

NEC[®]

1 GHz DIVIDE-BY-128/136 LOW POWER PRESCALER

**UPB568,
UPB568HA**

The μ PB568C, the μ PB568HA and the μ PB568G are two-modulus prescalers for TV, CATV and VTR, which adopts NEC's original pulse swallowing method, they are high sensitivity and low power prescalers.

It is possible that consists a tuning system of PLL frequency synthesizer method having a stable and high-precision fine tuning function by using with μ PD1700 series (μ PD1709, μ PD1711, μ PD1712 etc.)

Three kinds of packages are 8-pin DIP (μ PB568C), 8-pin Slim SIP (μ PB568HA) and 8-pin Mini Flat (μ PB568G).

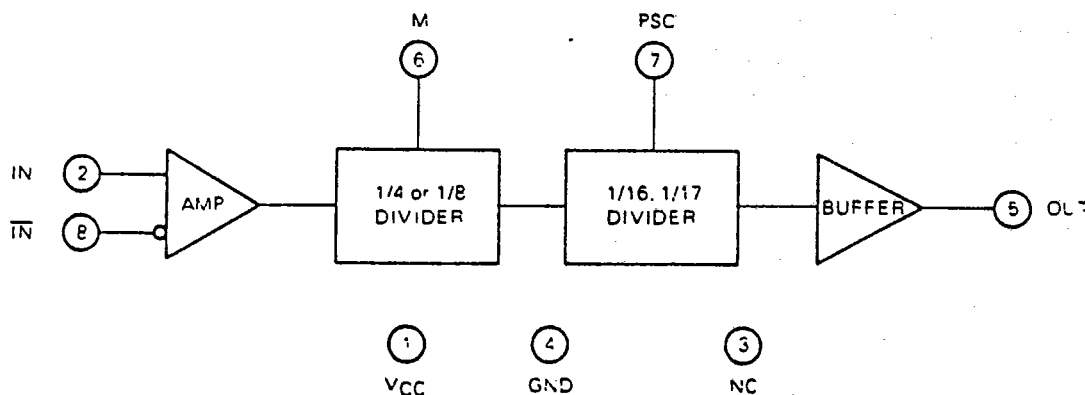
FEATURES

- High sensitivity: 60 mV_{p.p}
- Wide range, high speed : 90 to 1 000 MHz ($V_{in} = 60$ mV_{p.p} MIN.)
: 60 to 1 150 MHz ($V_{in} = 150$ mV_{p.p} MIN.)
- Low supply current: 29 mA (TYP.)
- NEC's original pulse swallowing method
 - 128/136 1 GHz (MAX.)
 - 64/68 500 MHz (MAX.)

Ordering Information

Order Code	Package
μ PB568C	8 pin plastic DIP (300 mil)
μ PB568G	8 pin mini flat (225 mil)
μ PB568HA	8 pin slim SIP

BLOCK DIAGRAM



Note: This pin number is μ PB568C and μ PB568G's.

μ PB568HA's pin number is different from μ PB568C and μ PB568G's.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	V_{CC}	-0.5 to 6.0	V
Input Voltage	V_I	-0.5 to $V_{CC}+0.5$	V
Output Current	I_O	-10.0	mA
Storage Temperature	T_{stg}	-55 to +125	°C

RECOMMENDED OPERATING CONDITIONS

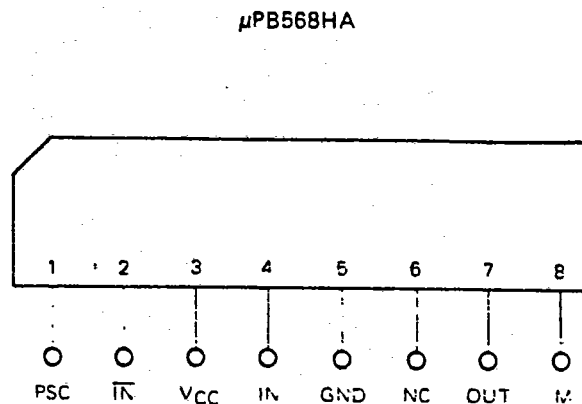
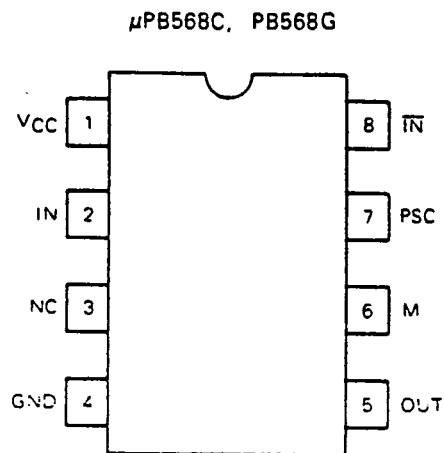
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	4.5	5.0	5.5	V
Operating Temperature	T_a	-35		+75	°C
Output Load Capacitance	C_L			10	pF

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

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Supply Current	I_{CC}		30	42	mA	$V_{CC} = 5.0\text{ V}$, $T_a = 25$ °C
Output Oscillation Voltage	V_O	0.9	1.15		V _{p.p}	OUT pin
Input Oscillation Voltage	V_{in}	0.06		1.5	V _{p.p}	IN pin
High Level Input Voltage	V_{IH}	0.7 V_{CC}			V	PSC pin
Low Level Input Voltage	V_{IL}			0.3 V_{CC}	V	PSC pin, $V_I = 5\text{ V}$
High Level Input Current 1	I_{IH1}			50	μA	PSC pin, $V_I = 5\text{ V}$
High Level Input Current 2	I_{IH2}			50	μA	M pin, $V_I = 5\text{ V}$
Operating Frequency 1	f_{in1}	90		1 000	MHz	IN pin, $V_{in} \geq 60\text{ mVp.p}$ M = GND sine wave
Operating Frequency 2	f_{in2}	90		500	MHz	IN pin, $V_{in} \geq 60\text{ mVp.p}$ M = V_{CC} sine wave
Operating Frequency 3	f_{in3}	60		1 150	MHz	IN pin, $V_{in} \geq 150\text{ mVp.p}$ M = GND sine wave
Low Level Input Current 1	I_{IL1}			150	μA	PSC pin, $V_I = 0$
Low Level Input Current 2	I_{IL2}			150	μA	M pin, $V_I = 0$

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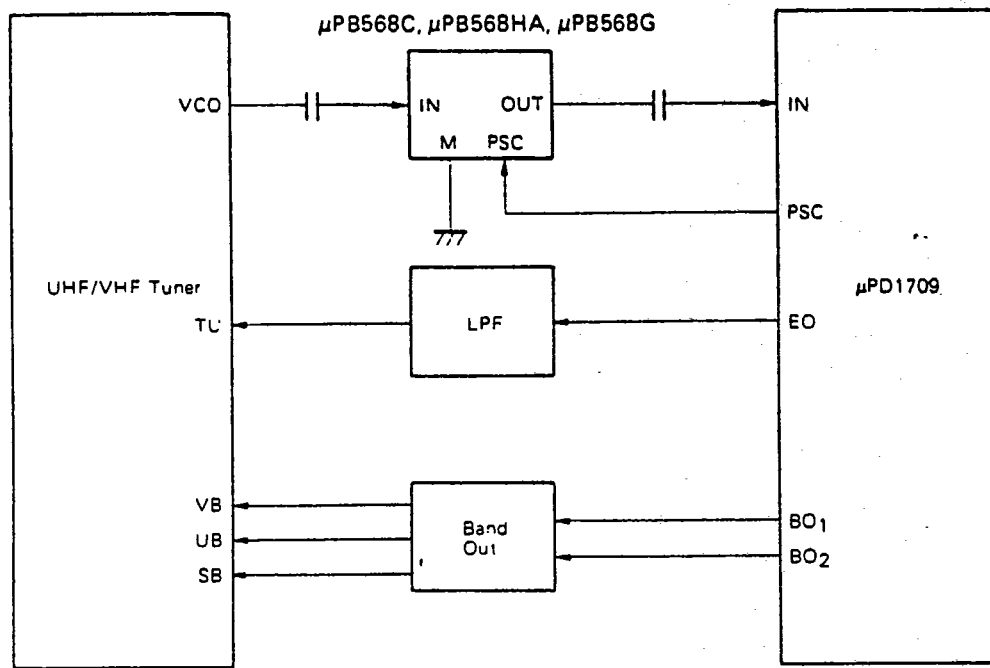
PIN CONFIGURATION



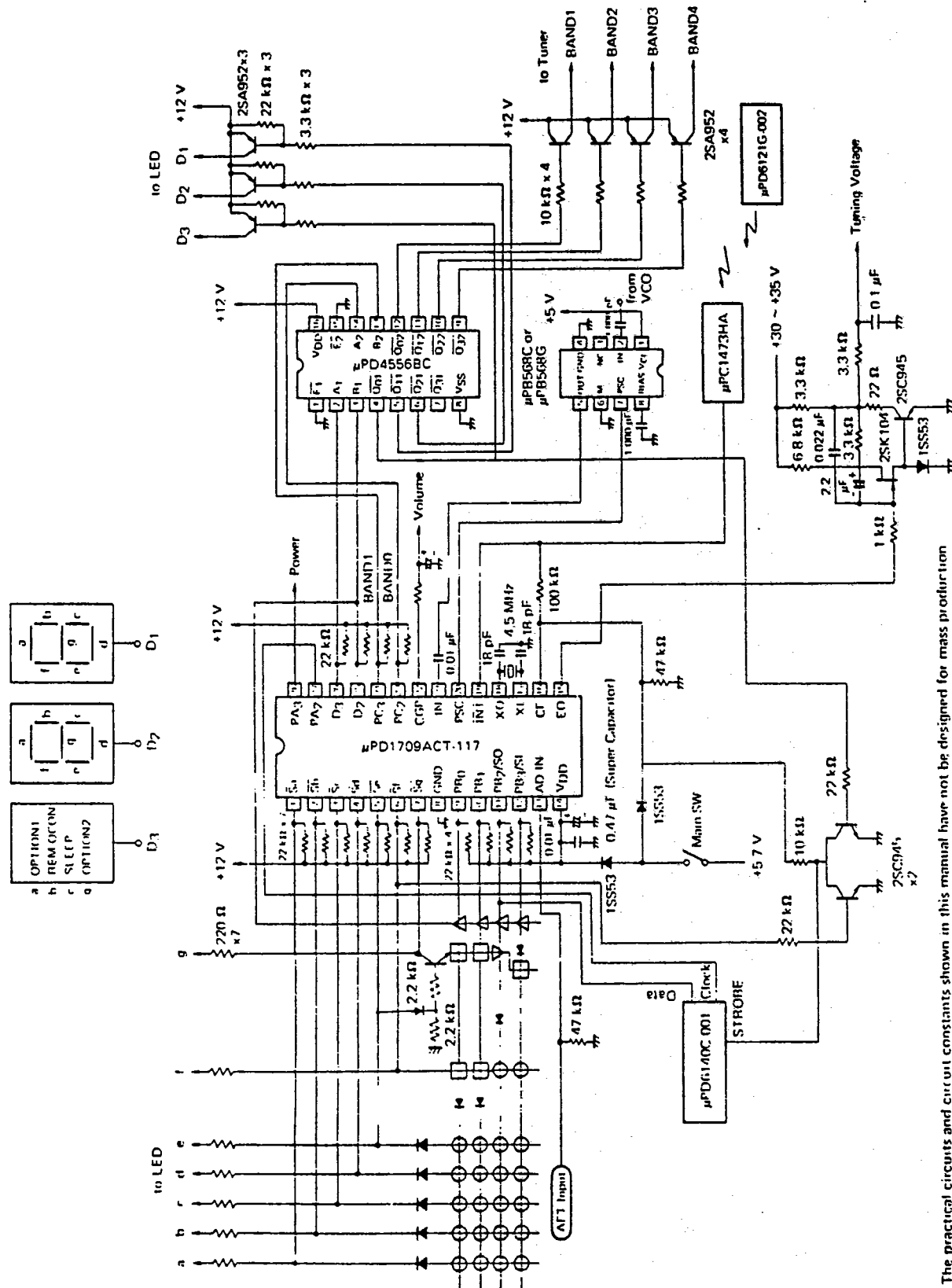
PIN DESCRIPTION

PIN NO.		PIN NAME	PIN DESCRIPTION
μ PB568C μ PB568G	μ PB568HA		
1	3	VCC	Power Supply Pin (+5 V $\pm$ 10 %)
2	4	IN	VCO Signal Input Pin
3	6	NC	No Connection
4	5	GND	Ground Pin
5	7	OUT	Signal Output Pin
6	8	M	Division Ratio Control H Level 64/68 L Level 128/136
7	1	PSC	Pulse Swallow Control (connected to PSC pin of device in μ PD1700 series)
8	2	$\overline{\text{IN}}$	Bias Pin

APPLICATION



APPLICATION CIRCUIT

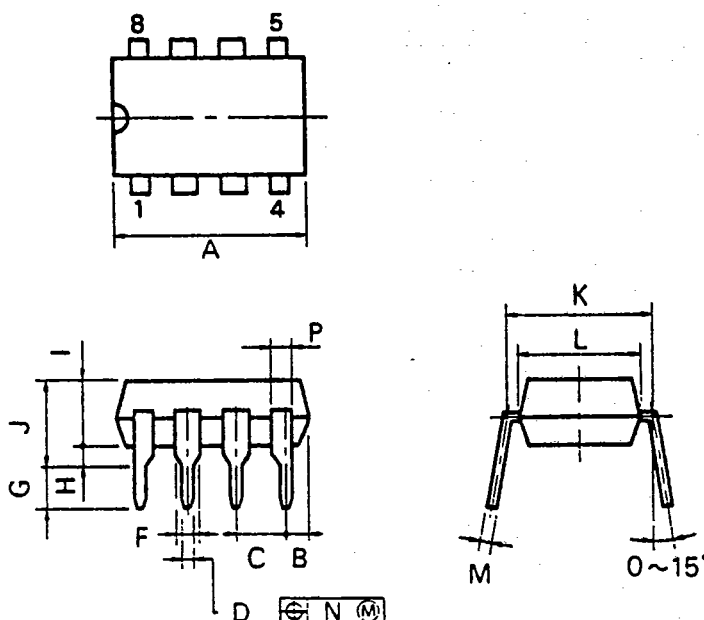


The practical circuits and circuit constants shown in this manual have not been designed for mass production (where deviation between parts and temperature characteristics must also be considered). Also note that NEC bears no responsibility in respect to patents related to these circuits.

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PACKAGE DIMENSIONS (Unit: mm)

8-pin Plastic DIP (300 mil)

 μ PB568C

P8C-100-300B.C

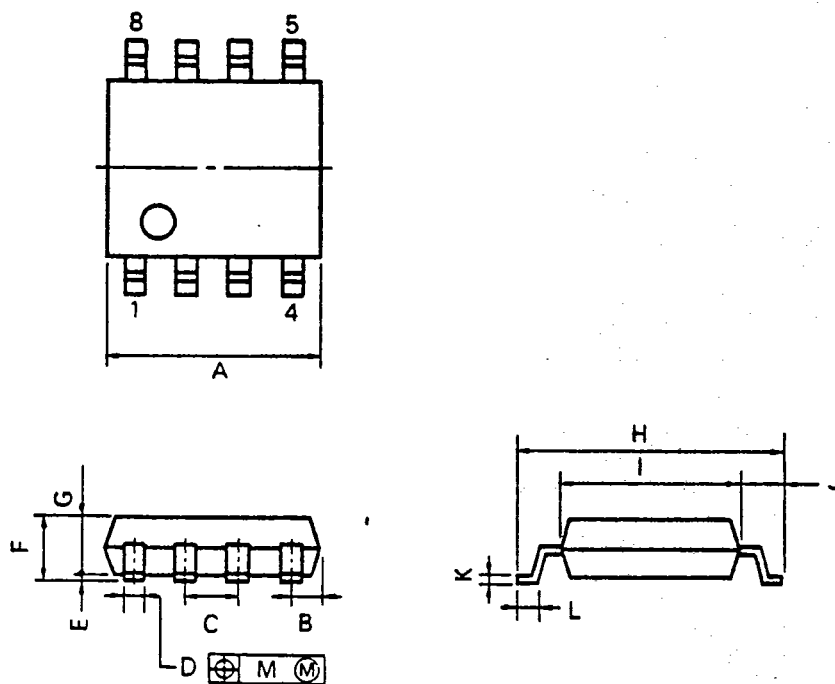
NOTES

- 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} _{-0.00}	0.020 ^{+0.004} _{-0.000}
F	1.4 MIN	0.055 MIN.
G	3.2 ^{+0.3} _{-0.0}	0.126 ^{+0.012} _{-0.000}
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 ^{+0.08} _{-0.00}	0.010 ^{+0.003} _{-0.000}
N	0.25	0.01
P	0.9 MIN	0.035 MIN.

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8-pin Plastic Mini Flat (225 mil)

 μ PB568G

S8GM-50-225B

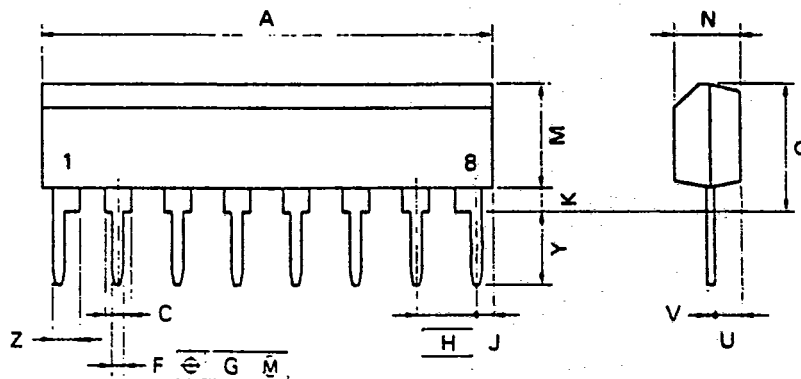
NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	5.70 MAX.	0.225 MAX.
B	0.94 MAX.	0.037 MAX.
C	1.27 (T.P.)	0.050 (T.P.)
D	0.40 $\begin{smallmatrix} \text{---} 0.10 \\ \text{---} 0.05 \end{smallmatrix}$	0.016 $\begin{smallmatrix} \text{---} 0.004 \\ \text{---} 0.003 \end{smallmatrix}$
E	0.1 $\begin{smallmatrix} \text{---} 0.1 \\ \text{---} 0.05 \end{smallmatrix}$	0.004 $\begin{smallmatrix} \text{---} 0.004 \\ \text{---} 0.003 \end{smallmatrix}$
F	1.8 MAX.	0.071 MAX.
G	1.49	0.059
H	6.5 $\begin{smallmatrix} \text{---} 0.3 \\ \text{---} 0.2 \end{smallmatrix}$	0.256 $\begin{smallmatrix} \text{---} 0.012 \\ \text{---} 0.010 \end{smallmatrix}$
I	4.4	0.173
J	1.1	0.043
K	0.15 $\begin{smallmatrix} \text{---} 0.10 \\ \text{---} 0.05 \end{smallmatrix}$	0.006 $\begin{smallmatrix} \text{---} 0.004 \\ \text{---} 0.003 \end{smallmatrix}$
L	0.6 $\begin{smallmatrix} \text{---} 0.2 \\ \text{---} 0.1 \end{smallmatrix}$	0.024 $\begin{smallmatrix} \text{---} 0.008 \\ \text{---} 0.006 \end{smallmatrix}$
M	0.12	0.005

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8-pin Slim SIP

 μ PB568HA**NOTE**

Each lead centerline is located within 0.25 mm (0.01 inch) of its true position (T.P.) at maximum material condition

P8HA-2548

ITEM	MILLIMETERS	INCHES
A	20.32 MAX.	0.8 MAX
C	1.1 MIN	0.043 MIN
F	0.5 ^{0.1}	0.02 ⁸⁸⁸¹
G	0.25	0.01
H	2.54	0.1
J	1.27 MAX	0.05 MAX
K	0.51 MIN	0.02 MIN
M	5.08 MAX	0.2 MAX
N	2.8 ^{0.2}	0.11 ⁸⁸⁸¹
Q	5.75 MAX.	0.227 MAX
U	1.5 MAX	0.059 MAX
V	0.25 ⁸⁸⁸¹	0.01 ⁸⁸⁸¹
Y	3.2 ^{0.5}	0.126 ^{0.02}
Z	1.1 MIN	0.043 MIN

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