INTRODUCTION

The KA22293 is a monolithic intergrated circuit for music center.
The KA22293 consists of Mic AMP, Mic and u-com or Manual selection part for Phono, Tuner, cd, tape, Aux, VTR input.

48-QFP-1010D/1010E

FEATURES

- 6 Input Dual Analog Switch
- Dual Phono Amp.
- Dual Buffer Amp × 2
- Dual MIC Mix
- u-com Interface for function selection.
- Manual function selection switch without u-com
- LEC Driving circuit for indication of selected function.
- Operating voltage : V_{CC} = 6V ~ 12V

ORDERING INFORMATION

Device	Package	Operating temperature	Pitch
KA22293	48-QFP-1010D	-20℃ ~ +70℃	0.8mm
KA22293Q	48-QFP-1010E	-20℃ ~ +70℃	0.75mm

BLOCK DIAGRAM

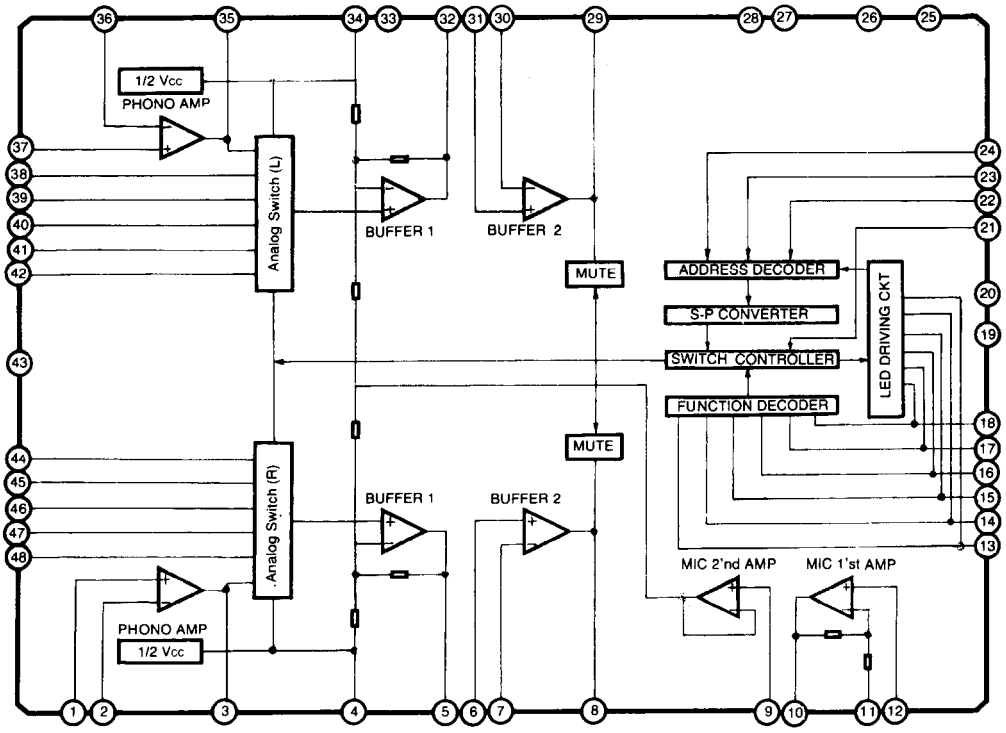


Fig. 1

PIN DESCRIPTION

Pin No	Symbol	I/O	Description
1	PHRIN	I	Right Channel PHONO AMP Input
2	PHRNF	I	Right Channel PHONO AMP Negative feedback
3	PHROUT	O	Right Channel PHONO AMP Output
4	RHV_{CC}	-	Right Channel 1/2 V_{CC}
5	BFR1 OUT	O	Right Channel 1'st Buffer Output
6	BFR2 INPUT	I	Right Channel 2'nd Buffer Input
7	BRF2 NF	I	Right Channel 2'nd Buffer Negative feedback
8	BFR2 OUT	O	Right Channel 2'nd Buffer Output
9	MIC 2/N	I	Mic 2'nd AMP Input
10	MIC 1OUT	O	Mic 1'st AMP Output
11	MIC1	I	Mic 1'st AMP Negative feedback
12	MIC	I	Mic 1'st AMP Input
13	MSPH	I/O	Manual Selection S/W for PHONO function
14	MSTU	I/O	Manual Selection S/W for Tuner function
15	MSCD	I/O	Manual Selection S/W for Compact Disc
16	MSTA	I/O	Manual Selection S/W for Tape
17	MSAU	I/O	Manual Selection S/W for Aux
18	MSVT	I/O	Manual Selection S/W for VTR
19	D-GND	-	Digital GND
20	RESET	-	RESET
21	MUTIN	I	Not use
22	CEIN	I	Enable Input from u-com
23	CLIN	I	Clock Input from u-com

PIN DESCRIPTION (Continued)

Pin No	Symbol	I/O	Description
24	DAIN	I	DATA Input from u-com
25	u/M SEL	-	u-com/Manual Selection
26	MUTIM	-	Muting time decision druing Manual Control
27	V_{CC}	-	V_{CC} (Digital)
28	V_{CC}	-	V_{CC} (Analog)
29	BFL2 OUT	O	Left Channel 2'nd Buffer Output pin
30	BFL2 NF	I	Left Channel 2'nd Buffer Negative feedback
31	BFL2 INT	I	Left Channel 2'nd Buffer Input
32	MFL1 OUT	O	Left Channel 1'st Buffer Output
33	RRF/L	-	Ripple Rejection filter
34	LHV_{CC}	-	Left Channel 1/2 V_{CC}
35	PHLOUT	O	Left Channel PHONO Ouptut
36	PHLNF	I	Left Channel PHONO AMP Negative feedback
37	PHLIN	I	Left Channel PHONO AMP Input
38	TULIN	I	Left Channel Tuner Input
39	CDLIN	I	Left Channel Compact Disc Input
40	TALIN	I	Left Channel TAPE Input
41	AULIN	I	Left Channel Aux Input
42	VTLIN	I	Left Channel VTR Input
43	A-GND	-	Analog GND
44	VTR IN	I	Right Channel VTR Input
45	AUR IN	I	Right Channel Aux Input
46	TAR IN	-	Right Channel TAPE Input
47	CDRIN	I	Right Channel Compact Disc Input
48	TURIN	I	Right Channel Tuner Input

ABSOLUTE MAXIMUM RATINGS (Ta = 25℃)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	12	V
Power Dissipation	P_D	400	mW
Operating Temperature	T_{OPR}	-20 ~ 75	℃
Storage Temperature	T_{STG}	-55 ~ 125	℃

ELECTRICAL CHARACTERISTICS

V_{CC} = 12V, f = 1Khz Unless otherwise specified.

Characteristic		Symbol	Test Condition	SPEC			UNIT
				MIN	TYP	MAX	
Quiescent Circuit Current	Manual	$I_{CCQ}1$	LED Currnet	20	40	55	mA
	u-Com	$I_{CCQ}2$	Exception	20	35	50	
Function Begining Selection		Vfo	Manual Mode		0.2	0.5	V
Function Indication Selection		Vf1	Manual / u-Com		0.2	0.5	V
Phono Amp Close Loop Gain		G_{VP}	f = 1KHz	34	35	36	dB
1'st Amp Close Loop Gain		$G_{VB}1$	f = 1KHz	5	6	7	dB
2'nd Amp Close Loop Gain		$G_{VB}2$	f = 1KHz	5	6	7	dB
1'st Mic Amp Gain		Gvm1	f = 1KHz	33	34	35	dB
2'st Mic Amp Gain		Gvm2	f = 1KHz	5	6	7	dB
Analog S/W Max Input Voltage		Vin amx	f = 1KHz, THD = 1%	1.2	1.5		Vrms
1'st Buffer Max Ouptut Voltage		Vob 1max	f = 1KHz, THD = 1%	2.5	3.0		Vrms
2'st Buffer Max Ouptut Voltage		Vobmax	f = 1KHz, THD = 1%	2.5	3.0		Vrms
1'st Mic Max Output Voltage		Vom1max	f = 1KHz, THD = 1%	1.2	1.5		Vrms
Function Cross Talk		CT1	f = 1KHz R_G = 4.7K V_{OB2} = $1V_{RMS}$	75	85		dB
Channel Cross Talk	Phono	CT2	f = 1KHz R_G = 0 V_{OB2} = $1V_{RMS}$	55	65		dB
	Phono exception	CT3		65	75		
S/N ratio	Phono	S/N 1	f = 1KHz R_G = 0 V_{OB2} = $200mV_{RMS}$	55	65		dB
	Phono exception	S/N2		75	85		
THD	Phono	THD1	f = 1KHz R_G = 0 V_{OB2} = $1V_{RMS}$		0.05	0.1	%
	Phono exception	THD2			0.03	0.05	

TEST CIRCUIT

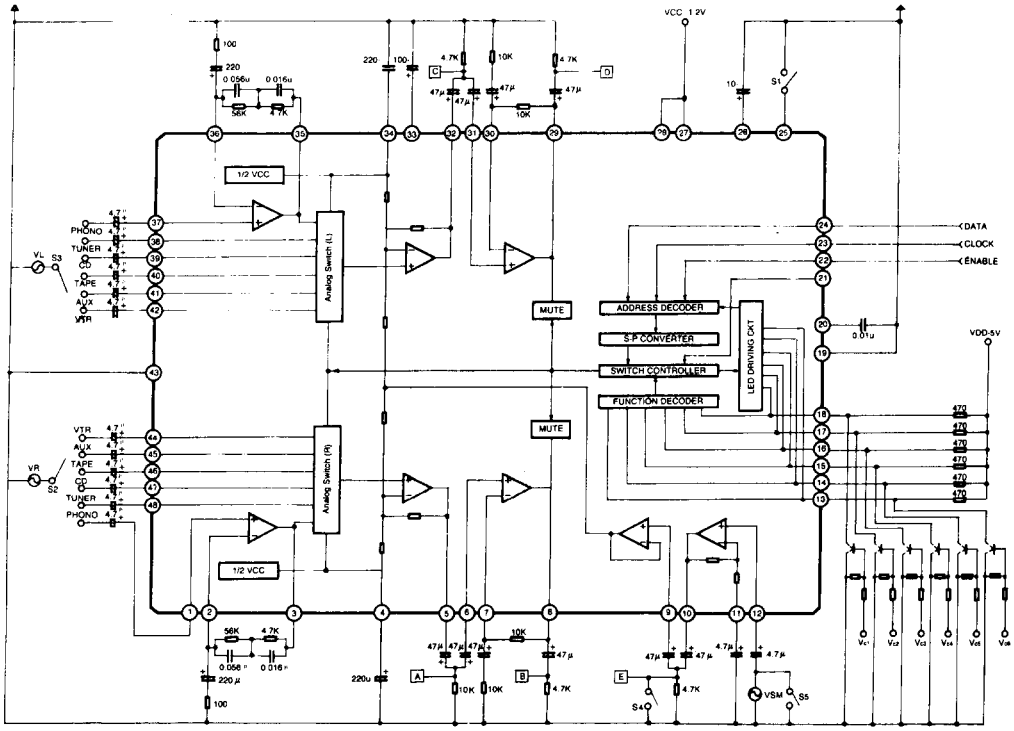


Fig. 2

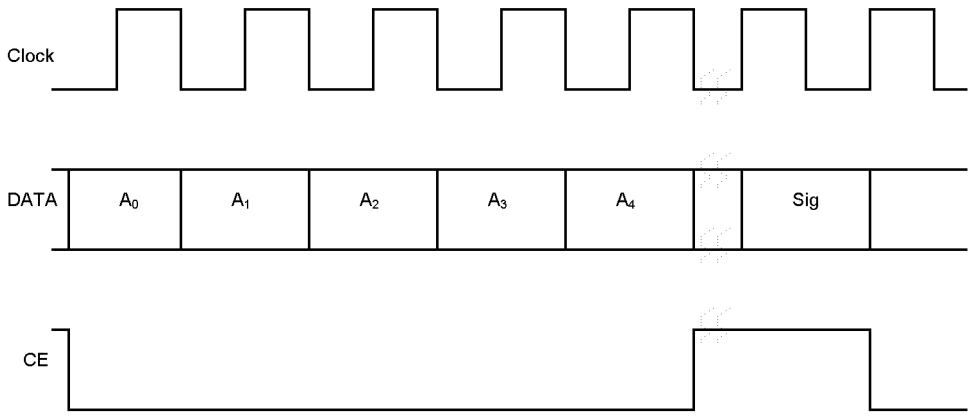
APPLICATION INFORMATION

Logic Part.

First of all, if you let the μ-com operate, the pin25 has to connect to the GND.

The KA22293 obtains the μ-com data such as following Timing diagram, and then, converters the data from the serial to the parallel type by the use of the internal Analog switches.

The signal inputed from the μ-com, consis of the 12 Bit serial data, and the data consists of the 4Bit address and the 8 Bit data fot the selection of the switch input.



DATA INPUT Mechod.

	ADDRESS	DATA
PHONO	0101	10000000
TUNER	0101	01000000
CD	0101	00100000
TAPE	0101	00010000
AUX	0101	00001000
VTR	0101	00000100

APPLICATION CIRCUIT

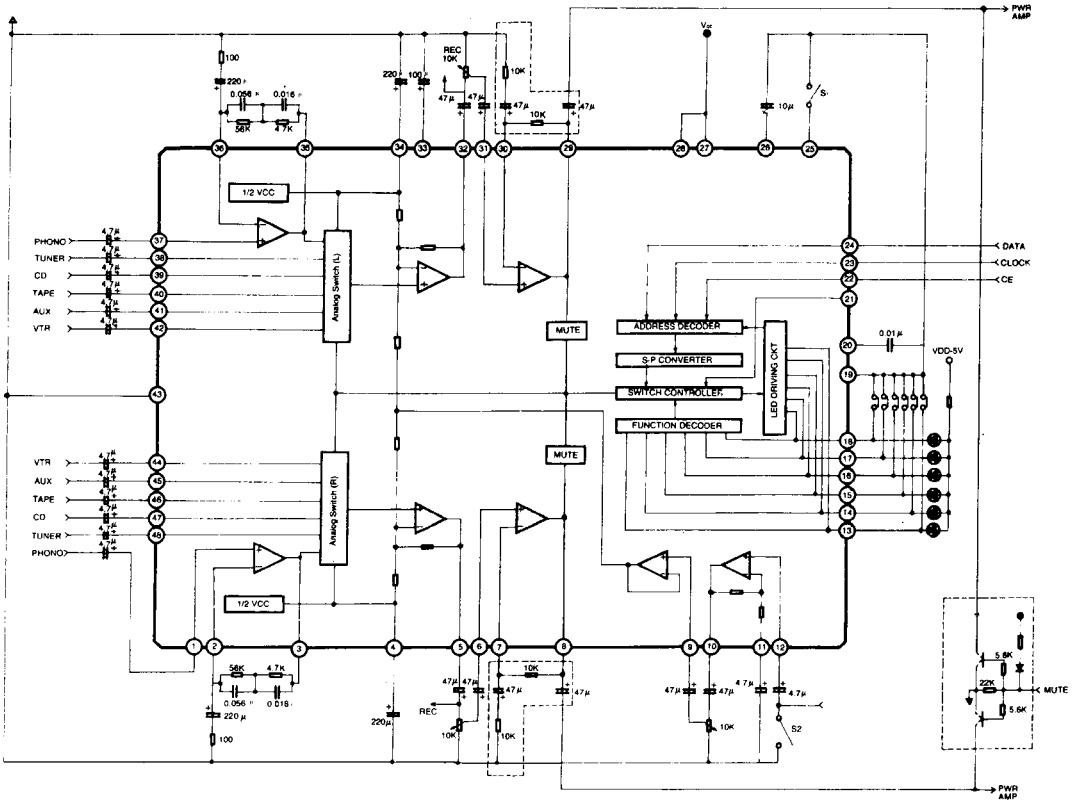
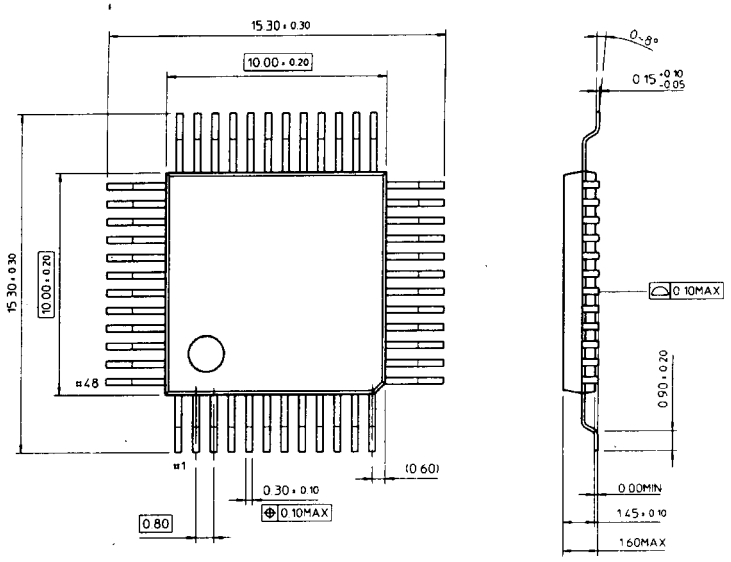


Fig. 3

Dimensions in Milimeters

48-QFP-1010D



48-QFP-1010E