



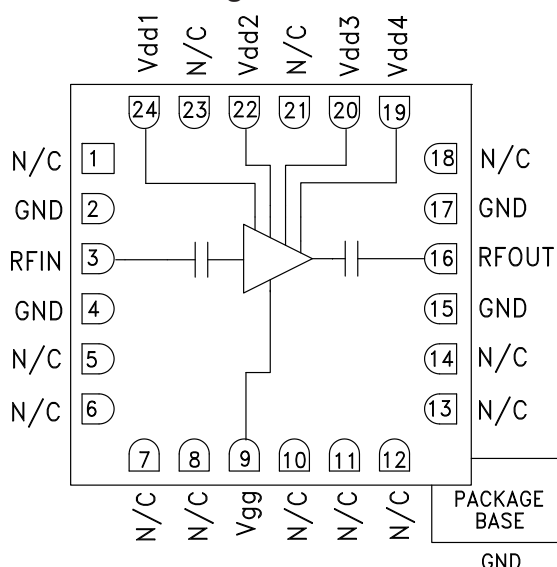
GaAs PHEMT MMIC DRIVER AMPLIFIER, 5.5 - 17 GHz

Typical Applications

The HMC633LC4 is ideal for:

- Point-to-Point Radios
- Point-to-Multi-Point Radios & VSAT
- LO Driver for Mixers
- Military & Space

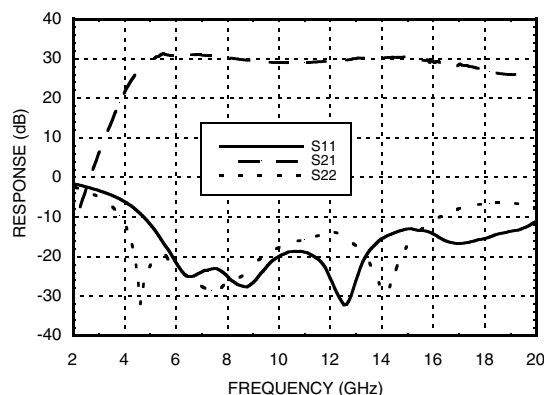
Functional Diagram



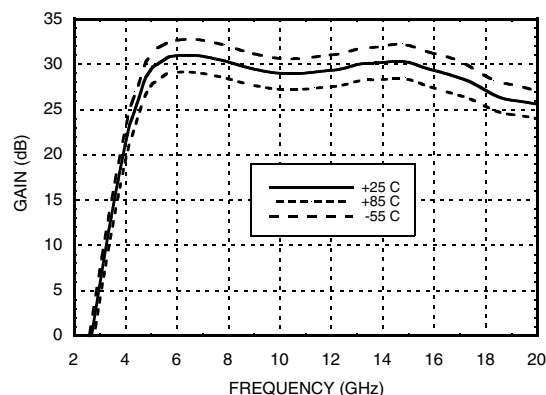


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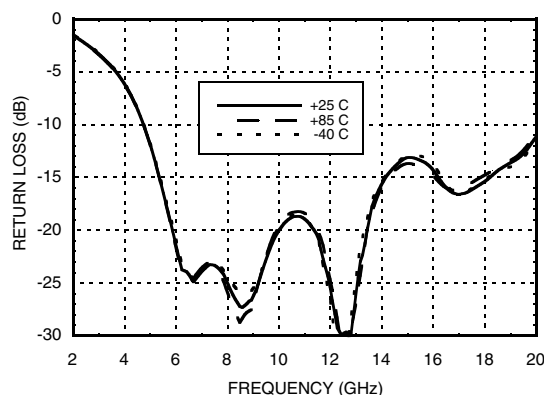
Broadband Gain & Return Loss



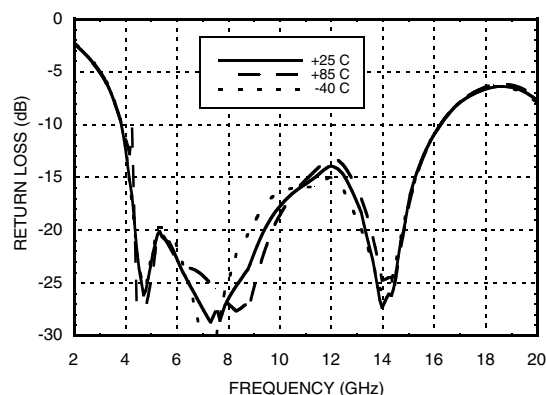
Gain vs. Temperature



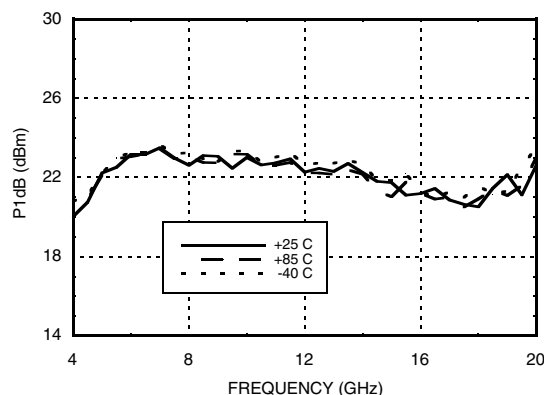
Input Return Loss vs. Temperature



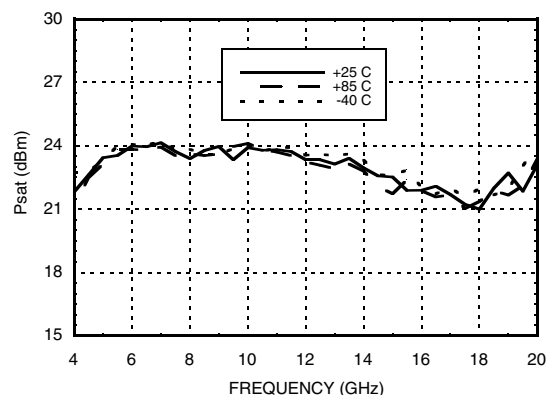
Output Return Loss vs. Temperature

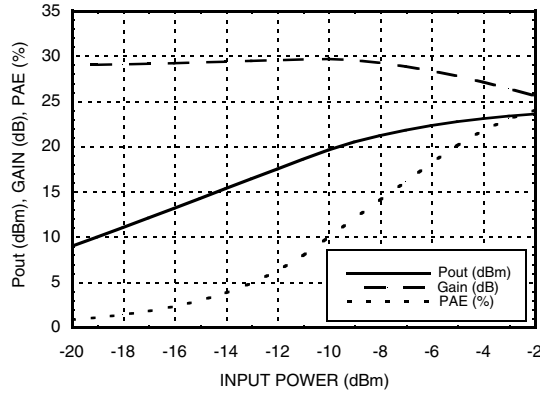
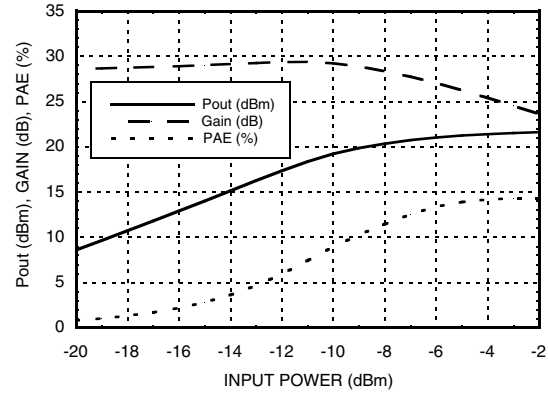
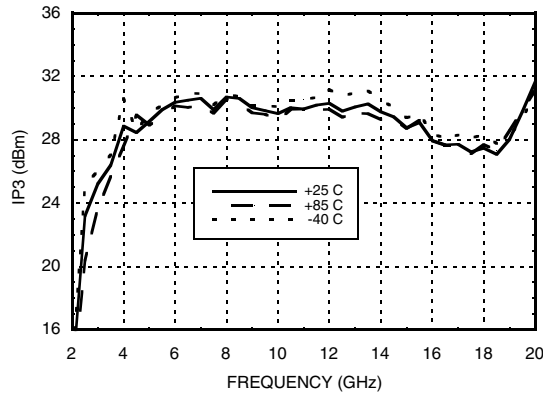
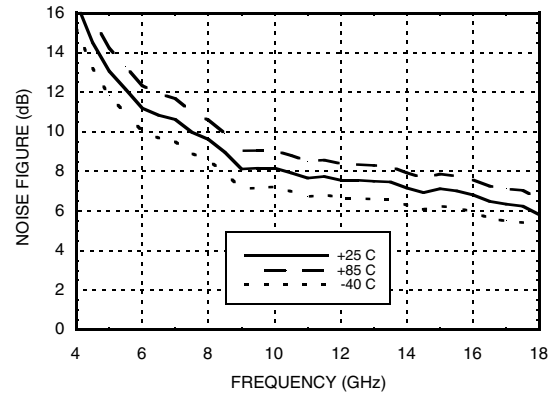
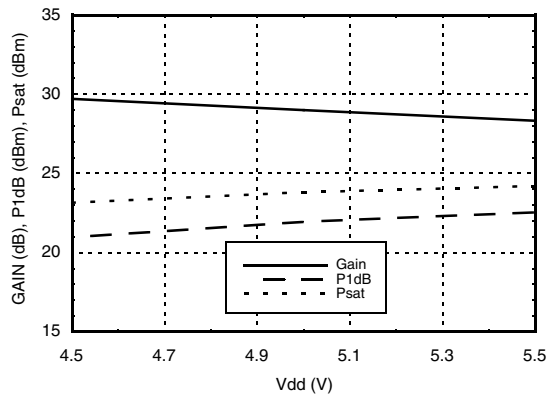
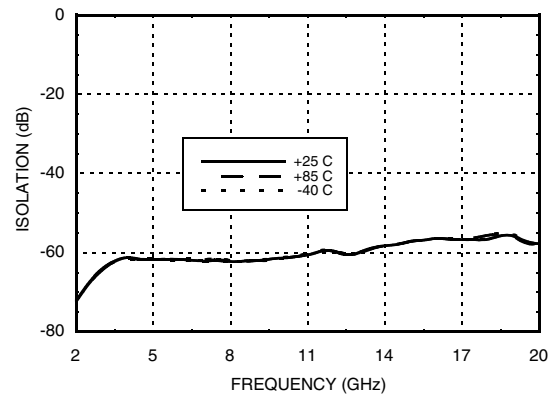


P1dB vs. Temperature



Psat vs. Temperature

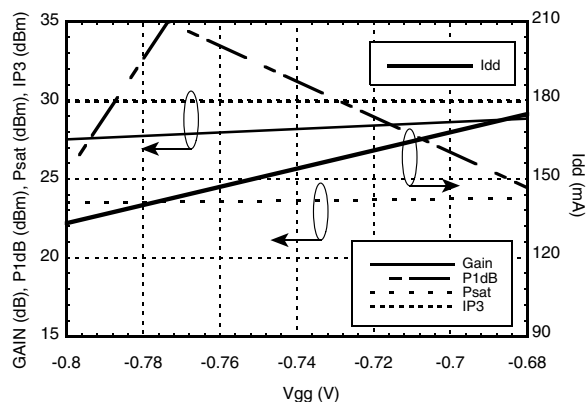


**GaAs PHEMT MMIC DRIVER
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Power Compression @ 11 GHz

Power Compression @ 17 GHz

Output IP3 vs. Temperature

Noise Figure vs. Temperature

Gain & Power vs. Supply Voltage @ 11 GHz

Reverse Isolation vs. Temperature




GaAs PHEMT MMIC DRIVER AMPLIFIER, 5.5 - 17 GHz

Gain, Power & Output IP3 vs. Gate Voltage @ 11 GHz



Absolute Maximum Ratings

Drain Bias Voltage (Vdd1, Vdd2, Vdd3, Vdd4)	+5.5V
Gate Bias Voltage (Vgg)	-3 to 0V
RF Input Power (RFIN)(Vdd = +5 Vdc)	+5 dBm
Channel Temperature	175 °C
Continuous Pdiss (T= 85 °C) (derate 11.08 mW/°C above 85 °C)	0.99 W
Thermal Resistance (channel to package bottom)	90.23 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

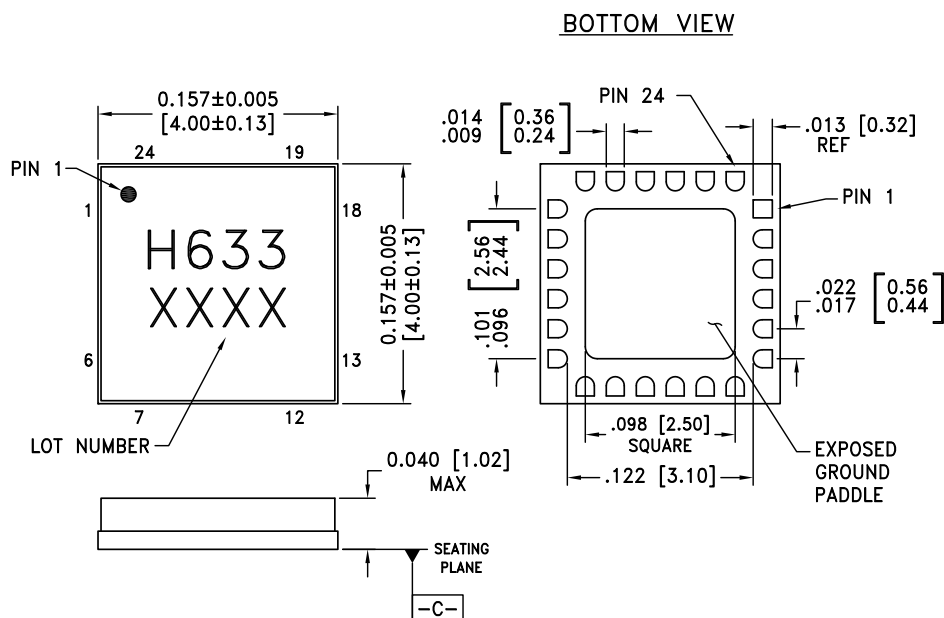


ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Typical Supply Current vs. Vdd

Vdd (V)	IdD (mA)
4.5	177
5.0	180
5.5	182

Note: Amplifier will operate over full voltage ranges shown above


**GaAs PHEMT MMIC DRIVER
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Outline Drawing**NOTES:**

1. PACKAGE BODY MATERIAL: ALUMINA
2. LEAD AND GROUND PADDLE PLATING: 30-80 MICROINCHES GOLD OVER 50 MICROINCHES MINIMUM NICKEL.
3. DIMENSIONS ARE IN INCHES [MILLIMETERS].
4. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm DATUM -C-
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[2]
HMC633LC4	Alumina, White	Gold over Nickel	MSL3 ^[1]	H633 XXXX

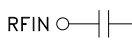
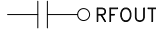
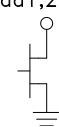
[1] Max peak reflow temperature of 260 °C

[2] 4-Digit lot number XXXX



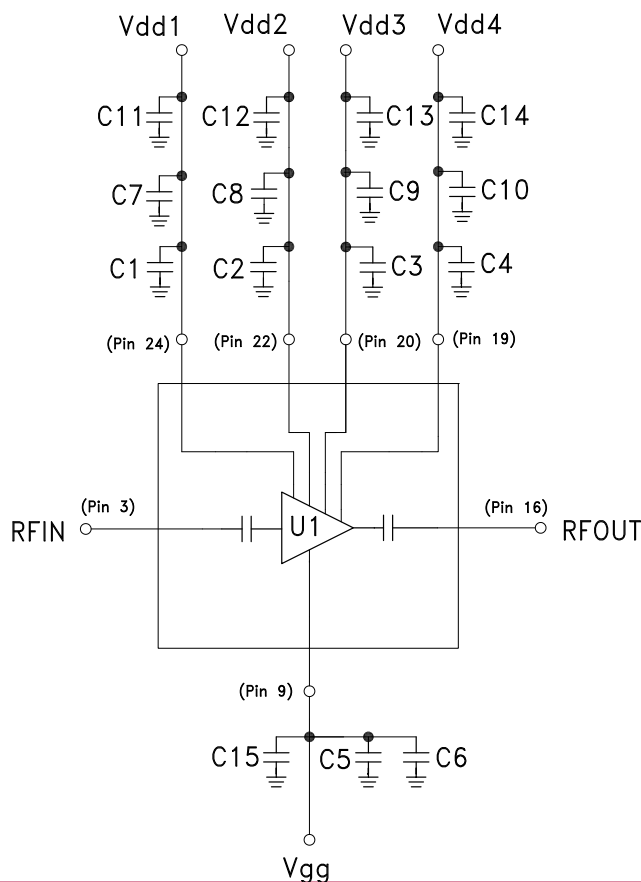
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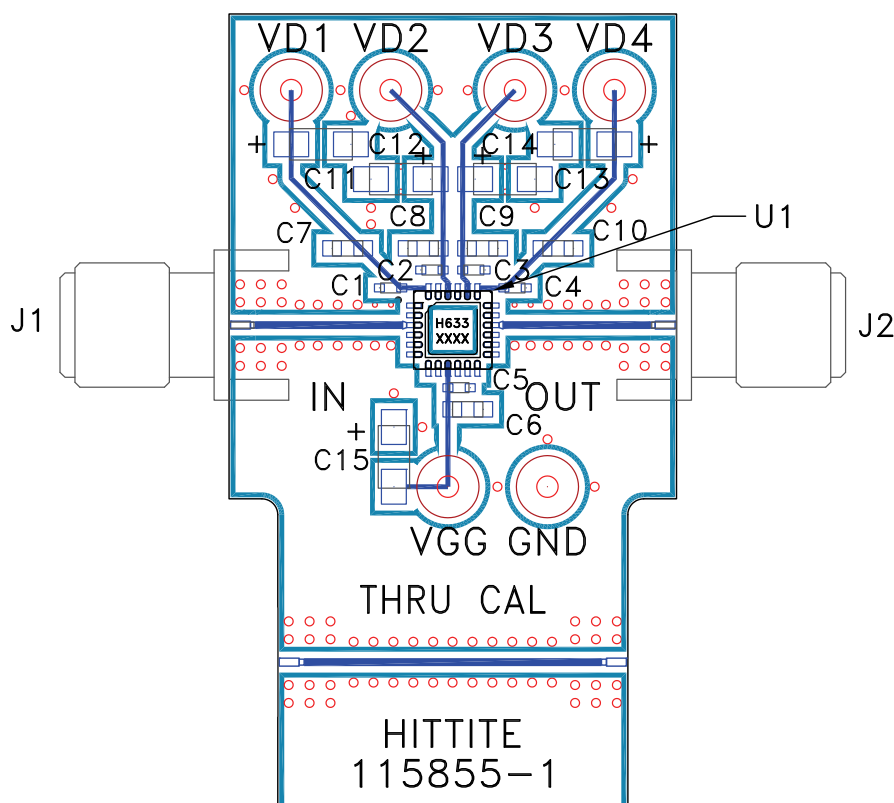
Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 5 - 8, 11 - 14, 18, 21, 23	N/C	No connection. These pins may be connected to DC/RF ground. Performance will not be affected.	
2, 4, 15, 17	GND	Package Bottom must be connected to RF/DC ground.	
3	RFIN	This pin is AC coupled and matched to 50 Ohms.	
9	Vgg	Gate control for amplifier, please follow "MMIC Amplifier Biasing Procedure" Application Note: See application circuit for required external components.	
16	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
24, 22, 20, 19	Vdd1, Vdd2, Vdd3, Vdd4	Power Supply Voltage for the amplifier. See application circuit for required external components.	

Application Circuit

Component	Value
C1 - C5	100 pF
C6 - C10	1000 pF
C11 - C15	2.2 μ F




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Evaluation PCB**List of Materials for Evaluation PCB 115857** ^[1]

Item	Description
J1 - J2	2.92 mm PC Mount K-Connector
VD1 - VD4	DC Pin
C1 - C5	100 pF Capacitor, 0402 Pkg.
C6 - C10	1000 pF Capacitor, 0603 Pkg.
C11 - C15	2.2 μ F Capacitor, Tantalum
U1	HMC633LC4 Driver Amplifier
PCB [2]	115855 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the application should use 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. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Hittite upon request.

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