HMC251MS8

GaAs MMIC SMT DIVIDE-BY-2, 3.0 - 6.5 GHz

Typical Applications

The HMC251MS8 is ideal for:

- Wireless Local Loop
- UNII & HiperLAN
- ISM
- VSAT

Features

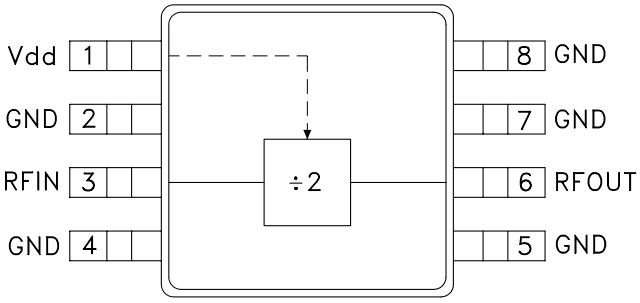
Divide-By-Two

Low Phase Noise: -130 dBc/Hz @ 10KHz

Single Positive Bias Voltage: +5.0V @ 27 mA

Miniature Small Outline Pakcage: MSOP8

Functional Diagram



General Description

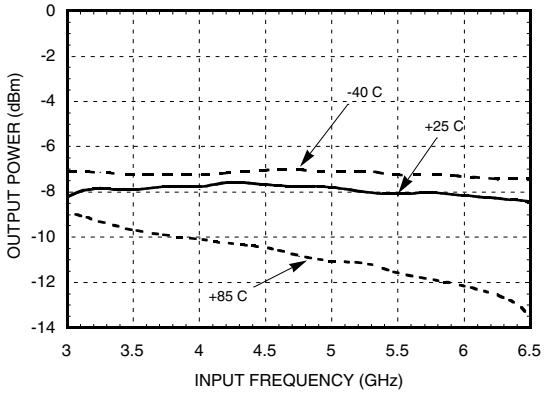
The HMC251MS8 is a low noise divide-by-2 GaAs MMIC prescaler in an 8 lead surface mount MSOP plastic package. This device operates from 3.0 to 6.5 GHz (input frequency) with a single +5.0 V DC supply while drawing only 27 mA of current. The low residual phase noise of this prescaler helps the user maintain good system noise performance.

Electrical Specifications, T_A = +25° C, Vdd = +5.0V, 50 Ohm System

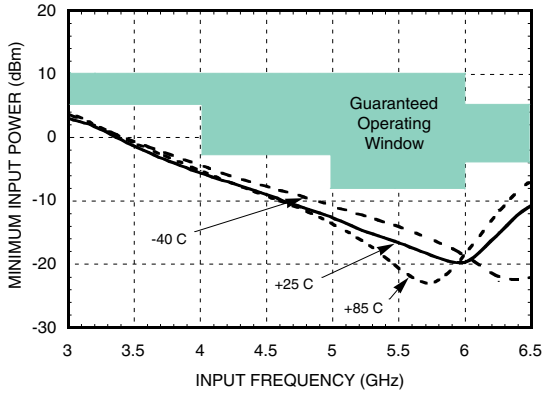
Parameter	Condition	Min	Typical	Max	Units
Input Frequency Range			3.0 - 6.5		GHz
Output Frequency Range			1.5 - 3.25		GHz
Operating Input Power Range	Fin = 3.0 - 4.0 GHz Fin = 4.0 - 5.0 GHz Fin = 5.0 - 6.0 GHz Fin = 6.0 - 6.5 GHz	6 -2 -8 -3		10 10 10 7	dBm dBm dBm dBm
Output Power for Minimum Input Power Level (Note 1)	Fin = 3.0 - 4.0 GHz Fin = 4.0 - 5.0 GHz Fin = 5.0 - 6.0 GHz Fin = 6.0 - 6.5 GHz	-12 -14 -16 -17	-8.0 -7.7 -8.2 -8.5	-3 -3 -3 -3	dBm dBm dBm dBm
Single-Side-Band Phase Noise	Fin = 5.0 - 6.0 GHz Offset from carrier = 10KHz		-130		dBc/Hz
Supply Current (Idd)	Vdd = -5.0 Vdc		27	33	mA

Note 1. Output Power Measured at half the Input Frequency.

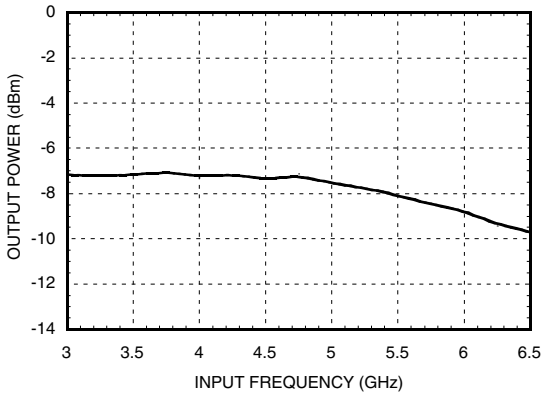
Output Power vs. Frequency @ Minimum Input Power Level



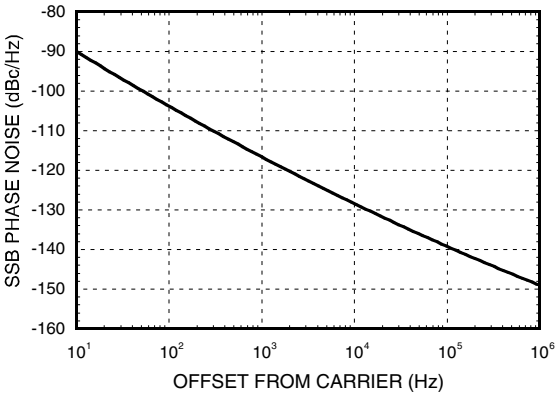
Minimum Input Power vs. Input Frequency



Output Power for Input Power= +10 dBm*

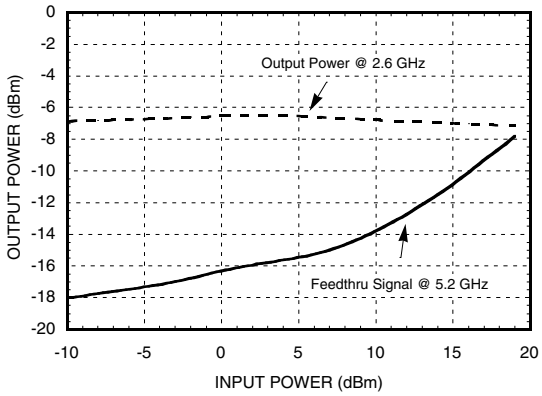


Single-Side-Band Phase Noise vs. Offset from Carrier, fin= 5 to 6 GHz

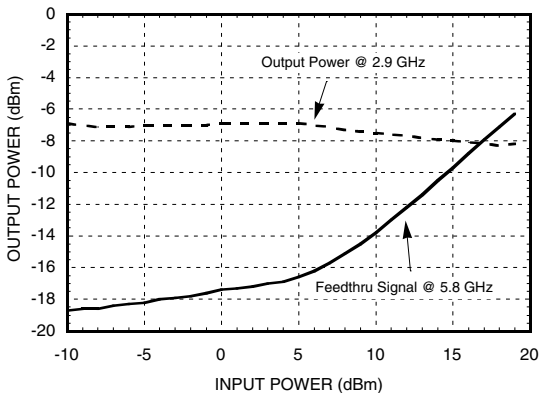


*Note: Output Power Measured @ fin/2

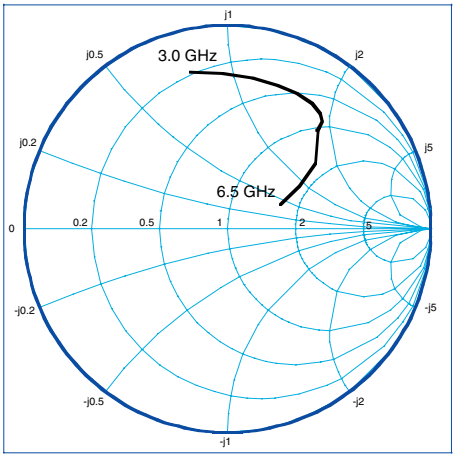
Output Power vs.
Input Power, Input Frequency= 5.2 GHz



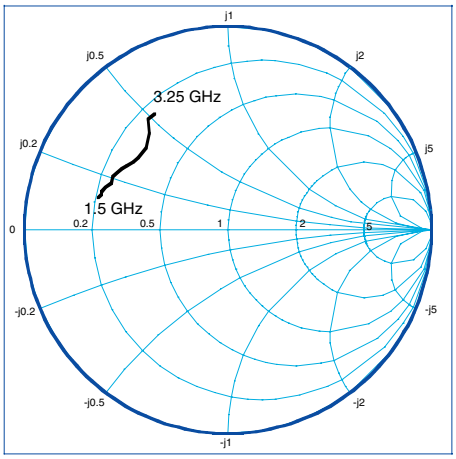
Output Power vs.
Input Power, Input Frequency= 5.8 GHz



RF IN S-Parameters *



RF OUT S-Parameters *



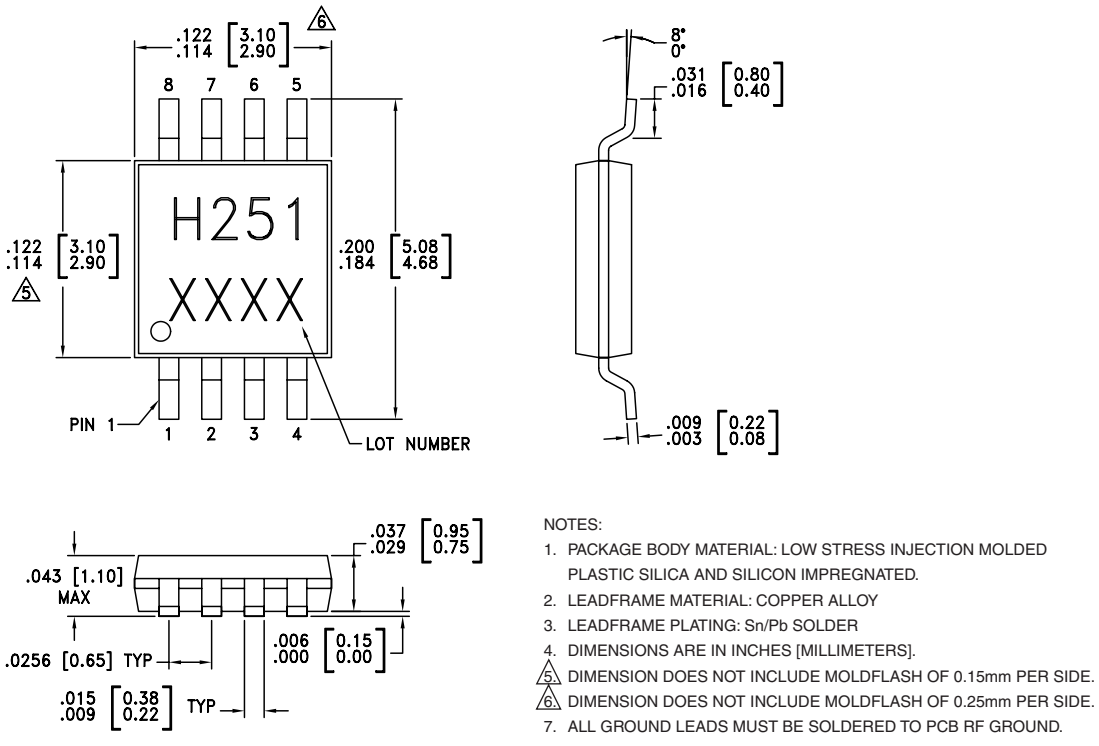
**S-Parameter Data is Available @ www.hittite.com*

Absolute Maximum Ratings

Vdd	+8 Vdc
Maximum Input Power (Vdd = +5.0 Vdc)	20 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

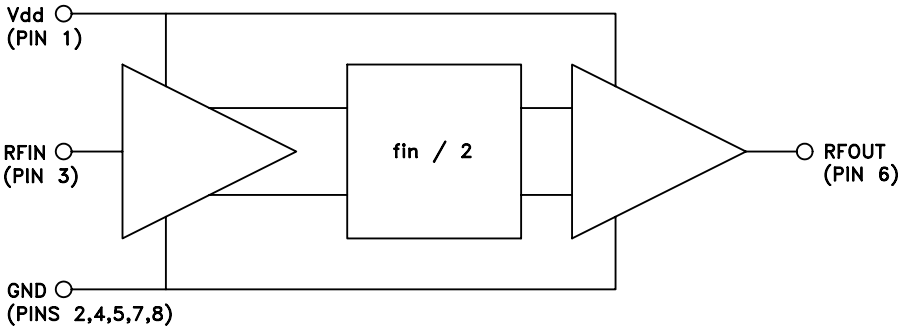
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEADFRAME MATERIAL: COPPER ALLOY
3. LEADFRAME PLATING: Sn/Pb SOLDER
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
6. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
7. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.
8. CLASSIFIED AS MOISTURE SENSITIVITY LEVEL (MSL) 1.

Application Circuit

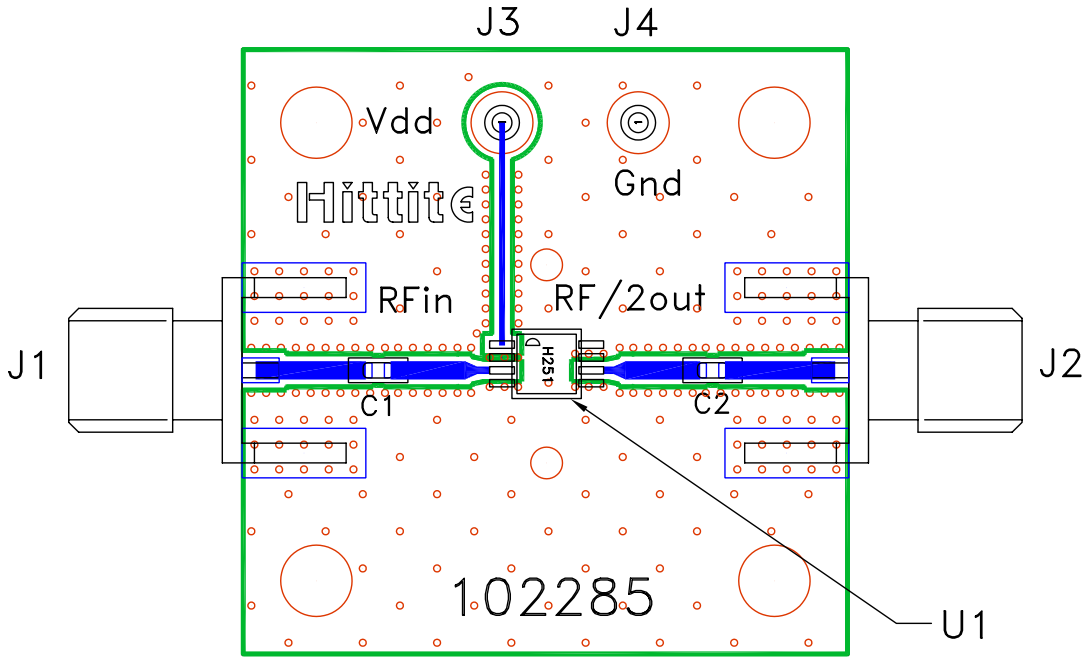


Operating Notes:

1. With no input signal, or input signals below the minimum input power level, the prescaler will self-oscillate.

2. DC blocks on the RF ports are not required but are recommended if DC voltages exceeding 8 volts are present.

Eval Board Layout *(Top View)*



List Of Materials

Item	Description
J1, J2	PC Mount SMA Connector
J3, J4	DC Pin
C1, C2	330 pF capacitor, 0603 Pkg.
U1	HMC251MS8 Prescaler
PCB*	102285 Eval Board
* Circuit Board Material: 4350	

The circuit board used in the final application should be generated with proper RF circuit design techniques. Signal lines at RF IN and RF OUT should have 50 ohm impedance and the package ground leads should be connected directly to the ground plane similar to that shown. The evaluation circuit board shown is available from Hittite upon request.