

KA2295

AM/FM TUNER + MPX

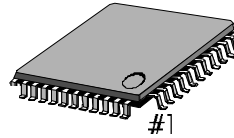
INTRODUCTION

The KA2295 is a monolithic integrated circuit designed for DTS music center. It includes AM/FM IF AMP, FM Quad DET, AM, DET, MAPX function

FEATURES

- Wide operating supply voltage ($V_{CC} = 6V \sim 12V$)
- Low distortion (AM : 0.5%, FM : 0.3%)
- Non-Adjusting VCO : Non-Adjusting of free running frequency.
- Built-in AM Band selection circuit.
- Built-in VCO stop circuit and muting circuit.
- Built-in AM/FM station detector circuit.
- Suitable for DTS (Digital Tuning System) Music Center.

48-QFP-1010D/1010E



OPERING INFORMATION

Device	Package	Operating temperature	Pitch
KA2295	48-QFP-1010D	-20°C ~ +70°C	0.8mm
KA2295Q	48-QFP-1010E	-20°C ~ +70°C	0.75mm

BLOCK DIAGRAM

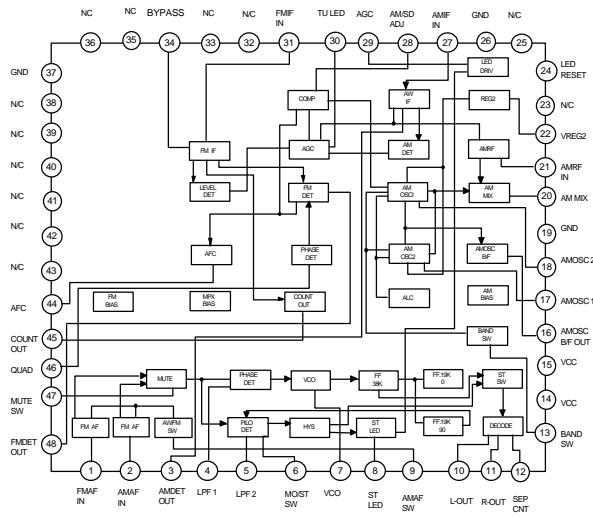


Fig. 1



PIN DESCRIPTION

PIN NO	NAME	I/O	DESCRIPTION
1	FM AF	I	FM AF INPUT PIN
2	AM AF	I	AM AF INPUT PIN
3	AM DET	O	AM DET OUTPUT PIN
4	LPF1	O	PHASE DETECTOR OUTPUT PIN
5	LPF2	O	PILOT DETECTOR OUTPUT PIN
6	MO/ST SW		MONO/STEREO SELECT PIN
7	VCO	O	VOLTAGE CONTRILLED OSCILLATOR PIN
8	ST-LED	O	STEREO LED PIN
9	AM/FM SW		AM/FM SELECT PIN
10	L-OUT	O	MPX L-CHANNEL OUTPUT PIN
11	R-OUT	O	MPX R-CHANNEL OUTPUT PIN
12	SEP CNT		SEPARATION CONTROL PIN
13	BAND SW		AM BAND SELECT PIN
14, 15	VCC		VCC PIN
16	BUFF OUT	O	AM OSC BUFFER OUTPUT PIN
17	AM OSC 1	O	AM OSC1 OUTPUT PIN
18	AM OSC 2	O	AM OSC2 OUTPUT PIN
19, 26, 37	GND		GROUND PIN
20	AM MIX	O	AM MIXER OUTPUT PIN
21	AM RF	I	AM RF INPUT PIN
22	REG	I	REGULATOR PIN
23, 25	N/C		NOT USE
24	LED SW		LED RESET PIN
27	AM IF	I	AM IF INPUT PIN
28	AM SD	O	AM STATION DETECTOR CONTROL PIN
29	TU-LED	O	TUNING LED PIN
30	AGC	O	AM AGC PIN
31	FM IF	I	FM IF INPUT PIN
32, 33	NC		NOT USE
34	BY-PASS	O	FM IF BYPASS PIN
35-43	NC		NOT USE
37	GND		FM IF GROUND
44	AFC	O	AGC OUTPUT PIN
45	COUNT	O	AM/FM IF COUNT OUTPUT PIN
46	QUAD	O	FM QUADRATURE DETECTOR PIN
47	MUTE		MUTING PIN
48	FM DET	O	FM DETECTOR OUTPUT PIN

ABSOLUTE AMXIMUM RATINGS_{a = 25°C}

Characteristic	Symbol	Value	Unit
Supply Voltage	V _{CC}	12	V
Power Dissipation	P _D	450	mW
Operating Temperature	T _{OPR}	-20 ~ 70	°C
Storage Temperature	T _{STG}	-40 ~ 120	°C

ELECTRICAL CHARACTERISTICS

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
*FM MONO (f _c = 107MHz, f _m = 1KHz, Δf = 75KHz V _{CC} = 8.5V						
CIRCUIT CURRENT 3	I _{CC1}	V _i = 0V	18	28	38	mA
-3dB SENSITIVITY	V _i (lim)	V _O = -3dB DOWN		34	40	dBu
OUTPUT VOLTAGE 2	V _{OF2}	V _i = 100dBu	450	550	670	mV
S/N RATIO 3	S/N F ₃	V _i = 100dBu	72	77		dB
AM REJECTION RATIO	AMR	V _i = 100dBu, MOD = 30% AM, f _m = 1KHz	48	60		dB
T. H. D. 2	THD1	V _i = 100dBu		0.2	1	%
IF BUFFER OUTPUT 1	V _{OIF1}	V _i = 50dBu	5	260	350	mVms
LED ON SENSITIVITY	VL (ON) 1	V _i = variable, svr = 27Kohm	42	52	62	dBu
*FM STEREO (f _c = 10.7MHz, Δf = 75KHz, L + R = 90%, PILOT = 10%, V _i = 100dBu V _{CC} = 8.5V						
SEPARATION	SEP	f _m = 1KHz, STEREO	35	45		dB
T. H. D. 2	THD ST	f _m = 1KHz		0.3	1	%
LED ON LEVEL	V _(ON)	PILOT ONLY	4	10	16	mV
HYSTERESIS	HY	PILOT ONLY	1	3	6	dB
CHANNEL BALANCE	CB	V _i = 300mV (Mono)	-1	0	+1	dB
MUTING ATTENUATION	ATT	V _i = 300mV (Mono)	67	82		dB
*AM (f _c = 1MHz, f _m = 1KHz, MOD = 30%)						
CIRCUIT CURRENT 3	I _{CC A3}	V _i = 0V	17	27	37	mA
OUTPUT VOLTAGE 2	VO A ₂	V _i = 27dBu	70	140	260	mV
OUTPUT VOLTAGE 1	VO A ₁	V _i = 80dBu	170	280	390	mV
T. H. D. 1	THD A ₁	V _i = 80dBu		0.5	1.2	%
T. H. D. 2	THD A ₂	V _i = 100dBu		0.6	1.3	%
OSC. VOLTAGE 1	SOC 1	V _i = 0V	150	250	350	mVrms
OSC. VOLTAGE 2	OSC 2	V _i = 0V	150	250	350	mVrms
S/N RATIO2	S/N 2	V _i = 23dBu	10	13		dB
S/N RATIO1	S/N A ₂	V _i = 80dBu	44	50		dB
IF BUFFER OUTPUT 2	V (IF) A ₁	V _i = 20dBu	70	100	200	dB
LED ON SENSITIVITY2	VL (ON) 2	V _i = VARIABLE, SVR = 10Kohm		13	20	dBu

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TEST CIRCUIT

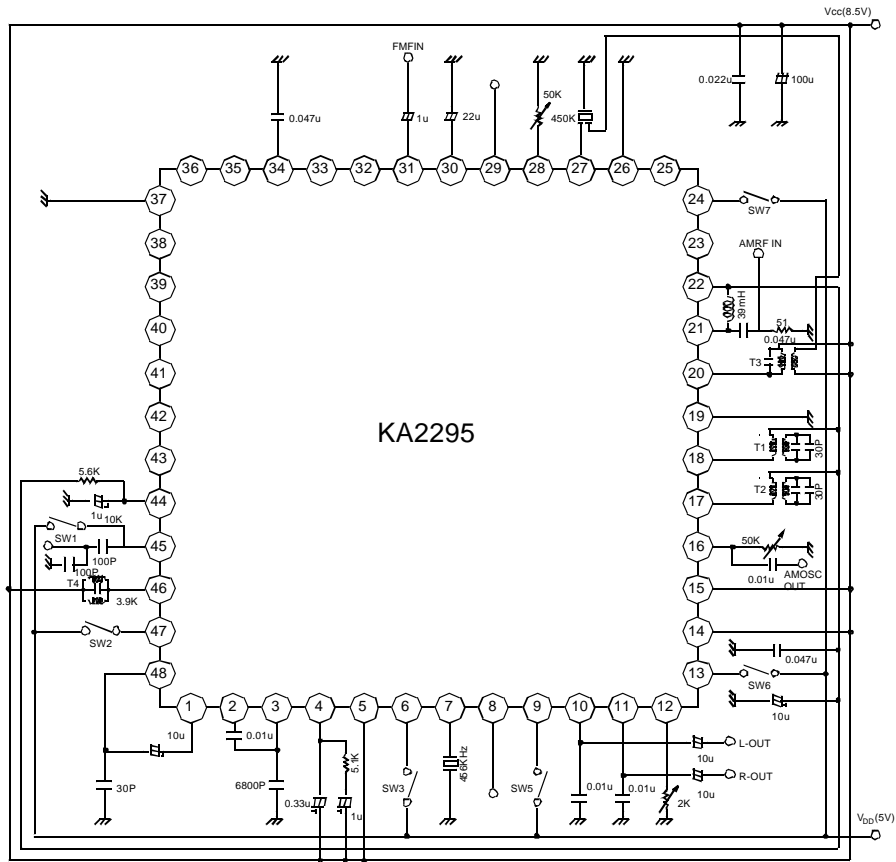


Fig. 2

COIL SPECIFICATION

NO	FUNCTION	f _o	Q	L	C	TURNS					REMARK
						1-2	1-3	2-3	2-4	4-6	
T1	MW OSC	1.45MHz	140	140uH			64			32	
T2	LW OSC	670KHz	130	220uH			80			40	
T2	SW OSC		28	1.3uH			12			8	
T3	AM IFT	450KHz			180pF	94		58		7	
T4	FM DET	10.7MHz	95		56pF		12				

OPERATING PRINCIPLES & METHOD

***AM BAND OSCILLATOR**

WE USE A NEW BAND SELECTION TECHNIQS IN THIS IC.
 THIS BAND SELECTION BLOCK IS COMPOSED OF 5 BLOCKS WHICH ARE ALC, OSC1, OSC2, BUFFER, SELECT SWITCH. SO EACH MICOM VOLTAGE (HIGH OR LOW)CAN SELECT THE AM BANDS (MW OR LW OR SW).

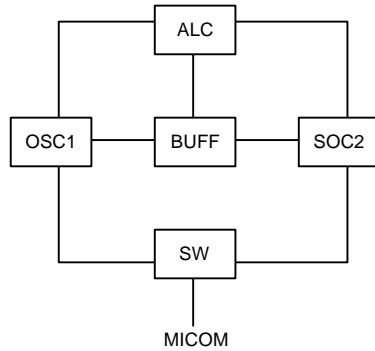


Fig. 3

***MONO, STEREO SELECT SWITCH**

IN FM MODE, WE CAN SELECT MONE OR STEREO WITH MICON OUTPUT VOLTAGE .AND IN STEREO STATE, WE CAN CHANGE THE STATE INTO MONO BY COMPULSION.

SAT : SATURATION

Vmicom	STATE	Q1	Q2	VA
HIGH	MONO	SAT	SAT	2.4V
LOW	STEREO	OFF	OFF	8.5V

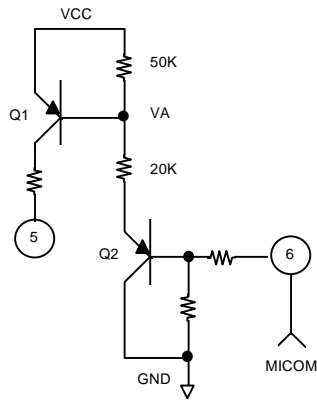


Fig. 4

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APPLICATION CIRCUIT

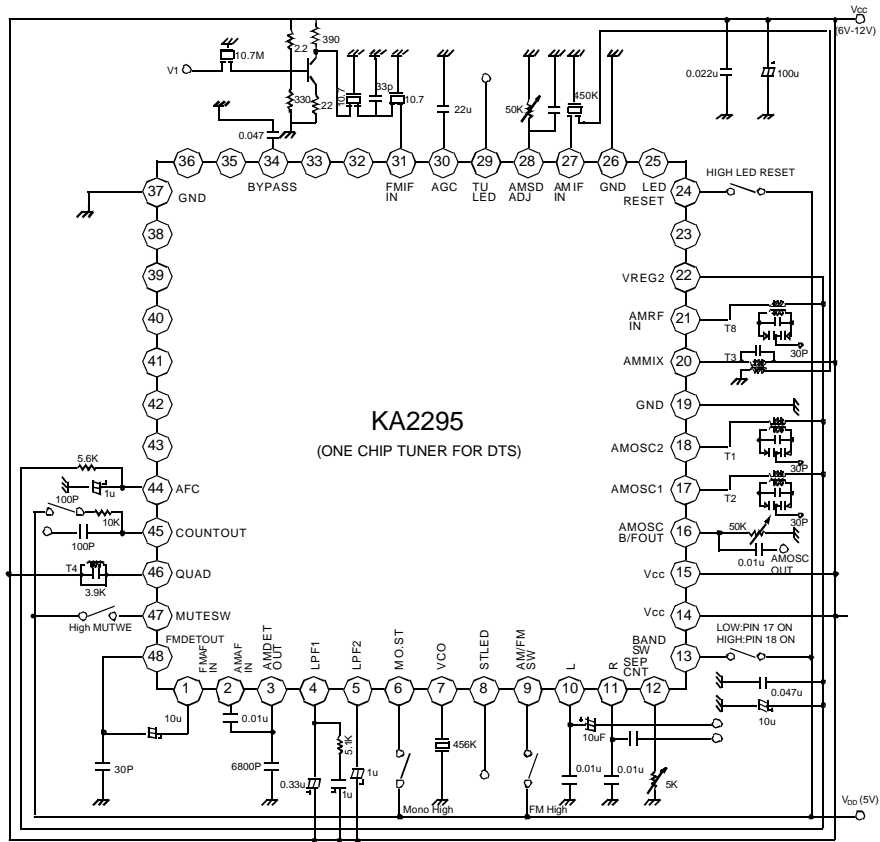
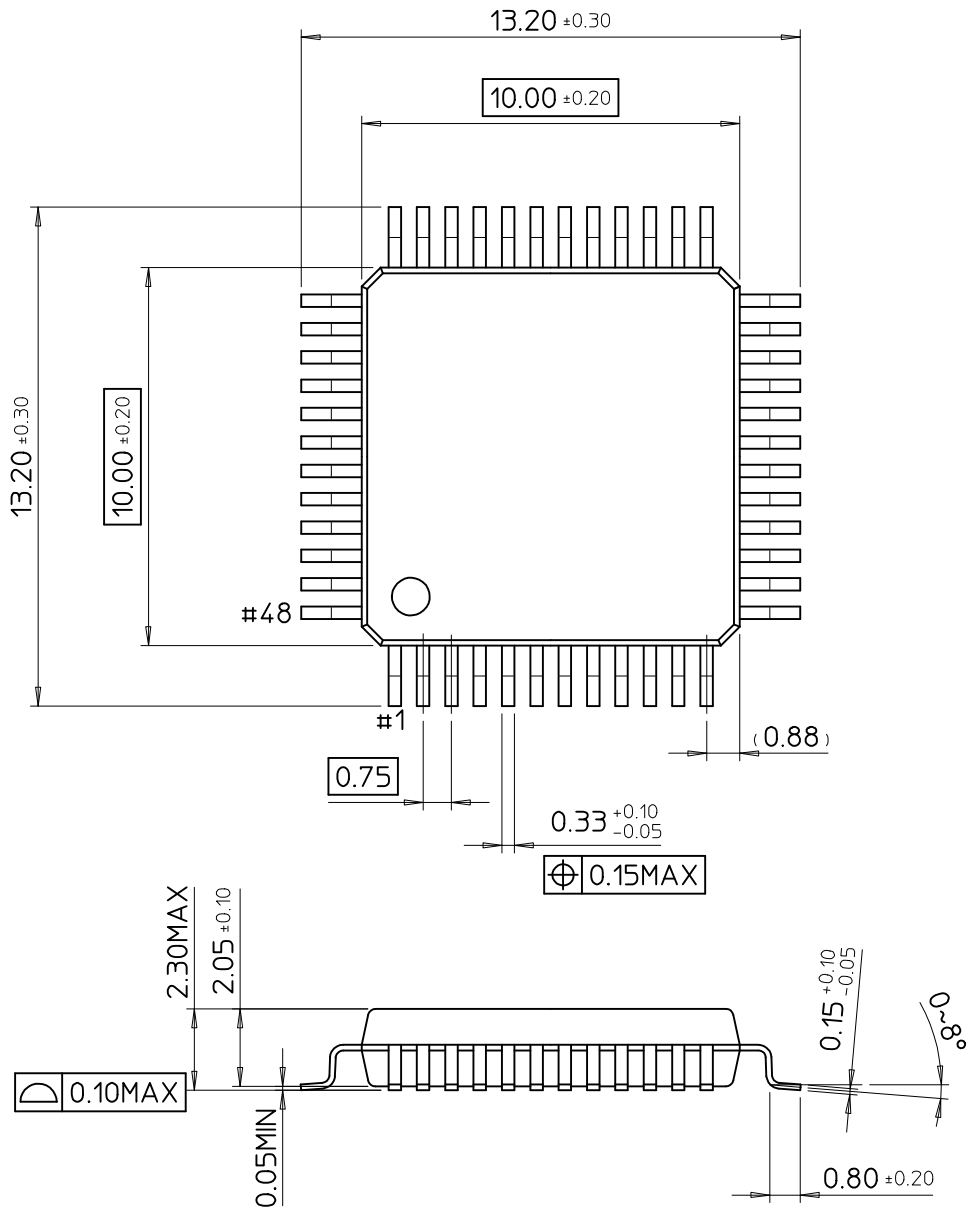


Fig. 5

48-QFP-1010E

Dimensions in Millimeters



SAMSUNG ELECTRONICS CO.,LTD.