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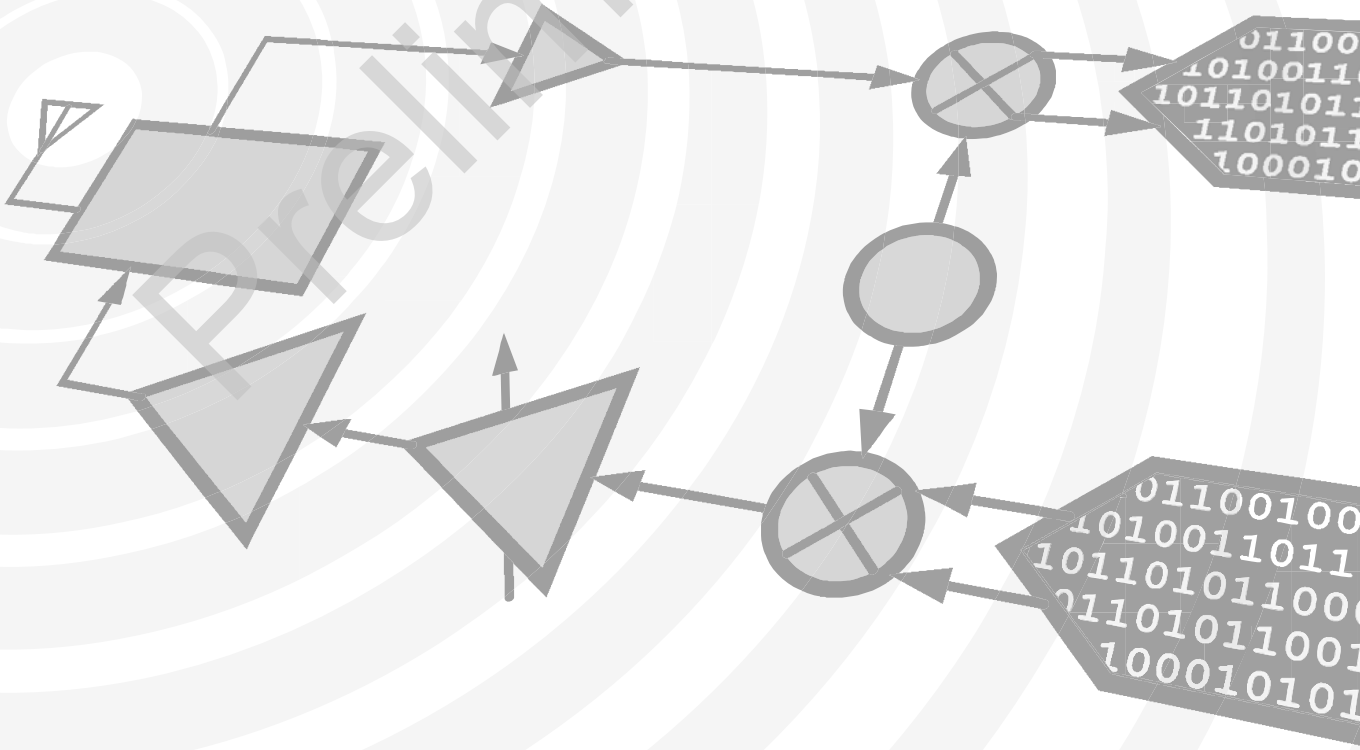

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HMC629ALP4 / 629ALP4E

v00.1115

3 dB LSB GaAs MMIC 4-BIT DIGITAL ATTENUATOR, DC - 6 GHz

Typical Applications

The HMC629ALP4(E) is ideal for:

- Cellular/3G Infrastructure
- WiBro / WiMAX / 4G
- Microwave Radio & VSAT
- Test Equipment and Sensors
- IF & RF Applications

Features

3 dB LSB Steps to 45 dB

Power-Up State Selection

Low Insertion Loss: 2.5 dB

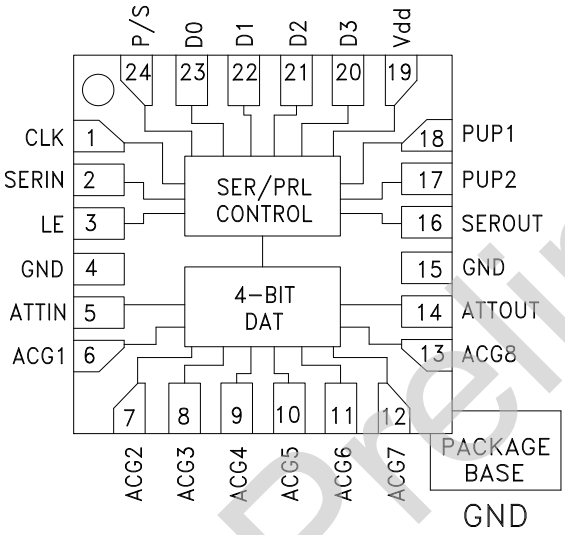
TTL/CMOS Compatible, Serial, Parallel or Latched Parallel Control

±0.25 dB Typical Step Error

Single +3V or +5V Supply

24 Lead 4x4mm SMT Package: $16mm^2$

Functional Diagram



General Description

The HMC629ALP4(E) is a broadband 4-bit GaAs IC Digital Attenuator in a low cost leadless SMT package. This versatile digital attenuator incorporates off-chip AC ground capacitors for near DC operation, making it suitable for a wide variety of RF and IF applications. The dual mode control interface is CMOS/TTL compatible, and accepts either a three wire serial input or a 4-bit parallel word. For applications which require only 33 dB of attenuation range, the HMC629ALP4(E) provides excellent attenuation accuracy up to 10 GHz. The HMC629ALP4(E) is housed in a RoHS compliant 4x4 mm QFN leadless package, and requires no external matching components.

Electrical Specifications,

T_A = +25° C, 50 Ohm System, with Vdd = +5V & Vctl = 0/+5V (Unless Otherwise Noted)

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Units
Insertion Loss	DC - 6		2.5	5	dB dB
Attenuation Range	DC - 6		45		dB
Return Loss (ATTIN, ATTOUT, All Atten. States)	DC - 6		17		dB
Attenuation Accuracy: (Referenced to Insertion Loss) All Attenuation States		± (0.50 + 5% of Atten. Setting) Max.			dB dB

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106
Phone: 781-329-4700 • Order online at www.analog.com
Application Support: Phone: 1-800-ANALOG-D

3 dB LSB GaAs MMIC 4-BIT DIGITAL ATTENUATOR, DC - 6 GHz

Absolute Maximum Ratings

RF Input Power (DC - 6 GHz)	28 dBm (T = +85 °C)
Digital Inputs (Data, Shift Clock, Latch Enable & Serial Input)	-0.5 to Vdd +0.5V
Bias Voltage (Vdd)	5.6V
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 10 mW/°C above 85 °C) [1]	0.66 W
Thermal Resistance	98.5 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

PUP Truth Table

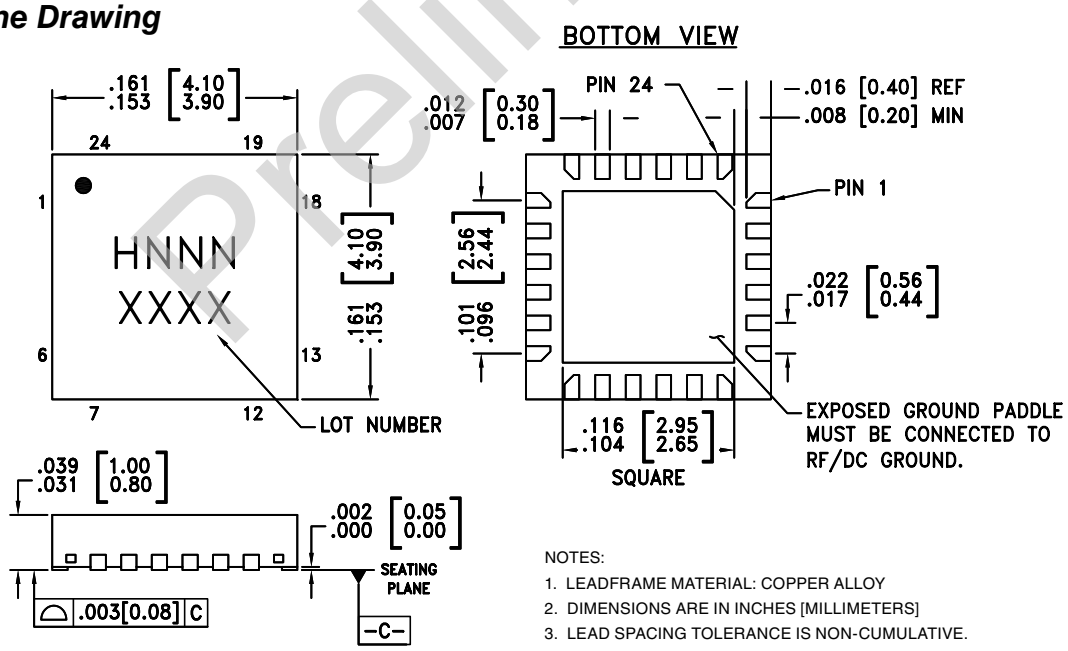
LE	PUP1	PUP2	Attenuation State
0	0	0	45 dB
0	1	0	45 dB
0	0	1	45 dB
0	1	1	Insertion Loss
1	X	X	0 to 45 dB

Note: Power-Up with LE= 1 provides direct parallel operation with D0 - D3.

Truth Table

Control Voltage Input				Attenuation State
D3	D2	D1	D0	
High	High	High	High	Reference I.L.
High	High	High	Low	3 dB
High	High	Low	High	6 dB
High	Low	High	High	12 dB
Low	High	High	High	24 dB
Any combination of the above states will provide an attenuation approximately equal to the sum of the bits selected.				

Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM. PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO PCB DESIGN AND ASSEMBLY FOR QFN PACKAGES APPLICATION NOTE FOR SUGGESTED LAND PATTERN.