NEC®

# 1.3 GHZ PRESCALER | UPB564C

The μPB564C is a general purpose prescaler intended for use in PLL Digital Tuning System. This is operated until 1.3 GHz by utilizing advanced bipolar process technology. This prescaler provides ÷256, ÷128 and ÷64 division ratio, and can be used for CATV.

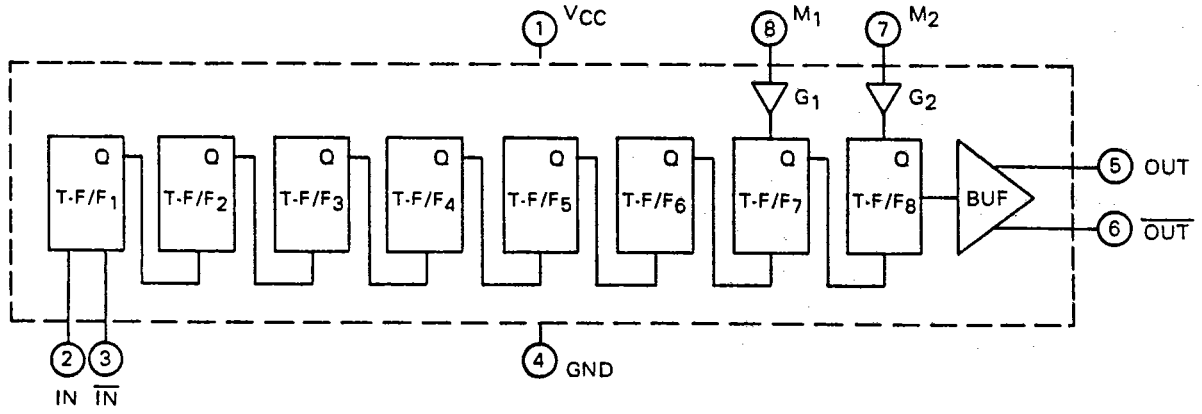
## FEATURES

- High frequency operation : 1.3 GHz MAX.
- Wide band operation : 300 MHz to 1 300 MHz
- Variable division ratio : ÷256, ÷128, ÷64
- Operation is guaranteed : −35 to +75 °C

## ORDERING INFORMATION

| Order Code | Package |
|---|---|
| μPB564C | 8 pin plastic DIP (300 mil) |

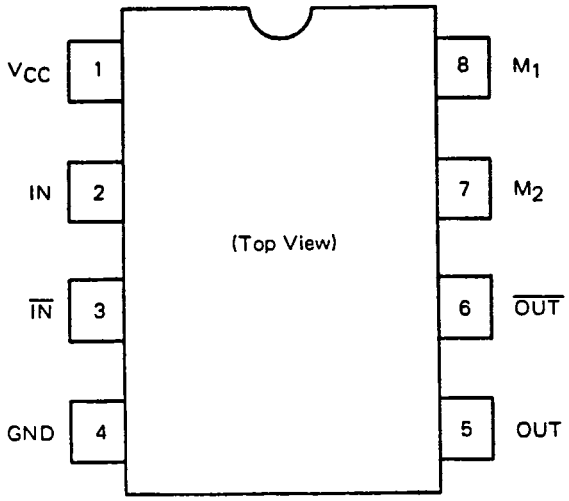
## BLOCK DIAGRAM




## DIVISION RATIO CONTROL

| $M_1$ | $M_2$ | Division Ratio |
|---|---|---|
| H | H | 64 |
| H | L | 128 |
| L | H | 128 |
| L | L | 256 |

H : $V_{CC}$ to 0.8 $V_{CC}$
L : GND to 0.2 $V_{CC}$




1. $V_{CC}$ : Power Supply Pin
2. IN : Signal Input Pin (Positive Logic)
3. $\overline{IN}$ : Signal Input Pin (Negative Logic)
4. GND : GND Pin
5. OUT : Output Pin (Positive Logic)
6. $\overline{OUT}$ : Output Pin (Negative Logic)
7. $M_2$ : Division Ratio Control
8. $M_1$ : Division Ratio Control

## 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 |
| Storage Temperature | $T_{stg}$ | −55 to +125 | °C |

## RECOMMENDED OPERATING CONDITIONS

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITION |
|---|---|---|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 4.5 | 5.0 | 5.5 | V | |
| Ambient Temperature | $T_a$ | −30 | | +75 | °C | |
| Output Load Capacitance | $C_L$ | | | 30 | pF | |

## ELECTRIC CHARACTERISTICS ($V_{CC}$=4.5 to 5.5 V, $T_a$=−30 to +75 °C)

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITION |
|---|---|---|---|---|---|---|
| Frequency Response | $f_{in}$ | 300 | | 1 300 | MHz | $v_i$=400 $mV_{p\text{-}p}$, ÷64, ÷128, ÷256 |
| Input Voltage | $v_i$ | 0.4 | | 1.2 | $V_{p\text{-}p}$ | |
| Output Voltage | $v_o$ | 0.86 | 1.15 | 1.44 | $V_{p\text{-}p}$ | f=1.3 GHz, ÷64, C=5 pF |
| High Level Input Voltage | $V_{IM}$ | 0.8 $V_{CC}$ | | | V | $M_1$, $M_2$ |
| Low Level Input Voltage | $V_{IL}$ | | | 0.2 $V_{CC}$ | V | $M_1$, $M_2$ |
| High Level Input Current | $I_{IH}$ | | | 15 | μA | $M_1$, $M_2$=$V_{CC}$ |
| Low Level Input Current | $I_{IL}$ | −160 | | | μA | $M_1$, $M_2$=GND |
| Power Supply Current | $I_{CC}$ | | 28 | 48 | mA | |

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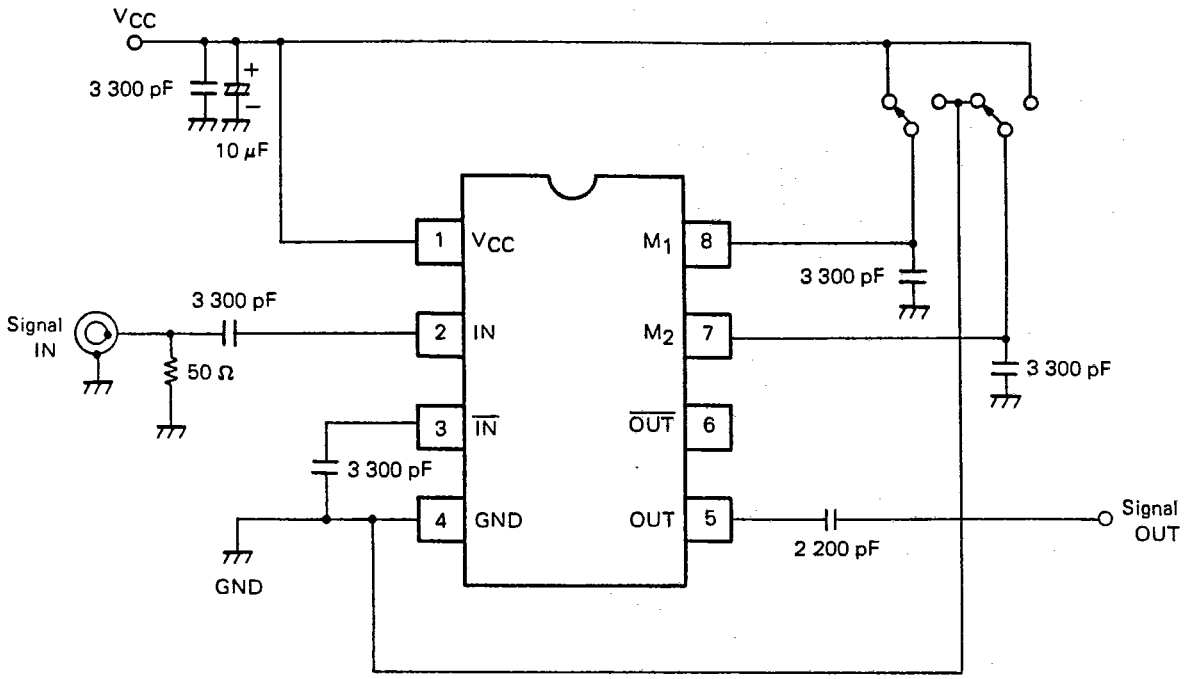
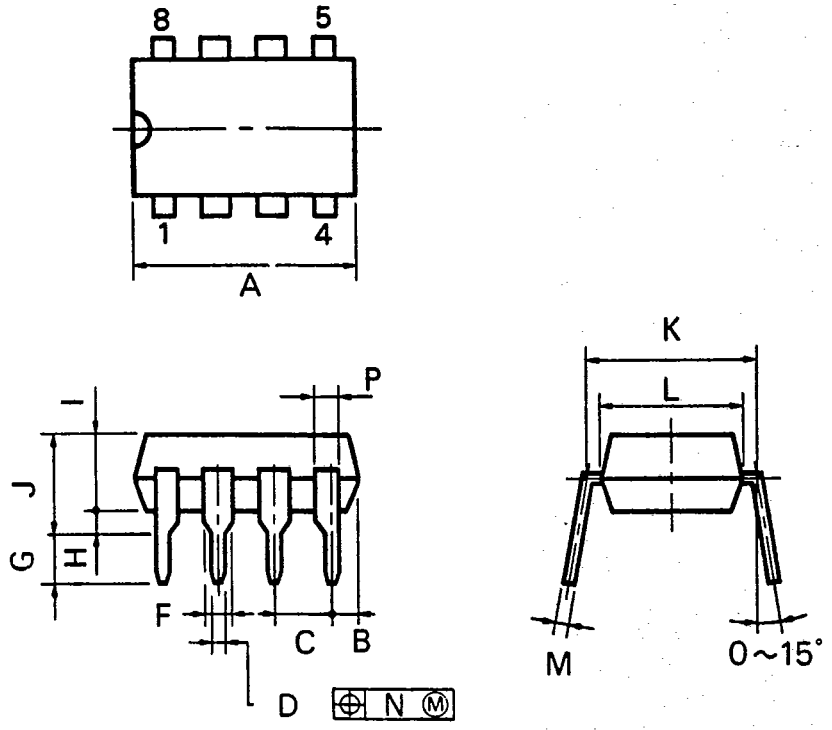
## TEST CIRCUIT



8 PIN PLASTIC DIP (300 mil)




P8C-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 | $0.50^{\pm 0.10}$ | $0.020^{+0.004}_{-0.005}$ |
| F | 1.4 MIN. | 0.055 MIN. |
| G | $2.9^{\pm 0.3}$ | 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 | $0.25^{+0.10}_{-0.05}$ | $0.010^{+0.004}_{-0.003}$ |
| N | 0.25 | 0.01 |
| P | 0.9 MIN. | 0.035 MIN. |