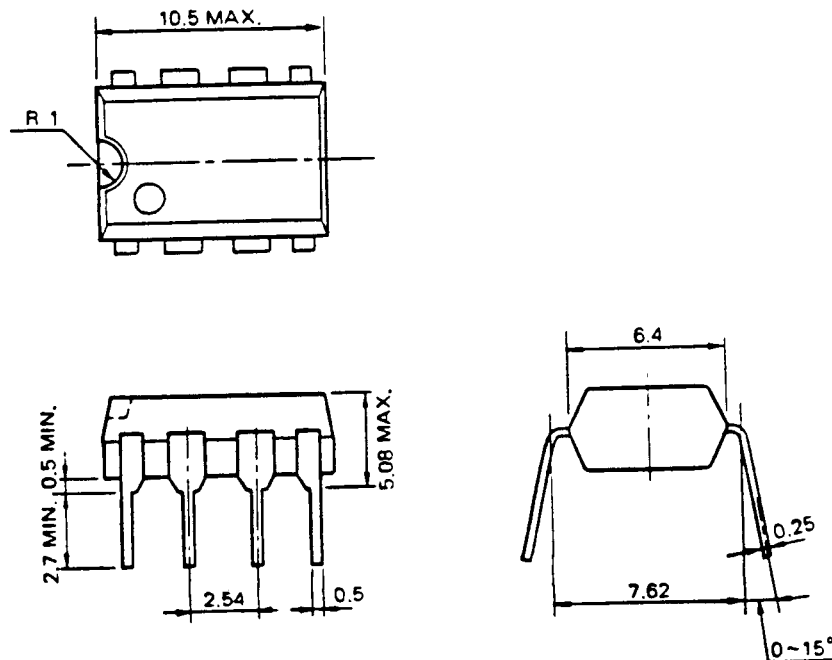


**NEC**<sup>®</sup>**150 MHz DIVIDE-BY-16/17  
LOW POWER PRESCALERS****UPB553AC****DESCRIPTION**

The UPB553AC is a VHF two-modulus prescaler intended for use in measurement instrumentation and PLL Digital Tuning Systems in conjunction with UPD1700 series. Advanced bipolar process technology is utilized to realize high frequency operation with extremely low power consumptions. The device provides +16 and +17 division ratio for NEC's original pulse swallowing method, and is guaranteed to operate up to 130 MHz over the -35°C to +75°C temperature range with a Vcc variation from +4.5 to +5.5 V. An included amplifier allows it to be operated with a small amplitude signal of 150 mVp-p.

**FEATURES**

- High frequency operation: 150 MHz ( $\div 16$ )  
130 MHz ( $\div 17$ )
- NEC's original pulse swallowing operation:  $\div 16/\div 17$
- Small input amplitude:  $V_{in} = 150 \text{ mVp-p (MIN.)}$
- Single supply voltage:  $V_{CC} = 5.0 \text{ V} \pm 10 \%$
- Low supply current:  $I_{CC} = 8.9 \text{ mA (TYP.)}$
- Incorporated buffer amplifier:  $V_O = 1.2 \text{ Vp-p (TYP.)}$
- Small package: 8 pin plastic dual in-line package (DIP)

**PACKAGE DIMENSIONS (Unit: mm)**

**ABSOLUTE MAXIMUM RATINGS**

Supply Voltage	V <sub>CC</sub>	-0.5 to 6.0	V
Input Voltage	V <sub>i</sub>	-0.5 to V <sub>CC</sub>	V
Output Current	I <sub>O</sub>	10	mA
Junction Temperature	T <sub>j</sub>	+125	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C

**RECOMMENDED OPERATING CONDITIONS**

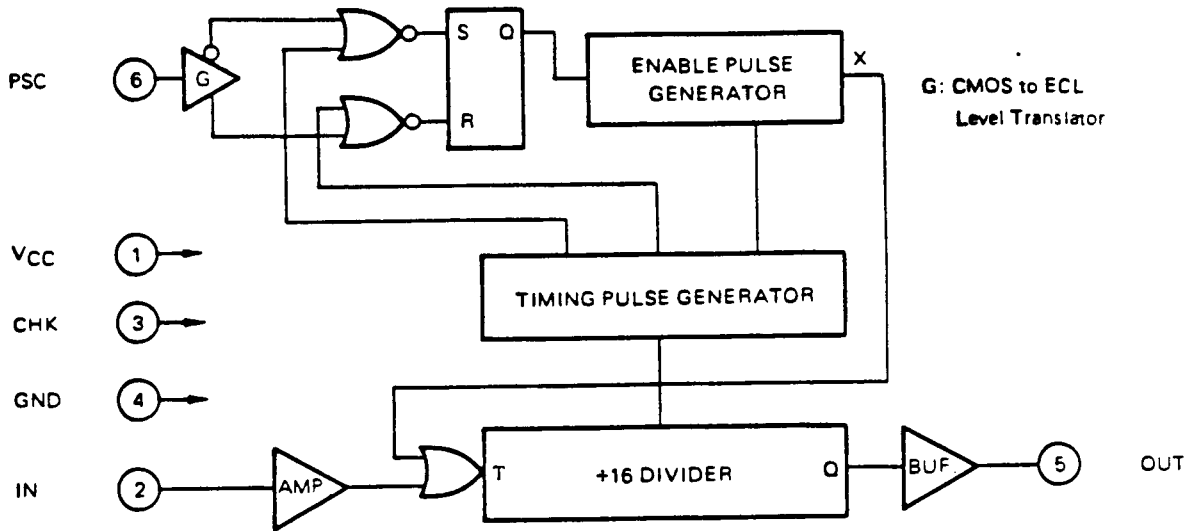
Supply Voltage Range	V <sub>CC</sub>	4.5 to 5.5	V
Ambient Temperature	T <sub>a</sub>	-35 to +75	°C
Output Load Capacitance	C <sub>L</sub>	less than 10 picofarad	

**ELECTRICAL CHARACTERISTICS (V<sub>CC</sub> = 5 V ±10 %, T<sub>a</sub> = -35 to +75 °C)**

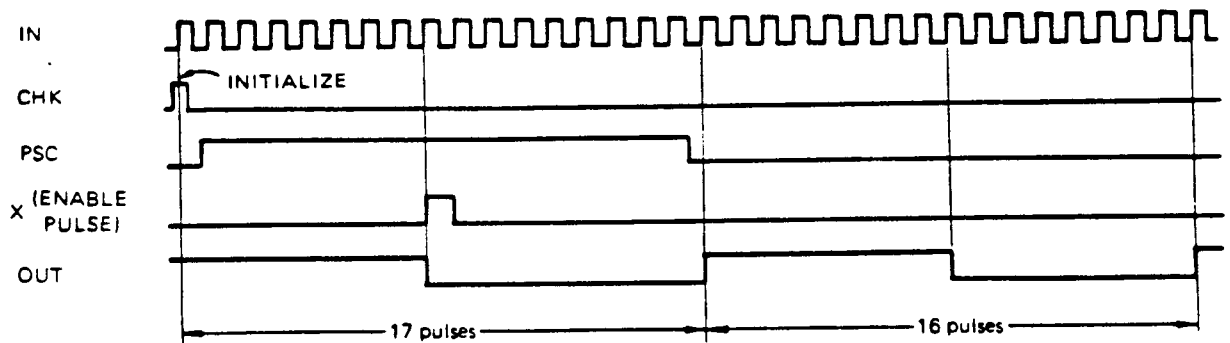
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Power Supply Current	I <sub>CC</sub>		8.9	12.7	mA	V <sub>CC</sub> = 5.0 V
Power Consumption	P <sub>C</sub>		44.5		mW	T <sub>a</sub> = 25 °C
Frequency Response	f <sub>in</sub>	1.0		150	MHz	V <sub>in</sub> ≥ 0.15 V <sub>p-p</sub> , ÷16
Frequency Response	f <sub>in</sub>	1.0		130	MHz	V <sub>in</sub> ≥ 0.15 V <sub>p-p</sub> , ÷17
Output Voltage	V <sub>O</sub>	0.9	1.2		V <sub>p-p</sub>	OUT terminal
Input Voltage	V <sub>in</sub>	0.15		2.0	V <sub>p-p</sub>	IN terminal
High Level Input Voltage	V <sub>IH</sub>	0.8V <sub>CC</sub>			V	PSC terminal
Low Level Input Voltage	V <sub>IL</sub>			0.2V <sub>CC</sub>	V	PSC terminal

Note: CHK terminal should be connected to GND.

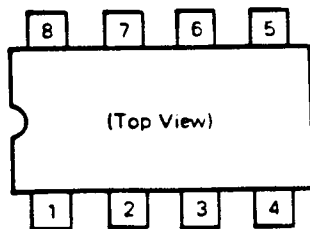
**BLOCK DIAGRAM (Top View)**



**TIMING CHART**



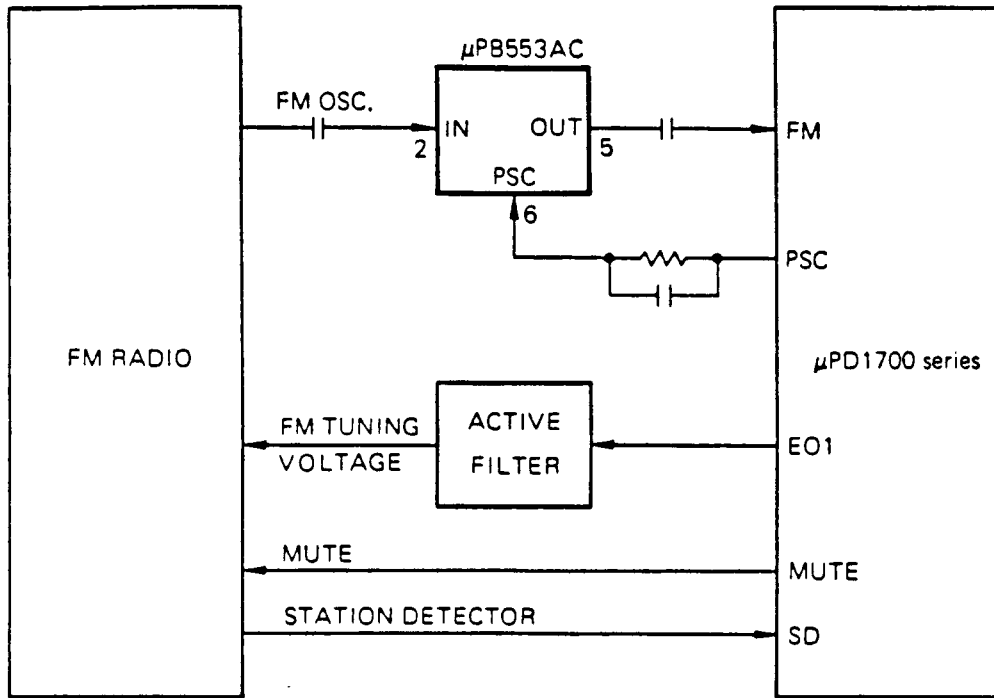
**CONNECTION DIAGRAM**



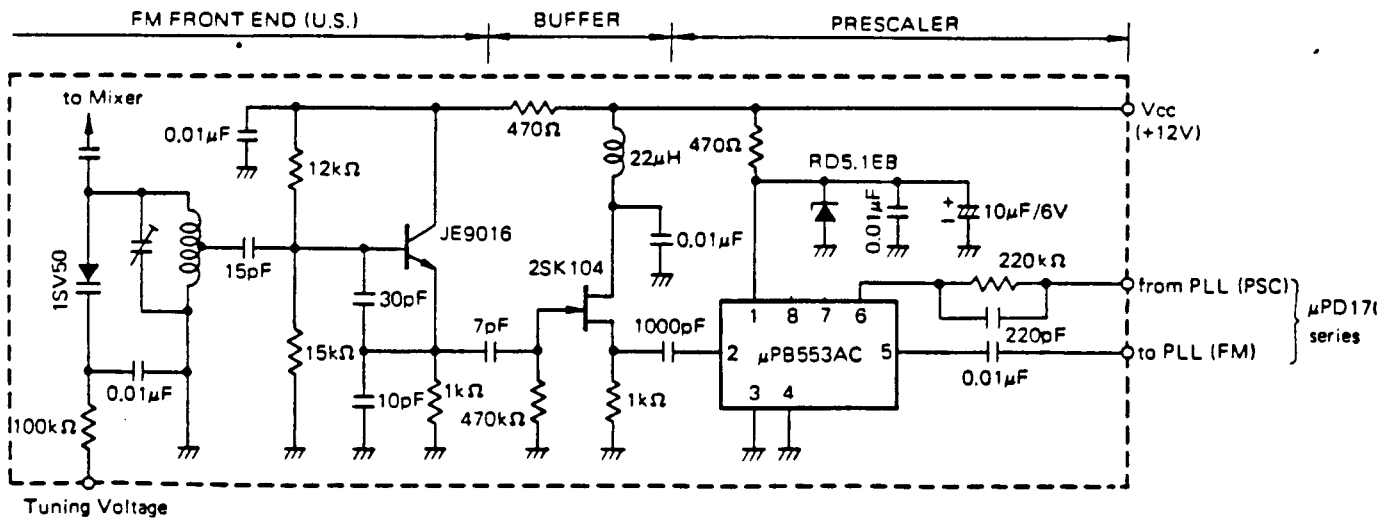
Pin Number	Symbol	Function
1	VCC	Power Supply (VCC)
2	IN	Signal Input
3	CHK	Check (Normally to GND)
4	GND	GND
5	OUT	Output
6	PSC	Division Ratio Control*
7	NC	No Connection
8	NC	No Connection

\*: When PSC terminal fixed high or low level, the  $\mu$ PB553AC functions as a  $\div 16$  prescaler.

APPLICATION-1



APPLICATION-2



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