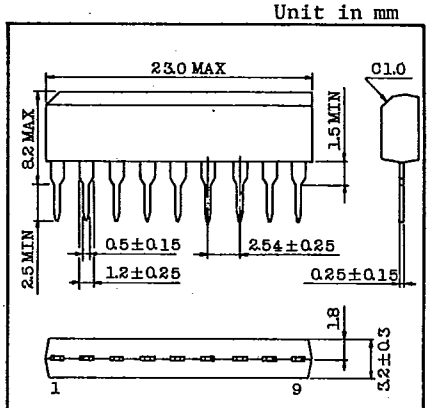
TD6102P

ECL PRESCALLER

TD6102P is an ECL that has been developed as a prescaller for FM/AM PLL synthesizer tuner, and with 1/4 and 1/8 dividing function, performs 25kHz, 50kHz and 75kHz shifting operations. In combination with TC9123BP and TC9124AP, a highly efficient synthesizer tunner can be constituted.

Unit in mm



Lead pitch is 2.54 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No.1 lead.

JEDEC	—
TOSHIBA	S9A-P

- Within a range of temperature from -20∿+75°C, the following operations are assured:

  FM input 150MHz
  AM input 10MHz

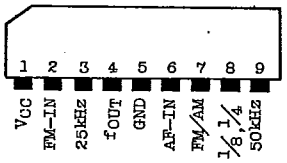
- Corresponding to fluctuation in IF selection circuit, 25kHz, 50kHz and 75kHz Shiftings (at time 100kHz step) are possible.
- Switching of FM input and AM input is possible.
- Under FM mode it is possible to select 1/4 and 1/8 dividing ratio (Under AM mode, no division can made).
- Because of built-in AC amplifier, operable at low input level.

  FM input ≧ 150mVrms. AM input ≧ 50mVrms.

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	8	V
Power dissipation	P_D	600	mW
Operating Temperature	Topr	-20∿75	°C
Storage Temperature	Tstg	-55∿150	°C

PIN CONNECTION



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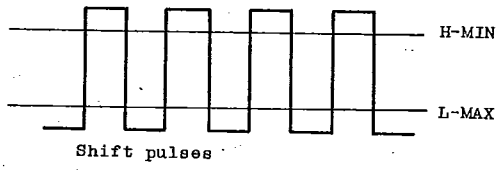
FUNCTIONS AND USING METHODS OF PIN.

SYMBOL	DESCRIPTION	CONDITIONS	REMARKS
V_{CC}	Power terminal	4.5 ∿ 8.0 (V) is applied.	
f_{FM-IN}	FM input terminal	f_{FM-IN}=1.0MHz ∿ 150MHz (sine wave) Input voltage ≧ 150mVrms.	
25kHz	25kHz Shift pulse input terminal	Operates Under AC mode Operates at the trailing edge of input pulse.	NOTE. 1
fout	Output terminal	Output Voltage ≧ 1.7 Vp-p (V_{CC}=7.5 ± 0.5(V))	(at 1/8 mode)
GND	Ground terminal	Ground	
f_{AM-IN}	AM input terminal	f_{AM-IN} (MAX)=10MHz (sine wave) Input Voltage ≧ 50mVrms.	
FM/AM	FM input and AM selecting terminal	Selection can be made under DC mode. FM at H-Level and AM at L-Level.	NOTE. 2
1/8,1/4	Dividing ratio Selecting terminal	Selection can be made under DC mode. 1/8 at H-Level and 1/4 at L-Level.	NOTE. 2
50kHz	50kHz Shift pulse input terminal	Operates under AC mode. Operates at the trailing edge of input pulse.	NOTE. 1

NOTE. 1 H-Level and L-Level of shift pulses to be applied to 25kHz and 50kHz input terminals shall be set at the following Level:

H-MIN ≧ V_{CC}-2.5(V), L-MAX ≦ V_{CC}-4.0(V)



NOTE. 2 H-Level and L-Level for FM/AM and 1/8 and 1/4 selection shall be set at the following Level:

H-MIN ≧ V_{CC}-0.5(V)

L-MAX ≦ V_{CC}-1.5(V)

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ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC}=5.0V, Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}		-	-	25	35	mA
Input Voltage	FM	V_{IN-FM}	2	-	150	-	-	mVrms
	AM (Note 3)	V_{IN-AM}	1	-	50	-	-	
Operating Frequency	FM	f_{FM}	1 , 2	Input Voltage= 150mVrms, sine wave	1.0	-	150	MHz
	AM	f_{AM}	1	Input Voltage= 50mVrms, sine wave	-	-	10	
Output Amplitude (Note 4)	FM	V_{out-FM}	1	V_{CC}=7.5 ± 0.5V, 1/8-mode. f_{FM}=150MHz	1.7	2.0	-	Vp-p
	AM	V_{out-AM}	1	V_{CC}=7.5 ± 0.5V f_{AM}=10MHz	1.7	2.0	-	
FM/AM, 1/8, 1/4 Selection Voltage	"H" Level	V_H	1	-	4.5	-	-	V
	"L" Level	V_L	1	-	-	-	3.5	
25kHz, 50kHz Shift Pulse Voltage	"H" Level	$V_{H-shift}$		-	2.5	-	-	V
	"L" Level	$V_{L-shift}$		-	-	-	1.0	
Input Resistance	2 Pin	Ri2		f_{FM}=150MHz	-	600	-	Ω
	6 Pin	Ri6		f_{AM}=10MHz	-	1.1	-	kΩ
Recommended Supply Voltage		V_{CC}		-	4.5	-	5.5	V

NOTE. 3 When both FM and AM inputs are simultaneously applied AM input voltage shall be 1/3 of FM input voltage or more.

NOTE. 4 When a 22kΩ resistor is externally inserted between pin 4 and GND, following output voltage are obtained at time of V_{CC} = 5.0 ± 0.5V : $V_{OUT-FM} \geq 1.7$ Vp-p (1/8 mode) $V_{OUT-AM} \geq 1.7$ Vp-p. Under 1/4 mode, following output voltage is obtained: V_{OUT-FM} = 1.0 Vp-p (typ.)

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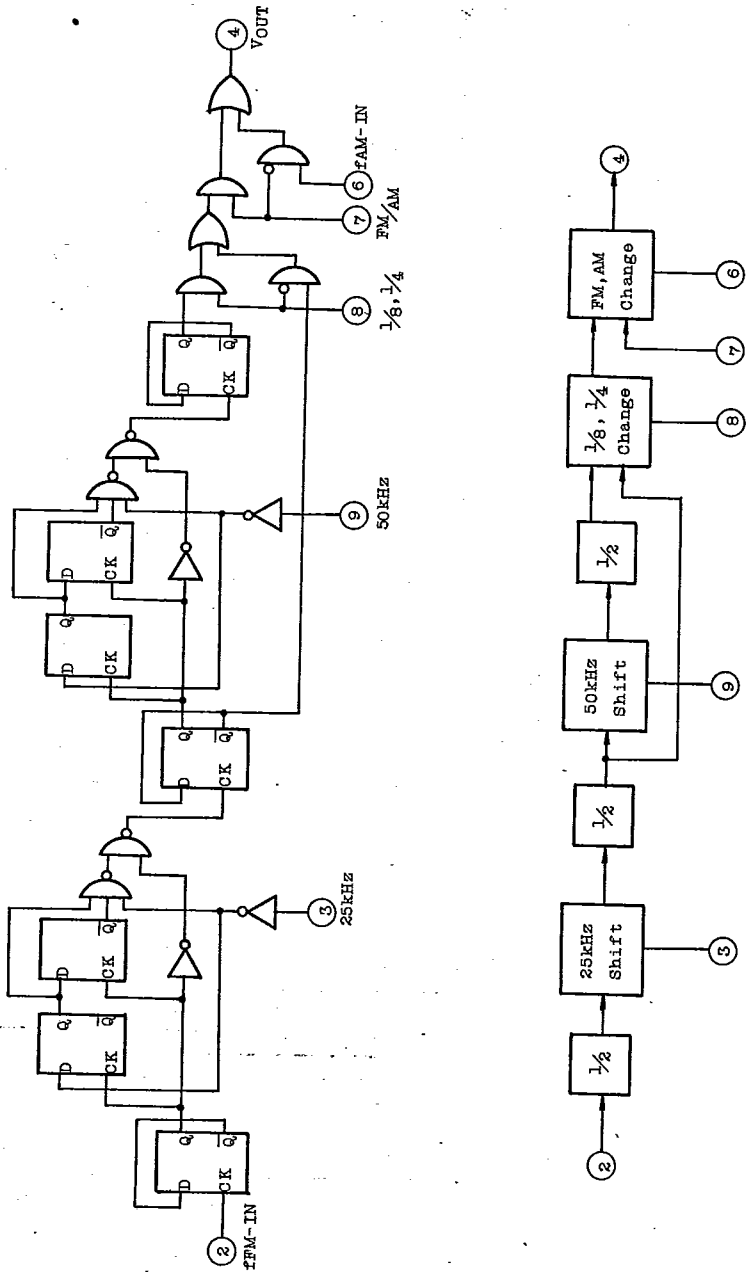
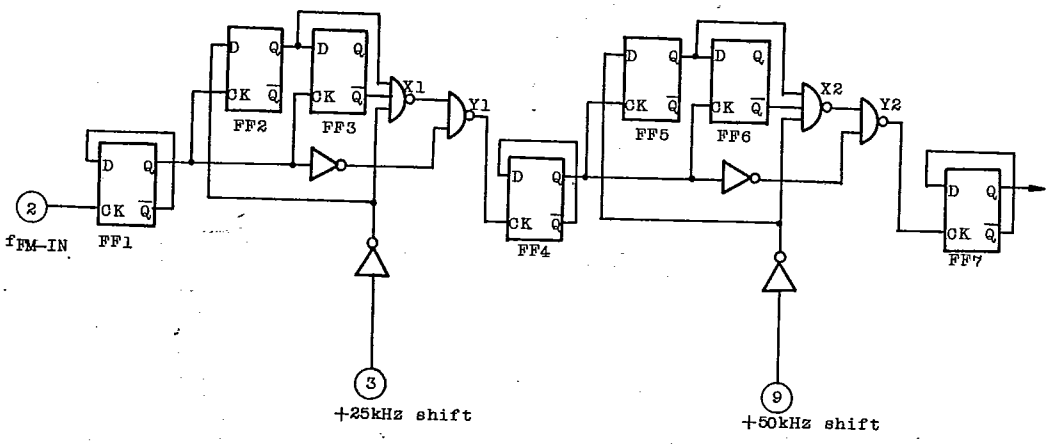
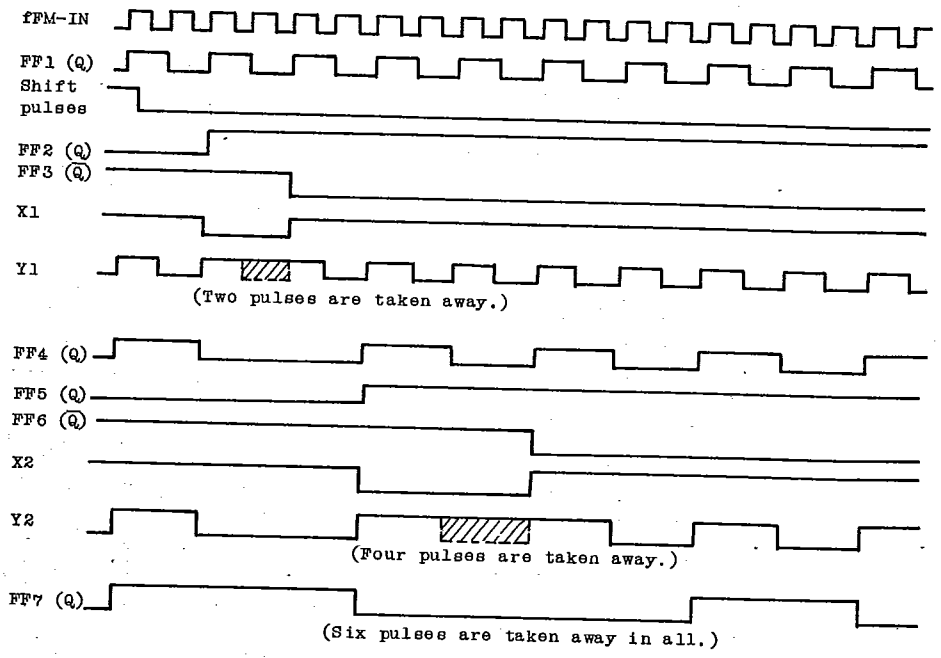
LOGIC & BLOCK DIAGRAM



BEHAVIOUR OF 25kHz SHIFT AND 50kHz SHIFT CIRCUITS





TIMING CHART

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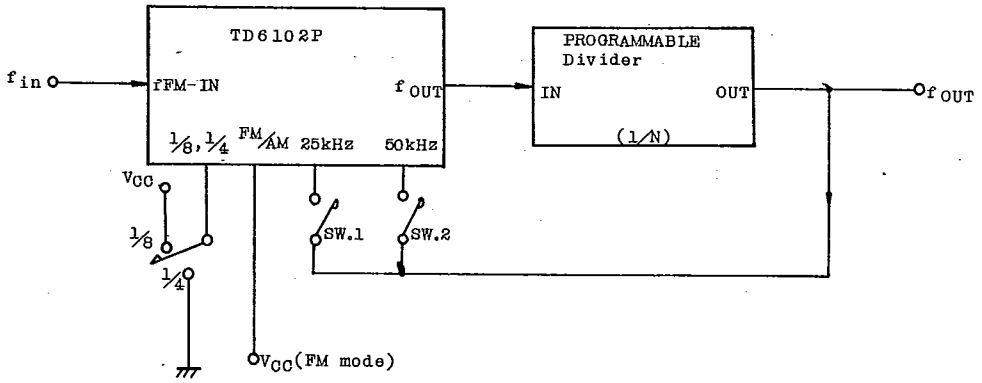
When shift pulses are applied to 25kHz and 50kHz shift terminals, two input pulses and four input pulses are taken away, respectively. When this function is applied to such a system as shown below, frequency dividing ratio can be changed.



MODE	25kHz SW.1	50kHz SW.2	DIVIDING RATIO (f_{IN}/f_{OUT})	REMARKS
FM mode 1/8 mode	off	off	8N	
	on	off	8N + 2	Corresponds to draw-out of two pulses.
	off	on	8N + 4	Corresponds to draw-out of four pulses.
	on	on	8N + 6	Corresponds to draw-out of six pulses.
FM mode 1/4 mode *	off	off	4N	
	on	off	4N + 2	Corresponds to draw-out of two pulses.

* Under 1/4 mode, 50kHz shift does not operate.

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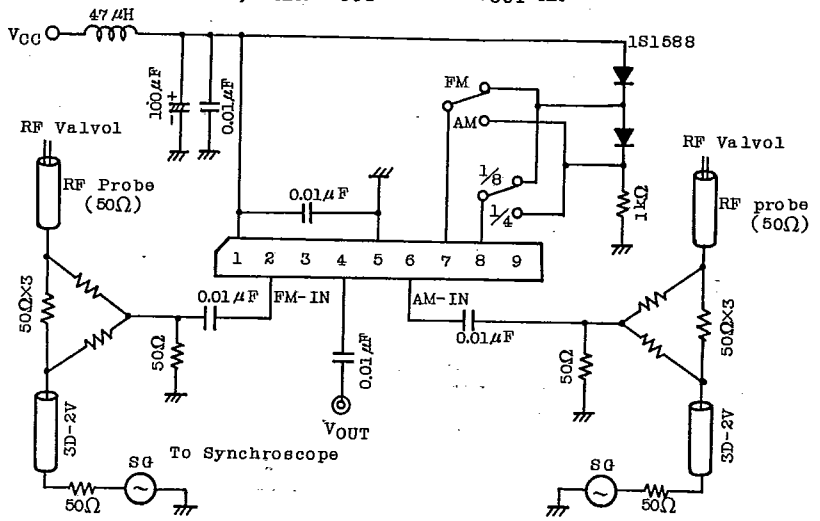
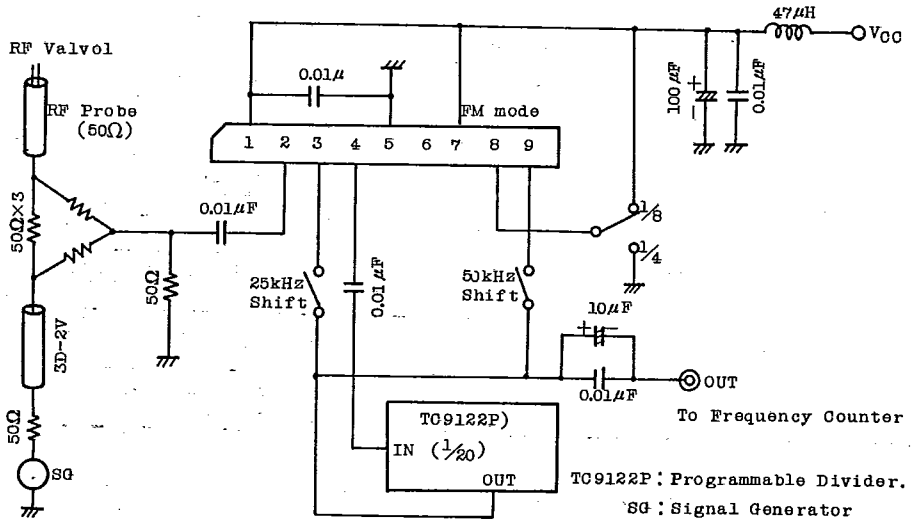
TEST CIRCUITS

TEST CIRCUIT (1) FOR f_{FM}, f_{AM}, V_{OUT-FM} and V_{OUT-AM}



TEST CIRCUIT (2) for f_{FM} 25kHz-shift and 50kHz-shift



TC9122P : Programmable Divider.

SG : Signal Generator