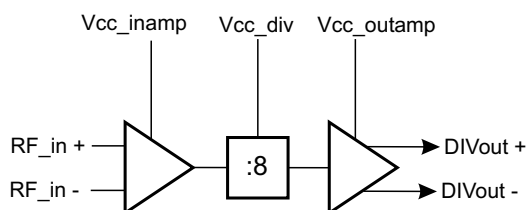


Features

- Low Phase Noise
- DC - 0.2 GHz square-wave input
- 0.2 - 12 GHz sine-wave input
- Single Supply: +5.0V or -5.0V
- QFN Package 4 x 4 mm²
- Low Cost

Functional Diagram



Typical Applications

MMIC Prescaler for use in PLL and down conversion applications such as:

- Communication and EW systems
- Satellite Communications
- Microwave Point-to-Point Radios
- Microwave Sensors
- other ISM Applications

General Description

The MMPS8 Divide-By-8 prescaler is designed in a highly reliable InGaP Hetero-Junction Bipolar Transistor (HBT) process. The prescaler provides a large input power sensitivity and a low phase noise.

The prescaler provides differential input and output with on-chip 50 Ohm matching. The chip contains no vias to the backside metalization. So the divider can also be operated with -5.0 V power supply. In this case, you can contact the input and output ports of the chip with ground-signal-ground-RF-probes. The MMIC is either available in a low cost plastic package or as a die.

Electrical Specifications, $T_A = 50^\circ \text{C}$, $V_{CC} = +5.0 \text{V}$

Parameter	Conditions	Min.	Typ.	Max.	Units
Frequency Range			DC - 12		GHz
Power Output (DIVout)	$V_{CC_amp} = 5.0 \text{V}$		-5		dBm
Input Power Sensitivity	0.2 - 1 GHz	-20	0	8	dBm
	1-10 GHz	-20	0	8	dBm
	10-12 GHz	-15	-3	0	dBm
Supply Current (I_{CC_div})	$V_{CC_div} = 5.0 \text{V}$		122		mA
Supply Current (I_{CC_amp})	$V_{CC_amp} = 5.0 \text{V}$		15		mA
Input/Output Return Loss			<15		dB
Phase Noise@100kHz Offset Divider-By-64 (2x Divider-By-8 in Series)	$F_{in} = 4.48 \text{GHz}$ $F_{out} = 70\text{MHz}$		< -153		dBc/Hz
	$F_{in} = 640 \text{MHz}$ $F_{out} = 10\text{MHz}$		< -153		



MMPS8

MMIC Divide-By-8 Prescaler
DC - 12 GHz

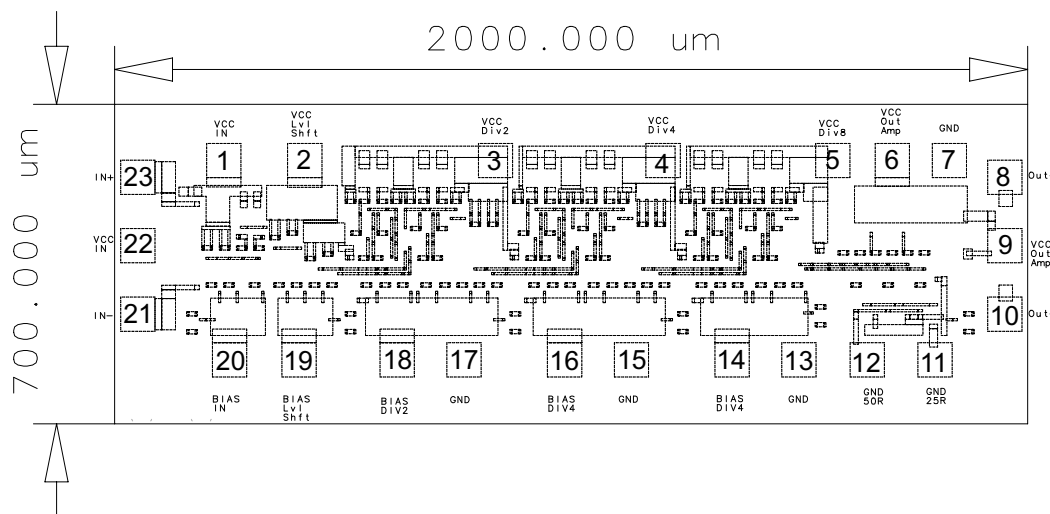
Absolute Maximum Ratings

Vcc	6 V
Input Power	15 dBm
Operating Temperature	-40 to +80° C
Storage Temperature	-60 to +145° C

Typical Supply Current vs. Vcc

Vcc (V)	Sum of Icc (mA)
5.0	137

Die Outline Drawing



MMIC DIVIDE-BY-8 PRESCALER



MMPS8

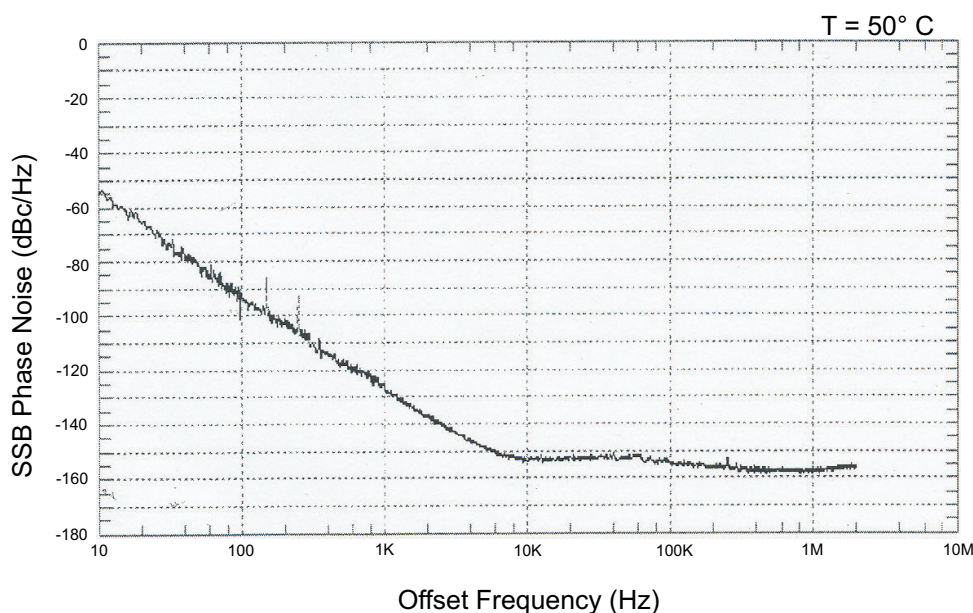
MMIC Divide-By-8 Prescaler DC - 12 GHz

MMIC DIVIDE-BY-8 PRESCALER

Pin Description

Pin Number	Function	Description	Interface Schematic
1-6,9,22	Vcc (GND)	DC-Supply 5V (for pos. supply) or GND (for neg. supply)	
7(optional), 11(optional), 12,13,15,17	GND (-Vcc)	Ground or -5V (for neg. supply) Pad 7: integrated RF blocking capacitor for Vcc-Pads. Pad 11: high power mode for output amplifier.	
21,23	RF_in	Pad 21: RF input Pad 23: complementary RF input	
8,10	RF_out	Pad 8: RF output Pad 10: complementary RF input	
14,16,17-20 (optinal)	Bias	Bias pads to control the bias condition of each stage. Applying 1.5V-2.0V to this pads will change the biasing conditions.	

Typical SSB Phase Noise @ 70 MHz (RF_in = 4.48 GHz with 2 x Div-By-8 in series)



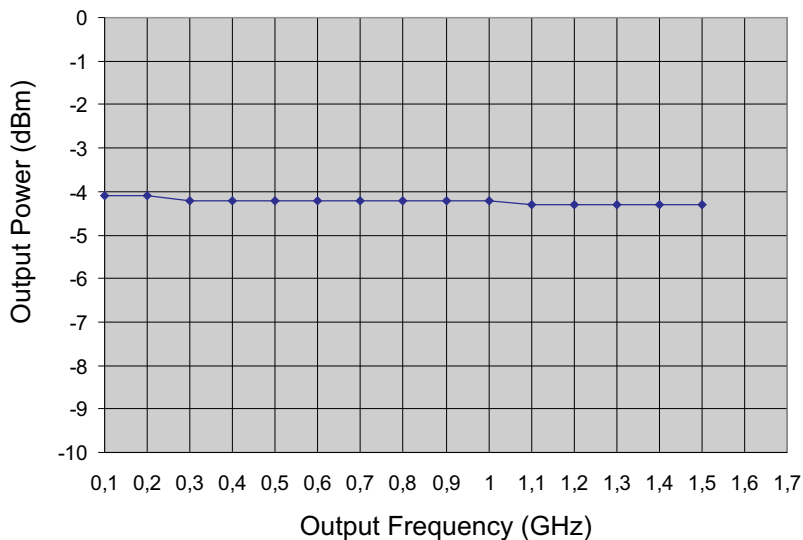


MMPS8

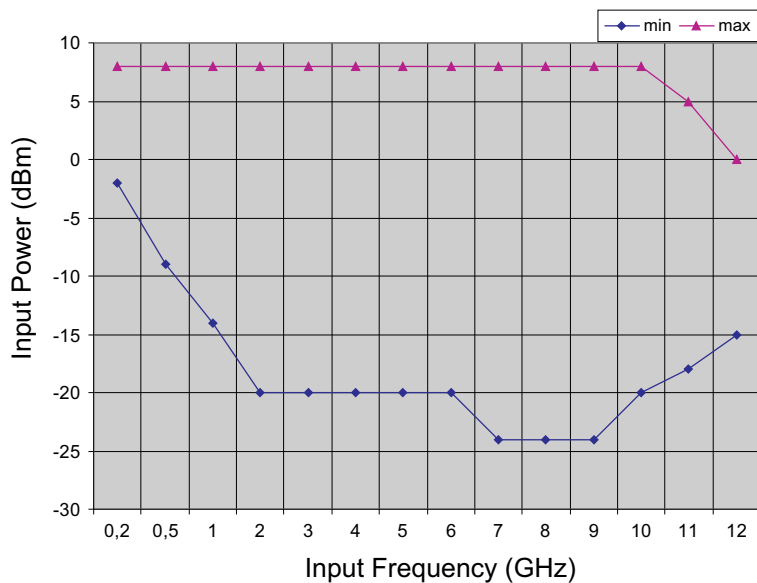
MMIC Divide-By-8 Prescaler
DC - 12 GHz

MMIC DIVIDE-BY-8 PRESCALER

Output Power vs. Frequency ($F_{in}=200\text{MHz} - 12\text{GHz}$) $T=50^{\circ}\text{C}$



Typical Input Sensitivity ($U_{cc}=5.0\text{V}$; $T=50^{\circ}\text{C}$)



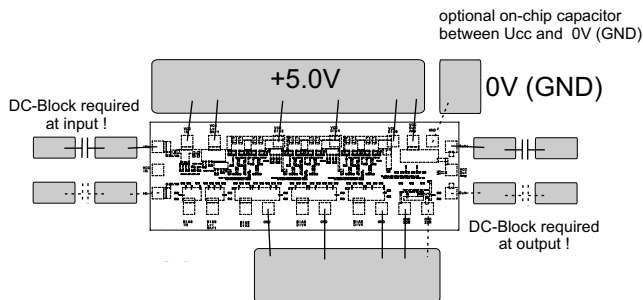


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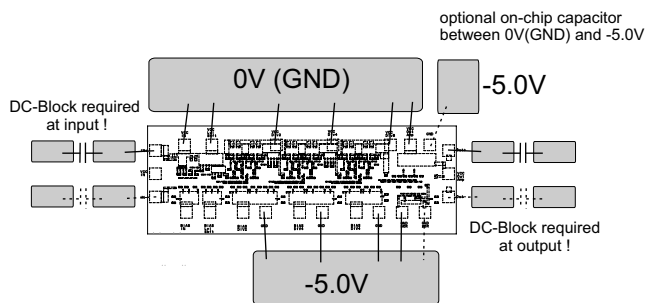
MMIC Divide-By-8 Prescaler
DC - 12 GHz

MMIC DIVIDE-BY-8 PRESCALER

positive supply



negative supply





MMPS8

MMIC Divide-By-8 Prescaler
DC - 12 GHz

Notes:

MMIC DIVIDE-BY-8 PRESCALER