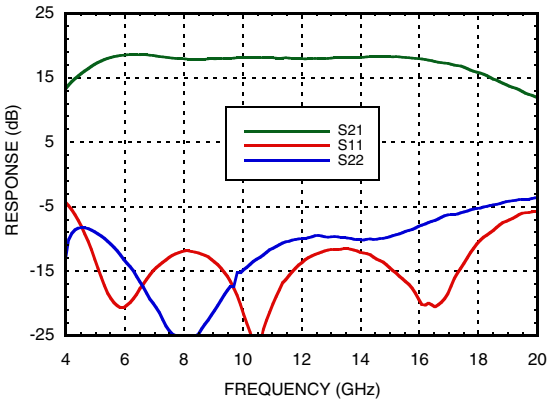
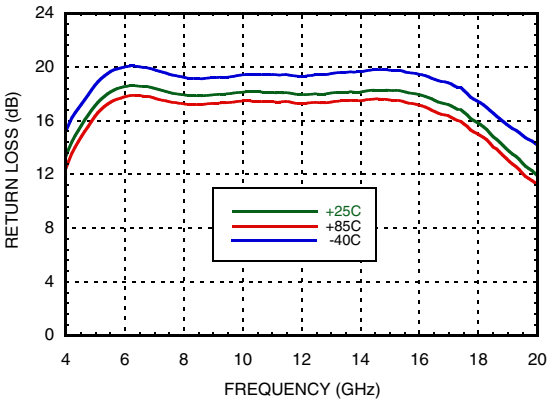
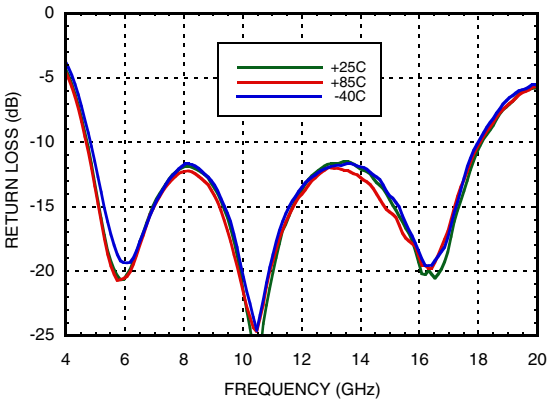
Broadband Gain & Return Loss



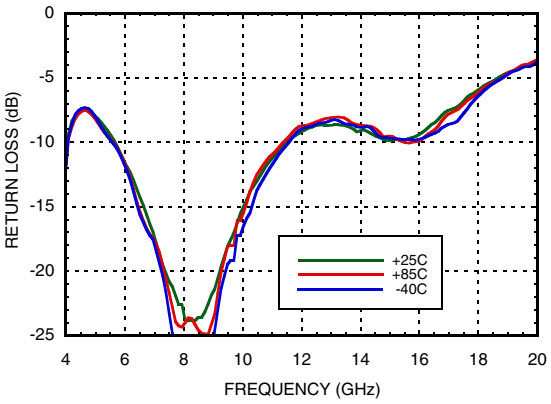
Gain vs. Temperature



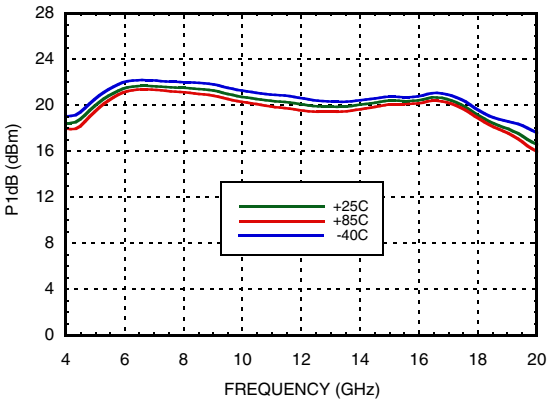
Input Return Loss vs. Temperature



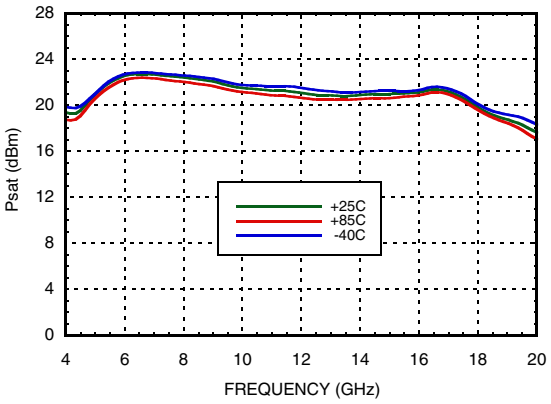
Output Return Loss vs. Temperature



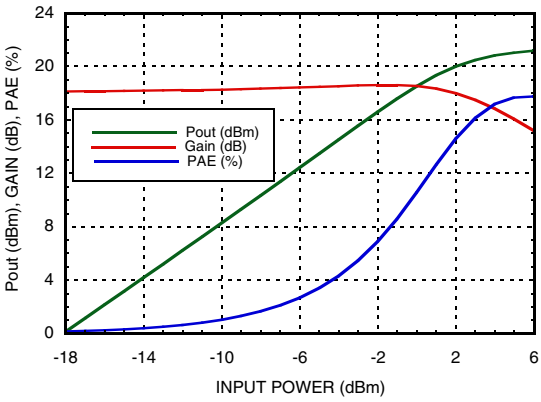
P1dB vs. Temperature



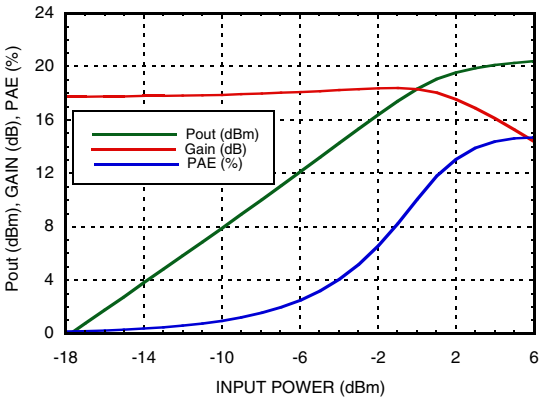
Psat vs. Temperature



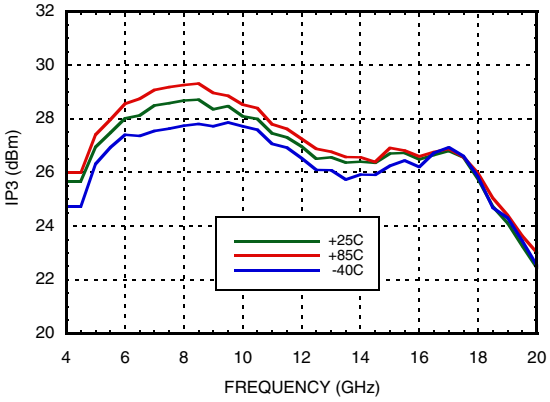
Power Compression @ 10 GHz



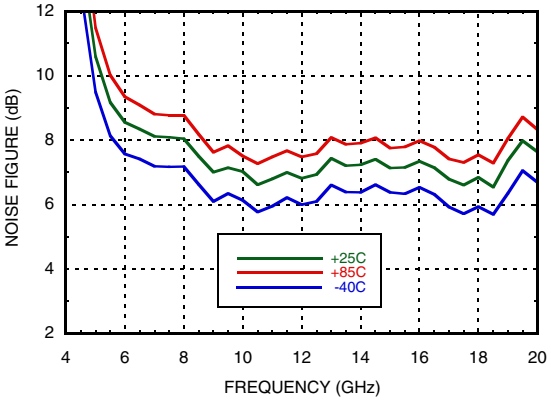
Power Compression @ 17 GHz



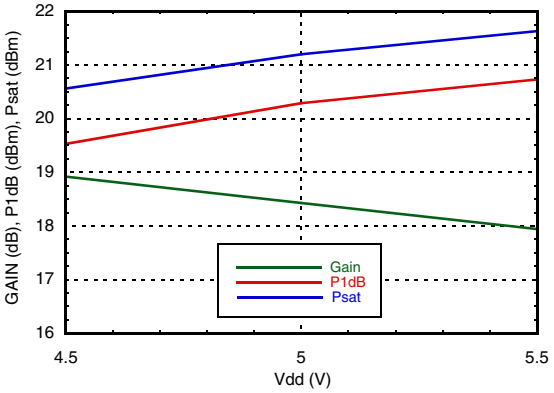
Output IP3 vs. Temperature



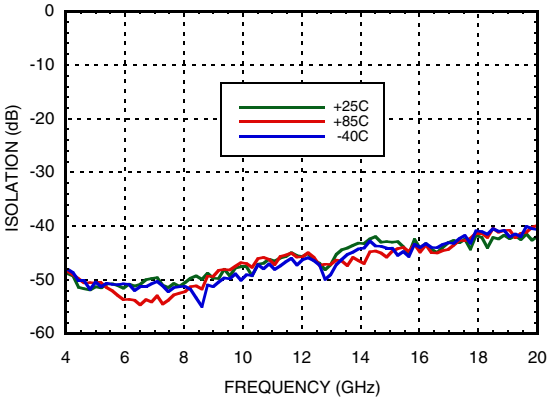
Noise Figure vs. Temperature



Gain, P1dB & PSAT vs. Supply Voltage @ 11 GHz



Reverse Isolation vs. Temperature



Absolute Maximum Ratings

Drain Bias Voltage (Vdd_1 = Vdd_2)	+5.5V
RF Input Power (RFIN)(Vdd = +5Vdc)	+10 dBm
Channel Temperature	175 °C
Continuous Pdiss (T = 85 °C) (derate 12.8 mW/°C above 85 °C)	1.15 W
Thermal Resistance (channel to ground paddle)	78 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C
ESD Sensitivity (HBM)	Class 1A, passed 250V

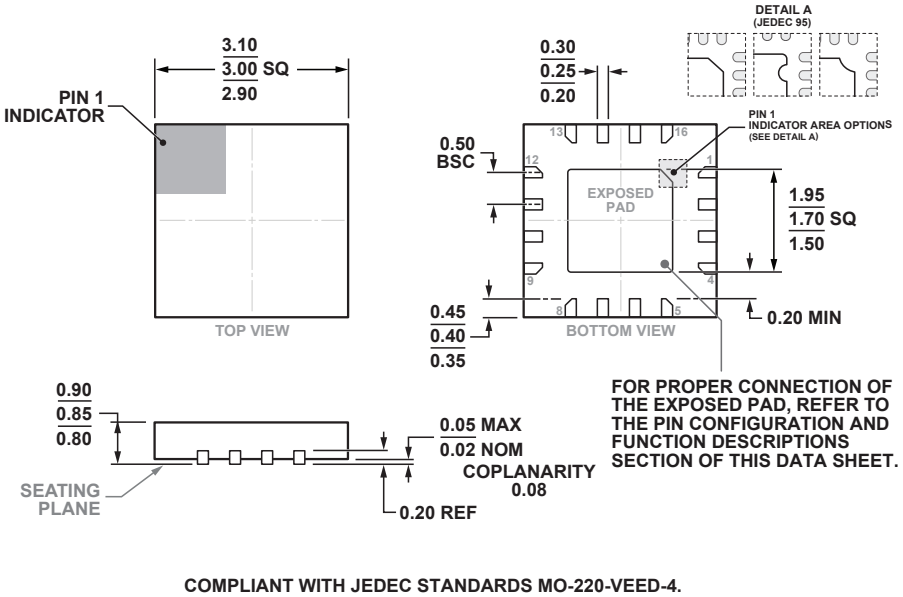
Typical Supply Current vs. Vdd_1 = Vdd_2

Vdd_1 = Vdd_2 (V)	Idd_1 + Idd_2 (mA)
+4.5	120
+5.0	122
+5.5	124

Note: Amplifier will operate over full voltage range shown above

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

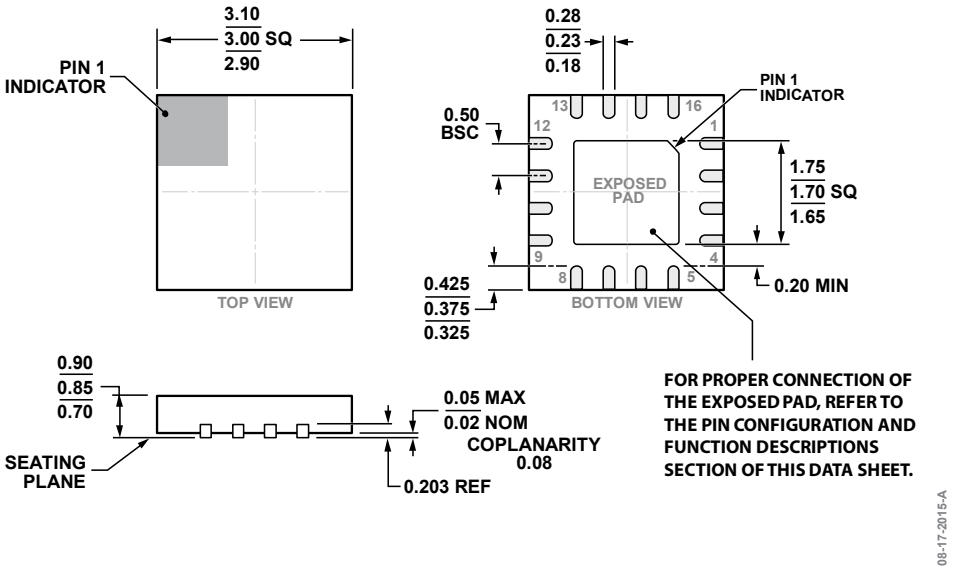
Outline Drawing - HMC451LP3



COMPLIANT WITH JEDEC STANDARDS MO-220-VEED-4.

16-Lead Lead Frame chip Scale Package [LFCSP]
3 mm × 3 mm Body and 0.85 mm Package Height
(HCP-16-1)
Dimensions shown in millimeters.

Outline Drawing - HMC451LP3E



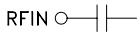
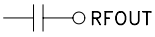
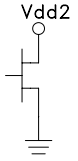
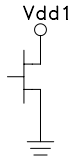
16-Lead Lead Frame chip Scale Package [LFCSP]
3 mm × 3 mm Body and 0.85 mm Package Height
(HCP-16-3)
Dimensions shown in millimeters.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking [3]
HMC451LP3	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 [1]	H451 XXXX
HMC451LP3E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 [2]	451 XXXX

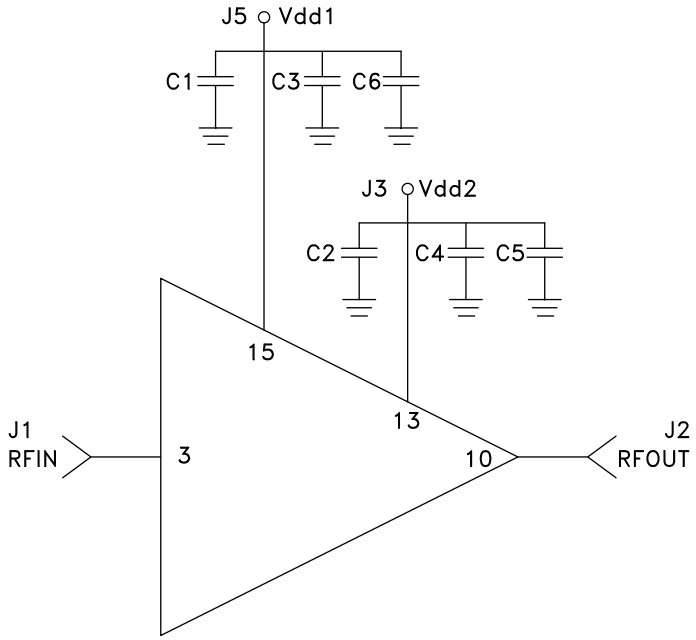
[1] Max peak reflow temperature of 235 °C
[2] Max peak reflow temperature of 260 °C
[3] 4-Digit lot number XXXX

Pin Descriptions

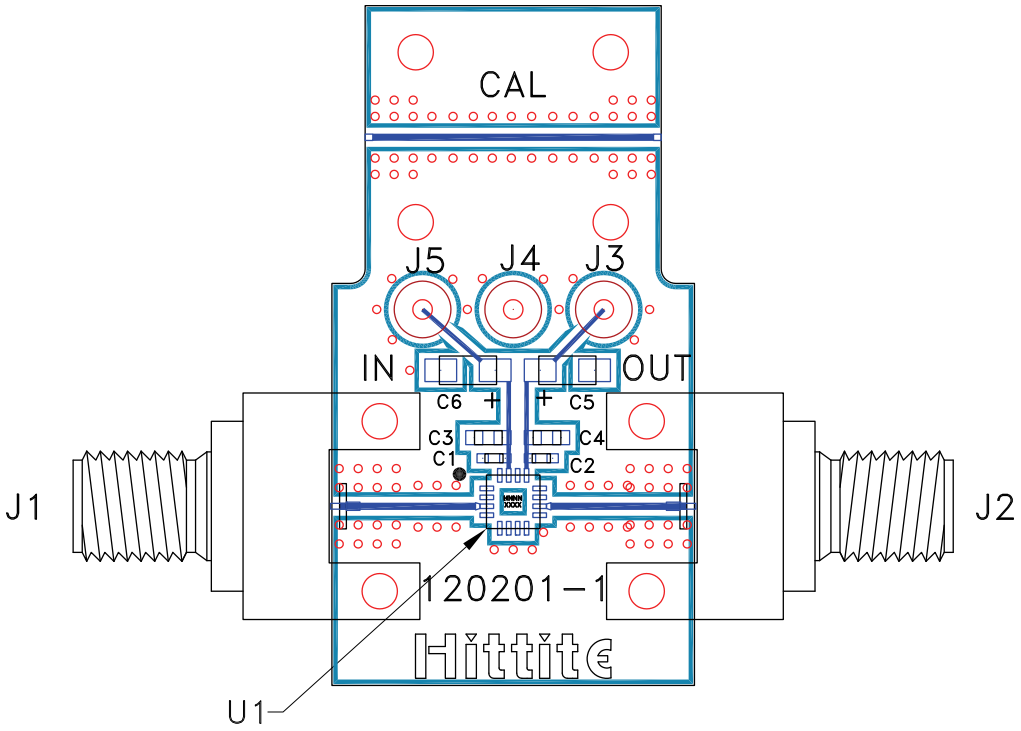
Pin Number	Function	Description	Interface Schematic
1, 2, 4 - 9, 11, 12, 14, 16	N/C	This pin may be connected to RF/DC ground. Performance will not be affected.	
3	RFIN	This pin is AC coupled and matched to 50 Ohms.	
10	RFOUT	This pin is AC coupled and matched to 50 Ohms.	
13	Vdd2	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1,000 pF and 2.2 µF are required.	
15	Vdd1	Power Supply Voltage for the amplifier. External bypass capacitors of 100 pF, 1,000 pF and 2.2 µF are required.	
	GND	Package bottom must be connected to RF/DC ground.	

Application Circuit

Component	Value
C1, C2	100 pF
C3, C4	1,000 pF
C5, C6	2.2 µF



Evaluation PCB



List of Materials for Evaluation PCB 120202 [1]

Item	Description
J1 - J2	PCB Mount SMA Connector
J3 - J5	DC Pin
C1, C2	100 pF Capacitor, 0402 Pkg.
C3, C4	1000 pF Capacitor, 0603 Pkg.
C5, C6	2.2 µF Capacitor, Tantalum
U1	HMC451LP3(E) Amplifier
PCB [2]	120201 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Arlon 25FR

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 Analog Devices, upon request.