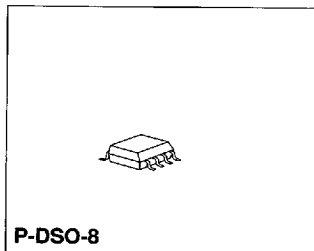


### Preliminary Data

Bipolar IC

### Features

- Low Current Consumption
- Wide Input Sensitivity
- Wide Input Frequency Range
- TTL/CMOS compatible MOD input
- Standby Mode
- Switchable divider ratios 64/65 or 128/129



### Applications

- With its very low (5.7 mA) current consumption the IC has been particularly designed for use in mobile communications. Furthermore, it can be switched to a low-power standby mode. Depending on the external network configuration, dividing ratios of 64/65 or 128/129 can be selected.

| Type     | Ordering Code | Package       |
|----------|---------------|---------------|
| PMB 2312 | Q67000-A6039  | P-DSO-8 (SMD) |

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## Circuit Description

The symmetrical differential inputs of the IC may be connected asymmetrically. In this case the unused input must be RF-grounded with a capacitor (ca. 1.5 nF) with a low serial inductance.

Depending on the logic level at SW input the basic divide ratio of the ECL-stages is fixed to 1 : 64/65 or 1 : 128/129. The MOD input determines whether modulus 1 : n or 1 : n + 1 (n = 64 or 128 according to SW-level) is active.

The IC can be switched to a low-power standby mode (input STB).

The MOD input is TTL/CMOS compatible.

The open-emitter output is CMOS compatible according to the **application circuit**. The minimum logic swing is fixed to 1 V<sub>pp</sub>.

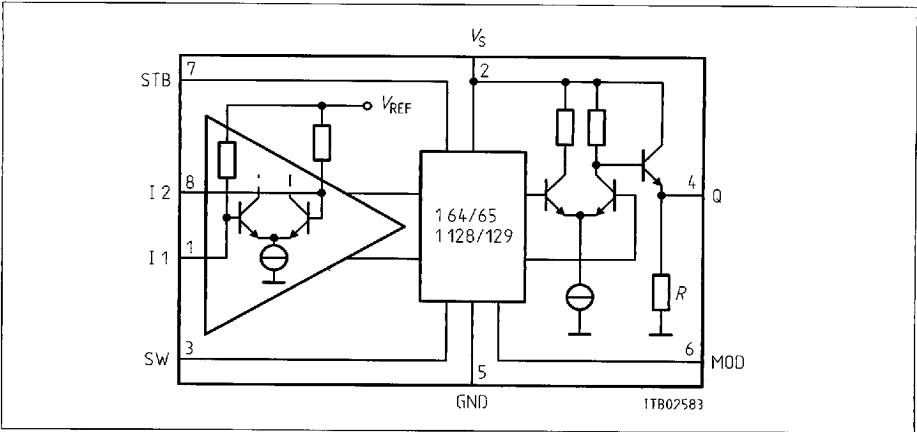
## Function Table

| Input Pin | Logic Level   | Prescaler Function                |
|-----------|---|-----------------------------------|
| SW        | high = 3.0 to $V_s$<br>low = GND to 0.8 V or open           | 1 : 64/65<br>1 : 128/129          |
| MOD       | high = 2.0 V to $V_s$ or open<br>low = GND to 0.8 V         | 1 : 64/1 : 128<br>1 : 65/1 : 129  |
| STB       | high = $V_s - 0.1$ V to $V_s$ or open<br>low = GND to 0.8 V | Divider<br>Q = high, standby-mode |

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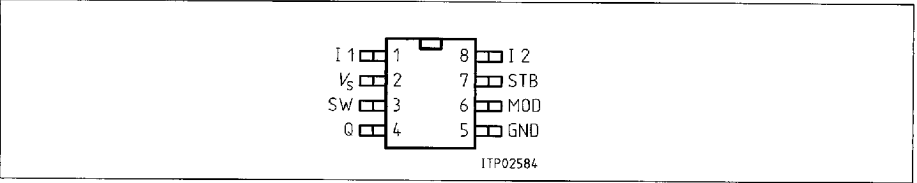
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Block Diagram

Pin Configuration  
(top view)



Pin Definitions and Functions

| Pin No. | Symbol         | Function   |
|---------|----------------|--|
| 1       | I1             | Input I1   |
| 2       | V <sub>S</sub> | Supply voltage                                     |
| 3       | SW             | Divide ratio 1 : 64/65 – 1 : 128/129 control input |
| 4       | Q              | Output   |
| 5       | GND            | Ground   |
| 6       | MOD            | Modulus 1 : n/n + 1 (n = 64 or 128) control input  |
| 7       | STB            | Standby mode control input                         |
| 8       | I2             | Input I2   |

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## Electrical Characteristics

### Absolute Maximum Ratings

$T_A = -40$  to  $85\text{ }^{\circ}\text{C}$

| Parameter                            | Symbol                     | Limit Values |       | Unit               |
|--------------------------------------|----------------------------|--------------|-------|--------------------|
|                                      |                            | min.         | max.  |                    |
| Supply voltage                       | $V_S$                      | - 0.3        | 6     | V                  |
| Input level<br>(pin 1; pin 8)        | $V_I$                      | 1            | 5     | V                  |
| Voltage swing<br>(pin 1 to pin 8)    | $V_{I18}$                  | - 3          | 3     | V                  |
| Input level<br>(pin 3; pin 6; pin 7) | $V_{SW}, V_{MOD}, V_{STB}$ | - 0.3        | 6     | V                  |
| Output level<br>(pin 4)              | $V_Q$                      |              | $V_S$ | V                  |
| Output current<br>(pin 4)            | $-I_Q$                     |              | 10    | mA                 |
| Junction temperature                 | $T_J$                      |              | 125   | $^{\circ}\text{C}$ |
| Storage temperature                  | $T_{stg}$                  | - 65         | 125   | $^{\circ}\text{C}$ |
| Thermal resistance<br>system-ambient | $R_{thSA}$                 |              | 185   | K/W                |

### Operating Range

|                     |       |      |      |                    |
|---------------------|-------|------|------|--------------------|
| Supply Voltage      | $V_S$ | 4.0  | 5.5  | V                  |
| Input frequency     | $f$   | 130  | 1100 | MHz                |
| Ambient temperature | $T_A$ | - 40 | 85   | $^{\circ}\text{C}$ |

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**AC/DC Characteristics**

$V_S = 4.0$  to  $5.5$  V;  $T_A = -40$  to  $85$  °C; refer to test circuit

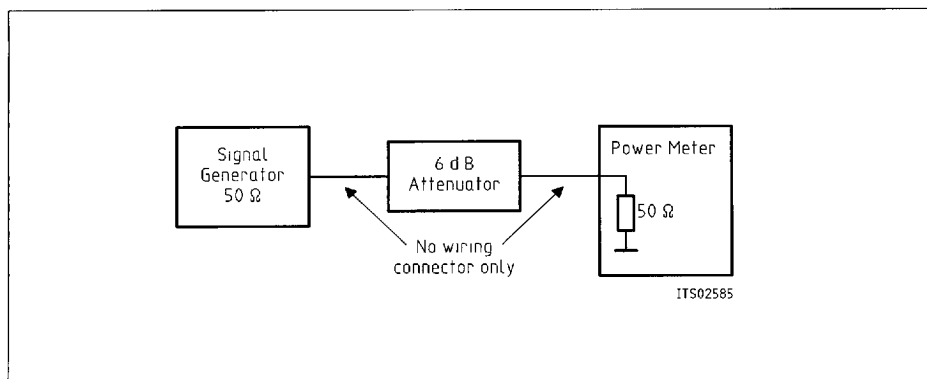
| Parameter  | Symbol      | Limit Values |      |       | Unit  | Test Condition   |
|--|-------------|--------------|------|-------|-------|--|
|  |             | min.         | typ. | max.  |       |  |
| Supply current   | $I_S$       |              | 5.7  | 7.4   | mA    | inputs RF-grounded,<br>$V_S = 4.0$ V, $T_A = 25$ °C<br>STB open, output open |
| Supply current   | $I_S$       |              | 5.8  | 7.5   | mA    | inputs RF-grounded,<br>$V_S = 5.0$ V, $T_A = 25$ °C<br>STB open, output open |
| Supply current   | $I_S$       |              | 5.9  | 7.7   | mA    | inputs RF-grounded,<br>$V_S = 5.5$ V, $T_A = 25$ °C<br>STB open, output open |
| Supply current in standby-mode                           | $I_{SSTB}$  |              | 0.3  | 0.45  | mA    | inputs RF-grounded,<br>output open, STB = GND                                |
| Input level  | $V_I$       | 25           |      | 400   | mVrms | 140 – 1000 MHz   |
| Input sensitivity<br>( <b>diagram 2</b> )                |             | – 19         |      | 5     | dBm   | sine wave  |
| Output logic swing                                       | $V_O$       | 1            |      |       | Vpp   | $C_L \leq 12$ pF   |
| SW threshold voltage high                                | $V_{SWH}$   | 3.0          |      | $V_S$ | V     |  |
| SW threshold voltage low                                 | $V_{SWL}$   | GND          |      | 0.8   | V     |  |
| SW input current high                                    | $I_{SWH}$   |              |      | 100   | μA    | SW = $V_S$   |
| SW input current low                                     | $-I_{SWL}$  |              |      | 50    | μA    | SW = GND   |
| MOD threshold voltage high                               | $V_{MODH}$  | 2.0          |      | $V_S$ | V     |  |
| MOD threshold voltage low                                | $V_{MODL}$  | GND          |      | 0.8   | V     |  |
| MOD input current high                                   | $I_{MODH}$  |              |      | 50    | μA    | MOD = $V_S$  |
| MOD input current low                                    | $-I_{MODL}$ |              |      | 100   | μA    | MOD = GND  |
| STB threshold voltage high                               | $V_{STBH}$  | $V_S - 0.1$  |      | $V_S$ | V     |  |
| STB threshold voltage low                                | $V_{STBL}$  |              |      | 0.8   | V     |  |
| STB input current high                                   | $I_{STBH}$  |              |      | 50    | μA    | STB = $V_S$  |
| STB input current low                                    | $-I_{STBL}$ |              |      | 160   | μA    | STB = GND  |
| Internal load resistance<br>( <b>see block diagram</b> ) | $R$         |              | 50   |       | kΩ    |  |

**Delay Times**

|  |           |  |  |    |    |  |
|--|-----------|--|--|----|----|--|
| MOD setup time<br>( <b>diagram 1</b> ) | $t_{set}$ |  |  | 29 | ns |  |
|--|-----------|--|--|----|----|--|

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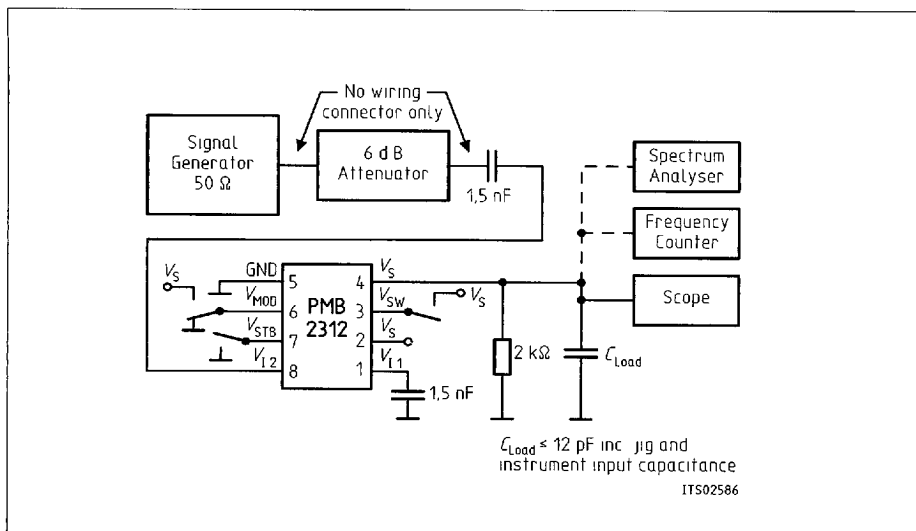


## Test Circuits Calibration of the Signal Generator

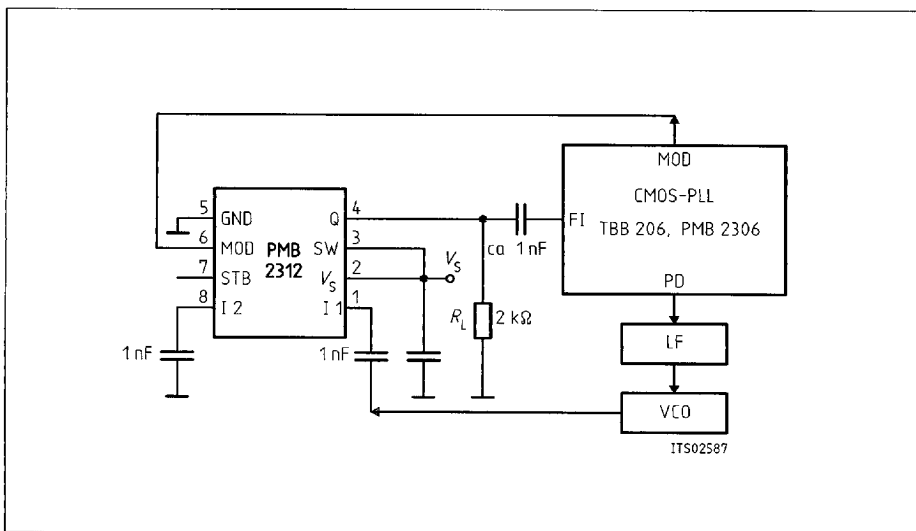
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Input Sensitivity and Output Logic Swing Measurement



Application Circuit

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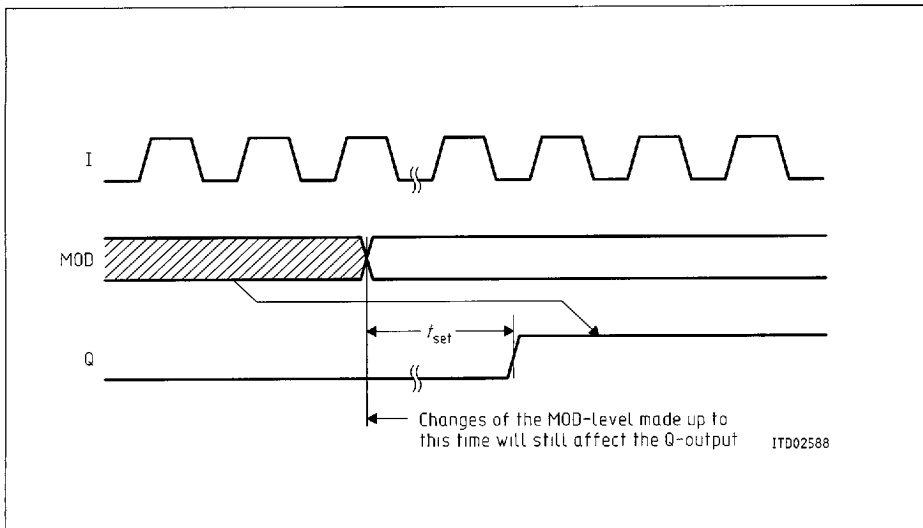


Diagram 1

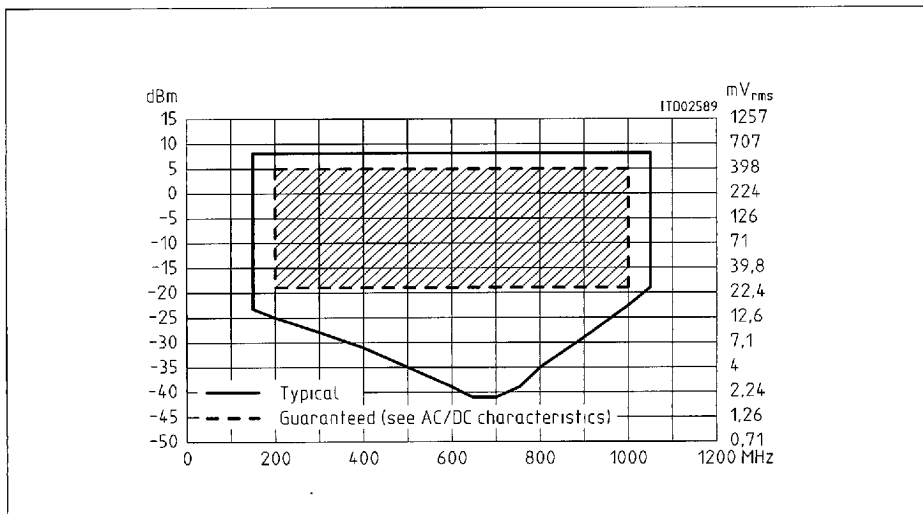


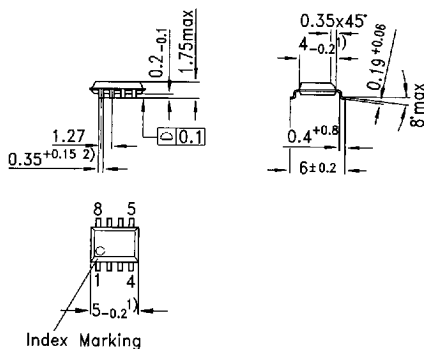
Diagram 2  
Input Sensitivity

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**Plastic Package, P-DSO-8 (SMD)**  
**(Plastic Dual Small Outline)**


- 1) Does not include plastic or metal protrusions of  $0.15^{max}$  per side
- 2) Does not include dambar protrusion of  $0.05^{max}$  per side

GPS05121

**Sorts of Packing**

Package outlines for tubes, trays etc. are contained in our  
Data Book "Package Information"

SMD = Surface Mounted Device

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Dimensions in mm

B115-H6626-  
G1-X-7600