GaAs MMIC SMT FREQUENCY DOUBLER 0.85 - 2.0 GHz INPUT

FEBRUARY 2001

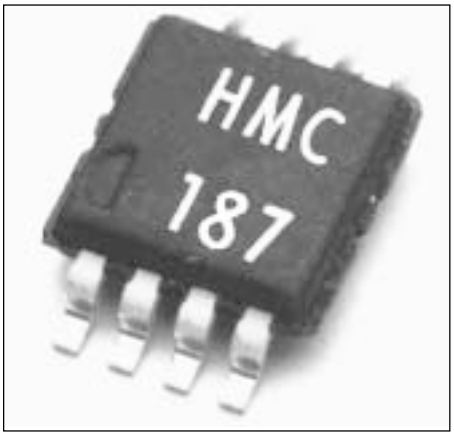
V01.0800

Features

CONVERSION LOSS: 16 dB

Fo, 3Fo, 4Fo ISOLATION: 40 dB

INPUT DRIVE LEVEL: 10 to 20 dBm



General Description

The HMC187MS8 is a miniature frequency doubler in a plastic 8-lead MSOP package. The suppression of the undesired fundamental and higher order harmonics is typically 40 to 50 dB with respect to input signal levels. The doubler uses same diode/balun structures used in Hittite MMIC mixers. The doubler is ideal for high volume applications where frequency doubling of a lower frequency is more economical than directly generating a higher frequency. The passive Schottky diode doubler technology contributes no measurable additive phase noise onto the multiplied signal.

GuaranteedPerformance, *50 Ohm system -40 to +85 deg C*

Typical Electrical Performance vs. Drive Level				
	10 dBm	15 dBm	20 dBm	Units
Input Frequency Range	1.25-1.75	1.0-1.75	0.85-2.0	GHz
Output Frequency Range	2.5-3.5	2.0-3.5	1.7-4.0	GHz
Conversion Loss	20	15	16	dB

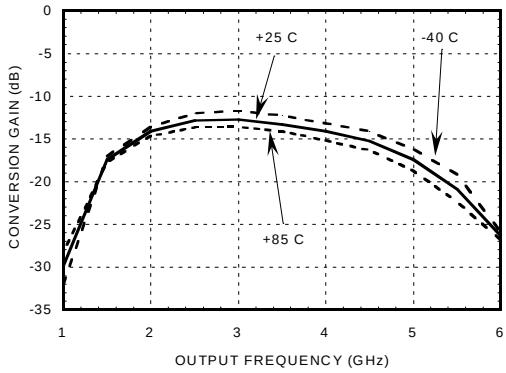
Performance for Input Signals in the 1.0 - 1.75 GHz Band (+15dBm Drive)				
	Min.	Typ.	Max.	Units
Fo Isolation (with respect to input level)	35	45		dB
3Fo Isolation (with respect to input level)	46	52		dB
4Fo Isolation (with respect to input level)	33	40		dB

HMC187MS8 SMT FREQUENCY DOUBLER 0.85 - 2.0 GHz INPUT

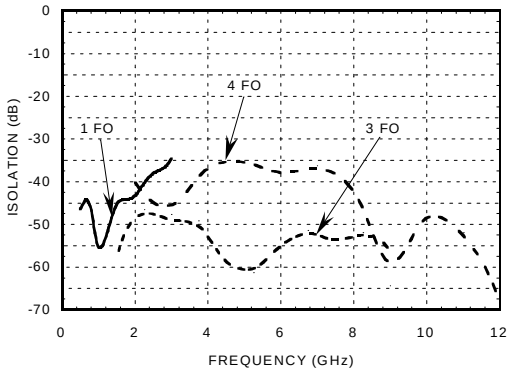
V01.0800

FEBRUARY 2001

Conversion Loss @ +15 dBm Drive Level

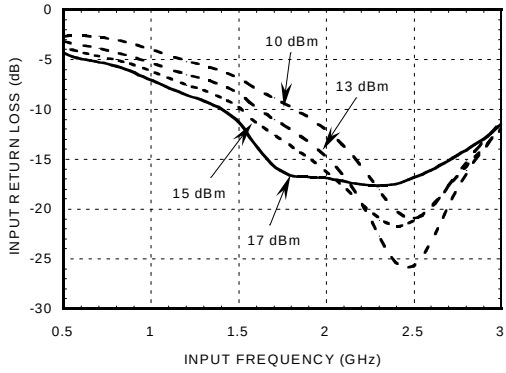


*Isolation @ +15 dBm Drive Level **

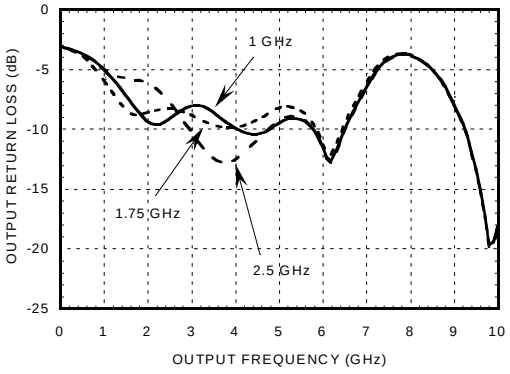


** With respect to input level*

Input Return Loss vs. Drive Level



Output Return Loss for Several Input Frequencies

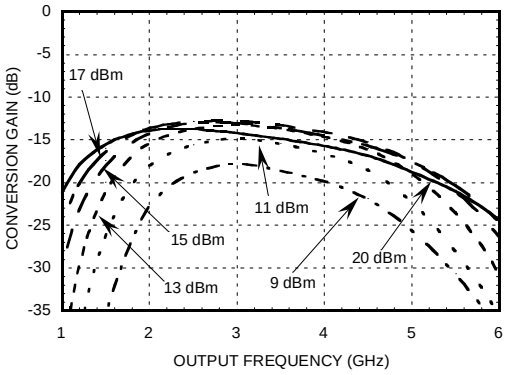


Note: *Output return loss measured at 2fo, with +10 dBm, +15 dBm, and +20 dBm drive levels on input of doubler.*

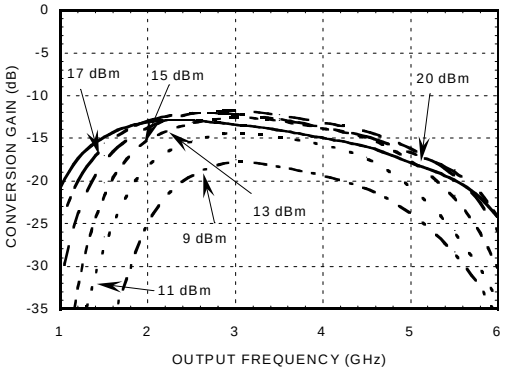
HMC187MS8 SMT FREQUENCY DOUBLER 0.85 - 2.0 GHz INPUT

FEBRUARY 2001 V01.0800

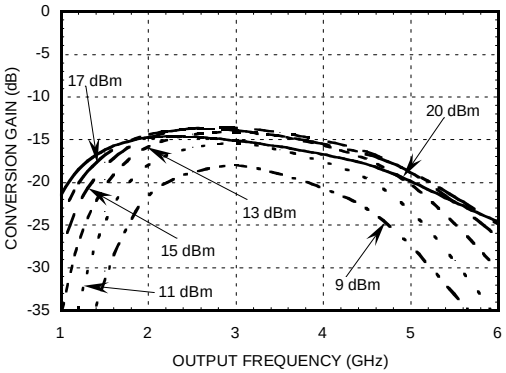
Conversion Gain@ 25 Deg C vs. Drive Level



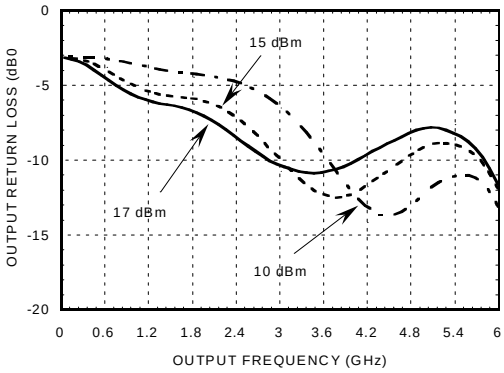
Conversion Gain @ -40 Deg C vs. Drive Level



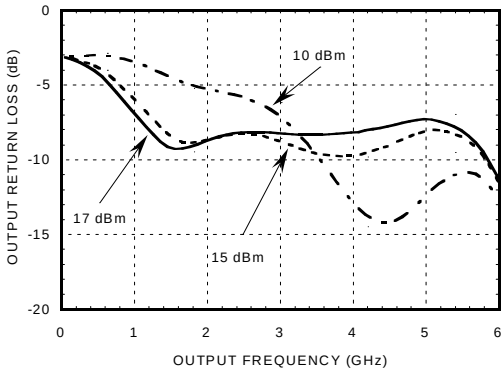
Conversion Gain @ +85 Deg C vs. Drive Level



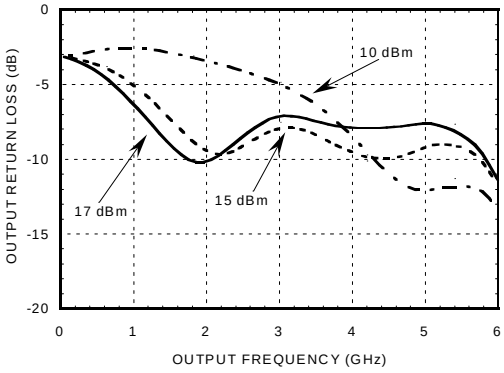
Output Return Loss with 1 GHz Input



Output Return Loss with 1.75 GHz Input



Output Return Loss with 2.5 GHz Input

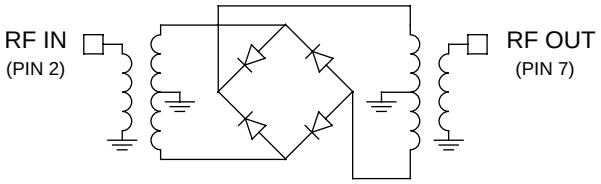


HMC187MS8 SMT FREQUENCY DOUBLER 0.85 - 2.0 GHz INPUT

V01.0800

FEBRUARY 2001

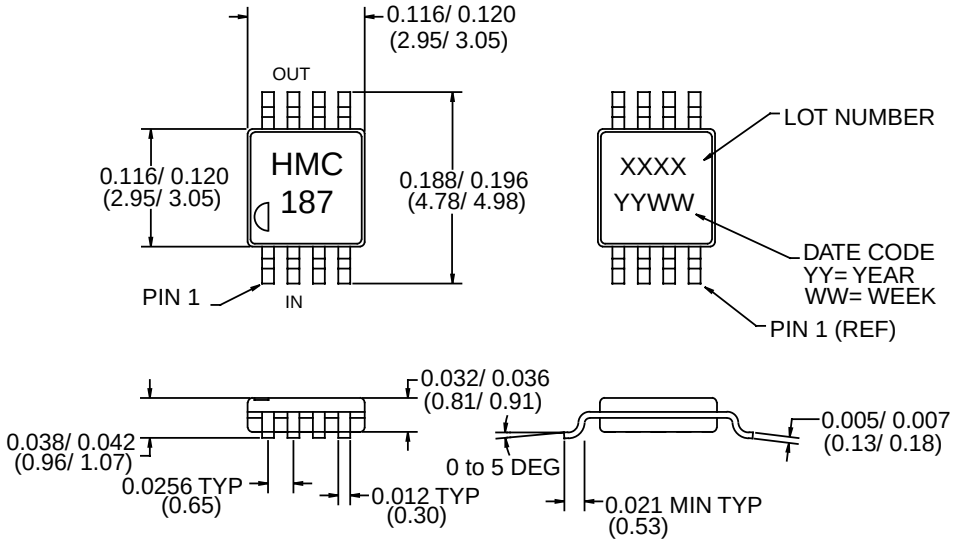
Schematic



Absolute Maximum Ratings

Input Drive	+27 dBm
Storage Temperature	-65 to +150 deg. C
Operating Temperature	-40c to +85 deg. C

Outline Drawing



1. MATERIAL:
   A) PACKAGE BODY - LOW STRESS INJECTION-MOLDED PLASTIC, SILICA & SILICONE IMPREGNATED.
   B) LEADFRAME MATERIAL : COPPER ALLOY
2. PLATING: LEAD - TIN SOLDER PLATE
3. DIMENSIONS ARE IN INCHES (MILLIMETERS). UNLESS OTHERWISE SPECIFIED ALL TOLERANCES ARE ±0.005(±0.13).
4. ALL UNLABELED LEADS ARE GROUND.