

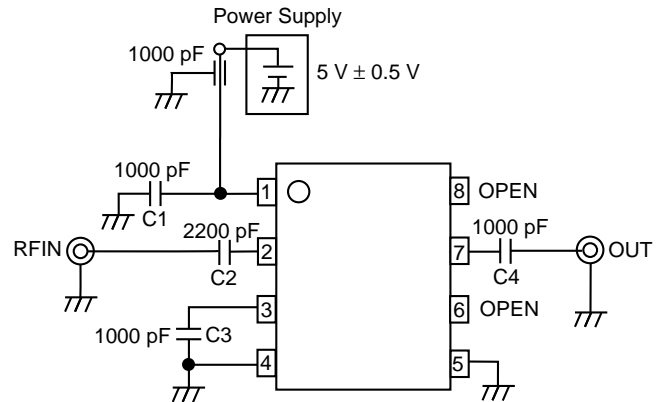
### FEATURES

- HIGH FREQUENCY OPERATION TO 3 GHz
- FIXED DIVIDE RATIO: ÷ 4
- LOW CURRENT CONSUMPTION: 15 mA @ 5 V
- SMALL PACKAGE: 8 PIN SSOP
- AVAILABLE IN TAPE AND REEL

### DESCRIPTION

The UPB1510GV is a Silicon MMIC digital prescaler manufactured with the NESAT™ IV silicon bipolar process. It features frequency response to 3 GHz, a divide-by-four ratio, and operates on a 5 volt supply while drawing only 15 mA. The device is housed in a small 8 pin SSOP package that contributes to system miniaturization. The low power consumption and wide frequency operation makes the device well suited for use in a PLL synthesizer for UHF/VHF TV and DBS tuner applications.

### TEST CIRCUIT



### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = -40 to +85°C, V<sub>CC</sub> = 4.5 to 5.5 V, Z<sub>S</sub> = Z<sub>L</sub> = 50 Ω)

PART NUMBER PACKAGE OUTLINE			UPB1510GV S08		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I <sub>CC</sub>	Circuit Current, No Input Signal	mA		15	
f <sub>IN (u)1</sub>	Upper Limit Operating Frequency 1, P <sub>IN</sub> = -10 to +6 dBm	GHz	3.0		
f <sub>IN (u)2</sub>	Upper Limit Operating Frequency 2, P <sub>IN</sub> = -15 to +6 dBm	GHz	2.7		
f <sub>IN (L)</sub>	Lower Limit Operating Frequency, P <sub>IN</sub> = -15 to +6 dBm	GHz			0.5
P <sub>IN1</sub>	Input Power 1, f <sub>IN</sub> = 2.7 to 3.0 GHz	dBm	-10		+6
P <sub>IN2</sub>	Input Power 2, f <sub>IN</sub> = 1.0 to 2.7 GHz	dBm	-15		+6
P <sub>OUT</sub>	Output Power, P <sub>IN</sub> = 0 dBm, f <sub>IN</sub> = 2.0 GHz	dBm	-12	-7	

# UPB1510GV

## ABSOLUTE MAXIMUM RATINGS<sup>1</sup> (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CC</sub>	Supply Voltage	V	6.0
V <sub>IN</sub>	Input Voltage	V	6.0
P <sub>D</sub>	Total Power Dissipation <sup>2</sup>	mW	250
T <sub>A</sub>	Operating Ambient Temp.	°C	-40 to +85
T <sub>STG</sub>	Storage Temperature	°C	-55 to +150

Notes:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Mounted on a double-sided copper clad 50x50x1.6 mm epoxy glass PWB (T<sub>A</sub> = +85°C).

## PRODUCT LINE-UP

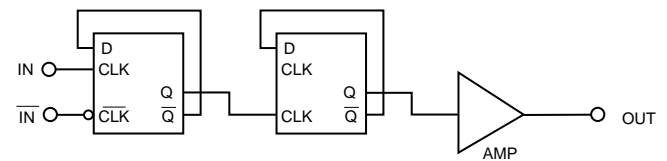
Product No.	I <sub>CC</sub> (mA)	V <sub>CC</sub> (V)	+4 f <sub>IN</sub> (GHz)	Package
UPB585G	18	4.5 to 5.5	0.5 to 2.5	8 pin SOP
UPB1510GV	15	4.5 to 5.5	0.5 to 3.0	8 pin SSOP

Note: This table shows typical values only.

## RECOMMENDED OPERATING CONDITIONS

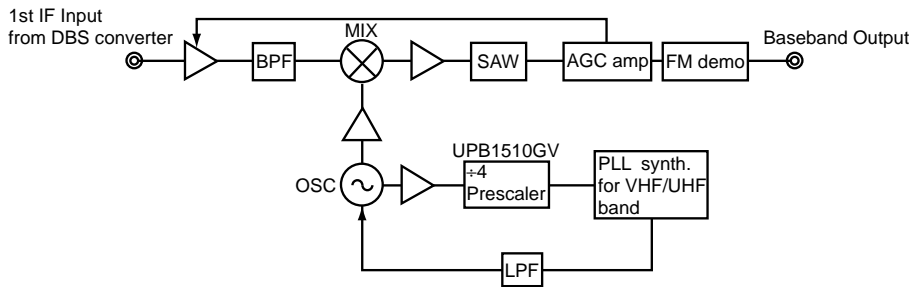
SYMBOL	PARAMETER	UNITS	MIN	TYP	MAX
V <sub>CC</sub>	Supply Voltage	V	4.5	5.0	5.5
T <sub>A</sub>	Operating Ambient Temp.	°C	-40	+25	+85

## INTERNAL BLOCK DIAGRAM



## SYSTEM APPLICATION EXAMPLE

### RF UNIT BLOCK OF DBS TUNER

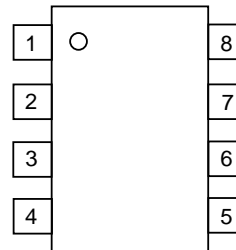
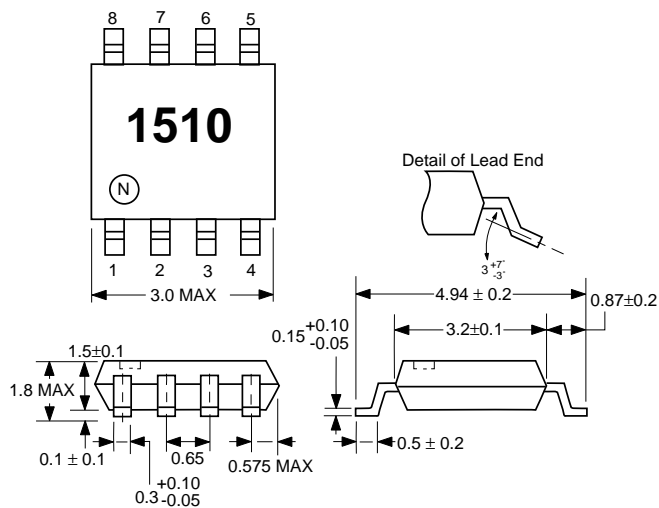


## PIN DESCRIPTIONS

Pin No.	Symbol	Applied Voltage	Description
1	VCC	4.5 to 5.5	Power supply pin. This pin must be decoupled with a bypass capacitor (e.g. 1000 pF).
2	IN	-	Signal input pin. This pin should be coupled to source with a capacitor (e.g. 1000 pF).
3	IN-bar	-	Signal input bypass pin. This pin must be equipped with a bypass capacitor (e.g. 1000 pF) to ground.
4	GND	0	Ground pin. Ground pattern on the board should be formed as wide as possible to minimize ground impedance.
5	GND	0	
6	NC	-	No connection, this pin should be left open.
7	OUT	-	Divided frequency output pin. This pin is designed as an emitter follower output, and should be coupled to the load with a capacitor (e.g. 1000 pF).
8	NC	-	No connection, this pin should be left open.

**OUTLINE DIMENSIONS** (Units in mm)

**PACKAGE OUTLINE S08**



**PIN CONNECTIONS**

- 1. Vcc      5. GND
- 2. IN      6. NC
- 3.  $\overline{\text{IN}}$     7. OUT
- 4. GND     8. NC

**ORDERING INFORMATION**

PART NUMBER	QUANTITY
UPB1510GV-E1	1000/Reel

Note:

- 1. Embossed tape 8 mm wide.  
Pin 1 is in the tape pull-out direction.

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