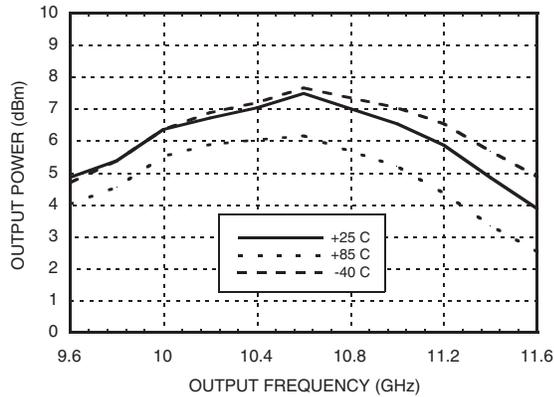


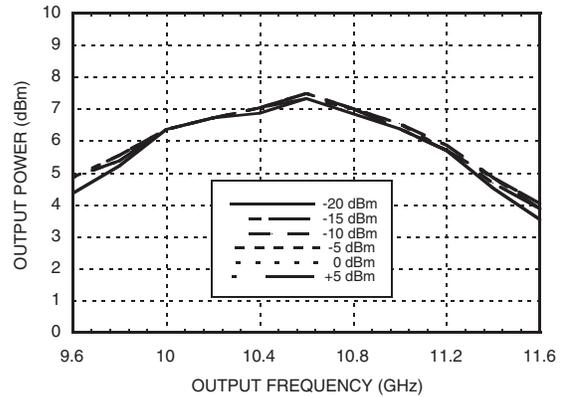
**SMT GaAs HBT MMIC x8 ACTIVE
FREQUENCY MULTIPLIER, 9.9 - 11.2 GHz OUTPUT**



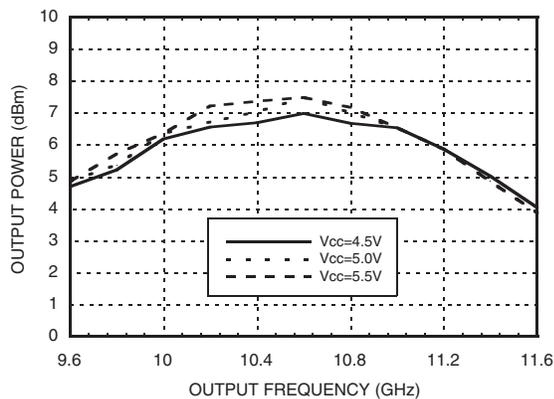
**Output Power vs.
Temperature @ -10 dBm Drive Level**



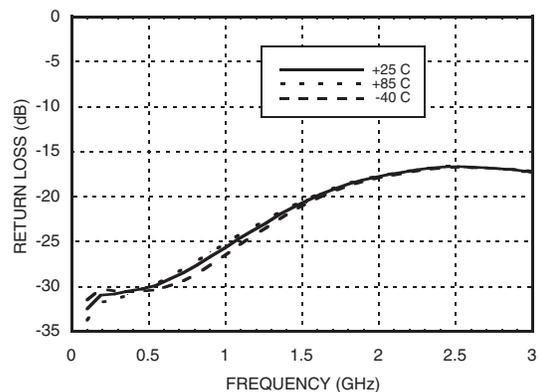
Output Power vs. Drive Level



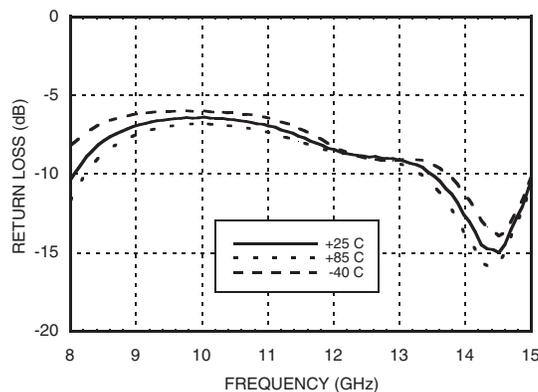
**Output Power vs.
Supply Voltage @ -10 dBm Drive Level**



Input Return Loss vs. Temperature



Output Return Loss vs. Temperature



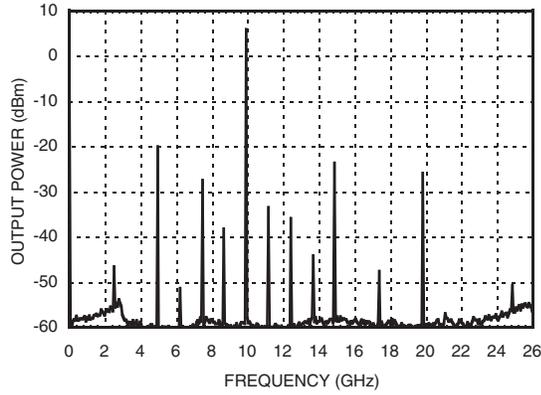
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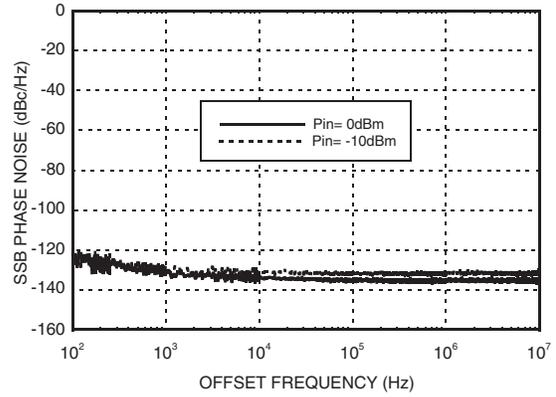
**SMT GaAs HBT MMIC x8 ACTIVE
FREQUENCY MULTIPLIER, 9.9 - 11.2 GHz OUTPUT**



Output Spectrum



**SSB Phase Noise
Performance, $F_{out} = 10.5$ GHz**



5

FREQ. MULTIPLIERS - ACTIVE - SMT

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SMT GaAs HBT MMIC x8 ACTIVE FREQUENCY MULTIPLIER, 9.9 - 11.2 GHz OUTPUT



Absolute Maximum Ratings

RF Input (Vcc = +5V)	+20 dBm
Vcc	+5.5V
Channel Temperature	135 °C
Continuous Pdiss (T=85 °C) (derate 10 mW/°C above 85 °C)	650 mW
Thermal Resistance (R _{th}) (junction to ground paddle)	100 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Typical Supply Current vs. Vcc

Vcc (V)	Icc (mA)
4.5	66
5.0	68
5.5	70

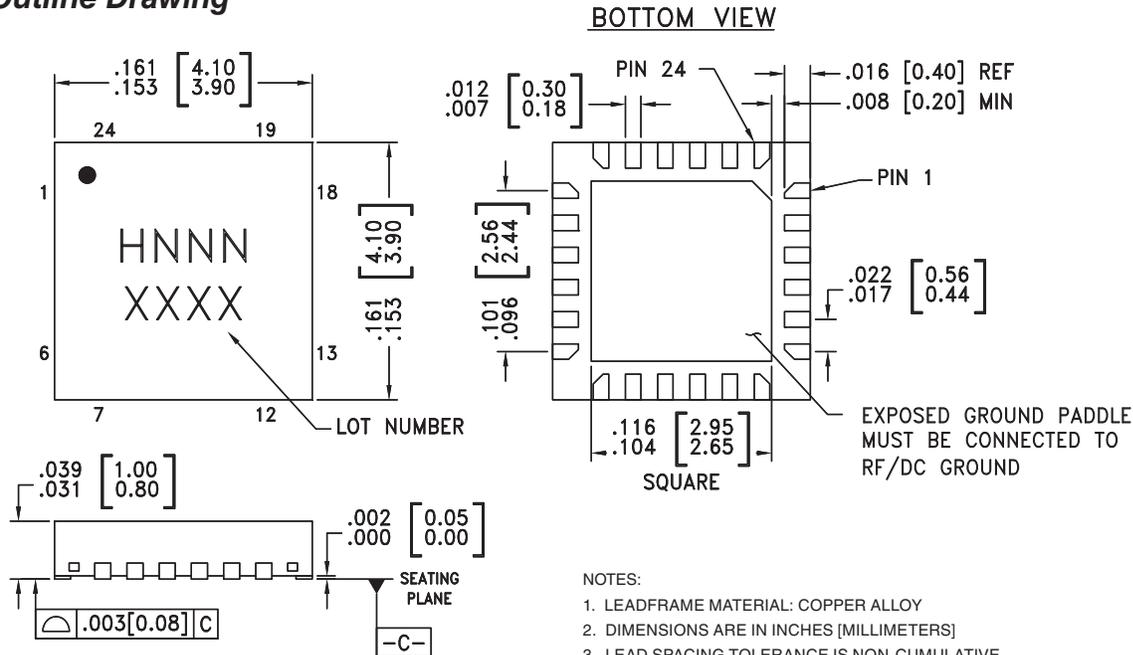
Note: Multiplier will operate over full voltage range shown above.



ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

5

Outline Drawing



Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC444LP4	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	H444 XXXX
HMC444LP4E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	H444 XXXX

[1] Max peak reflow temperature of 235 °C

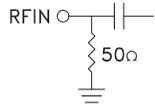
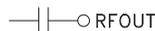
[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX

SMT GaAs HBT MMIC x8 ACTIVE FREQUENCY MULTIPLIER, 9.9 - 11.2 GHz OUTPUT



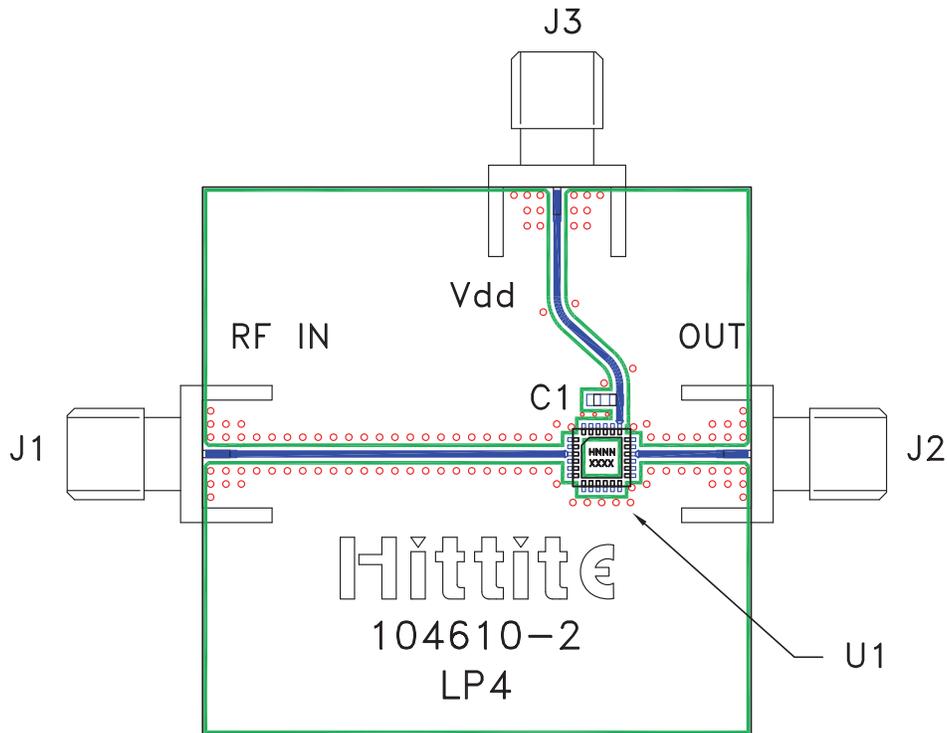
Pin Description

Pin Number	Function	Description	Interface Schematic
1, 2, 5 - 14, 17, 18, 20 - 24	N/C	The pins are not connected internally; however, all data shown herein was measured with these pins connected to RF/DC ground externally.	
3	RFIN	RF input needs to be DC blocked only if there is an external DC voltage applied to RF IN.	
4, 15	GND	All ground leads and ground paddle must be soldered to PCB RF/DC ground.	
16	RFOUT	Multiplied Output. AC coupled. No external DC blocks necessary.	
19	Vcc	Supply voltage 5V ± 0.5V.	

SMT GaAs HBT MMIC x8 ACTIVE FREQUENCY MULTIPLIER, 9.9 - 11.2 GHz OUTPUT



Evaluation PCB



List of Materials for Evaluation PCB 106137 [1]

Item	Description
J1 - J3	PCB Mount SMA Connector
C1	1,000 pF Capacitor, 0603 Pkg.
U1	HMC444LP4(E) x8 Active Multiplier
PCB [2]	104610 Eval Board

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

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