



LOW POWER DUAL MODULUS PRESCALER

UPB555C

The UPB555C is a general purpose dual modulus prescaler. It can be operated up to 150 MHz and it utilizes a low power advanced bipolar process technology.

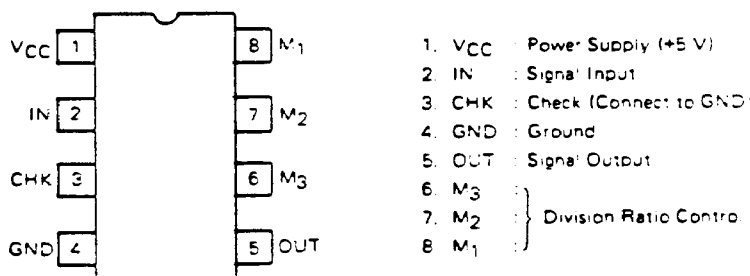
FEATURES

- Low supply current: $I_{CC} = 7.0 \text{ mA}$ (TYP.)
- Variable division ratio: $\div 8, \div 9, \div 16, \div 17, \div 32$ and $\div 33$
- Pulse swallowing operation: $\div 8/\div 9, \div 16/\div 17, \div 32/\div 33$
- Small input amplitude: $V_{in} = 150 \text{ mV}_{p.p}$ (MIN.)
- Incorporated buffer amplifier: $V_o = 1.2 \text{ V}_{p.p}$ (TYP.)
- 150 MHz operation is guaranteed: -35 to $+75^\circ\text{C}$
- Single supply voltage: $V_{CC} = 5 \pm 0.5 \text{ volts}$
- Low Cost

ORDERING INFORMATION

Order Code	Package
UPB555C	8 pin plastic DIP (300 mil)

CONNECTION DIAGRAM (Top View)



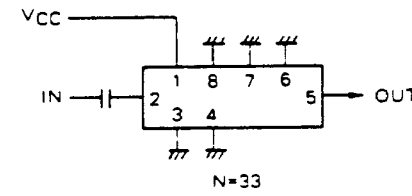
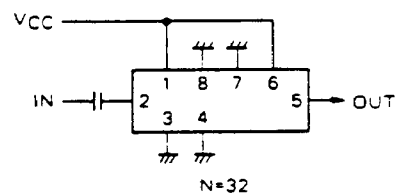
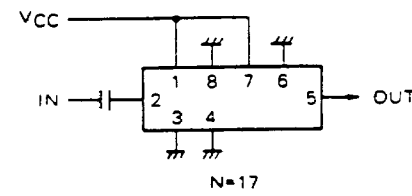
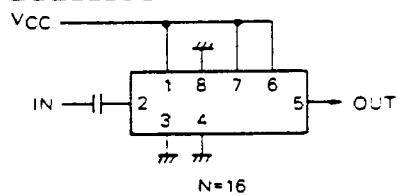
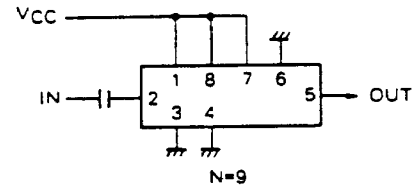
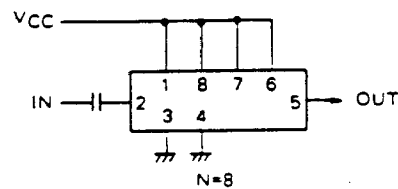
California Eastern Laboratories

DIVISION RATIO CONTROL

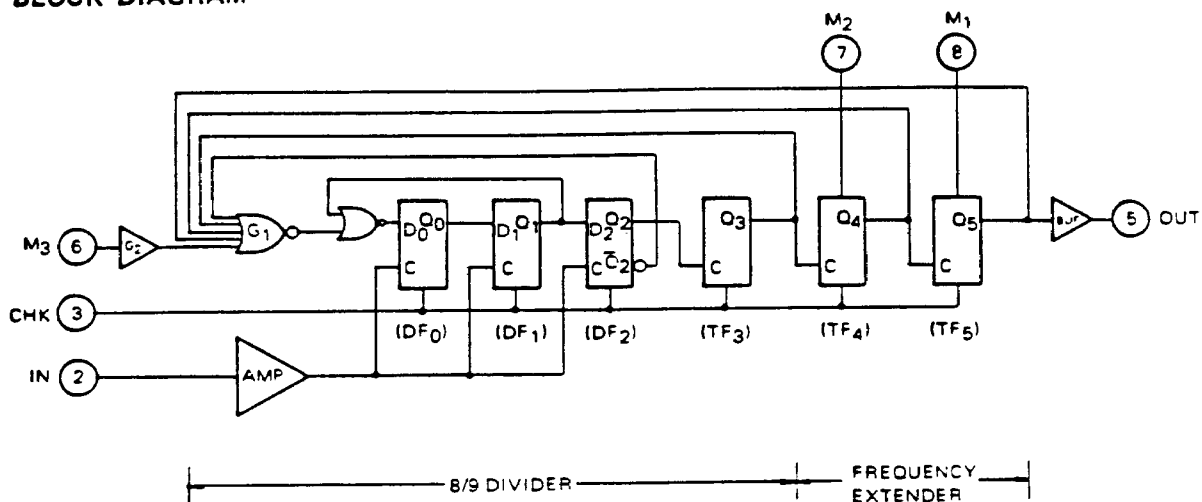
M ₁	M ₂	M ₃	DIVISION RATIO
V _{CC}	V _{CC}	High	÷ 8
V _{CC}	V _{CC}	Low	÷ 9
GND	V _{CC}	High	÷ 16
GND	V _{CC}	Low	÷ 17
GND	GND	High	÷ 32
GND	GND	Low	÷ 33

M₃ { Low : Less than 0.2 V_{CC}
High : More than 0.8 V_{CC}

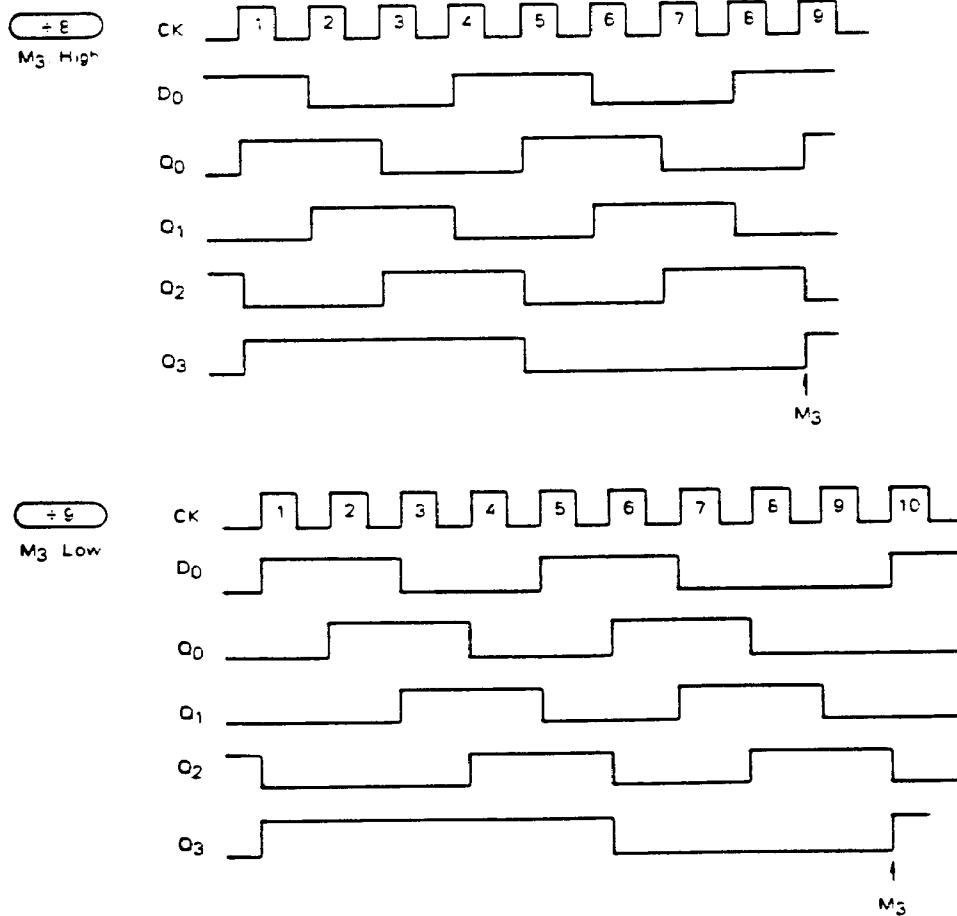
APPLICATION



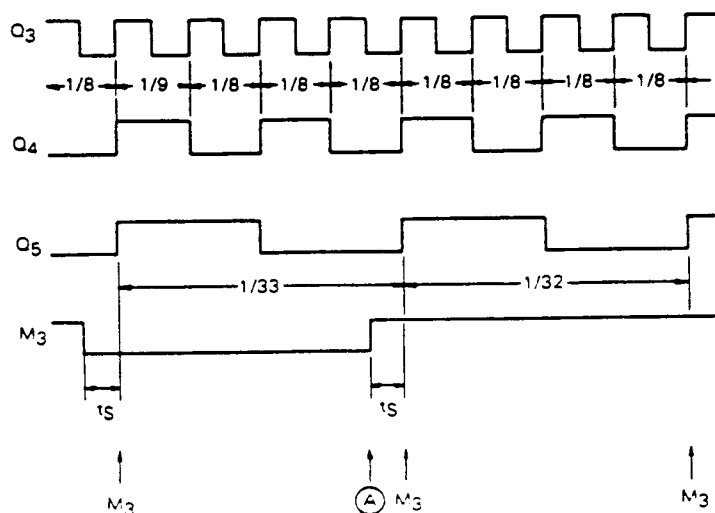
BLOCK DIAGRAM



TIMING CHART 1



TIMING CHART 2

Frequency Extender ($M_1 = M_2 = \text{GND}$)

When both Q_4 and Q_5 are low level, the M_3 pin is active. If the M_3 pin is low at (A) point, the division ratio is 1/9, otherwise the division ratio is 1/8. So 1/33 division ratio means $N = 9 \times 1 + 8 \times 3$.

When the M_1 pin is V_{CC} level, the TF_5 is through mode ($Q_4 = Q_5$). The two-modulus division ratio are 1/16 and 1/17. When both the M_1, M_2 pins are V_{CC} level, both TF_4, TF_5 are through mode. The two-modulus division ratio are 1/8 and 1/9.

COUNT	D_0	Q_0	Q_1	Q_2	Q_3
1	1	0	0	0	1
2	1	1	0	0	1
3	0	1	1	0	1
4	0	0	1	1	1
5	1	0	0	1	1
6	1	1	0	0	0
7	0	1	1	0	0
8	0	0	1	1	0
9	0 (1)*	0	0	1	0

* division ratio is 1/8

$M_1 = M_2 = V_{CC}$ (both TF_4, TF_5 are through mode)

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_o	-10	mA
Storage Temperature	T_{stg}	-55 to +125	°C

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Supply Voltage	V_{CC}	4.5	5.0	5.5	V	
Output Load Capacitance	C_L			10	pF	OUT Pin
Ambient Temperature	T_a	-35		+75	°C	
Input Rise Time	t_r			100	ns	M ₃ Pin (20 to E)
Input Fall Time	t_f			100	ns	M ₃ Pin (20 to E)

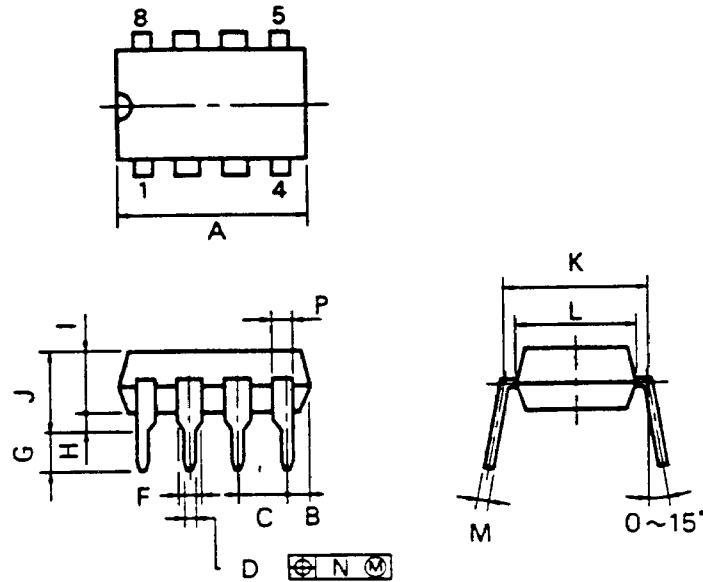
ELECTRIC CHARACTERISTICS ($V_{CC} = 5\text{ V} \pm 10\%$, $T_a = -35$ to $+75$ °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Operating Frequency	f_{in}	1		150	MHz	IN Pin, $V_{in} \geq 150\text{ mV}_{p.p}$ sine wave
Input Voltage	V_{in}	150		2000	mV _{p.p}	IN Pin
High Level Input Voltage	V_{IH}	0.8 V_{CC}			V	M ₃ Pin
Low Level Input Voltage	V_{IL}			0.2 V_{CC}	V	M ₃ Pin
Output Voltage	V_o	0.9	1.2		V _{p.p}	OUT Pin
Supply Current	I_{CC}		7.0	11	mA	V_{CC} Pin
Set Up Time	t_s			30	ns	M ₃ - OUT
Output Rise Time	t_r	5		20	ns	OUT Pin, $C_L = 10\text{ pF}$ (20 to 80 %)

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

PACKAGE DIMENSION

8 PIN PLASTIC DIP (300 mil)



PBC-100-300A

NOTES

- 1) Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition.
- 2) Item "K" to center of leads when formed parallel.

ITEM	MILLIMETERS	INCHES
A	10.16 MAX.	0.400 MAX.
B	1.27 MAX.	0.050 MAX.
C	2.54 (T.P.)	0.100 (T.P.)
D	0.50 ± 0.10	0.020 ± 0.004
F	1.4 MIN.	0.055 MIN.
G	2.9 ± 0.3	0.114
H	0.51 MIN.	0.020 MIN.
I	4.31 MAX.	0.170 MAX.
J	5.08 MAX.	0.200 MAX.
K	7.62 (T.P.)	0.300 (T.P.)
L	6.4	0.252
M	0.25 ± 0.13	0.010 ± 0.005
N	0.25	0.01
P	0.9 MIN.	0.035 MIN.

EXCLUSIVE AGENT FOR NEC Corporation RF & MICROWAVE SEMICONDUCTOR PRODUCTS—U.S. & CANADA
CALIFORNIA EASTERN LABORATORIES, INC. • Headquarters • 3280 Jay Street • Santa Clara, CA 95054 • (408) 988-3500 • Telex 34-8393/FAX 408-988-0279

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DATA SUBJECT TO CHANGE WITHOUT NOTICE

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