

LC7210

c-mos LSI

CIRCUIT DRAWING
No.4053

TUNING CIRCUIT OF PSL² ELECTRONIC TUNING SYSTEM



3012A

Features

- Multiband reception (FM, MW, LW/FM, SW1, SW2/TV, FM, MW, etc.) is available with micro-computer control.
- 3 tuning methods of auto search, preset, manual.
- Tuning control of PLL synthesizer mode, SL² voltage synthesizer auto search mode, S curve AFC reception mode, local oscillation frequency count mode.
- Little harmonic interference to FM band due to low reference oscillation frequency of 32kHz.
- With FM-IF ceramic filter variation adjusting function provided ($\pm 150\text{kHz}/10\text{kHz}$ step fine adjustment), multirank ceramic filter can be used.
- Because of S curve AFC reception, PLL control step can be made small (10kHz step) by lowering comparison frequency ($f_{\text{ref}}=0.1\text{kHz}$: FM band) without regard to CN ratio at the time of PLL operation.
- +5V single power supply, C-MOS process, 28-pin DIP.

Functions

- SL² auto search control.
- PLL control (Number of frequency divisions FM: 39999 max., AM: 3999 max.).
- Analog switch for S curve AFC.
- Local oscillation frequency counter (Number of counts FM, AM: 39999 max./10ms).
- Data generation for FM band IF offset fine adjustment (5 bits).

LC7220, -1, -2, -3, -5, -6, -7

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CIRCUIT DRAWING
No.4054

PLL SYNTHESIZER TUNER AND CONTROLLER FOR FM/AM RADIO



3025B



3026B

LC7220 series are PLL frequency synthesizer C-MOS LSIs designed for use in FM/AM 2-radio band radios. By using in conjunction with LB3500 (1/8 frequency division prescaler), electronic tuning system with 18-dot analog frequency display can be formed.

LC7220 series offer a choice of the following types according to destination and package.

Type No	Package	Area	Radio band	Frequency	Step	f_{ref}	IF
LC7220	DIP42S	U.S.A.	FM	87.5~108.1 MHz	200 kHz	6.25 kHz	+10.70, +10.75 MHz
LC7225	QIP64		AM(1)*	520~1610 kHz	10 kHz	10 kHz	+450 kHz
			AM(2)*	522~1611 kHz	9 kHz	9 kHz	+450 kHz
LC7221	DIP42S	Japan	FM	76.0~90.0 MHz	100 kHz	6.25 kHz	-10.70, -10.65 MHz
LC7226	QIP64		AM	522~1611 kHz	9 kHz	9 kHz	+450 kHz
LC7223	DIP42S	Japan	FM	76.0 to 90.0 MHz	100 kHz	6.25 kHz	-10.70, -10.65MHz
			AM	522 to 1629 kHz	9 kHz	9 kHz	+450kHz
LC7222	DIP42S	Europe (U.S.A.)	FM	87.5~108.1 MHz	50 kHz	6.25 kHz	+10.70, +10.75 MHz
LC7227	QIP64		AM(1)*	520~1610 kHz	10 kHz	10 kHz	+450 kHz
			AM(2)*	522~1611 kHz	9 kHz	9 kHz	+450 kHz

*: AM(1) or AM(2) is selected by changing pin connection.

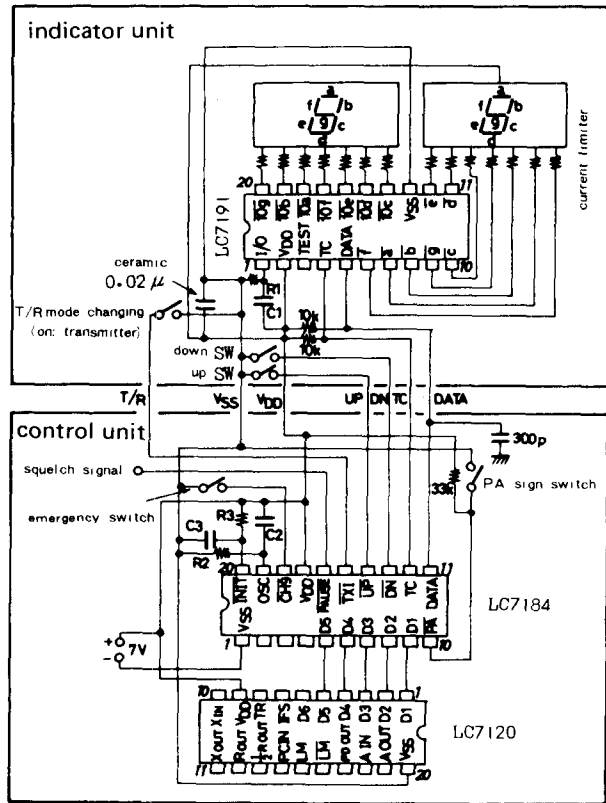
- Package Number: 3025B (LC7220, 7221, 7222, 7223), 3026B (LC7225, 7226, 7227)

ELECTRONIC TUNING SYSTEMS (monolithic integrated circuit)

Type Number	Page	Case			Circuit Drawing No.	Circuit Functions & Applications	Main Specifications
		Package	Pins	Package No.			
LC7210	222	DIP	28	3012A	4053	PSL ² Electronic Tuning System	Kit available with controller microcomputer, preset memory
LC7220	222	DIP	42S	3025B	4054	PLL Electronic Tuning System for FM/AM Radio	(U.S.A. version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
LC7221	222	DIP	42S	3025B	4054	PLL Electronic Tuning System for FM/AM Radio	(Japan version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
LC7222	222	DIP	42S	3025B	4054	PLL Electronic Tuning System for FM/AM Radio	(Europe version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
LC7223	222	DIP	42S	3025B	4054	PLL Electronic Tuning System for FM/AM Radio	(Japan version) Same as LC7221, AM1629kHz use
LC7225	222	QIP	64	3026B	4054	PLL Electronic Tuning System for FM/AM Radio	(U.S.A. version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
LC7226	222	QIP	64	3026B	4054	PLL Electronic Tuning System for FM/AM Radio	(Japan version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
LC7227	222	QIP	64	3026B	4054	PLL Electronic Tuning System for FM/AM Radio	(Europe version) FM/MW, 18-dot analog display, VDD=5V, fref=7.2MHz, used with LB3500 (1/8 prescaler)
©LM7000	248	DIP	20S	3021B	5003	Direct PLL Electronic Tuning System	IF counter, high-speed programmable divider capable of direct dividing FM band VCO
©LC7010	219	DIP	42S	3025B	4045	LM7000-Used Car Stereo Controller	(US, Europe version) 6 channel each of FM/(MW+LW), with clock, LED dynamic display
©LC7030	220	DIP	42S	3025B	4046	LM7000-Used Home Stereo Controller	(Japan, US, Europe version) 8 channels each of FM/(MW+LW), with remote control, LED or FLI dynamic display
©LC7570	235	DIP	42S	3025B	4093	Frequency Display FLI Static Driver	34-segment output, 5 steps, A/D converter, serial data input
©LC7572	236	DIP	18	3007A	4094	Electronic Tuning Preset Address Display LED Driver	16-dot display, 0 to 19 decimal display, 0 to F hexadecimal display, latch function
©LC7580	236	QIP	64	3026B	4095	Frequency Display LCD Driver	Static 1/1duty 53 segments, 1/2duty 104 segments, 5-level AD converter 2 pins
LB3500	197	SEP	9	3017B	3071	1/8 Prescaler	PLL electronic tuning system available with LC7220 series, with INH pin
LA5700	144	DIP	14T	3005A	2110	Voltage Regulator for SL ² Tuning System	V _{ref} =8V, V _{DD} =9V for LC7200, LC7250 of SL ² system, with backup controller

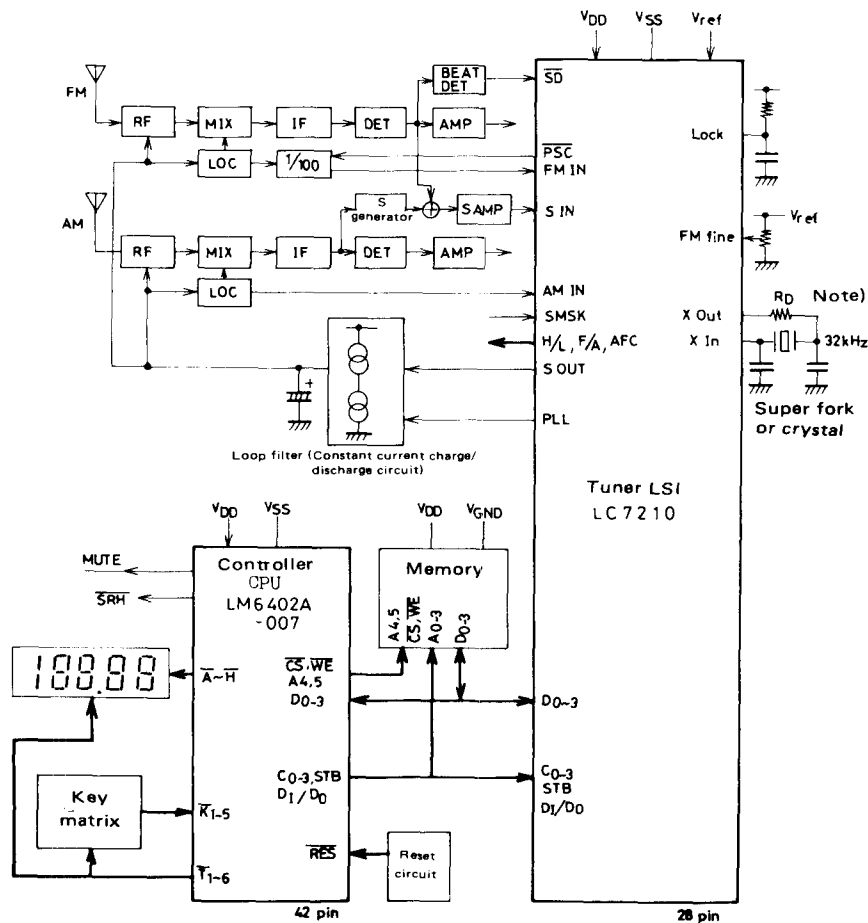
4052:LC7181,7191

APPLICATION: Channel selector system using LC7181, LC7191, LC7120



4053:LC7210

APPLICATION: PSL² SYSTEM BLOCK DIAGRAM



Note) If a super fork (EMF-Z 32.000kHz) is used, no R_D is needed. If a crystal is used, R_D is 220kohm±10% .