T-45-19-13

NEC®

LOW VOLTAGE, LOW POWER TWO-MODULUS PRESCALER

UPB552C

DESCRIPTION

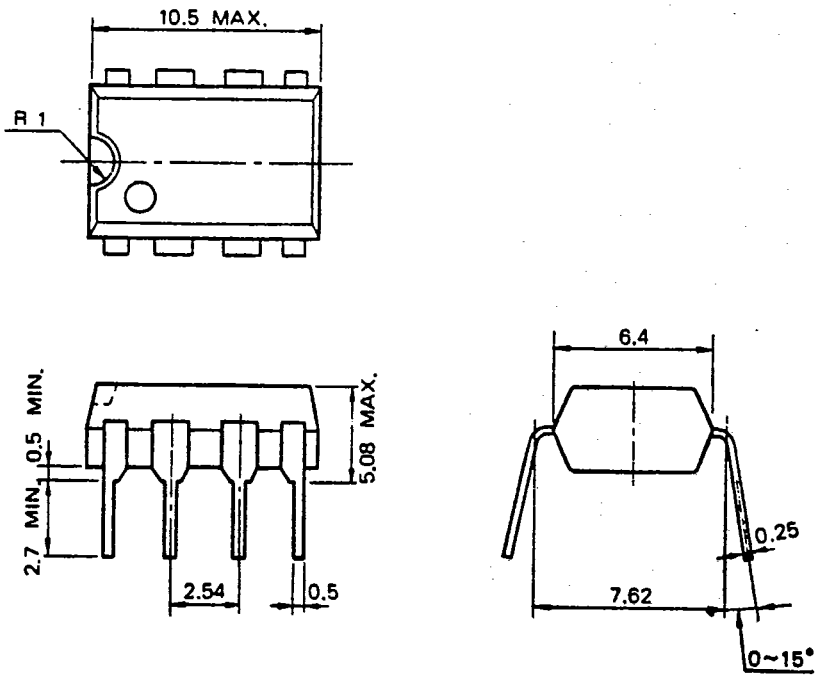
The μPB552C is a VHF two-modulus prescaler intended for use in PLL digital tuning systems.

Advanced bipolar process technology is utilized to realize high frequency operation with extremely low power consumptions. The device provides variable division ratio of 1/10, 1/11, 1/20, 1/22, 1/40, and 1/44 for a minimum guaranteed input frequency of 150 MHz over a −35 °C to +75 °C temperature range. An included input amplifier allows it to be operated with small amplitude signal of 150 mVp-p.

FEATURES

- High frequency, 150 MHz (except 1/10, 1/11)
- Variable division ratio, 1/10, 1/11, 1/20, 1/22, 1/40, and 1/44
- Small input amplitude (V_{in} = 150 mVp-p (MIN.)
- Wide supply voltage range, V_{CC} 2.8~4.5 volts
- Ultra-Low power, P_C = 19.6mW (TYP.)
- Incorporated buffer amplifier, V_O = 1.2 Vp-p (TYP.)
- Small package, 8-pin plastic DIP

PACKAGE DIMENSIONS (Unit: mm)



ABSOLUTE MAXIMUM RATINGS

Supply Voltage	V_{CC}	−0.5 to 6.0	V
Input Voltage	V_i	−0.5 to V_{CC}	V
Output Current	I_{OH}	− 10	mA
Junction Temperature	T_j	+125	°C
Storage Temperature	T_{stg}	−55 to +125	°C

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range	V_{CC}	2.8 to 4.5	V
Ambient Temperature	Ta	−35 to +75	°C
Output Load Capacitance	C_L	less than 10 picofarad	

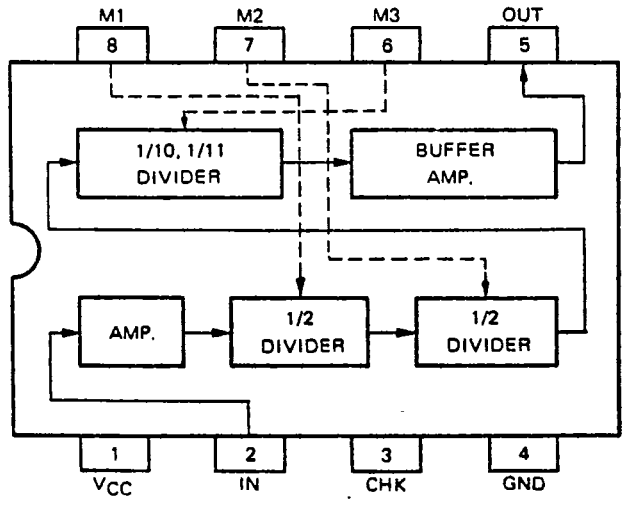
ELECTRICAL CHARACTERISTICS (V_{CC}= 2.8 ~ 4.5 V, Ta = −35 ~ +75 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Power Supply Current	I_{CC}		5.6	7.6	mA	V_{CC} = 3.5 V, Ta = 25 °C
Power Consumption	P_C		19.6		mW	
Output Voltage	V_O	0.9	1.2		Vp-p	(OUT)
High Level Input Voltage	V_{IH}	0.8V_{CC}			V	(M3)
Low Level Input Voltage	V_{IL}			0.2V_{CC}	V	(M3)
Frequency Response	fin	1		150	MHz	Division Ratio = 20, 22, 40, 44
Frequency Response	fin	1		50	MHz	Division Ratio = 10, 11
Input Voltage	Vin	150		2000	mVp-p	(IN)
Set Up Time	t_s	30			ns	M3 → OUT
Output Rise Time	t_r	5.0		20	ns	C_L = 10pF, (20 % → 80 %)

Note: M1, M2 and CHK input terminals should be connected to either GND or V_{CC}.

Vi ≥ 150 mVp-p, sine wave

CONNECTION DIAGRAM



Pin Number	Symbol	Function
1	V_{CC}	Power Supply (V_{CC})
2	IN	Signal Input
3	CHK	Initialize
4	GND	GND
5	OUT	Output
6	M3	Division Ratio Control
7	M2	
8	M1	

BLOCK DIAGRAM

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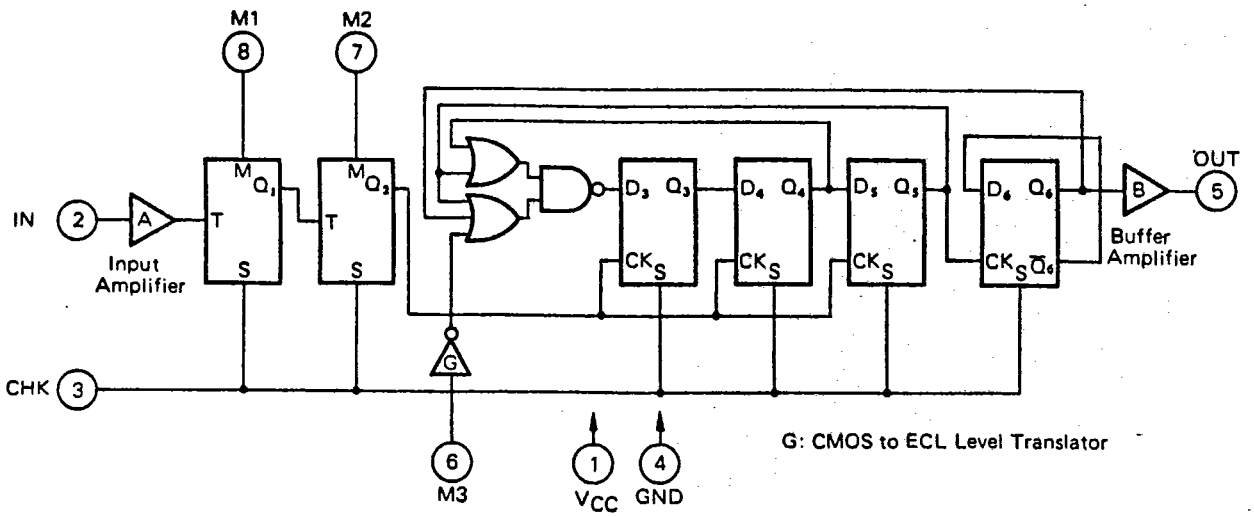
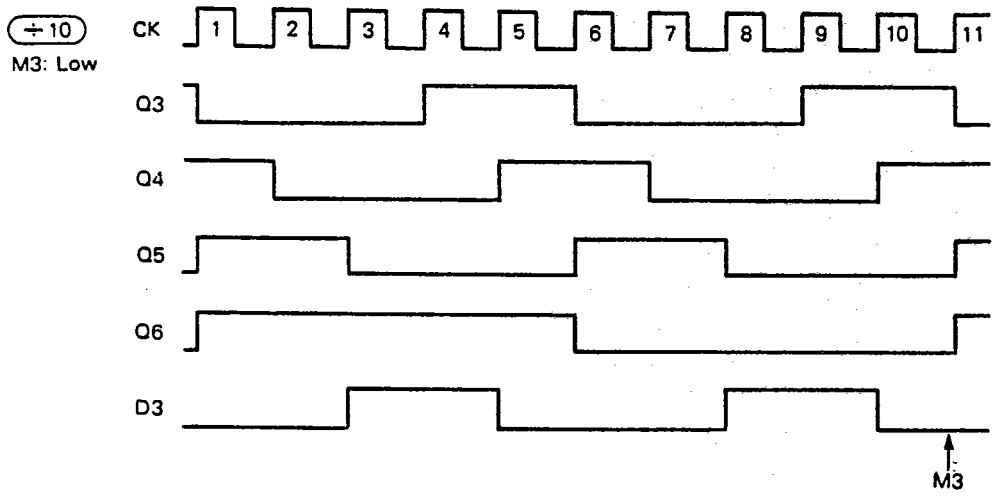
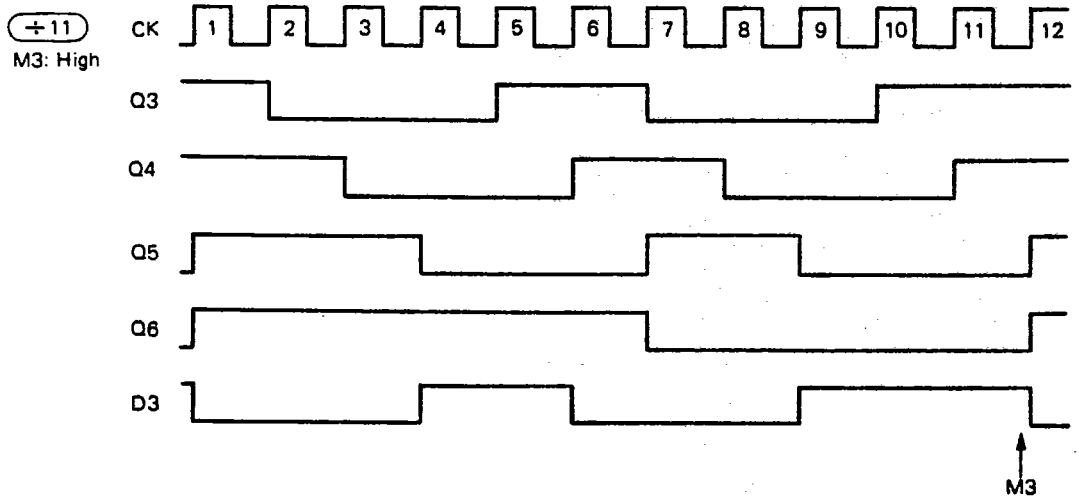


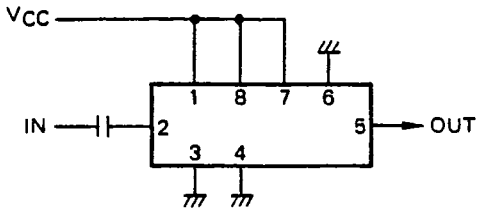
TIMING CHART



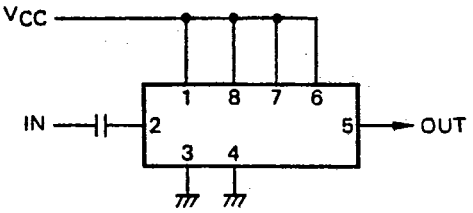


In the case of 1/20, 1/22, 1/40 and 1/44, input signal is divided by 2 or 4 for CK.

APPLICATION-1



DIVIDED BY 10



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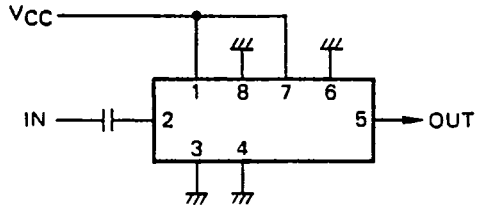

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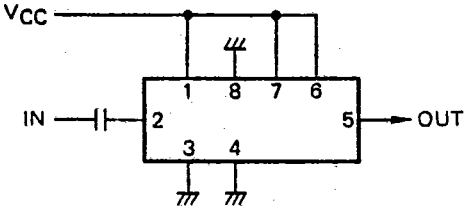

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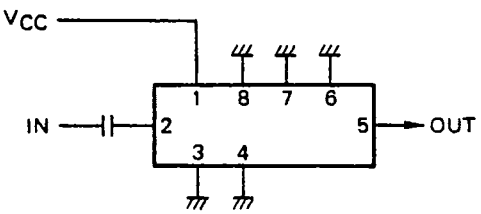

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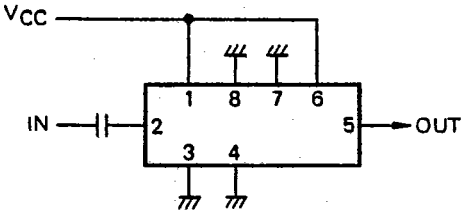

DIVIDED BY 44

APPLICATION-2