HRF-AT4522

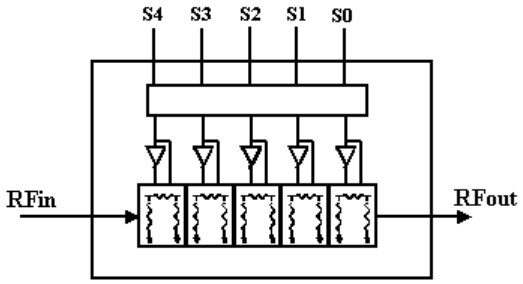
Honeywell

Product Concept Advance Information

31 dB, DC – 1.5 GHz, 5 BitParallel Digital Attenuator - 75 Ohm Match

Features

- Very Low DC Power Consumption
- Attenuation In Steps From 1 dB To 31 dB
- Single Or Dual Power Supply Voltages
- Parallel Data Interface
- 75 Ohm Compatible Impedance
- Space Saving LPCC™ Surface Mount Packaging



Product Description

The Honeywell HRF-AT4522 is a 5-bit digital attenuator that is ideal for use in cable communication system applications that require accuracy, speed and low power consumption. The HRF-AT4522 is manufactured with Honeywell's patented Silicon On Insulator (SOI) CMOS manufacturing technology, which provides the performance of GaAs with the economy and integration capabilities of conventional CMOS.

Electrical Specifications @ + 25°C

Results @ Vdd = 5.0 +/- 10%, Vss = 0 unless otherwise stated, Z0 = 75 Ohms

Parameter	Test Condition	Frequency	Minimum	Typical	Maximum	Units
Insertion Loss		DC – 0.5 GHz 0.5 – 2.0 GHz		2.5 3.0	3.0 4.0	dB dB
1dB Compression	VSS = 0V, Input Power	0.5 – 2.0 GHz		20		dBm
1dB Compression	VSS = - 3, Input Power	0.5 – 2.0 GHz		30		dBm
Input IP3	VSS = 0V Two-tone inputs Up To +5 dBm @ 0 dBm Attenuation	0.5 – 2.0 GHz		30		dBm
Input IP3	V_{ss} = - 3 Two-tone inputs Up To + 5 dBm @ 0 dBm Attenuation	0.5 – 2.0 GHz		40		dBm
Return Loss	Any Bit or Combination	DC - 2.0 GHz	-12	-15		dB
Attenuation Accuracy	Any Bit Or Combination Of Bits	DC – 2.0 GHz			.3 + 3% attn.	dB
Trise, Tfall Ton, Toff (Tpd) Transients	10% To 90% 50% Cntl To 90%/10%RF In-Band			10 15 30		nS nS mV

0.01uF Decoupling Capacitors Required On Power Supply Rails.

DC Electrical Specifications @ + 25°C

Parameter	Minimum	Typical	Maximum	Units
V_{DD}	4.5	5.0	5.5	V
V_{SS}		-3.0	-5.0	V
I_{DD} Power Supply Current		.01	2	mA
CMOS Logic level (0)	0		0.8	V
CMOS Logic level (1)	V_{DD} – 0.8		V_{DD}	V
Input Leakage Current			10	uA

Note 1, the performance curves are for Vdd = +5.0 +/- 10%

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Absolute Maximum Ratings[2]

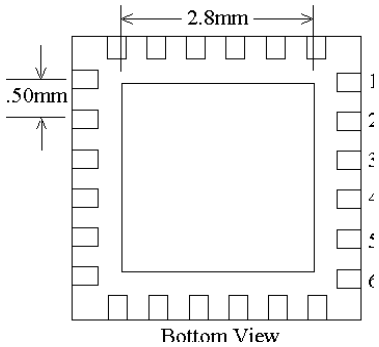
Parameter	Absolute Maximum	Units
Input Power	+ 35	dBm
V_{DD}	+6.0	V
V_{SS}	-5.5	V
ESD Voltage (Human Body Model)	TBD	V
Operating Temperature	-40 To +85	Degrees C
Storage Temperature	-65 To +125	Degrees C

(Note 2) Operation of this Device beyond any of these parameters may cause permanent damage.
Latch-Up: Unlike conventional CMOS digital attenuators, Honeywell's HRF-AT4522 is immune to latch-up.

ESD Protection: Although the HRF-AT4522 contains ESD protection circuitry on all digital inputs, conventional precautions should be taken to ensure that the Absolute Maximum Ratings are not exceeded.

Package Outline Drawing

This package conforms to the LPCC™ 4 X 4 mm 24 lead body dimensions.
See ASAT LPCC Marketing Outline Dwg. # DGMJ00004 Latest Rev.



Pin Configuration

Pin	Function	Pin	Function
1	VDD	13	GROUND
2	GROUND	14	GROUND
3	GROUND	15	RF OUTPUT
4	RF INPUT	16	GROUND
5	GROUND	17	VSS
6	GROUND	18	GROUND
7	GROUND	19	S0
8	GROUND	20	S1
9	GROUND	21	S2
10	GROUND	22	S3
11	GROUND	23	S4
12	GROUND	24	Open

Truth Table

S4	S3	S2	S1	S0	Output
0	0	0	0	0	Reference Input
0	0	0	0	1	1 dB
0	0	0	1	0	2 dB
0	0	1	0	0	4 dB
0	1	0	0	0	8 dB
1	0	0	0	0	16 dB
1	1	1	1	1	31 dB

Operation: Data on parallel input “S” pins are independently buffered and presented to the RF attenuator circuits.
"0" = CMOS Low, "1" = CMOS High.

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