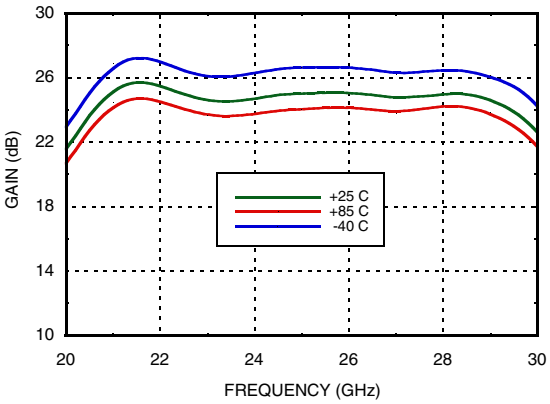
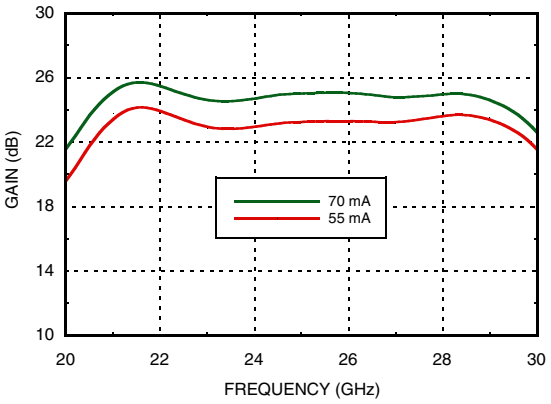
GaAs HEMT MMIC LOW NOISE AMPLIFIER, 24 - 28 GHz

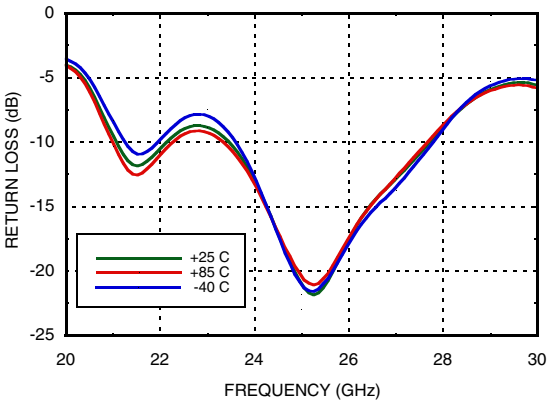
Gain vs. Temperature



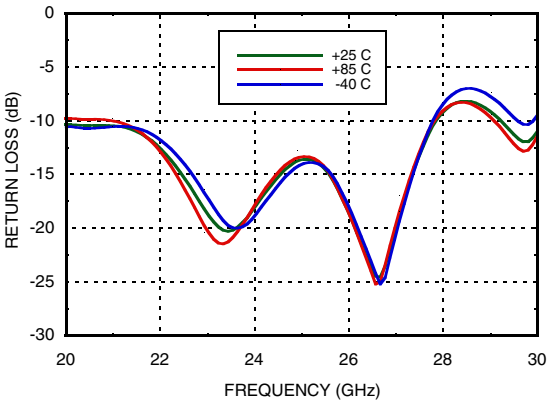
Gain vs. Idd



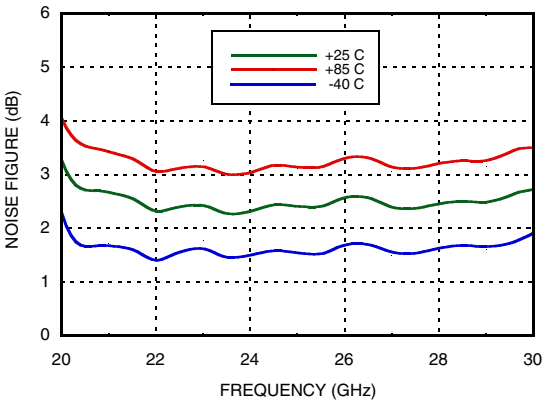
Input Return Loss vs. Temperature



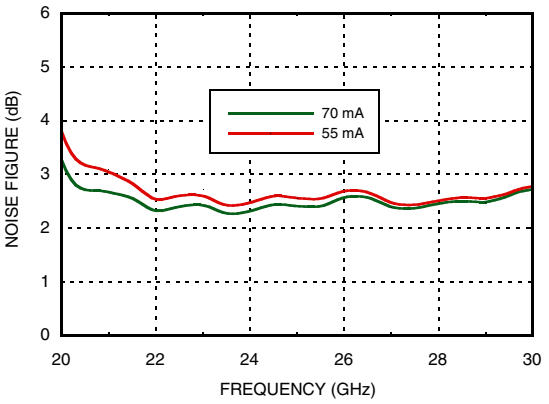
Output Return Loss vs. Temperature



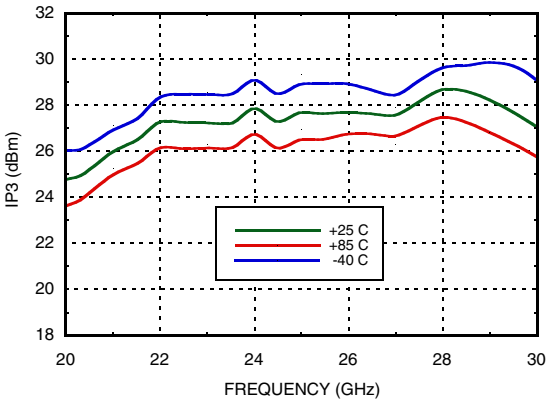
Noise Figure vs. Temperature



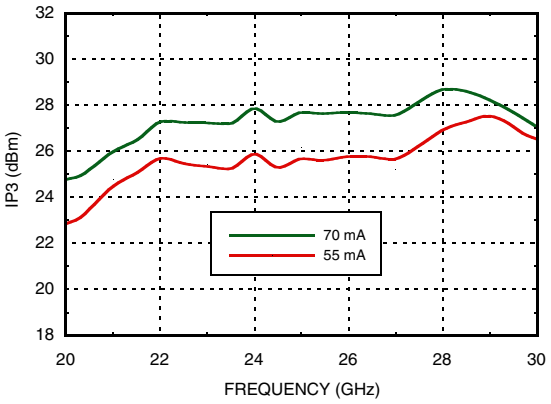
Noise Figure vs. Idd



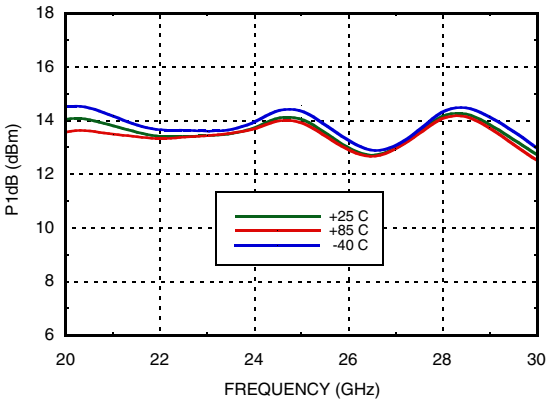
Output IP3 vs. Temperature



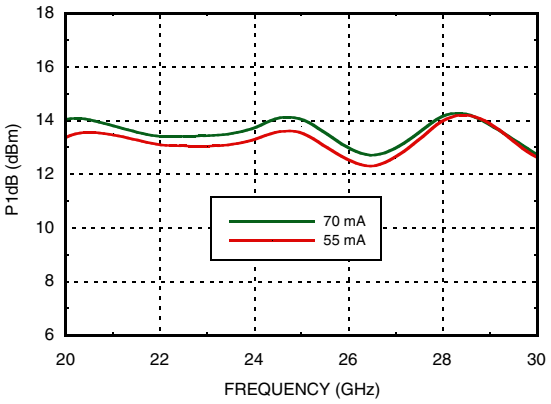
Output IP3 vs. Idd



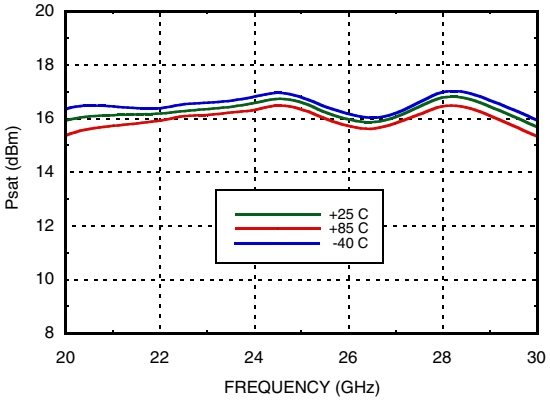
P1dB vs. Temperature



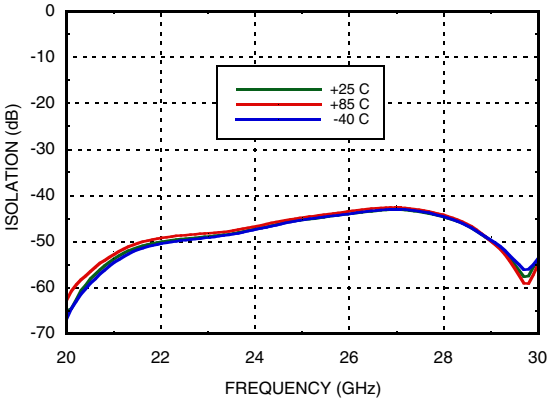
P1dB vs. Idd



Psat vs. Temperature

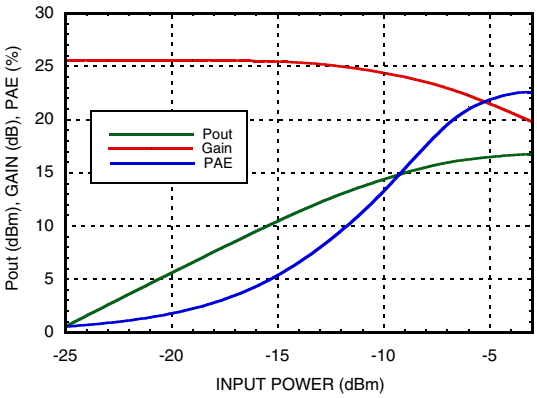


Reverse Isolation vs. Temperature

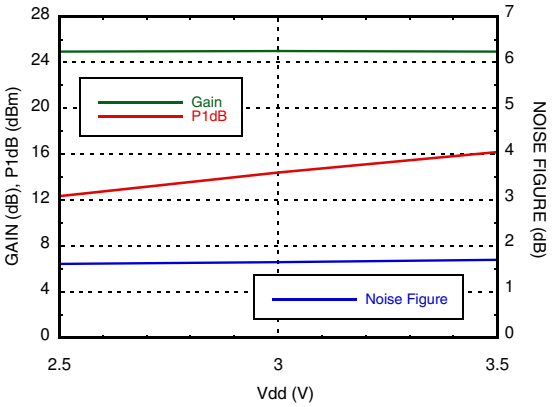


GaAs HEMT MMIC LOW NOISE AMPLIFIER, 24 - 28 GHz

Power Compression @ 28 GHz



Gain, Noise Figure & P1dB vs. Supply Voltage @ 28 GHz

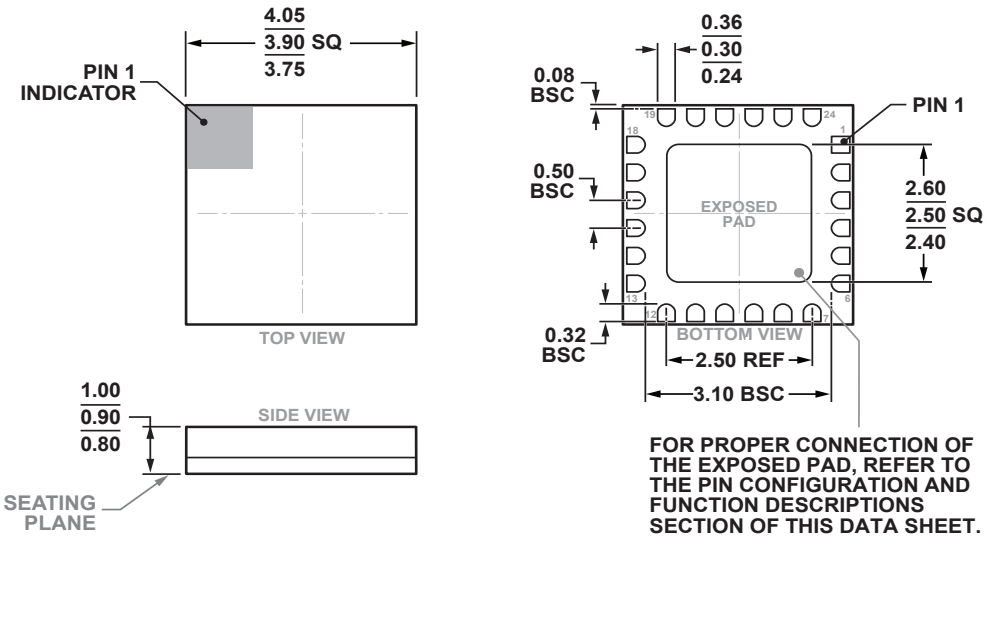


Absolute Maximum Ratings

Drain Bias Voltage	+4.5V
RF Input Power	+12 dBm
Gate Bias Voltage	-1 to 0.3V
Channel Temperature	175 °C
Continuous Pdiss (T = 85 °C) (derate 6.7 mW/°C above 85 °C)	0.21 W
Thermal Resistance (Channel to ground paddle)	148 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

Outline Drawing



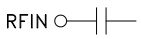
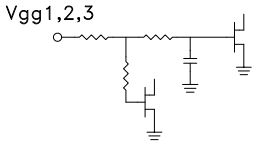
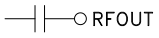
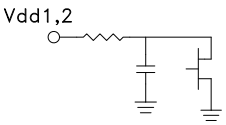
24-Terminal Ceramic Leadless Chip Carrier [LCC]
(E-24-1)
Dimensions shown in millimeters.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [2]
HMC752LC4	Alumina, White	Gold over Nickel	MSL3 [1]	H752 XXXX

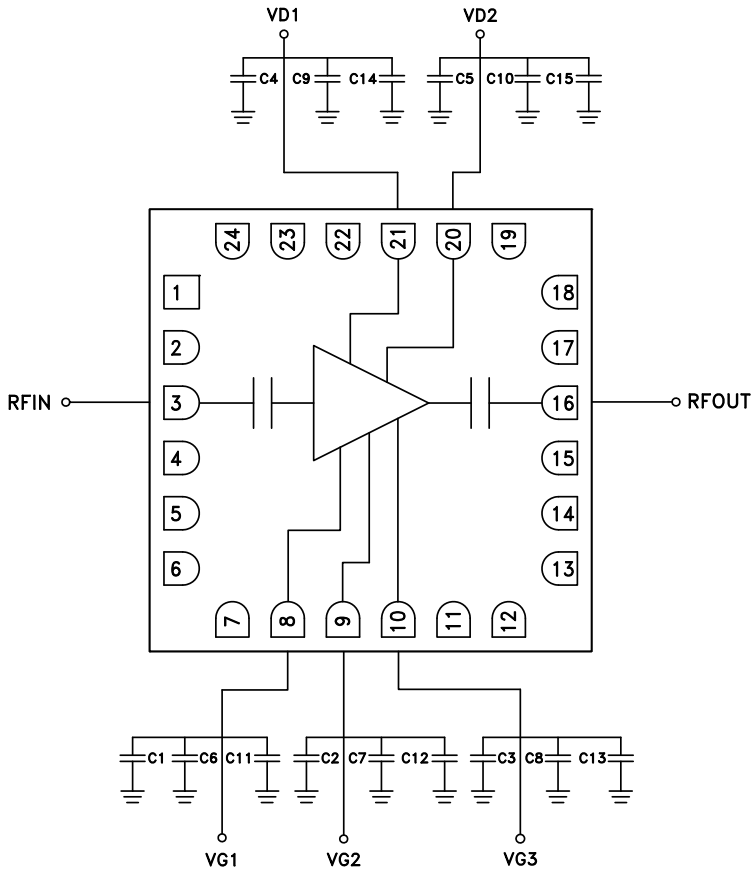
[1] Max peak reflow temperature of 260 °C
[2] 4-Digit lot number XXXX

Pin Descriptions

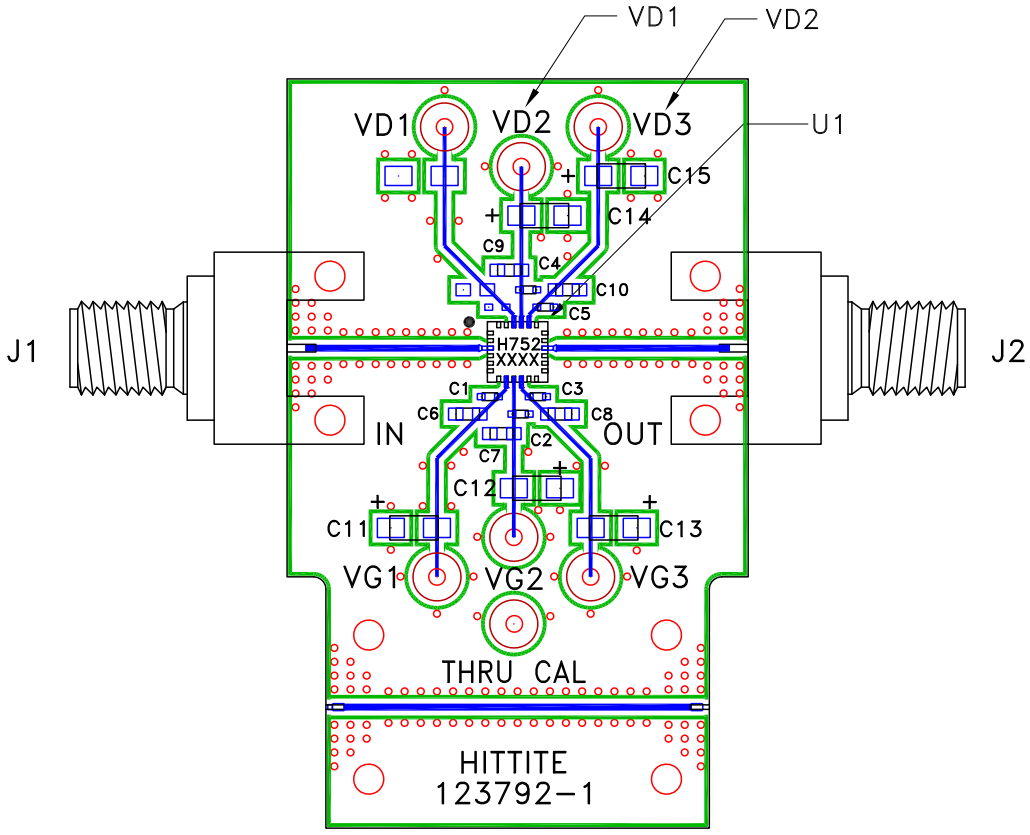
Pin Number	Function	Description	Interface Schematic
1, 2, 4, 6, 7, 12, 13, 15, 17 - 19, 24	GND	Package bottom has exposed metal paddle that must be connected to RF/DC ground.	
3	RFIN	This pad is AC coupled and matched to 50 Ohms.	
5, 11, 14, 22, 23	N/C	No Connection. This pin may be connected to RF/DC ground. Performance will not be affected.	
8 - 10	Vgg1 - 3	Gate control for amplifier. Please follow “MMIC Amplifier Biasing Procedure” application note. See assembly for required external components.	
16	RFOUT	This pad is AC coupled and matched to 50 Ohms.	
21, 20	Vdd1, Vdd2	Power Supply Voltage for the amplifier. See assembly for required external components.	

Application Circuit

Component	Value
C1 - C5	100 pF
C6 - C10	1,000 pF
C11 - C15	4.7 µF



Evaluation PCB



List of Materials for Evaluation PCB 123794 [1]

Item	Description
J1, J2	2.92mm PCB mount K-Connector
J3 - J9	DC Pin
C1 - C5	100pF Capacitor, 0402 Pkg.
C6 - C10	1,000pF Capacitor, 0603 Pkg.
C11 - C15	4.7 µF Capacitor, Tantalum
U1	HMC752LC4 Amplifier
PCB [2]	123792 Evaluation PCB [2]

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350 or Arlon 25FR

The circuit board used in this 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 Analog Devices upon request.