

### FEATURES

- HIGH FREQUENCY OPERATION: 2.5 GHz
- WIDE BAND OPERATION
- SINGLE SUPPLY VOLTAGE:  $V_{CC} = 5\text{ V} \pm 10\%$
- AVAILABLE IN TAPE & REEL (G08 PACKAGE)

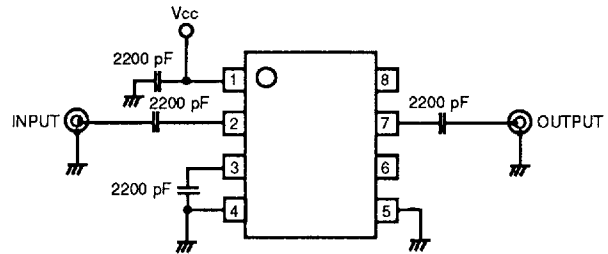
### DESCRIPTION

The UPB585 series of devices are divide-by-4 silicon bipolar prescalers. They feature high frequency response and operate from a single 5 volt supply. The series is available in two package styles: 8 lead ceramic flat pack (UPB585B) and an 8 pin plastic mini-flat package (UPB585G). Applications include: synthesizer for DBS receiver and other telecommunication applications.

### RECOMMENDED OPERATING INFORMATION

SYMBOL	PARAMETER	UNITS	RATINGS
V <sub>CC</sub>	Supply Voltage	V	4.5 to 5.5
T <sub>OP</sub>	Operating Temperature	°C	-20 to +75

### TEST CIRCUIT



Note: Because of the high internal gain and gain compression of the UPB585, this device is prone to self-oscillation in the absence of an RF input signal. If the device will be used in an application where DC power will be applied in the absence of an RF input signal, this self-oscillation can be suppressed by any of the following means:

- \* Add a shunt resistor from the RF input line to ground. The blocking capacitor should be between the resistor and the UPB585, but physical separation should be minimized. Typically a resistor value between 50 and 100 ohms will suppress the self-oscillation.
- \* Apply a DC offset voltage of +3.0 volts to the INPUT pin. The voltage source should be isolated from the INPUT pin by a series 1000 ohm resistor.
- \* Apply a DC offset voltage of +1.5 volts to the BYPASS pin. The voltage source should be isolated from the BYPASS pin by a series 1000 ohm resistor.

All these approaches reduce the input sensitivity of the UPB585 (by as much as 3 dB for the example of a 50 ohm shunt resistor), but otherwise have no effect on the reliability or other electrical characteristics of this device.

5

### ELECTRICAL CHARACTERISTICS<sup>1</sup> (T<sub>A</sub> = -20 to +75°C, V<sub>CC</sub> = 5 V)

PART NUMBER PACKAGE OUTLINE			UPB585B, UPB585G BF08, G08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I <sub>CC</sub>	Supply Current, T <sub>A</sub> = 25°C	mA	18	26	34
f <sub>IN</sub>	Frequency Response at: P <sub>IN</sub> = -15 to +5 dBm P <sub>IN</sub> = -10 to +5 dBm	GHz GHz	0.5 0.5		2.3 2.5
P <sub>IN</sub>	Input Power at f <sub>IN</sub> = 0.5 to 2.3 GHz f <sub>IN</sub> = 0.5 to 2.5 GHz	dBm dBm	-15 -10		+5 +5
P <sub>OUT</sub>	Power Output at f <sub>IN</sub> = 2 GHz, P <sub>IN</sub> = 0 dBm, T <sub>A</sub> = 25°C	dBm	-9	-4	
R <sub>TH (J-C)</sub>	Thermal Resistance, Junction to Case (UPB585B)	°C/W			50
R <sub>TH (J-A)</sub>	Thermal Resistance, Junction to Ambient (UPB585G) <sup>2</sup>	°C/W			270

Notes:

1. V<sub>CC</sub> = 5 V ± 10% (unless otherwise noted) Z<sub>s</sub> = Z<sub>o</sub> = 50 Ω.
2. Mounted on a 5 x 5 x 0.16 mm epoxy glass circuit board.

# UPB585B, UPB585G

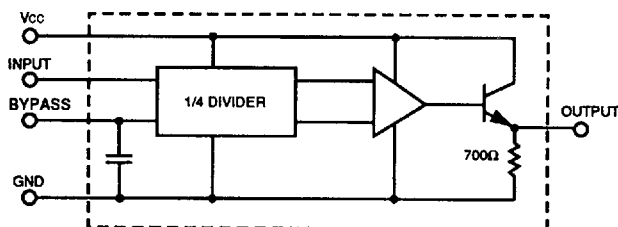
## ABSOLUTE MAXIMUM RATINGS<sup>1</sup> (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CC</sub>	Supply Voltage	V	-0.5 to 6.0
V <sub>IN</sub>	Input Voltage	V	-0.5 to V <sub>CC</sub> + 0.5
P <sub>IN</sub>	Input Power	dBm	+10
P <sub>T</sub>	Power Dissipation UPB585B UPB585G	W mW	1.5 (TA = +125°C) 250 (TA = +85°C)
T <sub>OP</sub>	Operating Temperature UPB585B UPB585G	°C °C	-55 to +125 -40 to +85
T <sub>STG</sub>	Storage Temperature UPB585B UPB585G	°C °C	-65 to +200 -65 to +150

Note:

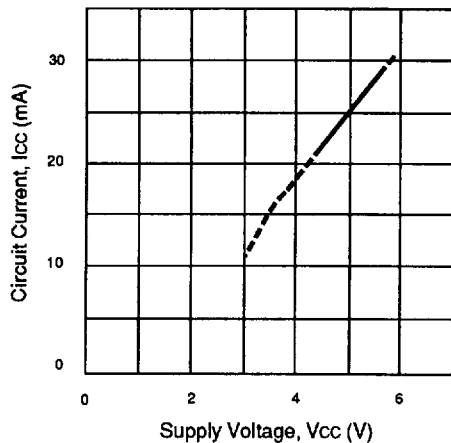
1. Operation in excess of any one of these conditions may result in permanent damage.

## INTERNAL BLOCK DIAGRAM

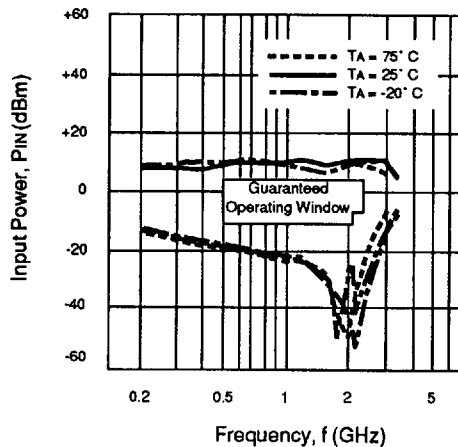


## TYPICAL PERFORMANCE CURVES (TA = 25°C unless otherwise noted)

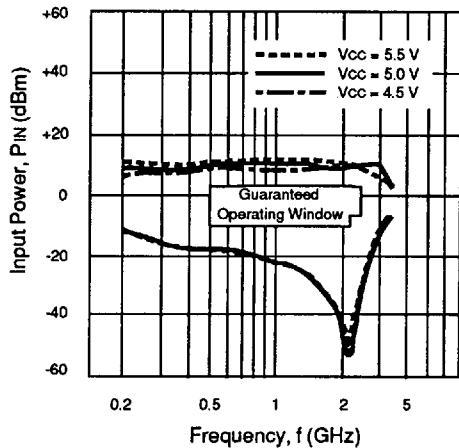
CIRCUIT CURRENT vs. VOLTAGE



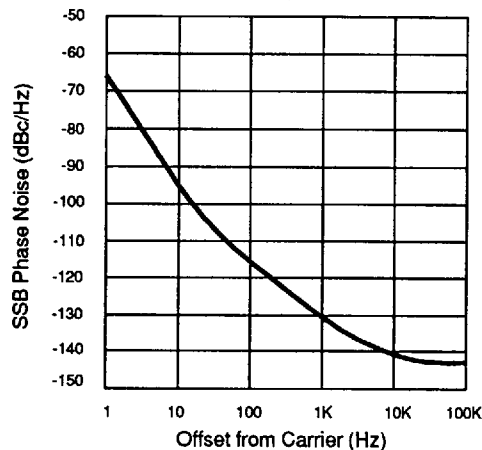
INPUT POWER vs. FREQUENCY AND TEMPERATURE



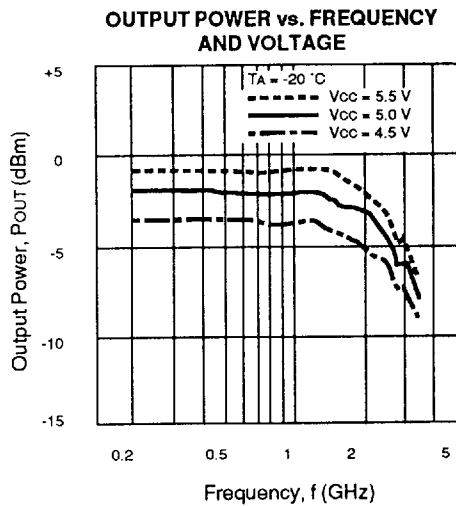
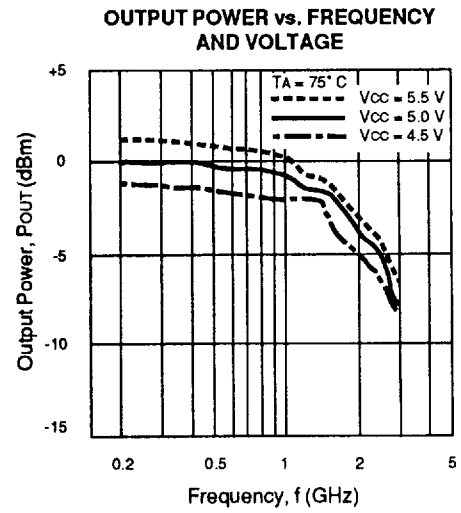
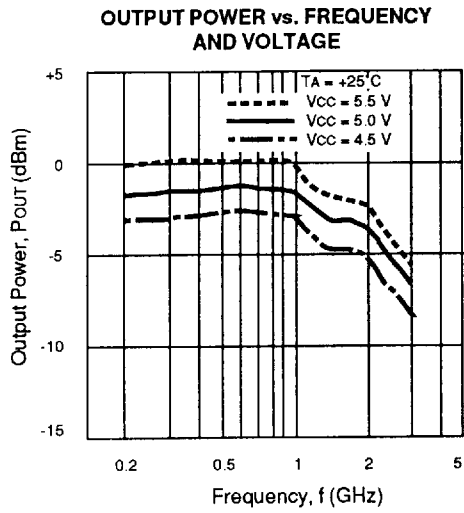
INPUT POWER vs. FREQUENCY AND SUPPLY VOLTAGE



UPB585G  
SSB PHASE NOISE vs.  
OFFSET FROM CARRIER  
f<sub>IN</sub> = 1 GHz, TA = 25°C



TYPICAL PERFORMANCE CURVES

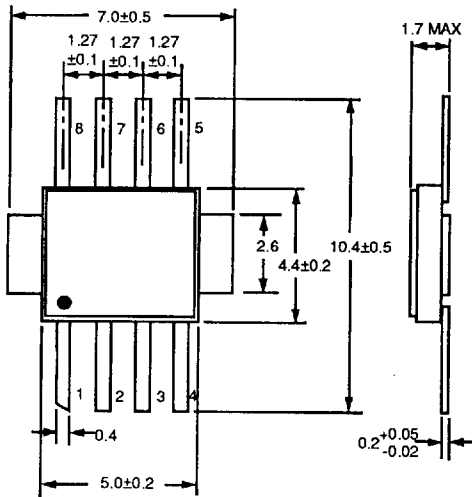


5

# UPB585B, UPB585G

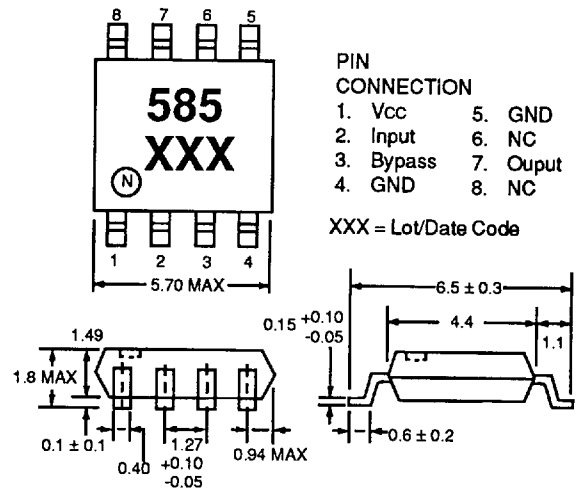
## OUTLINE DIMENSIONS (Units in mm)

**UPB585B  
PACKAGE OUTLINE BF08**



**PIN  
CONNECTION**  
 1. Vcc 5. GND  
 2. Input 6. NC  
 3. Bypass 7. Output  
 4. GND 8. NC

**UPB585G  
PACKAGE OUTLINE G08**



**PIN  
CONNECTION**  
 1. Vcc 5. GND  
 2. Input 6. NC  
 3. Bypass 7. Output  
 4. GND 8. NC

XXX = Lot/Date Code

## ORDERING INFORMATION

PART NUMBER	QTY
UPB585G-E1	2500/Reel