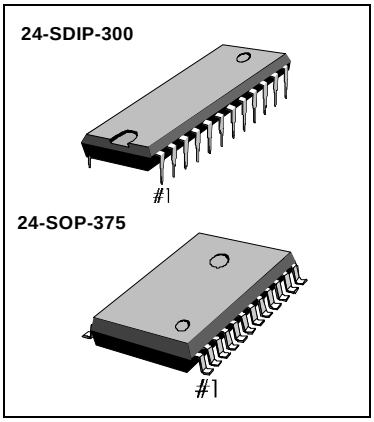
KA22900 AM/FM TUNER + MPX

INTRODUCTION

The KA22900 is a monolithic intergrated circuit which consists of a 3V one chip tuner and FM multiplex for AM/FM radios and head-phone radios.



FUNCTIONS

* FM Stage : RF/IF/AF amp, Quadrature Detector, MIX, OSC, Tuning Indicator.
* AM Stage : RF/IF/AF amp, Detector, MIX, OSC, AGC, Tuning Indicator.
* MPX Stage : PLL amp, Decoder, Flip Flop, VCO Stop, Phase Detector, Stereo Indicator.

FEATURES

- 3V one chip tuner with built - in FM Multiplex
- No AM detect coil, IF coupling capacitor, FM IF by-pass capacitor needed.
- Built-in tuning indicator function.
- Built-in AM/FM selection switch.
- Minimum number of external parts required.
- Wide operating voltage range : V_{CC} = 1.8V ~ 7V
- Low distortion (FM IF : 0.4%, AM IF : 1%, 0.2% (Typ)).

ORDERING INFORMATION

Device	Package	Operating Temperature
KA22900	24-SDIP-300	-20°C ~ +75°C
KA22900D	24-SOP-375	

BLOCK DIAGRAM

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ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	8	V
Power Dissipation	P_D	1200	mW
Operating Temperature	T_{OPR}	-20 ~ +75	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C
LED Driver Voltage	V_{DR}	10	V
LED Driver Current	I_{DR}	10	mA

ELECRTRICAL CHARACTERISTICS

(Ta = 25°C, V_{CC} = 3V, unless otherwise specified)
FM F/E : f = 98MHz, fm = 1KHzΔf = 22.5KHz AM : f = 1KHz, 30% Mod
FM IF : f = 10, 7MHz, fm = 1KHzΔf = 22.5KHz MPX : f = 1KHz, L + R = 90%, P = 10%, V_I = 150mV

Characteristics		Symbol	Test Condition	Min	Typ	Max	Unit	Test Circuit
Quiescent Circuit Current		I_{CCQ1}	FM, V_I =0	8.4	13.2	20.0	mA	1
		I_{CCQ2}	AM, V_I = 0	4.4	8.4	13.4	mA	1
F/E	-3dB Limiting Sensitivity	$V_{I\ (LIM)1}$	V_O = -3dB		10		dBμ	1
	Oscillation Voltage	V_{OSC}	f_{OSC} = 98MHz	40	70	110	mV	2
FM IF	-3dB Limiting Sensitivity	$V_{I(LIM)2}$	V_O = -3dB	40	46	53	dBμ	1
	Detector Output Voltage	$V_{O\ (DET)1}$	V_I = 80dBμ	55	80	110	mV	1
	Signal to Noise Ratio	S/N_1	V_I = 80dBμ	60	70		dB	1
	Total Hatmonic Distortion	THD_1	V_I = 80dBμ		0.4	1	dBμ	1
	AM Rejection Ratio	AMR	V_I = 80dBμ	22	32		dB	1
	Tuning Indication Voltage	V_{LI}	I_{LED} = 1mA	45	51	56	dBμ	1
AM IF	Voltage Gain	G_{V1}	V_I = 26dBμ	40	70	110	mV	1
	Detector Output Voltage	$V_{O(DET)2}$	V_I = 60dBμ	55	80	110	mV	1
	Signal to Noise Ratio	S/N_2	V_I = 60dBμ	32	42		dB	1
	Total Harmonic Distortion	THD_2	V_I = 60dBμ		1	2	%	1
	Tuning Indication Voltage	VL_2	I_{LED} = 1mA	20	25	30	dBμ	1
MPX	Maximum Input Voltage	$V_{I(MAX)}$	Stereo, THD = 3%	250	350		mV	1
	Channel Separation	CS_1	Stereo, f = 100Hz	35	42		dB	1
		CS_2	Stereo, f = 1KHz	35	42		dB	1
		CS_3	Stereo, f = 10Khz	35	42		dB	1
	Total Harmonic Distortion	THD_3	Mono		0.2	1	%	1
		THD_4	Stereo		0.2	1	%	1
	Voltage Gain	G_{V2}	Mono	-5	-3	-1	dB	1
	Channel Balance	CB	Mono	-2	0	2	dB	1
	Lamp on Level	$VL_{(ON)}$	Pilot only		8	16	mV	1
		$VL_{(OFF)}$	Pilot only	2	6		mV	1
	Lamp Hysteresis	HY			2		mV	1
	Capture Range	CR	Pilot only	±1	±3	±5	%	1
	Signal to Noise Ratio	S/N_3	Mono	60	70		dB	1