TOSHIBA Bipolar Digital Integrated Circuit Silicon Monolithic

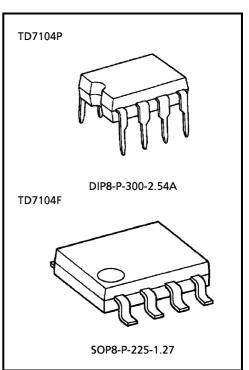
TD7104P,TD7104F

ECL Prescaler For Digital Synthesized Tuner

TD7104P,TD7104F are general-purpose fixed dividing prescaler developed for digital tuning system of PLL frequency synthesizer type, and can operate up to 1GHz.

Features

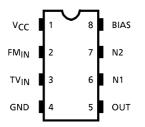
- Maximum operating frequency 1GHz. (at 1 / 8 dividign mode)
- Dividing ratios of 1 / 8, 1 / 4, and 1 / 2 are provided.
- Independent TV and FM inputs are provided.
 In FM mode, this IC can function as a buffer amplifier (1 / 1 dividing).
- The built-in input amplifier contributes to realizing high input voltage sensitivity.
- built-in stand-by circuit



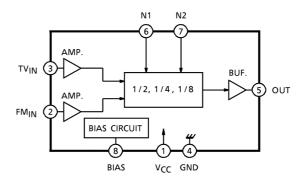
Weight

DIP8-P-300-2.54A: 0.45g (typ.) SOP8-P-225-1.27: 0.76g (typ.)

Pin Connection



Block Diagram



Pin Function

Pin No.	Symbol	Pin Name Function And Description		Remarks	
1	V _{CC}	Power supply terminal	Applies voltage of V_{CC} = 3.0 to 5.5V	—	
2	FM _{IN}	FM local OSC. signal input terminal	Inputs local oscillation signal in FM band. f _{IN} = 50 to 200MHz, FM _{IN} input signal is output by 1 / 1 dividing (buffer amplifier).	Built–in input Amp. provided	
3	TV _{IN}	TV local OSC. signal input terminal	Inputs local oscillation signal in TV band. $F_{IN} = 50M$ to 1.0GHz, TV _{IN} input signal is output by 1 / 8, 1 / 4, or 1 / 2 dividing, which is controlled with N1 and N2 input.	Built–in input Amp. provided	
4	GND	Ground terminal Grounds.		—	
5	Out	Dividing signal output terminal	Outputs dividing signal.	—	
6	N1	Dividing ratio selecting	These inputs control the selection of a dividing ratio among 1 / 1, 1 / 2, 1 / 4, and 1 / 8.	_	
7	N2	control terminal	FM _{IN} terminal is selected at N1 = N2 = "L" level (1 / 1 dividing). The truth table is shown below.		
8	BIAS	BIAS terminal	Connects capacitors on bias circuit. Change this pin into low, the IC is turned stand-by mode.	—	

Truth Table

Receiving Band	Input Terminal	Operating Frequency Range	Dividing Ratio	N1	N2
FM	FM _{IN}	50M~200MHz	÷1	0	0
TV		50M~400MHz	÷2	1	0
	τν _{in}	100M~500MHz	÷4	0	1
		100M~1.0GHz	÷8	1	1

Maximum Ratings (Ta = 25°C)

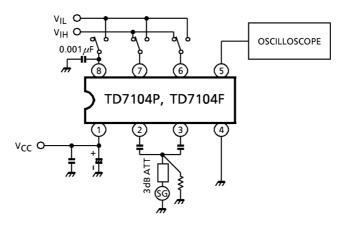
Characteristic	Symbol	Rating	Unit	
Power supply voltage	V _{CC}	6.5	V	
Power dissipation	PD	450 (200) (*)	mW	
Input voltage	V _{in}	–0.3~V _{CC} + 0.3	V	
Operating temperature	T _{opr}	-30~75	°C	
Storage temperature	T _{stg}	-55~150	°C	

(*) Flat package

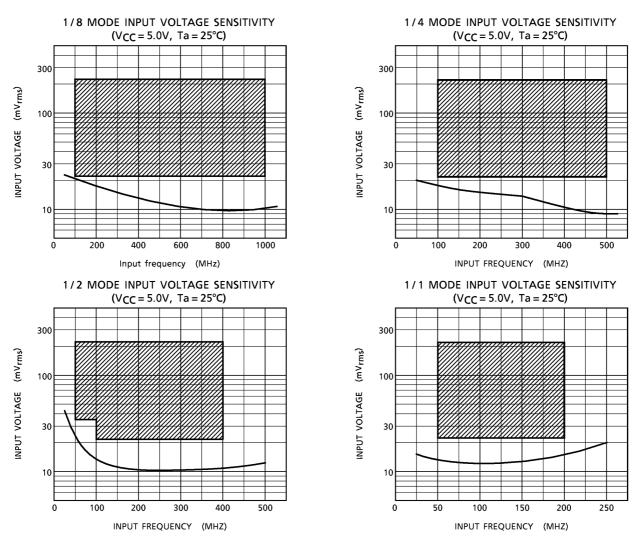
Electrical Characteristics (unless otherwise specified, $V_{CC} = 3.0 - 6.0V$, Ta = $-30 - 75^{\circ}C$)

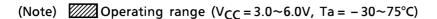
Charact	eristic	Symbol	Test Cir– cuit	Test Condition		Min.	Тур.	Max.	Unit
Power supply voltage		V _{CC}	_	—		3.0	~	6.0	V
Operating supply current		I _{CC1}	_	V _{CC} = 5.0V, ÷8, ÷4		_	14	20	mA
		I _{CC2}	_	V _{CC} = 5.0V, ÷2		_	11	18	
		I _{CC3}	_	V _{CC} = 5.0V, FM mode		_	7	13	
Stand-by current		I _{CS}	_	V _{CC} = 5.0V, BIAS = GND		_	30	70	μA
Operating frequency range		f _{IN1}	- 1	÷8, TV _{IN}		100		1000	MHz
		f _{IN2}		÷4, TV _{IN}		100		500	
		f _{IN3}		÷2, TV _{IN}		50		400	
		f _{IN4}		FM mode, FM _{IN}		50		200	
Input voltage range		V _{IN1}		TV _{IN} (÷8, ÷4)		22.0		220	
		V	1	$T_{1}(x, t; 2)$	f _{IN} = 50~100MHz	35.0		220	mV _{rms}
		V _{IN2}	1 TV _{IN} (÷2)	ι ν _{IN} (÷∠)	f _{IN} = 100~400MHz	22.0		220	
		V _{IN3}	FMIN			22.0		220	
Output amplitude		V _{OUT}	1	Out, C _L = 3pF		0.4	0.5	_	V _{p-p}
Input voltage	"H" level	VIH	—	N1, N2, BIAS		2.5	_	V _{CC}	v
	"L" level	VIL	_	N1, N2, BIAS		0	—	0.8	
lanut cumant	"H" level	I _{IH}	_	N1, N2, BIAS, V _{CC} = 5.0V V _{IH} = 4.0V		_	_	100	μA
Input current	"L" level	۱ _{IL}	_	N1, N2, BIAS, V _{CC} = 5.0V V _{IL} = 1.0V		_	_	10	

Test Circuit 1 (input voltage sensitivitly)

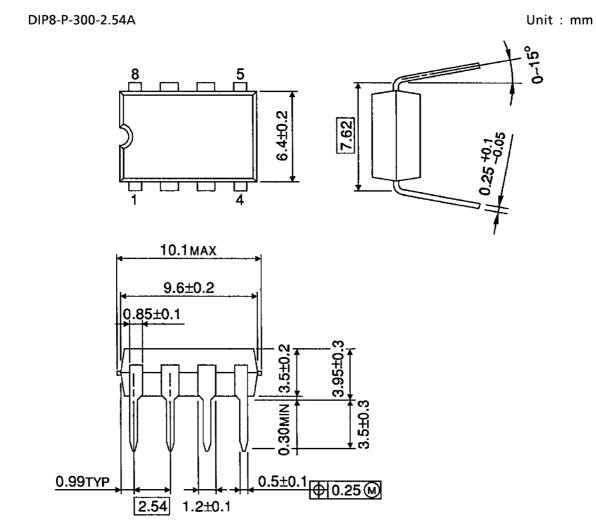






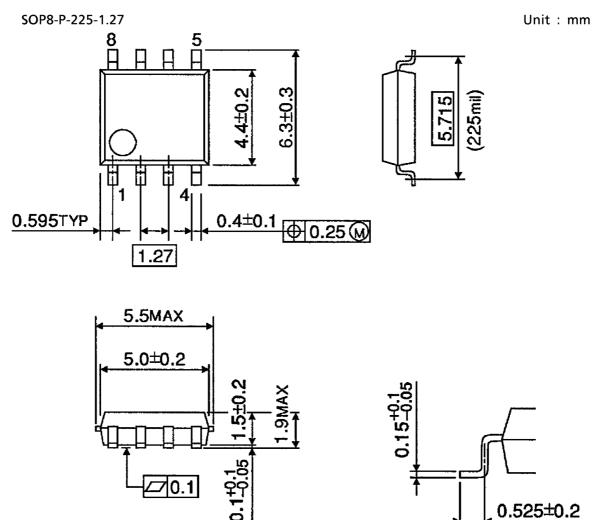


Package Dimensions



Weight: 0.45g (typ.)

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