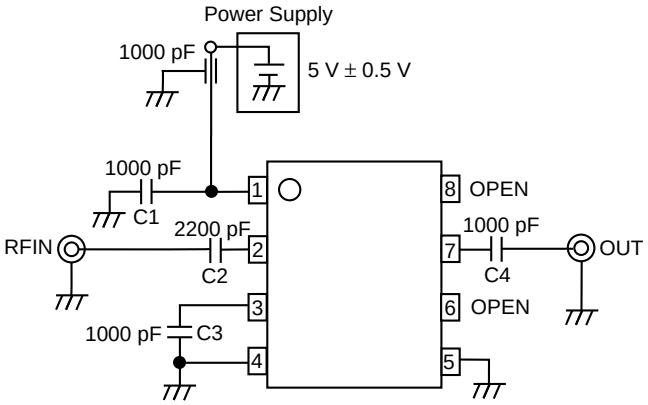
NEC

3.0 GHz DIVIDE BY 4 PRESCALER | UPB1510GV

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**

TEST CIRCUIT



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.

ELECTRICAL CHARACTERISTICS (T_A = -40 to +85°C, V_{CC} = 4.5 to 5.5 V, Z_S = Z_L = 50 Ω)

PART NUMBER PACKAGE OUTLINE			UPB1510GV S08		
SYMBOLS	**PARAMETERS AND CONDITIONS**	**UNITS**	**MIN**	**TYP**	**MAX**
I_{CC}	Circuit Current, No Input Signal	mA		15	
f_{IN} (u)1	Upper Limit Operating Frequency 1, P_{IN} = -10 to +6 dBm	GHz	3.0		
f_{IN} (u)2	Upper Limit Operating Frequency 2, P_{IN} = -15 to +6 dBm	GHz	2.7		
$f_{IN\ (L)}$	Lower Limit Operating Frequency, P_{IN} = -15 to +6 dBm	GHz			0.5
$P_{IN}1$	Input Power 1, f_{IN} = 2.7 to 3.0 GHz	dBm	-10		+6
$P_{IN}2$	Input Power 2, f_{IN} = 1.0 to 2.7 GHz	dBm	-15		+6
P_{OUT}	Output Power, P_{IN} = 0 dBm, f_{IN} = 2.0 GHz	dBm	-12	-7	

ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CC}	Supply Voltage	V	6.0
V_{IN}	Input Voltage	V	6.0
P_D	Total Power Dissipation[2]	mW	250
T_A	Operating Ambient Temp.	°C	-40 to +85
T_{STG}	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_A = +85°C).

RECOMMENDED OPERATING CONDITIONS

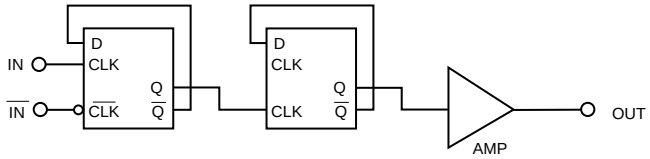
SYMBOL	PARAMETER	UNITS	MIN	TYP	MAX
V_{CC}	Supply Voltage	V	4.5	5.0	5.5
T_A	Operating Ambient Temp.	°C	-40	+25	+85

PRODUCT LINE-UP

Product No.	I_{CC} (mA)	V_{CC} (V)	÷4 f_{IN} (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

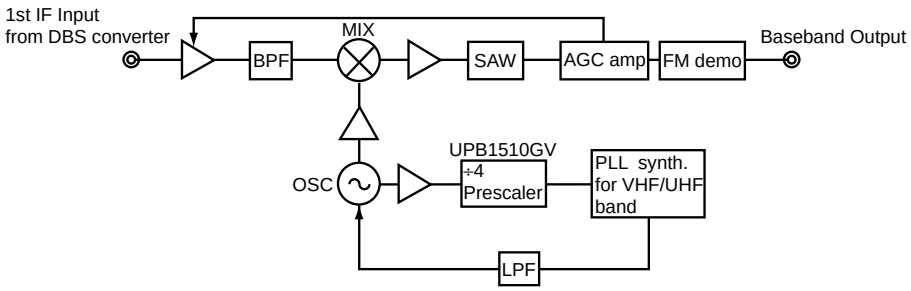
Note: This table shows typical values only.

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	$\overline{IN}$	–	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.