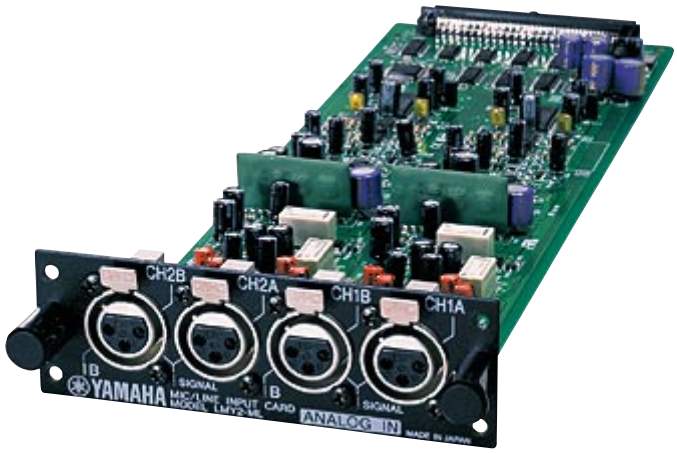
MIC/LINE INPUT CARD

LMY2-ML

SERVICE MANUAL



■ **CONTENTS**

YAMAHA
HAMAMATSU, JAPAN
0.27K-9551 Printed in Japan '00.3

PA 011502
200004**-32000

IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground bus in the unit (heavy gauge black wires connect to this bus).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and /or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT-SOEVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

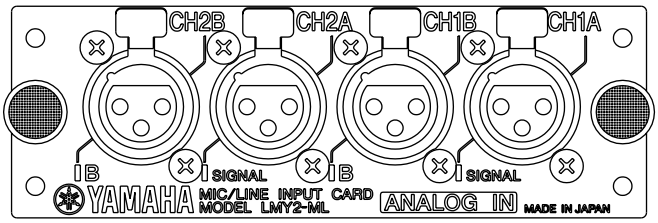
SPECIFICATIONS

Input Terminals	GAIN	Actual Load Impedance	For Use With Nominal	Input Level		Connector
				Nominal	Maximum. Before Clip	
CH1A, CH1B CH2A, CH2B	-68 dB	3k ohm	50-600 ohm Mice & 600 ohm Lines	-68 dB (309 μV)*	-54 dB (1.55 mV)*	XLR-3-31 type (Balanced)**
	+10 dB			+10 dB (2.45 V)*	+24 dB (12.3 V)*	

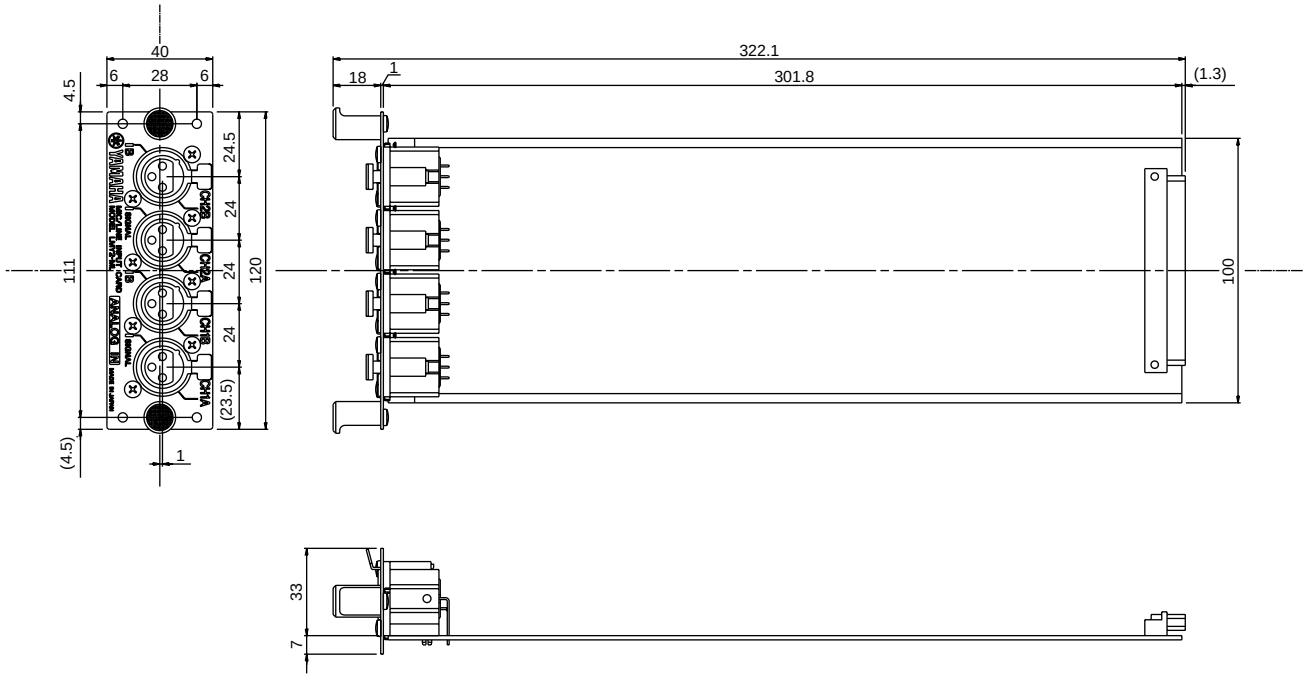
* 0 dB is referenced to 0.775 Vrns.

** 1=GND, 2=HOT, 3=COLD

PANEL LAYOUT

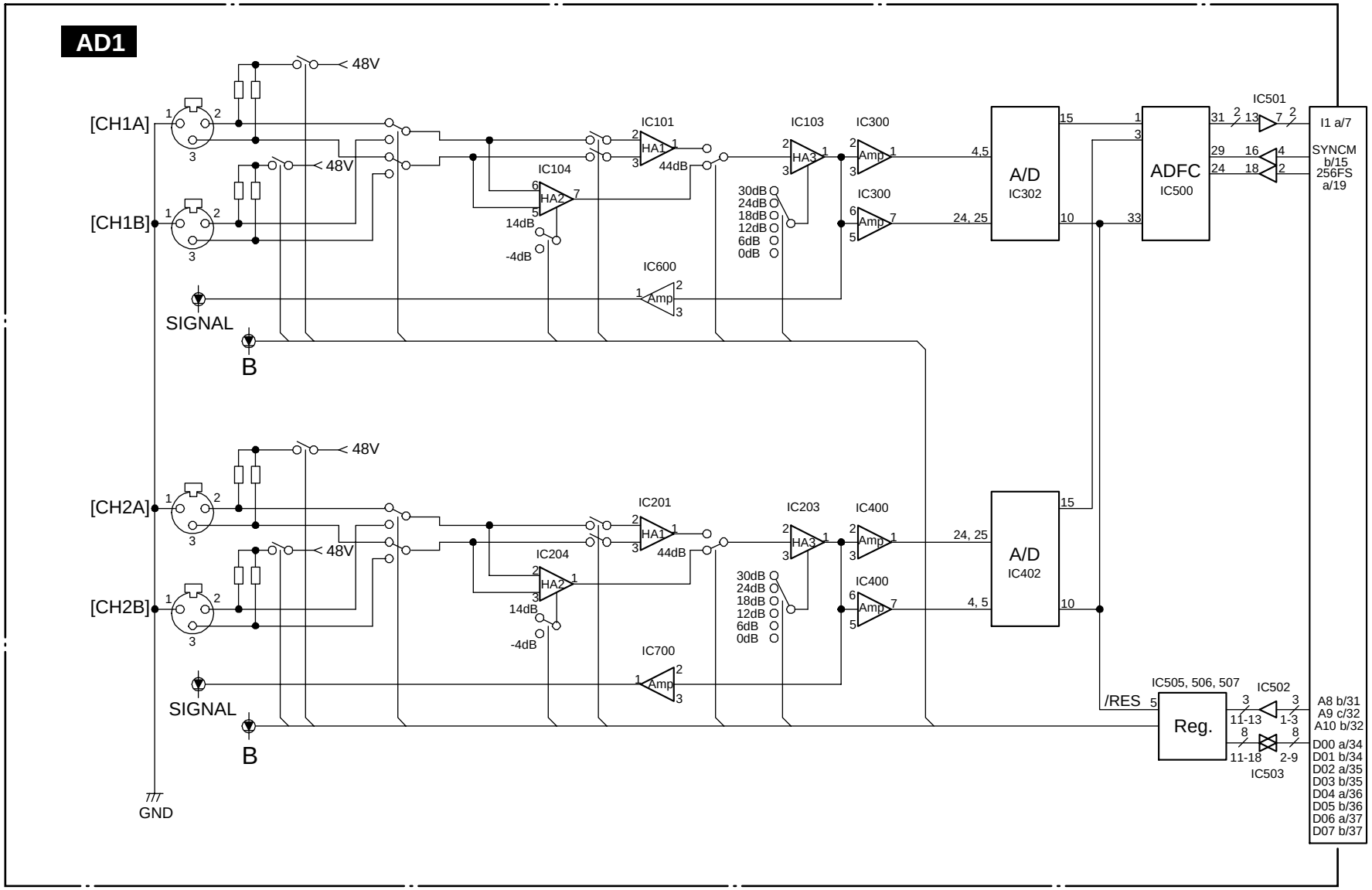


DIMENSIONS

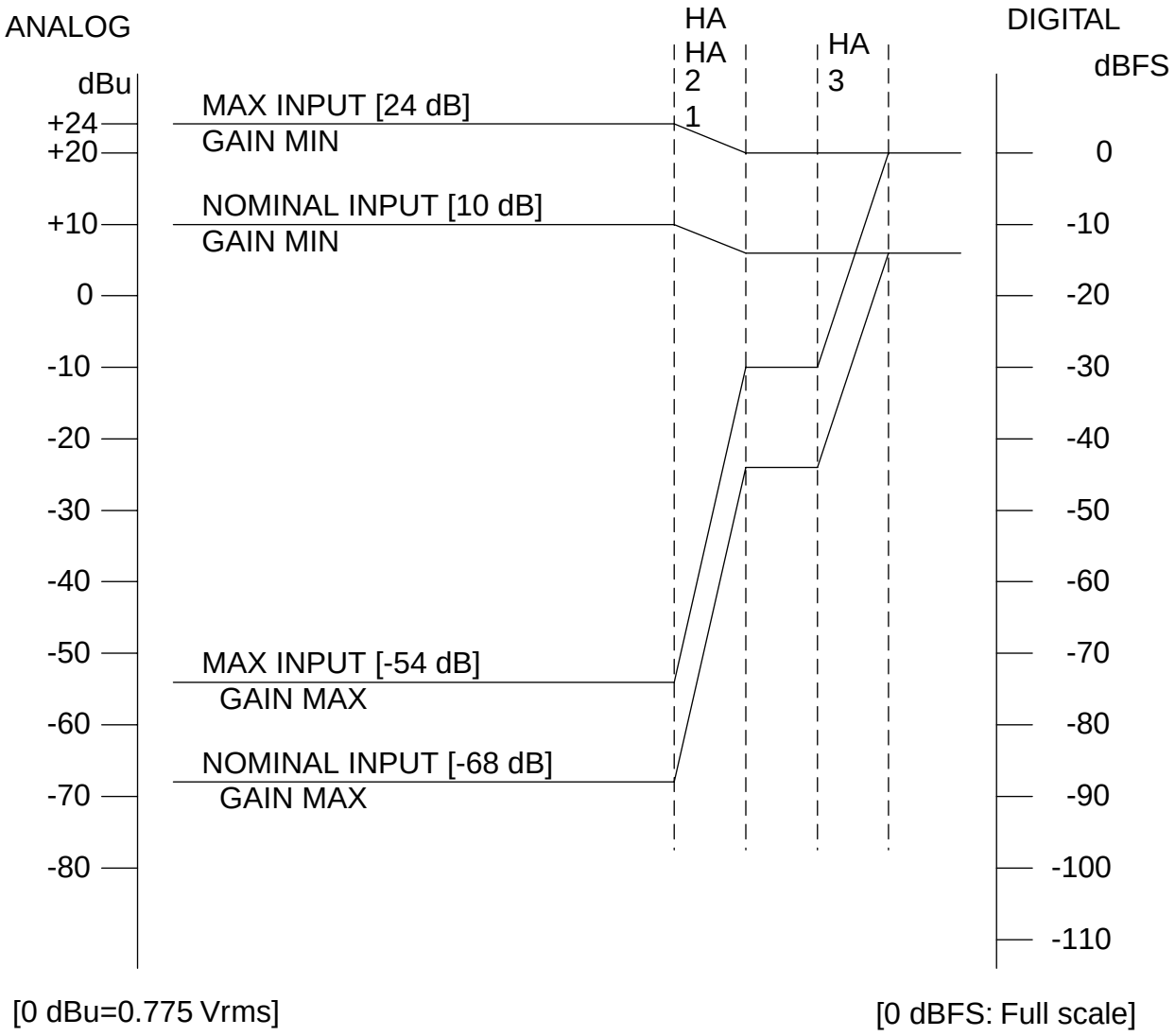


Unit: mm

BLOCK DIAGRAM



LEVEL DIAGRAM



■ LSI PIN DISCRIPTION

● **YAC509** (XM167A00) **ADFC** AD1: IC500

PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	SI0 (L)	I	Input to Lch LO gain side (IMOD0=1) Input to Lch (IMOD0=0)	23	XO	O	Connect X'tal OUT crystal oscillator or input 256fs clock to XI.
2	SI1 (L)	I	Input to Lch HI gain side (IMOD0=1)	24	XI	I	Connect X'tal IN crystal oscillator or input 256fs clock to XI.
3	SI0 (R)	I	Input to Rch LO gain side (IMOD0=1) Input to Rch (IMOD0=0)	25	CK256A	O	Output clock which is inputted to 256fs OUT XI.
4	SI1 (R)	I	Input to Rch HI gain side (IMOD0=1)	26	MCK	O	Output 128fs clock.
5	WCKI	I/O	Word clock input/output of serial input	27	BCKO	O	Output 64fs bit clock which divides MCK (It rises at the head of SYNC).
6	BCKI	I/O	Bit clock input/output of serial input	28	WCKO	O	Output 1fs word clock which divides MCK and of which the duty ratio is 50%.
7	IMOD0 (*)	I	Setting of serial input modes. "1" = parallel, "0" = serial	29	SYNC	I/O	Input/output of 1fs synchronous clock (The fall of SYNC makes the 6th rise of 256fs the head of WC.)
8	IMOD1 (*)	I	Setting of serial input modes. "1" = asynchronous, "0" = synchronous	30	SOR	O	Output in order of Rch data and Lch data.
9	ITM0 (*)	I	Setting of input data timing	31	SOL	O	Output in order of Lch data and Rch data.
10	ITM1 (*)	I	(〃)	32	CKSEL (*)	I	Switching of input or output of SYNC. "1" = output, "0" = input.
11	GSEL0 (*)	I	Setting of a floating gain	33	$\overline{\text{RESET}}$	I	Internal reset at "0".
12	GSEL1 (*)	I	(〃)	34	$\overline{\text{MUTE}}$ (*)	I	Output "0" for output mute all at "0".
13	DFC (*)	I	Digital filter ON/OFF ("1"=ON, "0"=OFF)	35	OMD (*)	I	SOL, SOR output (switching of "0"MBS First/"1" LSB First).
14	GCC (*)	I	Automatic adjustment of floating gain ON/OFF ("1"=ON, "0"=OFF)	36	$\overline{\text{NSC}}$ (*)	I	Noise shooping ON/OFF. "1"=OFF, "0"=ON.
15	HTC (*)	I	Quasi instantaneous cross fade bold time ON/OFF ("1"=ON, "0"=OFF)	37	Test4	O	Normally non-connected.
16	CFT0 (*)	I	Setting of cross fade time	38	Test5	O	〃
17	CFT1 (*)	I	(〃)	39	VDD		VDD(+5V)
18	GND		GND	40	GND		GND
19	VDD		VDD(+5V)	41	$\overline{\text{DLSP0}}$ (*)	I	Floating delay switching. ("1"=16 sample delay, "0"=0 sample delay)
20	Test1 (*)	I	Normally non-connected	42	$\overline{\text{FLSW}}$ (*)	I	Floating inhibiting SW. "1"= floating, "0"= floating is inhibited. ADC of output wave at HI level side.
21	Test2 (*)	I	〃	43	Test6 (*)	I	Normally non-connected.
22	Test3	O	〃	44	Test7 (*)	I	〃

ITM1	ITM0	Input timing (format)
0	0	Move forward 20 bits closer
0	1	16 bits B.B format
1	0	18 bits B.B format
1	1	20 bits B.B format

GSEL1	GSEL0	Floating gain
0	0	12 dB (2 bits)
0	1	18 dB (3 bits)
1	0	24 dB (4 bits)
1	1	30 dB (5 bits)

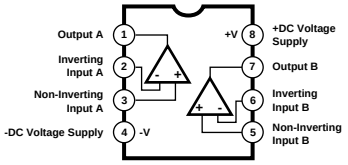
CFT1	CFT0	Cross fade time
0	0	0 ms
0	1	53 ms
1	0	106 ms
1	1	212 ms

• **AK5392-VS-E2** (XV065A00) **A/D CONVERTER** AD1: IC302,402

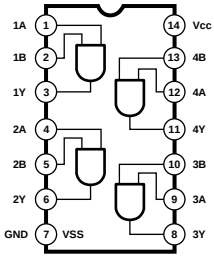
PIN No.	NAME	I/O	FUNCTION	PIN No.	NAME	I/O	FUNCTION
1	VREFL	O	L ch standard voltage output (+3.75V)	15	SDATA	O	Serial data output
2	GNDL		L ch standard grand (0 V)	16	FSYNC	I/O	Frame synchronization clock
3	VCOML	O	L ch common voltage (+2.5 V)	17	MCLK	I	Master clock input
4	AINL+	I	L ch analog +input	18	CMODE	I	Master clock select
5	AINL-	I	L ch analog -input	19	HPFE	I	HPF enable pin
6	ZCAL	I	Zero calibration "L"=VCOML, VCOMR "H": Analog input (AINLI,AINRI)	20	TEST	I	Test pin
7	VD		Power supply for digital	21	B GND		Ground (0 V)
8	DGND		Ground for digital	22	A GND		Ground for analog (0 V)
9	CAL	O	Calibration status	23	VA		Power source for analog (5V)
10	RST	I	Reset	24	AINR-	I	Rch analog -input
11	SMODE2	I	Serial interface mode select	25	AINR+	I	Rch analog +input
12	SMODE1	I		26	VCOMR	O	R ch common voltage (2.5 V)
13	LSCK	I/O	Clock for L/R ch select	27	GNDR		R ch standard glound (0 V)
14	SCLK	I/O	Serial data clock	28	VREFR	O	R ch standard voltage output (3.75 V)

IC BLOCK DIAGRAM

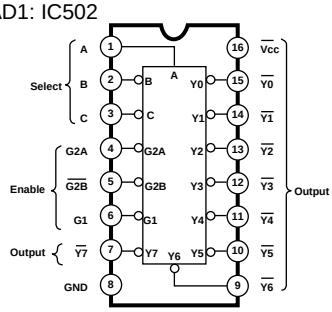
● **NJM2068MD-T1** (XJ553A00)
Dual Operatinal Amplifier
AD1: IC104, 105, 204, 205, 300, 301, 400, 401, 600, 700



● **HD74LV08AFPEL**(IS000800)
Qual 2 Input AND
AD1: IC508

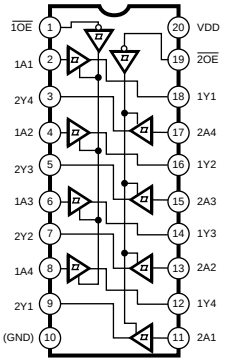


● **SN74LV138ANSR** (IS013810)
DECODER
AD1: IC502

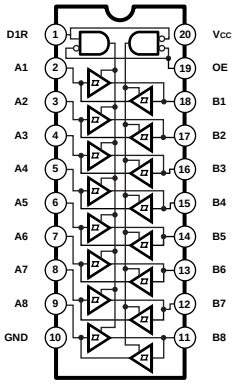


ENABLE INPUTS			SELECT INPUTS			OUTPUTS							
G1	G2A	G2B	C	B	A	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
X	H	X	X	X	X	H	H	H	H	H	H	H	H
X	X	H	X	X	X	H	H	H	H	H	H	H	H
L	X	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	L	H	H	H	H	H	H	H
H	L	L	L	L	H	H	L	H	H	H	H	H	H
H	L	L	L	H	L	H	H	L	H	H	H	H	H
H	L	L	L	H	H	H	H	H	L	H	H	H	H
H	L	L	H	L	L	H	H	H	H	L	H	H	H
H	L	L	H	L	H	H	H	H	H	H	L	H	H
H	L	L	H	H	L	H	H	H	H	H	H	L	H
H	L	L	H	H	H	H	H	H	H	H	H	H	L

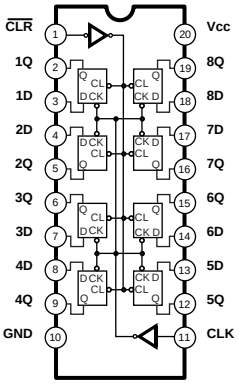
● **HD74LV244AFPEL**(IS024400)
Octal 3-State Bus Buffer
AD1: IC501



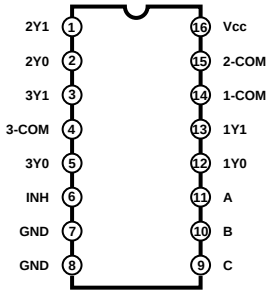
● **HD74LV245AFPEL**(IS024500)
Octal 3-State Bus Buffer
AD1: IC503, 504



● **HD74LV273AFPEL**(IS027300)
Octal 3-State D-Type Flip Flop
AD1: IC505-507

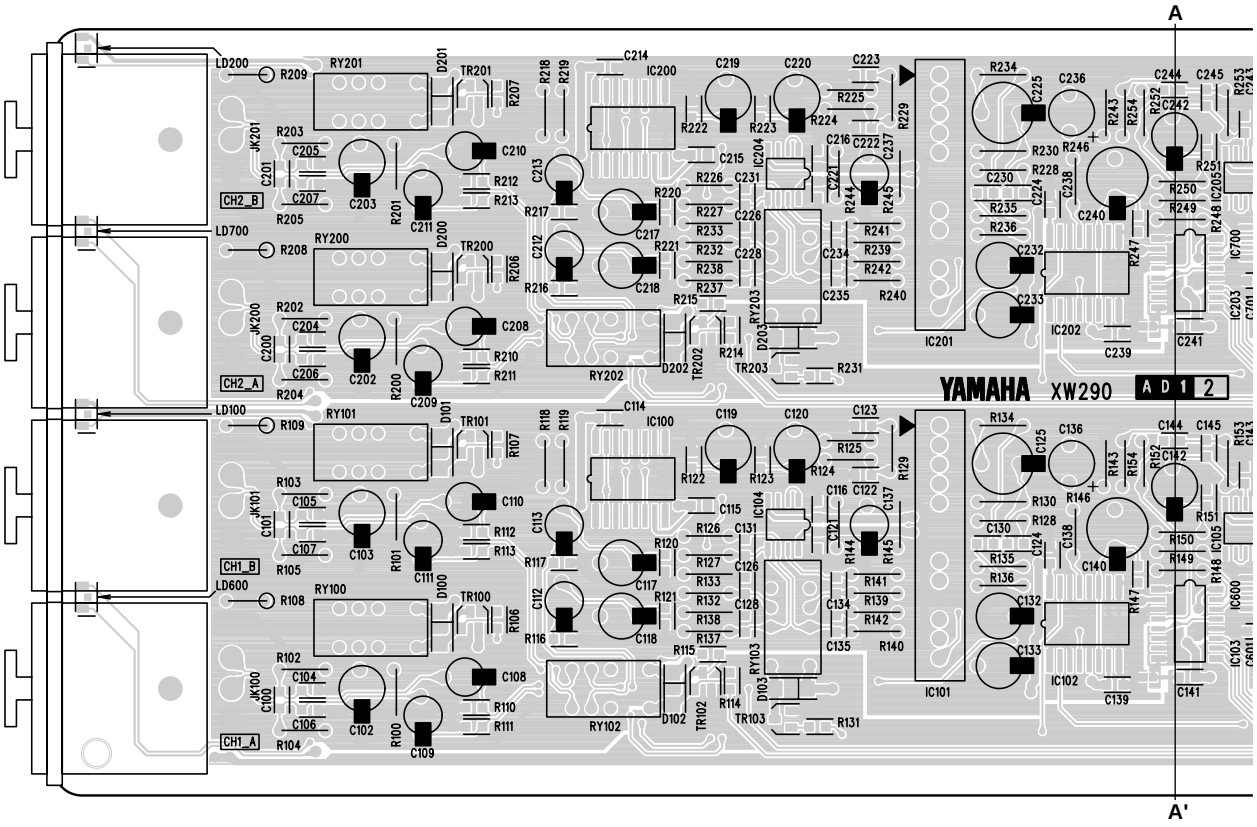


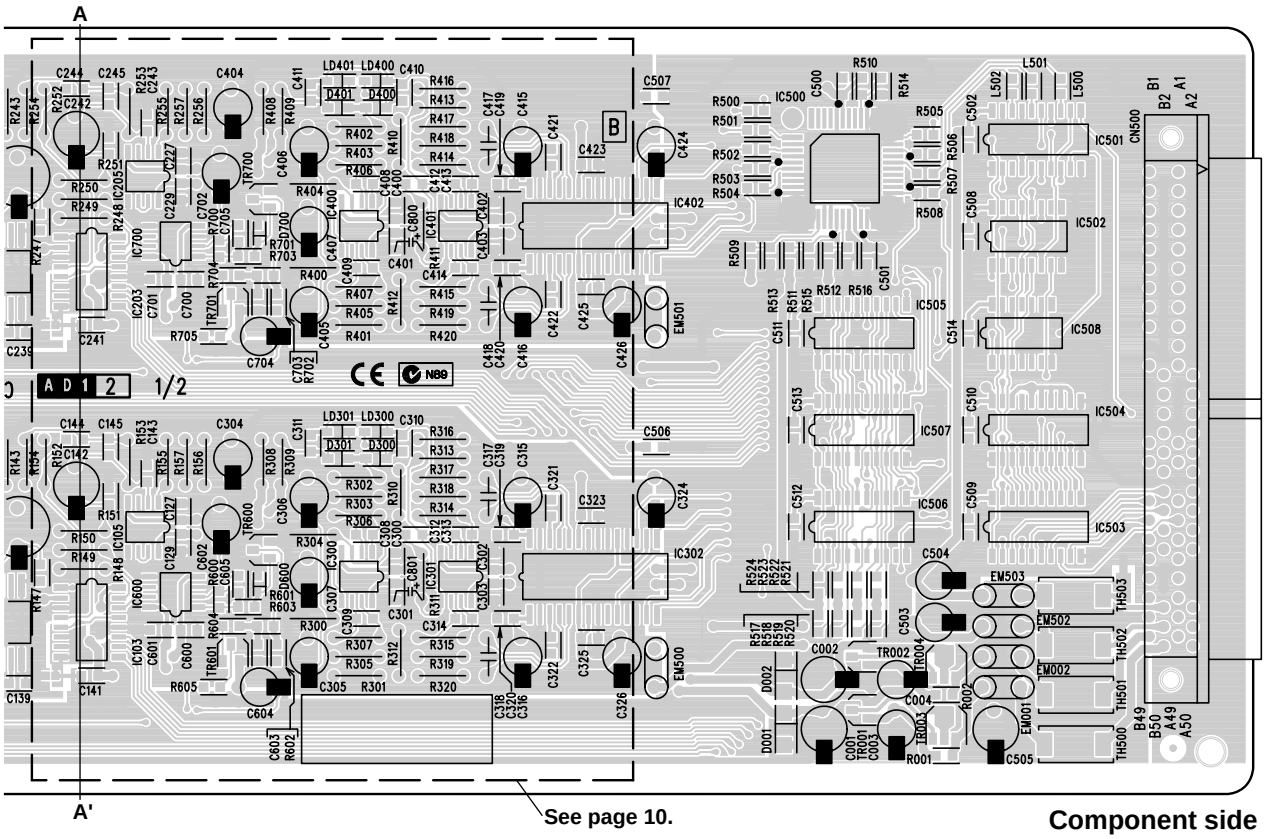
● **HD74LV4053AFPEL**(IS405300)
MULTIPLEXER
AD1: IC103, 203



■ CIRCUIT BOARD

●AD1 Circuit Board



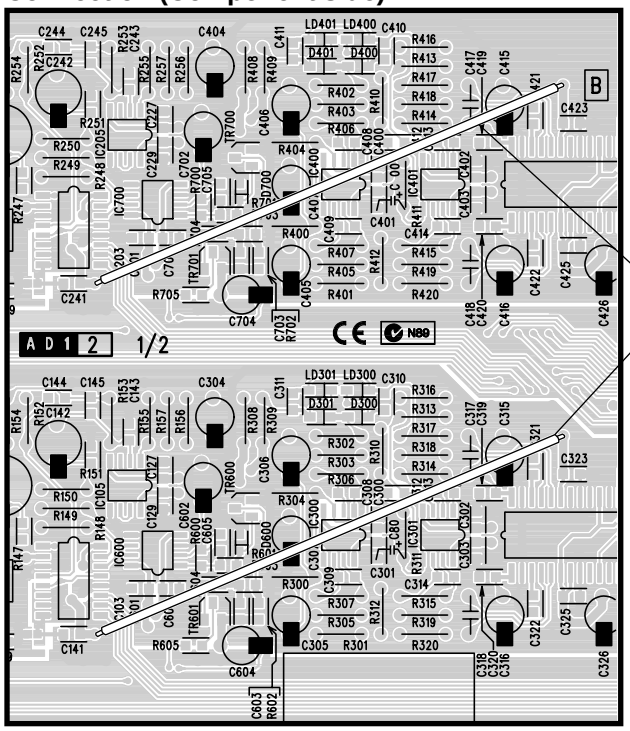


See page 10.

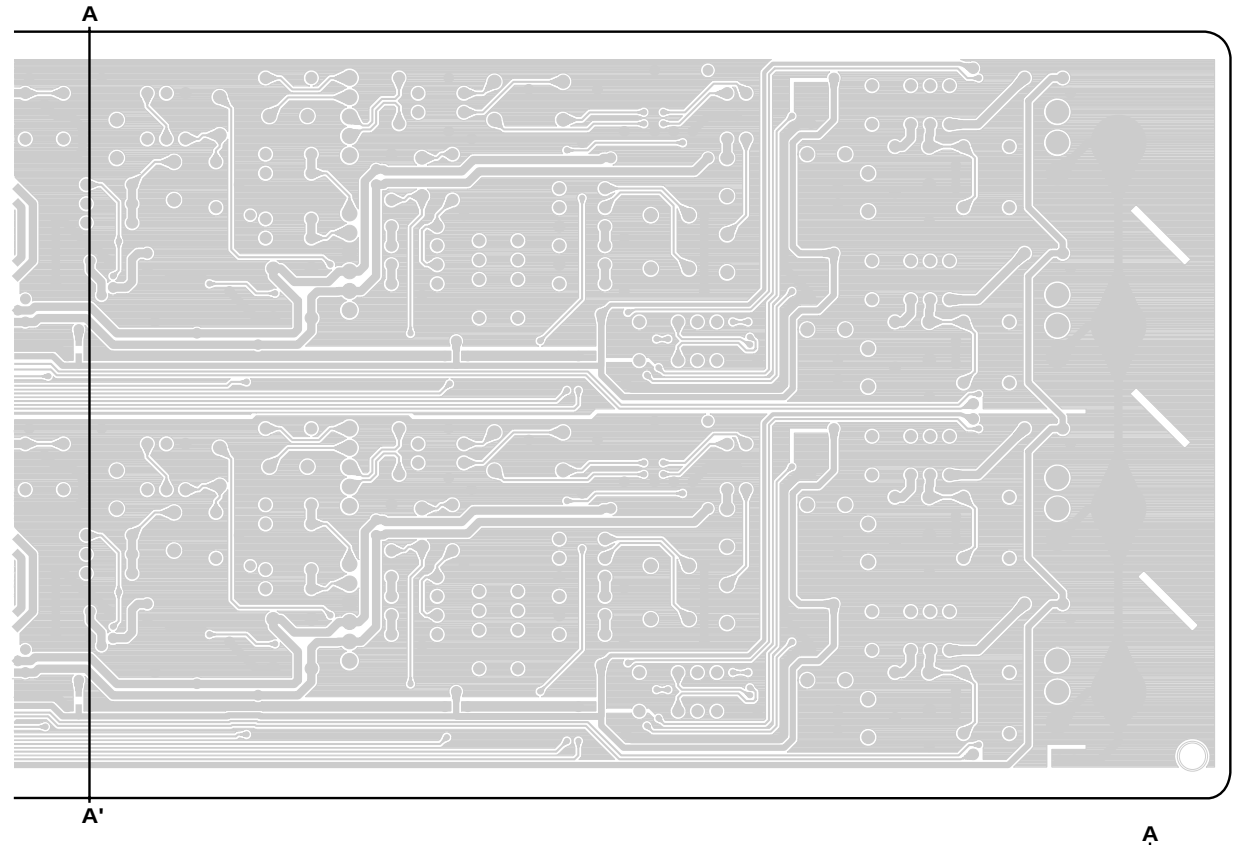
Component side

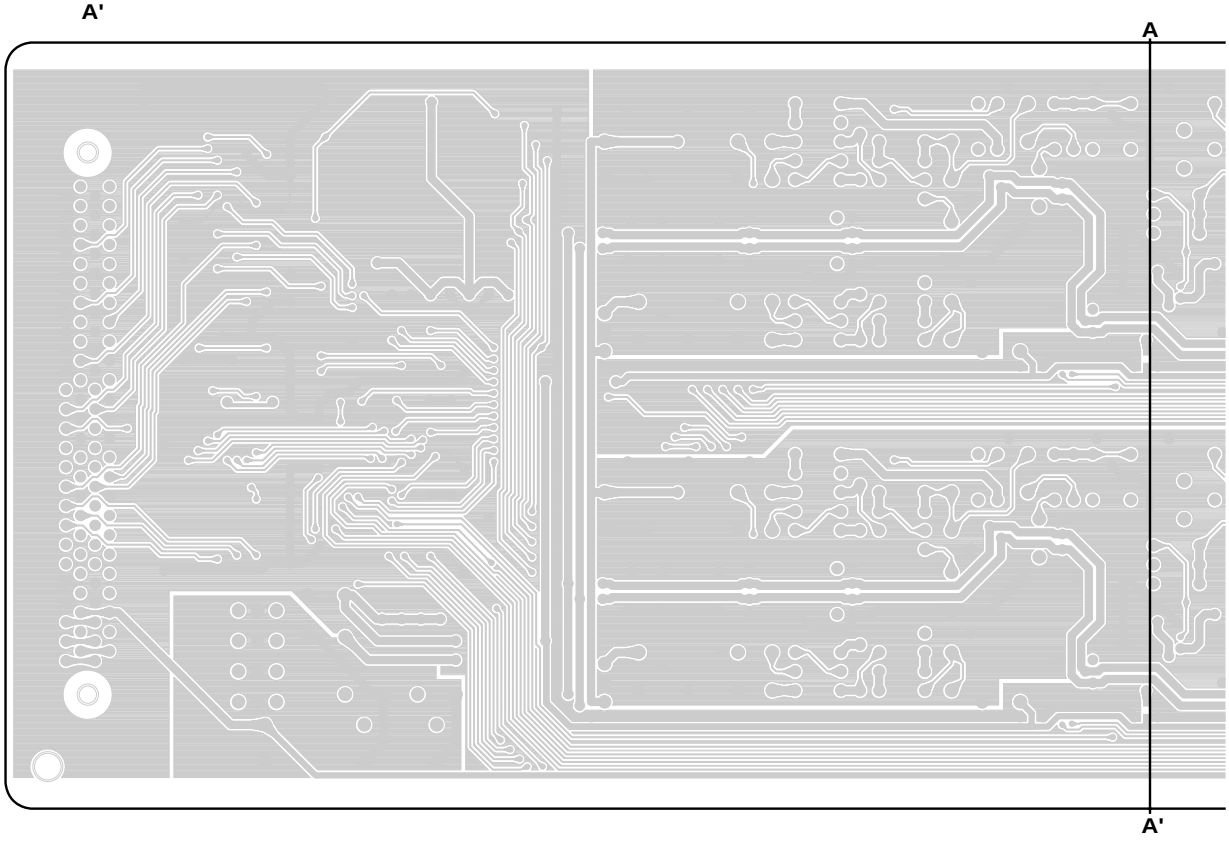
AD1: V412790

Connection (Component side)



●AD1 Circuit Board





Pattern side

AD1: V412790

MIC/LINE INPUT CARD

LMY2-ML

PARTS LIST

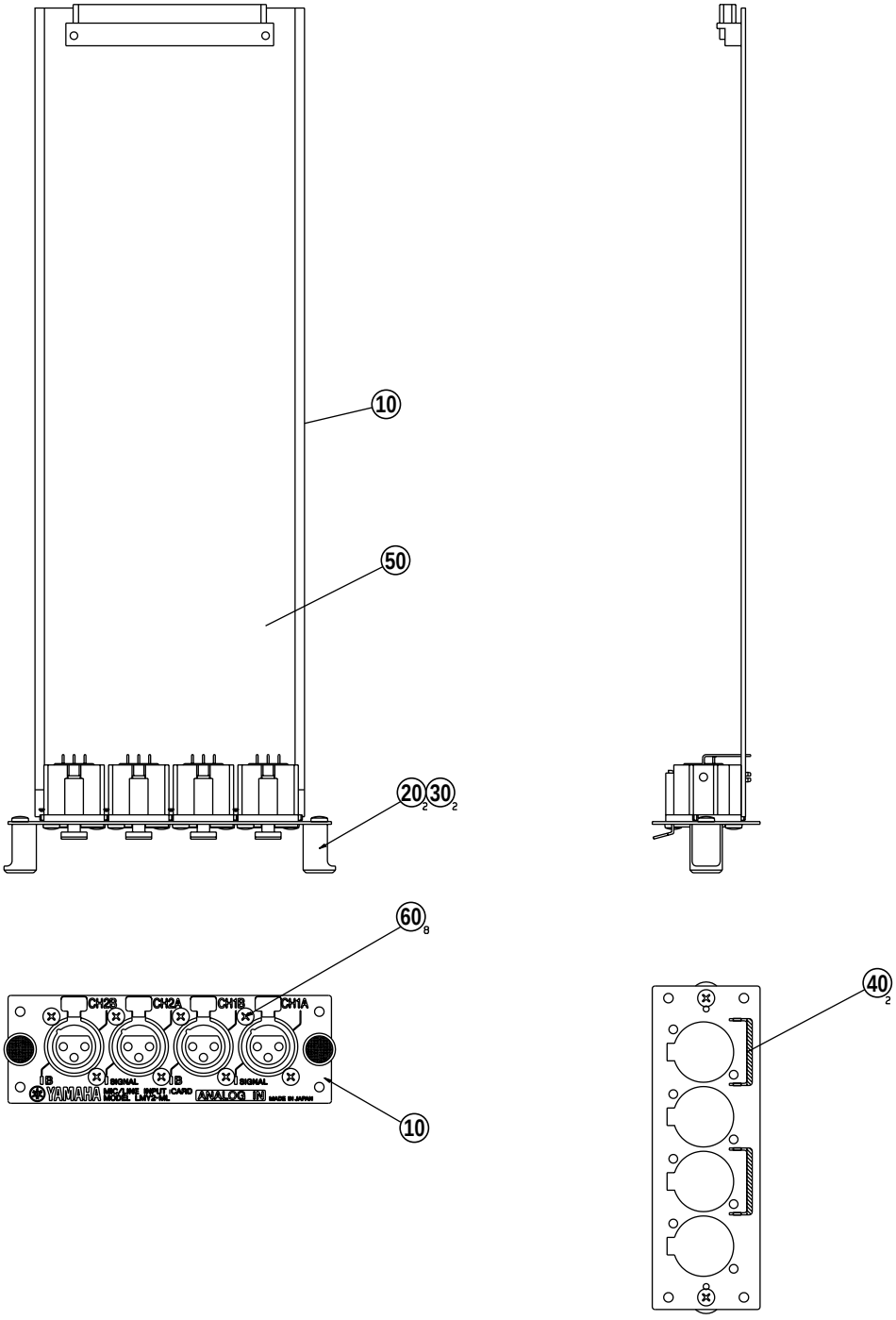
■ **CONTENTS**

Notes: DESTINATION ABBREVIATIONS

A: Australian model	J: Japanese model
B: British model	U: U.S. model
C: Canadian model	V: General export model (110V)
E: European model	W: General export model (220V)
H: North European model	X: General export model
I: Indonesian model	Y: Export model

- The numbers in "QTY" shows quantities for each unit.
- The parts with "--" in "Parts No." are not available as spare parts.
- The mark " } " in the remarks column indicates that these parts are interchangeable.

OVERALL ASSEMBLY



	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
			OVERALL ASSEMBLY			LMY2-ML		
		--	Overall Assembly	LMY2-ML		(V451590)		
*	10	V4102500	Panel					
	20	VV441000	Knob	ABS(Black)			2	01
	30	EP600190	Bind Head Tapping Screw-B	3.0X8 MFZN2BL			2	01
*	40	V4238900	Lens				2	
*	50	V4127900	Circuit Board	AD1		(XW290B0)		
	60	VS863000	Bonding Head Screw	3.0X6 MFZN2BL			8	01

*: New parts

RANK: Japan only

■ ELECTRICAL PARTS

	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
			ELECTRICAL PARTS			LMY2-ML		
*		**V4127900**	Circuit Board	LMY2ML AD1		(XW290B0)		
*	C001	**V5829200**	Capacitor.	100 20 25SG100M+T				01
*	C002	**V5829200**	Capacitor.	100 20 25SG100M+T				01
*	C003	**V5829400**	Electrolytic Cap.	10 20 25SG100M+T				01
*	C004	**V5829400**	Electrolytic Cap.	10 20 25SG100M+T				01
	C102	**UR867470**	Electrolytic Cap.	47.00 50.0V				01
	C103	**UR867470**	Electrolytic Cap.	47.00 50.0V				01
	C104	**UB051470**	Monolithic Ceramic Cap.	SL 47P 50V				01
	-107	**UB051470**	Monolithic Ceramic Cap.	SL 47P 50V				01
	C108	**VJ097400**	Electrolytic Cap.	10.00 50.0V				01
	-111	**VJ097400**	Electrolytic Cap.	10.00 50.0V				01
*	C112	**V5618900**	Electrolytic Cap.	47.00 25.0V				01
*	C113	**V5618900**	Electrolytic Cap.	47.00 25.0V				01
*	C117	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
*	-120	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
	C125	**UR819100**	Electrolytic Cap.	1000 6.3V				01
*	C132	**V5829200**	Capacitor.	100 20 25SG100M+T				01
*	C133	**V5829200**	Capacitor.	100 20 25SG100M+T				01
	C136	**V5618900**	Electrolytic Cap.	47.00 25.0V				01
*	C137	**V5618900**	Electrolytic Cap.	47.00 25.0V				01
*	C140	**V5909300**	Electrolytic Cap.	100.00 50.0V				01
*	C142	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
	C202	**UR867470**	Electrolytic Cap.	47.00 50.0V				01
	C203	**UR867470**	Electrolytic Cap.	47.00 50.0V				01
	C208	**VJ097400**	Electrolytic Cap.	10.00 50.0V				01
	-211	**VJ097400**	Electrolytic Cap.	10.00 50.0V				01
*	C212	**V5618900**	Electrolytic Cap.	47.00 35.0V				01
*	C213	**V5618900**	Electrolytic Cap.	47.00 35.0V				01
*	C217	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
*	-220	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
	C225	**UR819100**	Electrolytic Cap.	1000 6.3V				01
*	C232	**V5829200**	Capacitor.	100 20 25SG100M+T				01
*	C233	**V5829200**	Capacitor.	100 20 25SG100M+T				01
	C236	**V5618900**	Electrolytic Cap.	47.00 25.0V				01
*	C237	**V5618900**	Electrolytic Cap.	47.00 35.0V				01
*	C240	**V5909300**	Electrolytic Cap.	100.00 50.0V				01
	C242	**V5619000**	Electrolytic Cap.	100.00 25.0V				01
*	C304	**V5618700**	Electrolytic Cap.	22.00 25.0V				01
	C307	**UR837220**	Electrolytic Cap.	22.00 16.0V				01
	C315	**UR857100**	Electrolytic Cap.	10.00 35.0V				01
	C316	**UR857100**	Electrolytic Cap.	10.00 35.0V				01
	C324	**UR837220**	Electrolytic Cap.	22.00 16.0V				01
	C326	**UR837100**	Electrolytic Cap.	10.00 16.0V				01
*	C404	**V5618700**	Electrolytic Cap.	22.00 25.0V				01
	C407	**UR837220**	Electrolytic Cap.	22.00 16.0V				01
	C415	**UR857100**	Electrolytic Cap.	10.00 35.0V				01
	C416	**UR857100**	Electrolytic Cap.	10.00 35.0V				01
	C424	**UR837220**	Electrolytic Cap.	22.00 16.0V				01
	C426	**UR837100**	Electrolytic Cap.	10.00 16.0V				01
*	C503	**V5829300**	Electrolytic Cap.	100.00 16.0V				01
*	C504	**V5829300**	Electrolytic Cap.	100.00 16.0V				01
	C505	**UR877470**	Electrolytic Cap.	47.00 63.0V				
	C602	**UR847100**	Electrolytic Cap.	10.00 25.0V				01
	C604	**UR847100**	Electrolytic Cap.	10.00 25.0V				01
	C702	**UR847100**	Electrolytic Cap.	10.00 25.0V				01
	C704	**UR847100**	Electrolytic Cap.	10.00 25.0V				01
	C800	**UR837100**	Electrolytic Cap.	10.00 16.0V				01
	C801	**UR837100**	Electrolytic Cap.	10.00 16.0V				01
	CN500	**VT640300**	Receptacle	PHEC 100P SE				04
	D001	**VS201100**	Diode	D1F60				01
	D002	**VS201100**	Diode	D1F60				01
	D100	**VS201100**	Diode	D1F60				01
	-103	**VS201100**	Diode	D1F60				01
	D200	**VS201100**	Diode	D1F60				01
	-203	**VS201100**	Diode	D1F60				01
*	D300	**V3840700**	Diode	RN731V				
*	D301	**V3840700**	Diode	RN731V				
*	D400	**V3840700**	Diode	RN731V				
*	D401	**V3840700**	Diode	RN731V				

*: New parts

RANK: Japan only

	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	D600	**VT332900**	Diode	1SS355 TE-17				01
	D700	**VT332900**	Diode	1SS355 TE-17				01
	EM001	**FZ006970**	LC Filter	LS MT Y223NB				02
	EM002	**FZ006970**	LC Filter	LS MT Y223NB				02
*	EM500	**FZ006970**	LC Filter	LS MT Y223NB				02
	-503	**FZ006970**	LC Filter	LS MT Y223NB				02
*	IC100	**XW399A00**	IC	SSM2402		Analog SW.		
*	IC101	**XK866A00**	IC	917090		HA(BALANCE)		09
	IC102	**XW399A00**	IC	SSM2402		Analog SW.		
	IC103	**IS405300**	IC	HD74LV4053AFPEL		MULTIPLEXER		
*	IC104	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC105	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
*	IC200	**XW399A00**	IC	SSM2402		Analog SW.		
*	IC201	**XK866A00**	IC	917090		HA(BALANCE)		09
	IC202	**XW399A00**	IC	SSM2402		Analog SW.		
	IC203	**IS405300**	IC	HD74LV4053AFPEL		MULTIPLEXER		
	IC204	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC205	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC300	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC301	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC302	**XV065A00**	IC	AK5392-VS-E2		A/D CONVERTER		12
	IC400	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC401	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
*	IC402	**XV065A00**	IC	AK5392-VS-E2		A/D CONVERTER		12
*	IC500	**XM167A00**	IC	YAC509		ADFC		11
*	IC501	**IS024400**	IC	HD74LV244AFPEL		BUFFER		
*	IC502	**IS013810**	IC	SN74LV138ANSR		DECODER		
*	IC503	**IS024500**	IC	HD74LV245AFPEL		BUFFER		
*	IC504	**IS024500**	IC	HD74LV245AFPEL		BUFER		
*	IC505	**IS027300**	IC	HD74LV273AFPEL		D-FF		
	-507	**IS027300**	IC	HD74LV273AFPEL		D-FF		
	IC508	**IS000800**	IC	HD74LV08AFPEL		AND		
	IC600	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	IC700	**XJ553A00**	IC	NJM2068MD-T1		OP AMP		02
	JK100	**VL958600**	XLM Connector	XLM-3-31PCV				08
	JK101	**VL958600**	XLM Connector	XLM-3-31PCV				08
*	JK200	**VL958600**	XLM Connector	XLM-3-31PCV				08
*	JK201	**VL958600**	XLM Connector	XLM-3-31PCV				08
*	L500	**V2589800**	Chip Inductance	BK2125LM751 2				
*	-502	**V2589800**	Chip Inductance	BK2125LM751 2				
*	LD100	**V4998500**	LED (Chip)	AA1101F				
*	LD200	**V4998500**	LED (Chip)	AA1101F				
*	LD300	**V2451800**	LED (Chip)	SML-010LT				
*	LD301	**V2451800**	LED (Chip)	SML-010LT				
*	LD400	**V2451800**	LED (Chip)	SML-010LT				
*	LD401	**V2451800**	LED (Chip)	SML-010LT				
	LD600	**V5074100**	LED (Chip)	PG1101F-TR (Gr)				
	LD700	**V5074100**	LED (Chip)	PG1101F-TR (Gr)				
	R100	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R101	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R102	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	-105	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
*	R108	**HV755390**	Flame Proof C. Resistor	390.0 1/4 J				01
*	R109	**HV755390**	Flame Proof C. Resistor	390.0 1/4 J				01
*	R118	**VC321300**	Metal Film Resistor	100.0 1/4 F				01
*	R119	**VC321300**	Metal Film Resistor	100.0 1/4 F				01
	R124	**VC321300**	Metal Film Resistor	10.00 1/4 F				
	R125	**VC321300**	Metal Film Resistor	10.00 1/4 F				
*	R126	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R127	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R128	**VC325700**	Metal Film Resistor	470.0 1/4 F				
	R129	**VC328700**	Metal Film Resistor	4.7K 1/4 F				01
*	R130	**VC327200**	Metal Film Resistor	2.2K 1/4 F				01
*	R132	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	R133	**VC325200**	Metal Film Resistor	300.0 1/4 F				
*	R134	**VC322300**	Metal Film Resistor	27.00 1/4 F				
	R135	**VC327200**	Metal Film Resistor	2.2K 1/4 F				01
*	R136	**VC325700**	Metal Film Resistor	470.0 1/4 F				
*	R137	**VC330400**	Metal Film Resistor	47.0K 1/4 F				01
	R138	**VC327500**	Metal Film Resistor	3.0K 1/4 F				

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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	R139	**VC325200**	Metal Film Resistor	300.0 1/4 F				
*	R140	**VC330400**	Metal Film Resistor	47.0K 1/4 F				01
	R141	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
*	R142	**VC327500**	Metal Film Resistor	3.0K 1/4 F				
	R143	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R144	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
	R145	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R146	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
	R148	**VC329500**	Metal Film Resistor	20.0K 1/4 F				01
	R149	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	R150	**VC329500**	Metal Film Resistor	20.0K 1/4 F				01
	R152	**VC329600**	Metal Film Resistor	22.0K 1/4 F				01
*	R153	**V5099600**	Metal Film Resistor	160K 1/4 F				
	R154	**VC326500**	Metal Film Resistor	1.0K 1/4 F				01
	R155	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
*	R156	**V5099500**	Metal Film Resistor	120K 1/4 F				
*	R157	**VC322700**	Metal Film Resistor	39.00 1/4 F				
	R200	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R201	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R202	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	-205	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	R208	**HV755390**	Flame Proof C. Resistor	390.0 1/4 J				01
	R209	**HV755390**	Flame Proof C. Resistor	390.0 1/4 J				01
*	R218	**VC321300**	Metal Film Resistor	100.0 1/4 F				01
*	R219	**VC321300**	Metal Film Resistor	100.0 1/4 F				01
*	R224	**VC321300**	Metal Film Resistor	10.00 1/4 F				
*	R225	**VC321300**	Metal Film Resistor	10.00 1/4 F				
	R226	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R227	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
*	R228	**VC325700**	Metal Film Resistor	470.0 1/4 F				
	R229	**VC328700**	Metal Film Resistor	4.7K 1/4 F				01
	R230	**VC327200**	Metal Film Resistor	2.2K 1/4 F				01
	R232	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
*	R233	**VC325200**	Metal Film Resistor	300.0 1/4 F				
*	R234	**VC322300**	Metal Film Resistor	27.00 1/4 F				
	R235	**VC327200**	Metal Film Resistor	2.2K 1/4 F				01
*	R236	**VC325700**	Metal Film Resistor	470.0 1/4 F				
	R237	**VC330400**	Metal Film Resistor	47.0K 1/4 F				01
*	R238	**VC327500**	Metal Film Resistor	3.0K 1/4 F				
*	R239	**VC325200**	Metal Film Resistor	300.0 1/4 F				
	R240	**VC330400**	Metal Film Resistor	47.0K 1/4 F				01
	R241	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
*	R242	**VC327500**	Metal Film Resistor	3.0K 1/4 F				
	R243	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R244	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
	R245	**VC331200**	Metal Film Resistor	100K 1/4 F				01
	R246	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
	R248	**VC329500**	Metal Film Resistor	20.0K 1/4 F				01
	R249	**VC328400**	Metal Film Resistor	6.8K 1/4 F				01
	R250	**VC329500**	Metal Film Resistor	20.0K 1/4 F				01
	R252	**VC329600**	Metal Film Resistor	22.0K 1/4 F				01
*	R253	**V5099600**	Metal Film Resistor	160K 1/4 F				
	R254	**VC326500**	Metal Film Resistor	1.0K 1/4 F				01
	R255	**VC323900**	Metal Film Resistor	100.0 1/4 F				01
*	R256	**V5099500**	Metal Film Resistor	120K 1/4 F				
*	R257	**VC322700**	Metal Film Resistor	39.00 1/4 F				
	R301	**VC330000**	Metal Film Resistor	33.0K 1/4 F				01
*	R302	**VC328300**	Metal Film Resistor	6.2K 1/4 F				
*	R303	**VC330100**	Metal Film Resistor	36.0K 1/4 F				
	R304	**VC327400**	Metal Film Resistor	2.7K 1/4 F				01
*	R305	**VC323500**	Metal Film Resistor	68.00 1/4 F				
	R306	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
*	R307	**VC327800**	Metal Film Resistor	3.9K 1/4 F				
*	R308	**VC329000**	Metal Film Resistor	12.0K 1/4 F				
	R309	**VC329400**	Metal Film Resistor	18.0K 1/4 F				01
	R310	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
*	R311	**VC321700**	Metal Film Resistor	15.00 1/4 F				
	R312	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R313	**VC328900**	Metal Film Resistor	11.0K 1/4 F				01
	R314	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01

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	REF NO.	PART NO.	DESCRIPTION			REMARKS	QTY	RANK
	R315	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R316	**VC327400**	Metal Film Resistor	2.7K 1/4 F				01
	R317	**HF754470**	Carbon Resistor	47.0 1/4 J				01
	-320	**HF754470**	Carbon Resistor	47.0 1/4 J				01
	R401	**VC330000**	Metal Film Resistor	33.0K 1/4 F				01
*	R402	**VC328300**	Metal Film Resistor	6.2K 1/4 F				
*	R403	**VC330100**	Metal Film Resistor	36.0K 1/4 F				
	R404	**VC327400**	Metal Film Resistor	2.7K 1/4 F				01
*	R405	**VC323500**	Metal Film Resistor	68.00 1/4 F				
	R406	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
*	R407	**VC327800**	Metal Film Resistor	3.9K 1/4 F				
*	R408	**VC329000**	Metal Film Resistor	12.0K 1/4 F				
	R409	**VC329400**	Metal Film Resistor	18.0K 1/4 F				01
	R410	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
*	R411	**VC321700**	Metal Film Resistor	15.00 1/4 F				
	R412	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R413	**VC328900**	Metal Film Resistor	11.0K 1/4 F				01
	R414	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R415	**VC328800**	Metal Film Resistor	10.0K 1/4 F				01
	R416	**VC327400**	Metal Film Resistor	2.7K 1/4 F				01
	R417	**HF754470**	Carbon Resistor	47.0 1/4 J				01
	-420	**HF754470**	Carbon Resistor	47.0 1/4 J				01
	R600	**VK582200**	Carbon Resistor (chip)	330.0K 1/10 D				01
	R700	**VK582200**	Carbon Resistor (chip)	330.0K 1/10 D				01
	R800	**HF758100**	Carbon Resistor	1/4 J 100K TP-52				01
	R801	**HF758100**	Carbon Resistor	1/4 J 100K TP-52				01
	R802	**VC328700**	Metal Film Resistor	9.1K 1/4F				01
	R803	**VC328700**	Metal Film Resistor	9.1K 1/4F				01
	RY100	**VU685600**	Relay	DC NA- 5 W-K				06
	-103	**VU685600**	Relay	DC NA- 5 W-K				06
	RY200	**VU685600**	Relay	DC NA- 5 W-K				06
	-203	**VU685600**	Relay	DC NA- 5 W-K				06
*	TH500	**VV111400**	Poly Switch	SMD075-2 SMD				
*	TH501	**VV111400**	Poly Switch	SMD075-2 SMD		for current limitation		
	TH502	**VV111700**	Poly Switch	SMD125-2 SMD				
*	TH503	**VV111400**	Poly Switch	SMD075-2 SMD				
	TR001	**VV556400**	Transistor	2SC2412K Q,R,S				01
	TR002	**VV556500**	Transistor	2SA1037K Q,R,S				01
	TR003	**VG013300**	Transistor	2SB1132 82-390				01
	TR004	**VG013400**	Transistor	2SD1664 82-390				01
	TR100	**VV556400**	Transistor	2SC2412K Q,R,S				01
	-103	**VV556400**	Transistor	2SC2412K Q,R,S				01
	TR200	**VV556400**	Transistor	2SC2412K Q,R,S				01
	-203	**VV556400**	Transistor	2SC2412K Q,R,S				01
	TR600	**VV556400**	Transistor	2SC2412K Q,R,S				01
	TR601	**VV556500**	Transistor	2SA1037K Q,R,S				01
	TR700	**VV556400**	Transistor	2SC2412K Q,R,S				01
	TR701	**VV556500**	Transistor	2SA1037K Q,R,S				01
		RD250000	Carbon Resistor (chip)	0.0 0.0 J				01
		RD254100	Carbon Resistor (chip)	10.0 0.1 J				01
		RD255390	Carbon Resistor (chip)	390.0 0.1 J				01
		RD255560	Carbon Resistor (chip)	560.0 0.1 J				01
		RD256100	Carbon Resistor (chip)	1.0K 0.1 J				01
		RD256220	Carbon Resistor (chip)	2.2K 0.1 J				01
		RD257100	Carbon Resistor (chip)	10.0K 0.1 J				01
		RD257470	Carbon Resistor (chip)	47.0K 0.1 J				01
		RD258100	Carbon Resistor (chip)	100.0K 0.1 J				01
		UA354100	Mylar Capacitor	0.0100 50V J				01
		UB012470	Monolithic Ceramic Cap.	B 470P 50V K				01
		UB044100	Monolithic Ceramic Cap.	F 0.010 50V Z				01
		UB050300	Monolithic Ceramic Cap.	SL 3P 50V C				01
		UB051100	Monolithic Ceramic Cap.	SL 10P 50V D				01
*		**UB051200**	Monolithic Ceramic Cap.	SL 20P 50V J				
		UB051470	Monolithic Ceramic Cap.	SL 47P 50V J				01
		UB051820	Monolithic Ceramic Cap.	SL 82P 50V J				01
		UB052100	Monolithic Ceramic Cap.	SL 100P 50V J				01
		UB245100	Monolithic Ceramic Cap.	F 0.100 25V Z				01
		UB245220	Monolithic Ceramic Cap.	F 0.220 25V Z				01

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