-type: none"> Input pins used to read data into RAM Output pins used to output data from RAM Built-in pull-up/pull-down resistors 	The same as K1 to K4	The same as K1 to K4
P1 P2 P3 P4	I/O	15 16 17 18	I/O ports Function: The same as pins A1 to A4	The same as K1 to K4	The same as K1 to K4

Pin	I/O	QIP-80 Pin No.	Function	Option	At reset																														
So1 So2 So3 So4	I/O	7 8 9 10	I/O ports Function: The same as for pins A1 to A4 Pins So1 to So3 area also used for the serial interface. • Use of these pins in serial mode can be selected under program control. • Pin functions: SO1:Serial input pin SO2:Serial output pin SO3:Serial clock pin The serial clock pin can be switched between internal and external, and between rising edge output and falling edge output.	• Transistors to hold a low or high level • Selection of either pull-up or pull-down resistors Internal serial clock divisor selection I 1/1 II 1/2 III 1/4	The same as for K1 to K4																														
N1 N2 N3 N4	Output	39 40 41 42	Output-only ports • Output pins used to output data from RAM • An alarm signal can be output from pin N4. (Note that this is only when the N4 output latch is slow.) • An alarm signal modulated at 1, 2 or 4 kHz can be output. (These frequencies are output when ϕ_0 is 32.768 kHz.) • A carrier signal can be output from N3. (Note that this is only when the N3 output latch is slow.)	• Pins N1 to N4 output circuit type: I CMOS II N-channel open drain • Pins N1 to N4 output level I High level II Low level	The output levels on pins N1 to N4 can be specified as an option																														
INT	Input	6	Input ports • External interrupt request inputs • Input pins used to read data into RAM • Input detection can be performed on either rising or falling edges. • Built-in pull-up/pull-down resistors	• Transistors to hold a low or high level • Selection of either pull-up or pull-down resistors • Signal conversion (rising/falling) selection																															
RES	Input	5	LSI internal reset input • The reset input level can be selected to be either high or low. • Built-in pull-up/pull-down resistors • Note: The reset pulse must be at least 500 μ s.	*Only when the input resistor open specification is selected																															
TST	Input	43	Test input • QIP80 products: Connect to Vss. • Chip products: Leave open or connect to Vss.																																
Seg1, Seg2 to Seg35	Output	44, 45 to 78	• LCD panel drive/general-purpose output — LCD panel drive I STATIC II 1/2 bias-1/2 duty III 1/2 bias-1/3 duty IV 1/2 bias-1/4 duty V 1/3 bias-1/3 duty VI 1/3 bias-1/4 duty Types I to V can be specified as mask options. — General-purpose output mode I CMOS II P-channel open drain III N-channel open drain Types I to III can be specified as mask options. • LCD/general-purpose output control is handled by the segment PLA, and thus program control is not required. • These pins support output latch control on reset and in standby states when the oscillators are stopped. • Arbitrary combinations of LCD drive and general-purpose outputs can be used.	• LCD driver/general-purpose output switching • LCD drive type switching — STATIC — 1/2 bias-1/2 duty — 1/2 bias-1/3 duty — 1/2 bias-1/4 duty — 1/3 bias-1/3 duty — 1/3 bias-1/4 duty • General-purpose output circuit switching — CMOS — P-channel open drain — N-channel open drain • Output latch control in standby modes	• LCD drive — All segments on — All segments off *: Determined by mask options • General purpose outputs — High level — Low level Determined by mask options Note: When a combination of LCD drive and general-purpose outputs, the output state is either: — All lit/high level — All off/low level. • These pins go to the static drive mode during the reset period.																														
COM1 COM2 COM3 COM4	Output	2 1 80 79	LCD panel drive common polarity outputs The table below shows how these pins are used depending on the duty used. (values for alternating frequency reflect a typical specification of 32.768 MHz for ϕ_0 .) <table border="1" data-bbox="459 1818 1050 2011"> <thead> <tr> <th></th> <th>Static duty</th> <th>1/2 duty</th> <th>1/3 duty</th> <th>1/4 duty</th> </tr> </thead> <tbody> <tr> <td>COM1</td> <td>○</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>COM2</td> <td>×</td> <td>○</td> <td>○</td> <td>○</td> </tr> <tr> <td>COM3</td> <td>×</td> <td>×</td> <td>○</td> <td>○</td> </tr> <tr> <td>COM4</td> <td>×</td> <td>×</td> <td>×</td> <td>○</td> </tr> <tr> <td>Alternation frequency</td> <td>32 Hz</td> <td>32 Hz</td> <td>42.7 Hz</td> <td>32 Hz</td> </tr> </tbody> </table> Note: A cross (X) indicates that the pin is not used with that duty type.		Static duty	1/2 duty	1/3 duty	1/4 duty	COM1	○	○	○	○	COM2	×	○	○	○	COM3	×	×	○	○	COM4	×	×	×	○	Alternation frequency	32 Hz	32 Hz	42.7 Hz	32 Hz		The static drive waveform is output during the reset period. *There are cases where the alternating frequency stops for the CF, RC and external clock specifications. (These cases differ depending on option specifications.)
	Static duty	1/2 duty	1/3 duty	1/4 duty																															
COM1	○	○	○	○																															
COM2	×	○	○	○																															
COM3	×	×	○	○																															
COM4	×	×	×	○																															
Alternation frequency	32 Hz	32 Hz	42.7 Hz	32 Hz																															

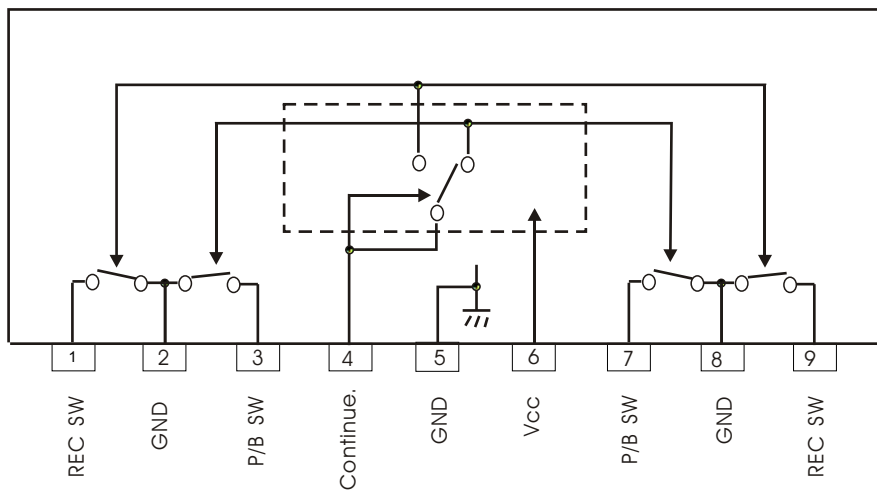
BA5417

BLOCK DIAGRAM



BA3126N

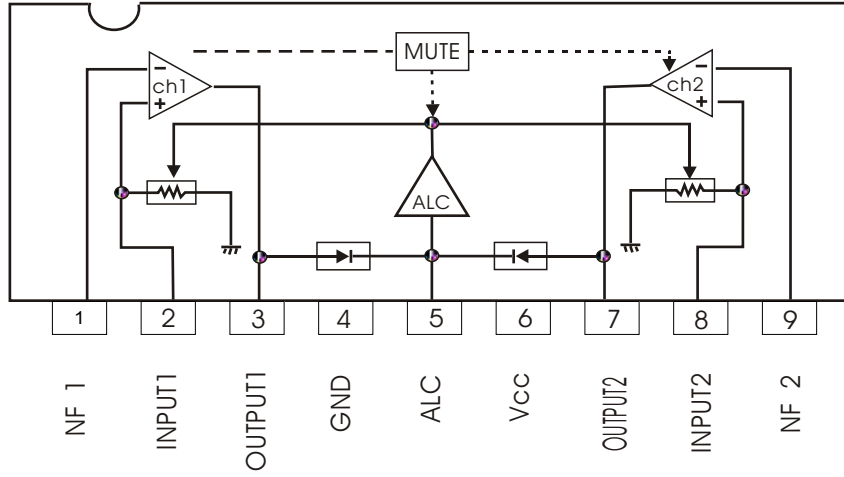
BLOCK DIAGRAM





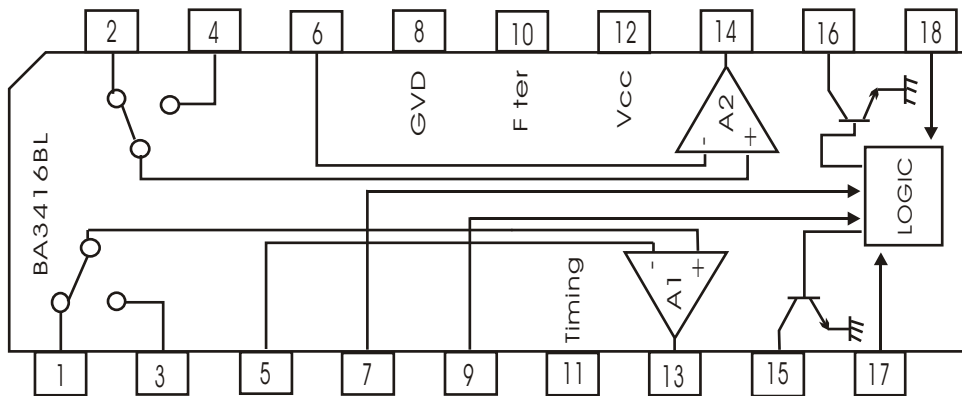
BA3308

Block diagram



BA3416BL

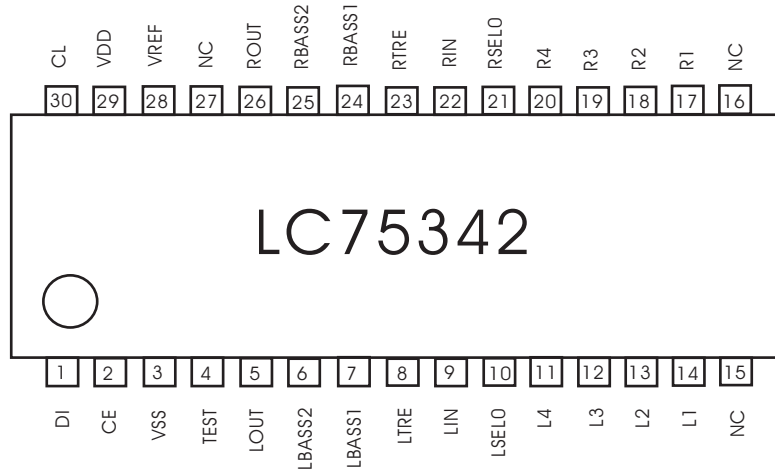
Block diagram



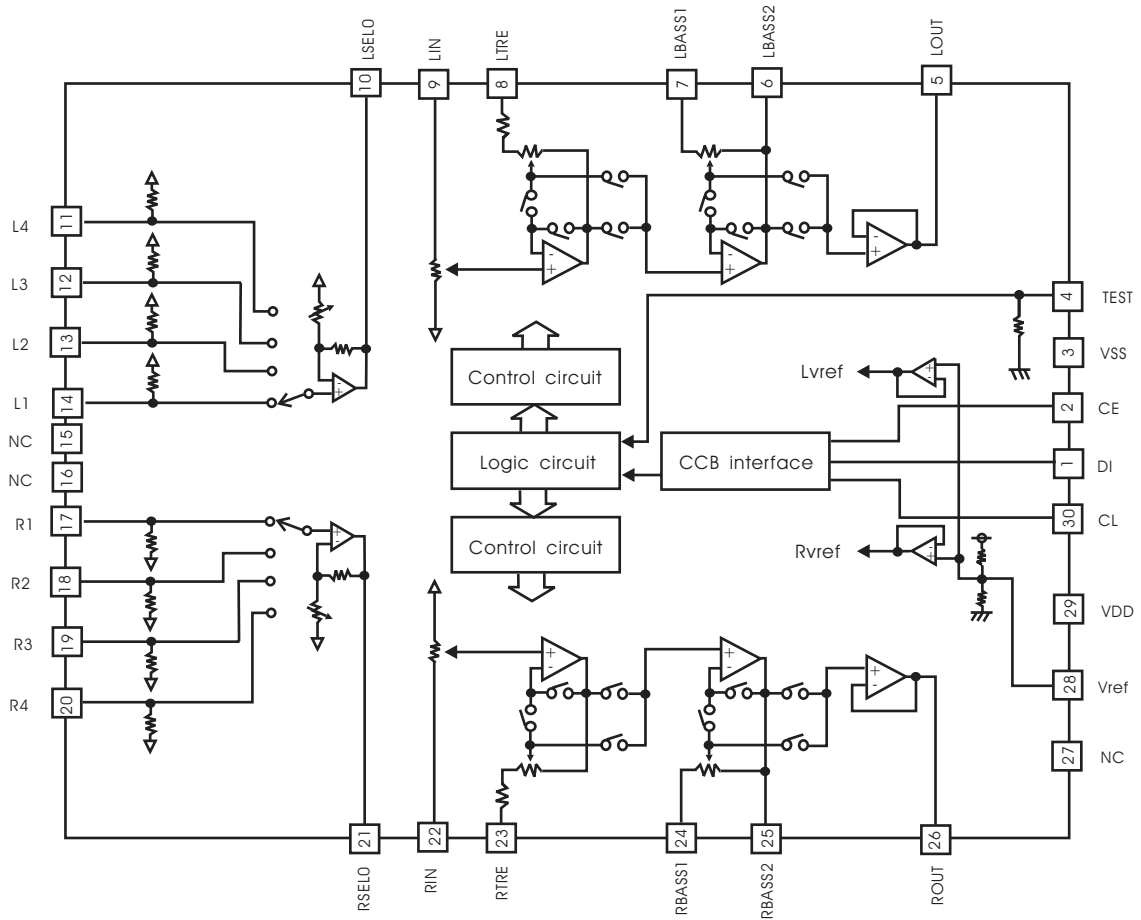
LC75342

Single-C hip Volume and Tone Control System

Pin assignment (Top view)

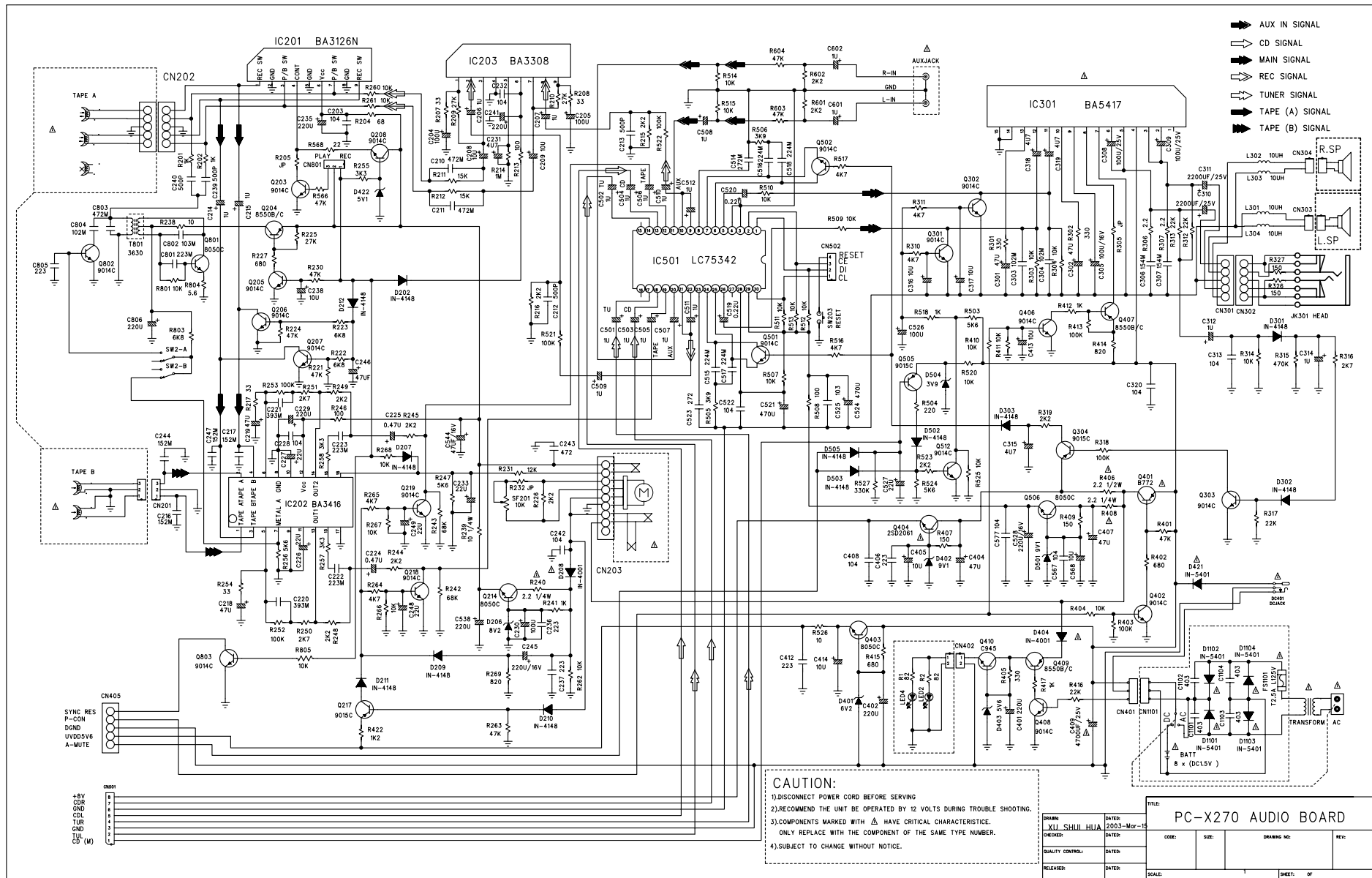


Equivalent circuit



Pin functions

Pin Number	Pin	Description
14 13 12 11 17 18 19 20	L1 L2 L3 L4 R1 R2 R3 R4	Input signal connections
10 21	LSELO RSELO	Input selector outputs
7 6 24 25	LBASS1 LBASS2 RBASS1 RBASS2	Connections for the resistors and capacitors that form the bass band filters.
9 22	LIN RIN	Volume control and equalizer input
5 26	LOUT ROUT	Volume and equalizer outputs
8 23	LTRE RTRE	Connections for the capacitors that form the treble band filters.
28	Vref	Connection to the 0.5xVDD voltage generator circuit used as the analog signal ground. Applications must connect a capacitor of about 10 uF between this pin and Vss to exclude power supply ripple.
3	Vss	Ground
29	VDD	Power supply
2	CE	Chip enable Data is written to the internal latch when this pin goes from high to low. The internal analog switches operate at this point. Data transfer is enabled when this pin is high.
1 30	DI CL	Serial data and clock inputs used for IC control.
4	Vss	Electronic volume and tone control testing This pin must be tied to Vss during normal operation.
15 16 27	NC	Unused. These pins must be left open or connected to Vss during normal operation.

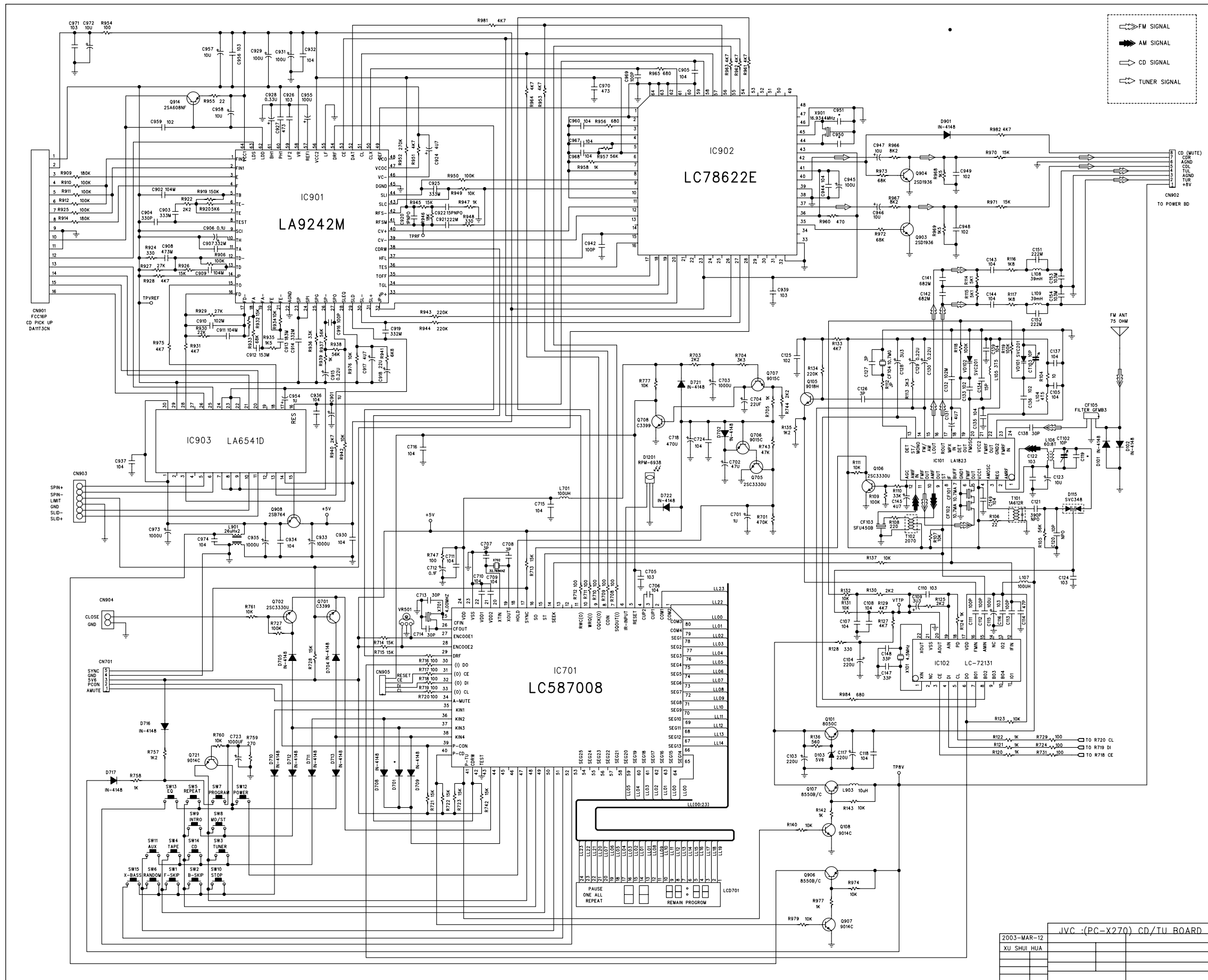


- ➡ AUX IN SIGNAL
- ➡ CD SIGNAL
- ➡ MAIN SIGNAL
- ➡ REC SIGNAL
- ➡ TUNER SIGNAL
- ➡ TAPE (A) SIGNAL
- ➡ TAPE (B) SIGNAL

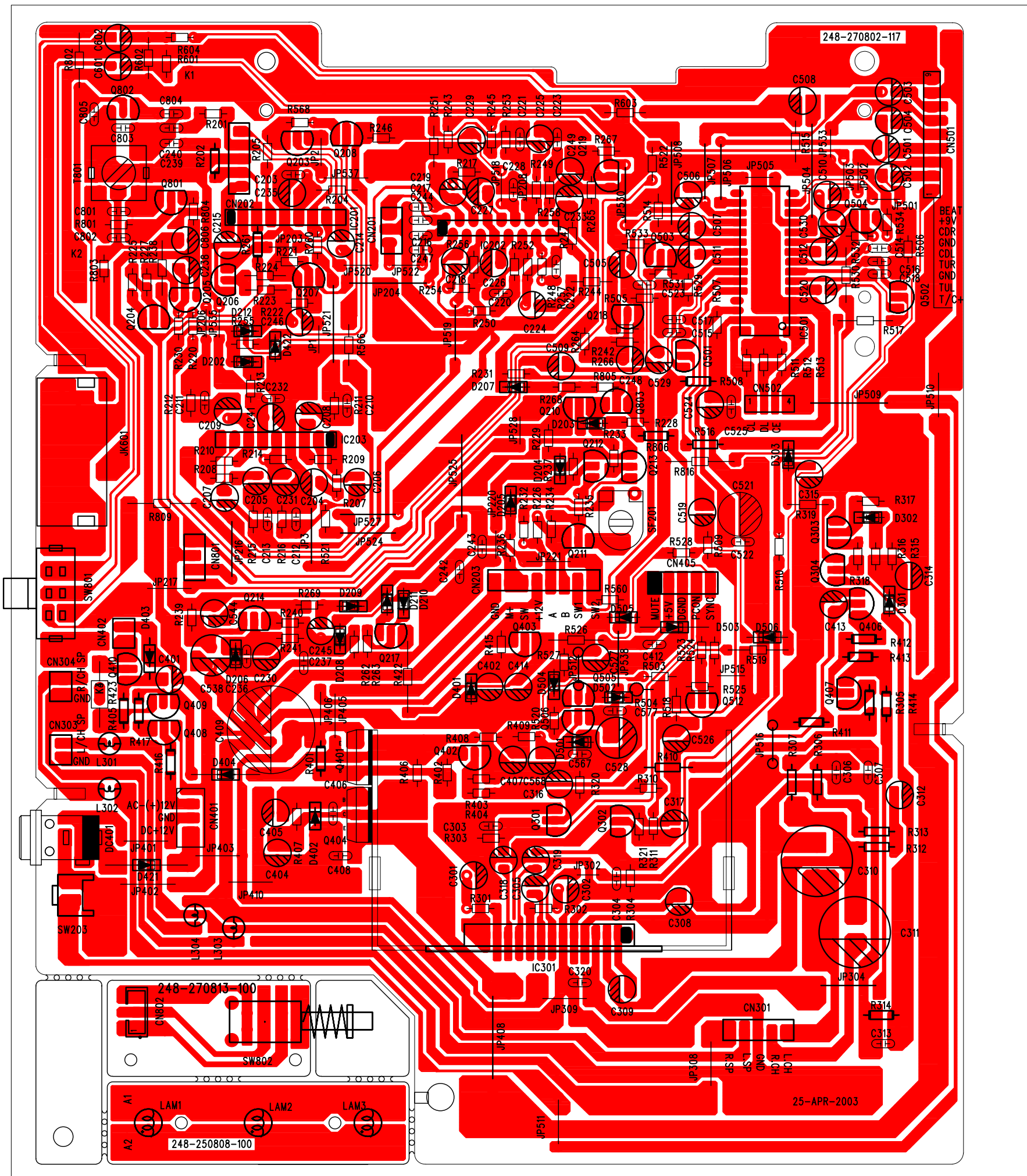
CAUTION:

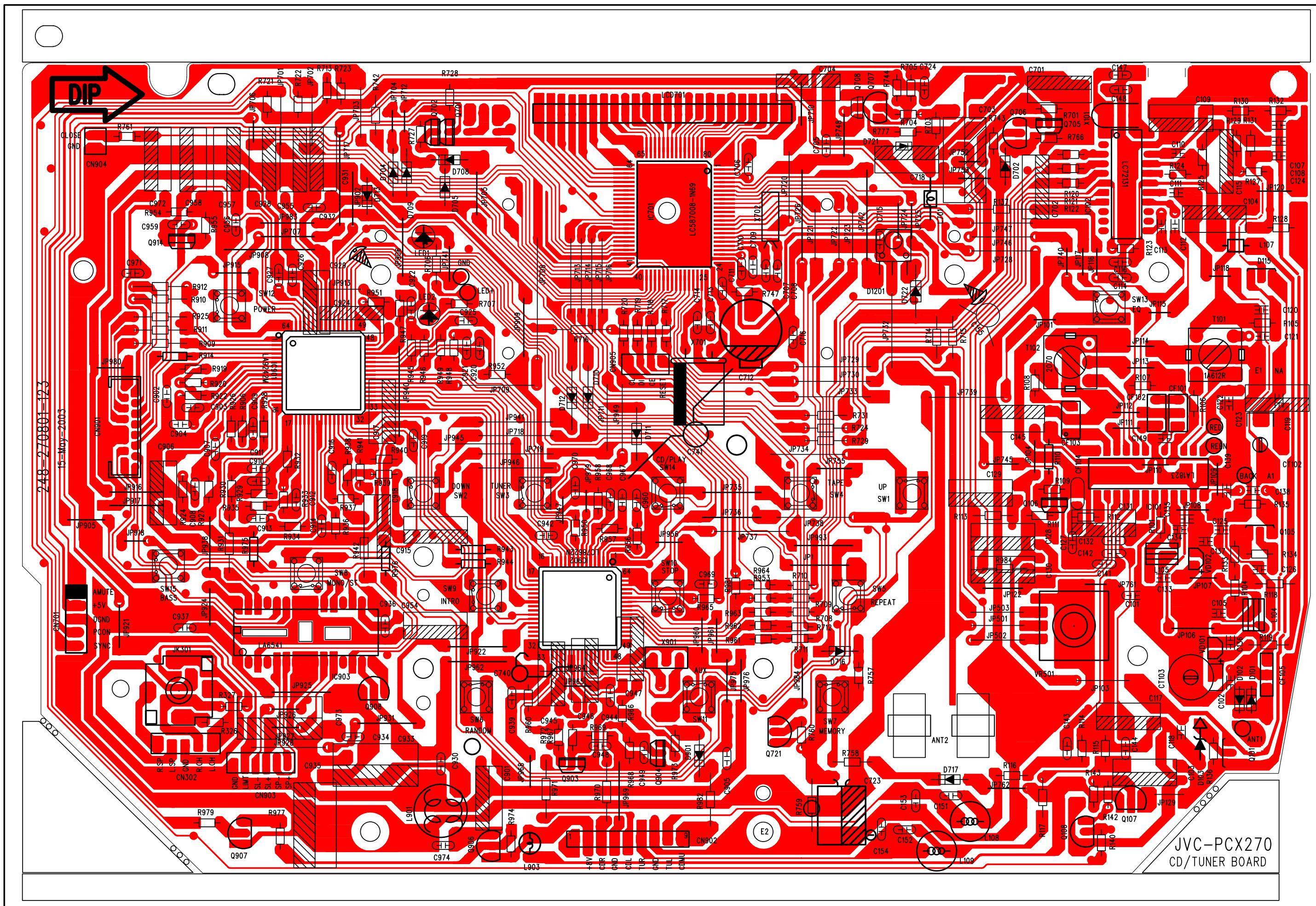
- 1).DISCONNECT POWER CORD BEFORE SERVING
- 2).RECOMMEND THE UNIT BE OPERATED BY 12 VOLTS DURING TROUBLE SHOOTING.
- 3).COMPONENTS MARKED WITH Δ HAVE CRITICAL CHARACTERISTIC. ONLY REPLACE WITH THE COMPONENT OF THE SAME TYPE NUMBER.
- 4).SUBJECT TO CHANGE WITHOUT NOTICE.

DRAWN: XUI SHUI HUIA		DATE: 2003-Mar-15		TITLE: PC-X270 AUDIO BOARD	
DESIGNED:	DATE:	CODE:	SIZE:	DRAWING NO.:	REV:
QUALITY CONTROL:	DATE:	RELEASED:	DATE:	SCALE:	SHEET: OF



2003-MAR-12 JVC -(PC-X270) CD/TU BOARD
 XU SHUI HUA





JVC-PCX270
CD/TUNER BOARD

248-270801-123

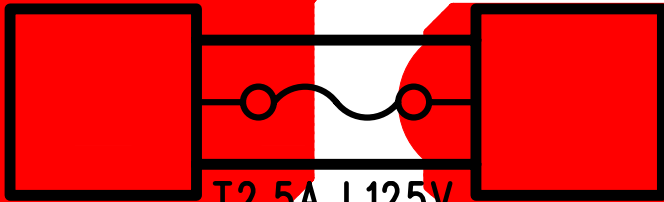
13-May-2003

248-250812-100

CAUTION:

FOR CONTINUED
PROTECTION
AGAINST RISK OF FIRE,
REPLACE ONLY WITH SAME
TYPE 2.5A / 125V FUSE

18-MAY-2001

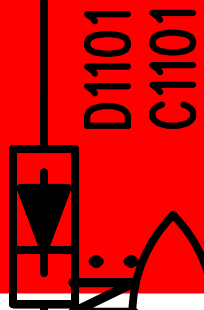


FS1101

AC+12V
GND
DC+12V



CN1101



C1102

C1103



C1104



C1105



D1104

8

AC1



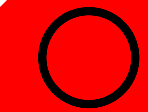
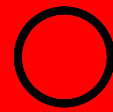
AC2



BATT
DC+12V

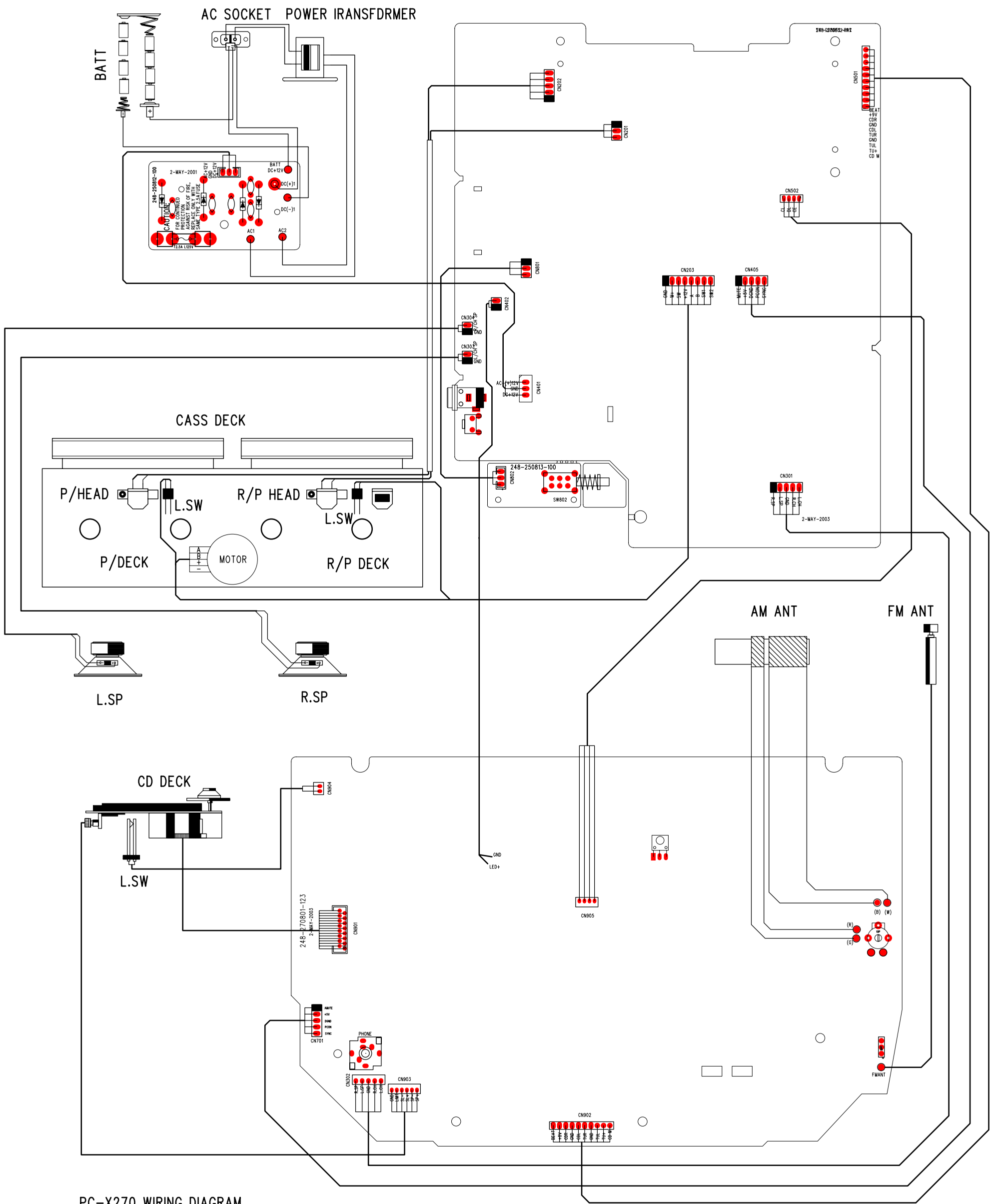


DC(+)

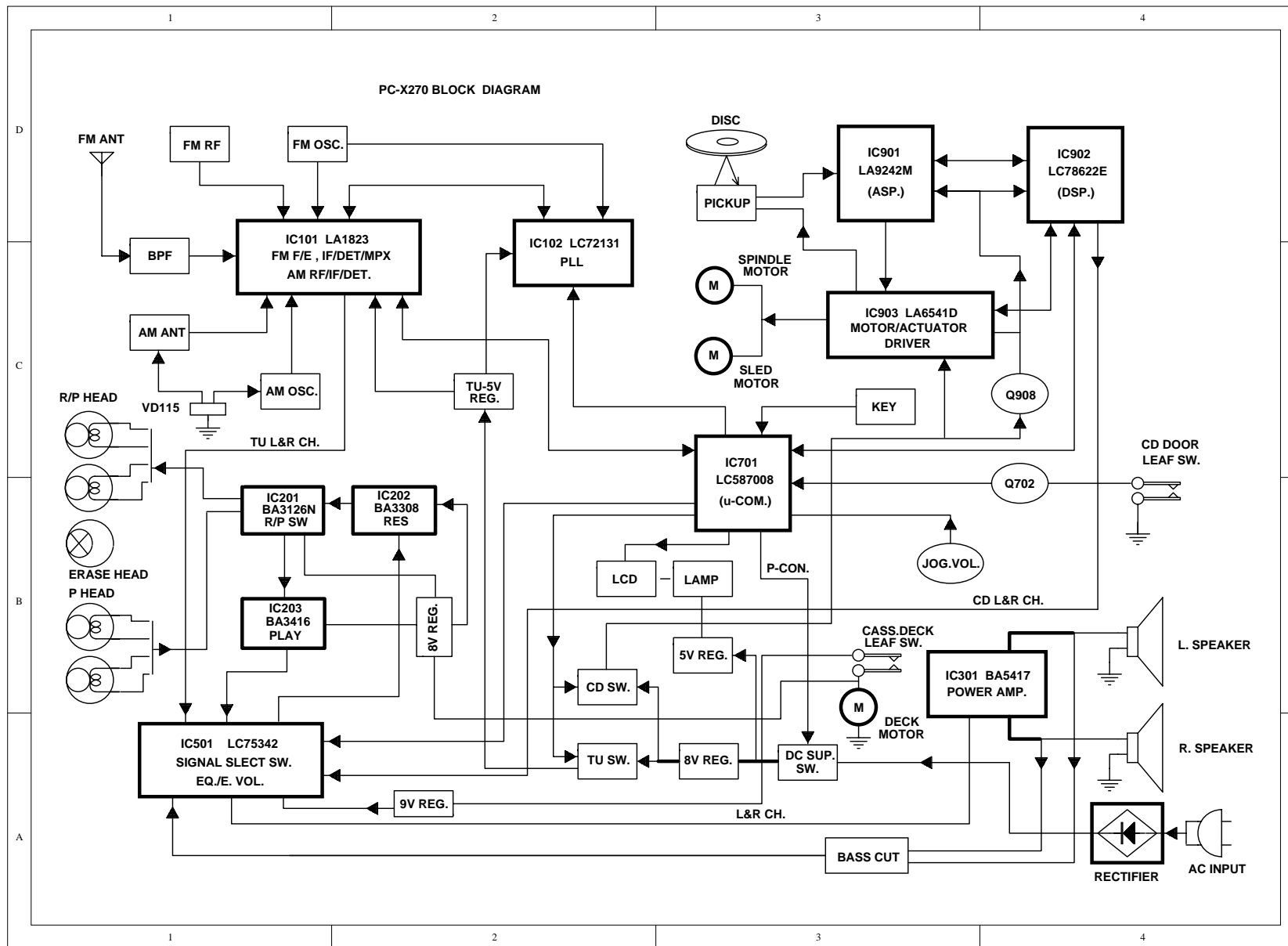


DC(-)





PC-X270 WIRING DIAGRAM



Adjustment method MODEL : PC-X270

■ Measurement instruments required for adjustment

- 1 Low frequency oscillator
This oscillator should have a capacity to output 0dBs to 600 at an oscillation frequency of 50Hz-20KHz
- 2 Electronic voltmeter
- 3 Distortion meter
- 4 Frequency counter
- 5 Wow & flutter meter
- 6 Test tape
TCC-112 : Tape speed and running unevenness (3KHz)
TCC-140 : Reference level (1KHz)
TCC-182A : Head angle (8KHz) , playback frequency characteristics (1KHz) and dubbing frequency characteristics (125Hz and 8KHz)
Because of frequency - mixed tape with 125 , 1K , 8K and 14KHz (250nWb/m -24dB) , use this tape together with a filter .
- 7 Black tape
TYPE I : AC - 225
TYPE II : AC - 514
- 8 Torque gauge : For play and back tension
FWD(TW2111A) , REV(TW2121a) and FF/REW(TW2231A)

■ Measurement conditions

Power supply voltage ----- AC 120V (60Hz)
Reference output ----- Speaker : 0.866V/3
Headphone : 0.245V/32
Reference frequency and ----- 1KHz , AUX : 450-500mV
input level
Input for confirming recording and ----- AUX : -28dBs
playback characteristics
Measurement output terminal ----- Speaker J3002
* Load resistance ----- 3

■ Radio Input signal

AM frequency ----- 400Hz
AM modulation ----- 30%
FM frequency ----- 1 KHz
FM frequency deviation ----- 22.5KHz

● Tuner section

Voltage applied to tuner ----- +B:DC 4.9V
VT:DC 12V
Reference measurement ----- 26.1mV(0.28V)/3
output
Input positions ----- AM : Standard loop antenna
FM : TP1 (hot) and TP2 (GND)

● Standard measurement position of volume

Bass ----- Off
Active hoper bass pro ----- Off
Up and down adjustment of volume ----- Vol : 23

Precautions for measurement

- 1 Apply 30PF and 33 Kohm to the IF sweeper output side and 0.082UF and 100 Kohm in series to the sweeper input side .
- 2 The IF sweeper output level should be made as low as possible within the adjustable range .
- 3 Since the IF sweeper is a fixed device , there is no need to adjust this sweeper .
- 4 Since a ceramic oscillator is used , there is no need to perform any MIX adjustment .
- 5 Since a fixed coil is used , there is no need to adjust the FM tracking .
- 6 The input and output earth systems are separated . In case of simultaneously measuring the voltage in both of the input and output systems with an electronic voltmeter for two channels , therefore , the earth should be connected particularly carefully .
- 7 In the case of BTL connection amp . , the minus terminal of speaker is not for earthing . Therefore , be sure not to connect any other earth terminal to this terminal . This system is of an BTL system .
- 8 For connecting a dummy resistor when measuring the output , use the wire with a greater code size .
- 9 Whenever any mixed tape is used , use the band pass filter (DV-12V)

TAPE DECK ADJUSTMENTS

1 HEAD AZIMUTH ADJUSTMET

- (1) Load the test tape TCC-182A 8KHz for azimuth adjustment.
- (2) Press the PLAY button.
- (3) Use a cross-tip screwdriver to turn the screw for azimuth adjustment so that the left and right output are maximized
- (4) Press the STOP button
- (5) After completion of the adjustment. Use thread lock(TB-1401B) to secure the azimuth-adjustment screw.

2 AC BIAS FREQUENCY ADJUSTMENTS

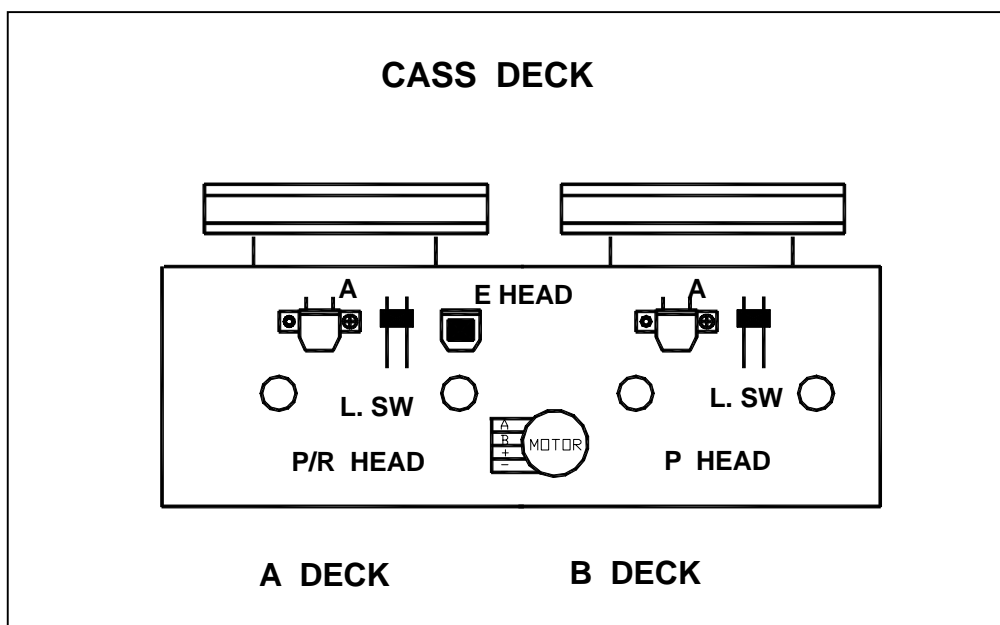
- (1) Connect frequency counter to CN202(BS);
- (2) R/P swith in recording state;
- (3) Adjusting T801 use a plastic screwdriver, AC bias frequency;61+-1KHZ..

3 TAPE SPEED ADJUSTMENT

- (1) Insert the test tape(MTT-111N,3,000 HZ)
- (2) Press the PLAY button.
- (3) Use a flat-tip screwdriver to turn the SF201

adjust SF201 so that the frequency counter become 3,000Hz

TAPE HEAD AND SPEED ADJUSTMENT DIAGRAM



■ Tape recorder section

Items	Measurement conditions	Measurement method	Standard Values	Adjusting] positions
Confirmation of head angle	Test tape :TA-182A(8KHz) Measurement output terminal :Speaker terminal Sparker R (Load resistance:3) :Headphone terminal	1 Playback the test tape TCC-182A (8KHz) 2 With the recording & playback mechanism, adjust the head azimuth screw so that the left and right output levers become maximum, After adjustment, lock the head azimuth at least by half turn.	Maximum output	Adjust the head azimuth screw only when the head has been changed
Confirmation of tape speed	Test tape :TCC-112(3000Hz) Measurement output terminal :Headphone terminal	Adjust SF201 so that the frequency counter reading becomes 3,010Hz +/-15Hz when playing back the test tape TCC-112 (3000Hz) with playback and recording mechanism after ending forward winding if the taoe.	Tape speed of deck :3,010Hz +/-15Hz	SF201

■ Reference Values for Confirmation Items

ITEMS	Measurement conditions	Measurement method	Standard Values	Adjusting] positions
Wow & flutter	Test tape :TCC-112(3000Hz) Measurement output terminal :Headphone terminal	When the test tape TCC-112 (3000Hz) has been played back with the recording and playback mechanism at the beginning of forward winding, the frequency counter reading of wow & flutter should be 0.25% or less (WRMS).	0.25% or less (WRMS)	

■ Electrical Performance

ITEMS	Measurement conditions	Measurement method	Standard Values	Adjusting] positions
Adjustment of recording bias current (Reference Value)	· Mode:Forward or reverse mode · Recording mode · Test tape TDK-60 Measurement output terminal :Both recording and headphone terminals	1 With the recording and playback mechanism, load thd test tapes TDK-60 , and set the mechanism to the recording and pausing condition in advance . 2 After connecting 100 in series to the recorder head, measure the bias current with a valve voltmeter at both of the terminals	270 μ A +/-0.5 μ A	

Adjustment of recording and playback frequency characteristics	Reference frequency :1KHz and 8KHz (REF.: -20dB) Test tape TDK-60 Measurement input terminal :OSC IN	<p>1 with the recording and playback mechanism, load the test tapes (TDK-60) and set the mechanism to the recording and pausing condition in advance</p> <p>2 While repetitively inputting the reference frequency signal of 1KHz and 10KHz from OSC IN, record and playback the tape.</p> <p>3 While recording and playback the test tape in TYPE , adjust for Lch and for Rch so that the output deviation between 1KHz and 8KHz must be in -1dB</p>	Output deviation between 1KHz and 8KHz : -1dB +/-2dB	
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■ Reference Values for Electrical Function Confirmation Items

Items	Measurement conditions	Measurement method	Standard Values	Adjusting] positions
Recording bias frequency	Forward or reverse · Test tape TDK-60 · Measurement terminal : BIAS TP on P.C. board	<p>1 While changing over to and from BIAS 1 and 2, confirm that the frequency is changed</p> <p>2 With the recording and playback mechanism, load the test tape. (TDK-60) , and set the mechanism to the recording and pausing condition in advance.</p> <p>3 Confirm that the BIAS TP frequency on the P.C. board is 61KHz +/-1KHz</p>	61KHz +/-1KHz	

Flow of functional operation until TOC read

