Eight-way Active Power Splitter

ADVANCED PRODUCT INFORMATION - Rev 0.1

FEATURES

- Single Input, Eight Output Design
- Wideband Operation to above 1 GHz
- Nominal 3.2 dB Gain
- 4.7 dB Typical Noise Figure
- Single +3.3V or +5V Supply
- High Linearity, Low Distortion
- Current adjust pin for optimizing distortion performance
- Single-Ended 75 Ohm Inputs/Outputs
- Materials set consistent with RoHS Directives

APPLICATIONS

- All-Digital CATV Set-Top Boxes with Multiple Tuners
- Home Gateways, Multiple-Tuner TVs and Set-top boxes

S34 Package
24 Pin QFN
4 mm x 4 mm x 1 mm

PRODUCT DESCRIPTION

This APS3628 active splitter from ANADIGICS accepts a broadband RF input from 50 MHz to 1002 MHz and splits the signal to provide eight broadband RF outputs with minimal degradation of quality. The single-package surface mount device amplifies the input using highly linear, low noise amplification stages, and couples the amplified signal to eight separate output paths that each can drive digital video tuners. The overall linearity of each path is maintained across the entire operating frequency range, ensuring low distortion effects on each output signal.

Requiring a single voltage supply of either +3.3V or +5 V, the active splitter is manufactured using ANADIGICS' highly reliable GaAs MESFET process. The small surface mount QFN packaging makes this device ideal for use in today's set-top boxes, televisions and video tuner cards requiring multiple-tuner solutions.

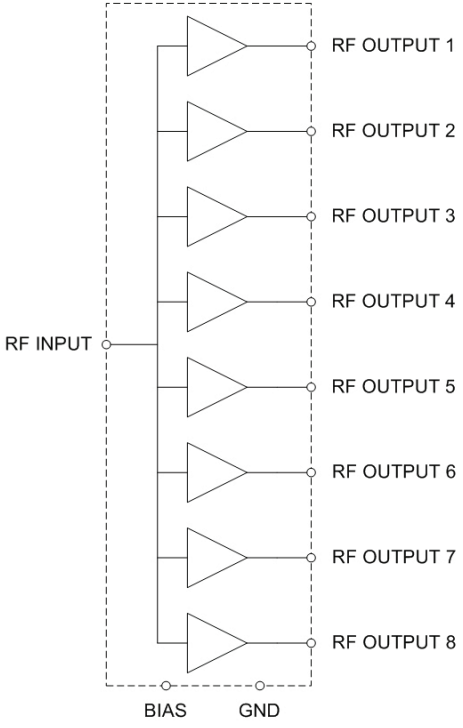


Figure 1: Functional Block Diagram

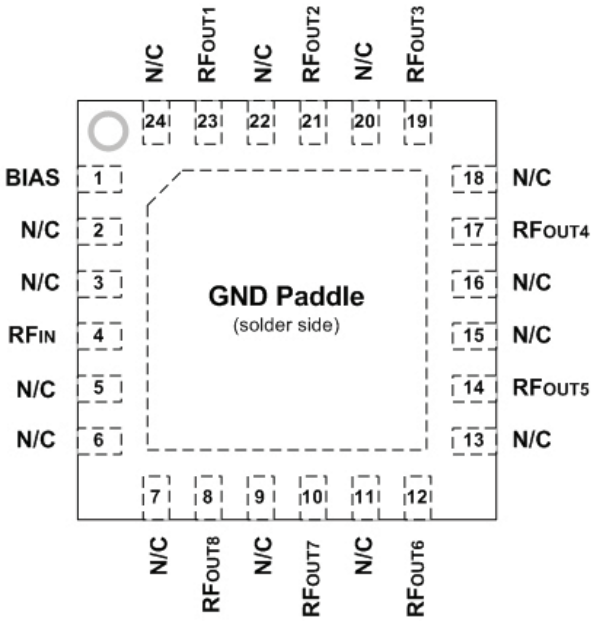


Figure 2: Pinout Diagram (X-ray Top View)

Table 1: Pin Description

PIN	NAME	DESCRIPTION	PIN	NAME	DESCRIPTION
1	Bias	Bias	24	N/C	No Connection
2	N/C	No Connection	23	RF_{OUT1}	RF Output 1
3	N/C	No Connection	22	N/C	No Connection
4	RF_{IN}	RF Input	21	RF_{OUT2}	RF Output 2
5	N/C	No Connection	20	N/C	No Connection
6	N/C	No Connection	19	RF_{OUT3}	RF Output 3
7	N/C	No Connection	18	N/C	No Connection
8	RF_{OUT8}	RF Output 8	17	RF_{OUT4}	RF Output 4
9	N/C	No Connection	16	N/C	No Connection
10	RF_{OUT7}	RF Output 7	15	N/C	No Connection
11	N/C	No Connection	14	RF_{OUT5}	RF Output 5
12	RF_{OUT6}	RF Output 6	13	N/C	No Connection

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Minimum and Maximum Ratings

PARAMETER	MIN	MAX	UNIT	COMMENTS
Supply Voltage (V_{CC})	0	+8	V	
RF Input Power	-	+40	dBmV	per channel 132 channel loading
ESD Rating	500 1000	- -	V	Human Body Model, Class 1B Charged Device Model, Class 3
MSL Level	MSL-1	-	-	

Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 3: Operating Ranges

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Operating Frequency (f)	50	-	1002	MHz	
Supply Voltage (V_{CC})	+3.0	-	5.25	V	Supplied via output pins
RF Input Power (P_{IN})	-15	-	+15	dBmV	per channel
Current Adjust Pin (I_{ADJ})	0	-	+0.5	V	
Case Temperature (T_C)	-5	-	+85	°C	no damage to device operating over -30 to +95 °C range

The device may be operated safely over these conditions; however, parametric performance is guaranteed only over the conditions defined in the electrical specifications.

Table 4: Electrical Specifications
(T_{AMB} = +25 °C, V_{CC} = +3.3 V, I_{CC} = 200 mA, 75 Ω system)

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
Gain at 50 MHz	-	3.5	-	dB	
Noise Figure	-	4	-	dB	
CTB (1)	-	-70	-	dBc	
CSO (1)	-	-58	-	dBc	
XMOD (1)	-	-67	-	dBc	
RF Isolation Input-Output Output-Output	 - -	 25 25	 - -	dB	
Input Return Loss	-	-10	-	dB	
Power Consumption	-	660	-	mW	

Notes:
(1) 132 channels, +15 dBmV input per channel, 0 dB tilt.

APPLICATION INFORMATION

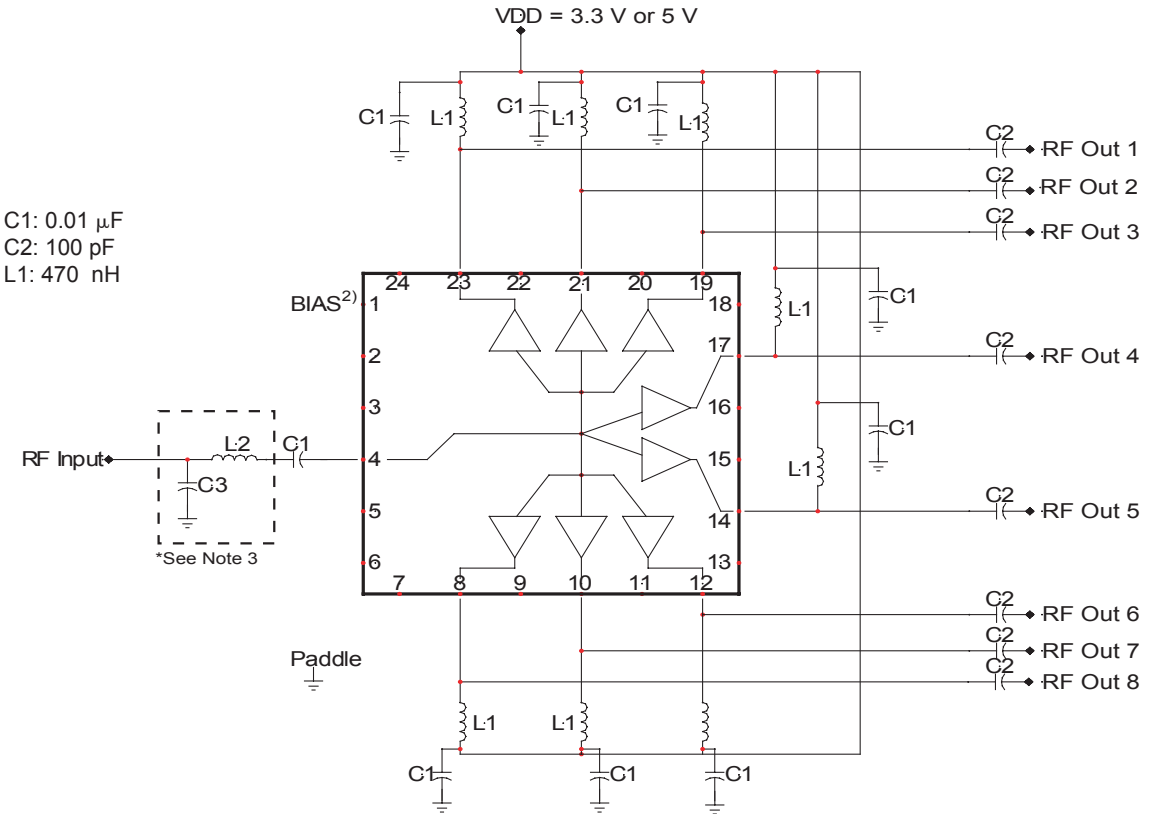


Figure 3: 8-Way Active Splitter Digital Application Circuit

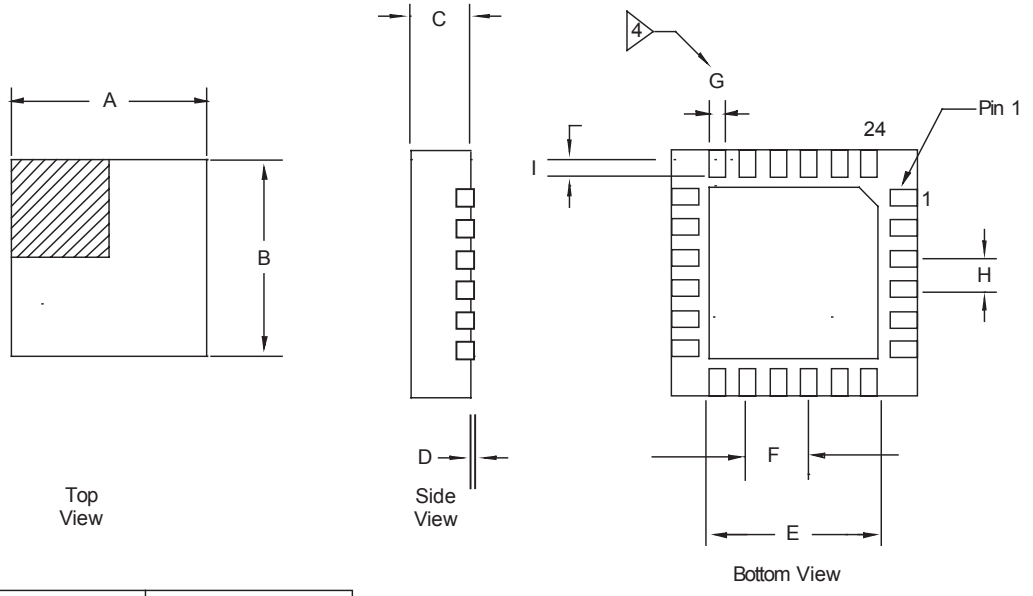
Notes:

1. Application circuits are available for other supply voltages. Contact ANADIGICS broadband engineering for more detail.

2) The BIAS pin is normally grounded for 3.3 V applications. However, the device linearity may be improved at V_{DD} = 5 V by applying an external voltage on the pin, using a voltage divider circuit between V_{DD} and GND.

3) L2 and C3 may be necessary for matching. The values are determined by the application, as needed.

PACKAGE OUTLINE



DIMENSION	MILLIMETERS		
	MIN	TYP	MAX
A	3.90	4.00	4.10
B	3.90	4.00	4.10
C	0.80	0.90	1.00
D	0.00	0.02	0.05
E	2.50	2.65	2.80
F	1.00 BSC.		
G	0.180	0.250	0.300
H	0.50 BSC.		
I	0.35	0.40	0.45

1. All dimensions are in millimeters, angles in degrees.
2. The terminal #1 identifier and pad numbering convention shall conform to JESD 95-1 SPP-012
3. Lead coplanarity: 0.05 max.
4. Dimension applies to metalized pad and is measured between 0.25 and 0.30 MM from pad tip.

Figure 4: S34 Package Outline - 24 Pin 4 mm x 4 mm x 1 mm QFN

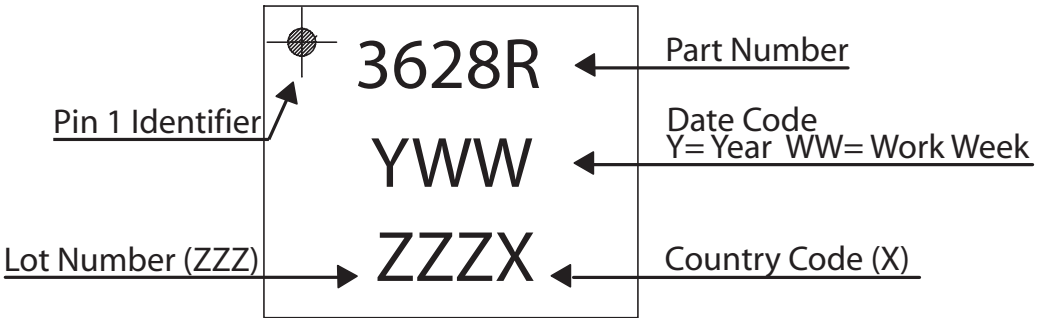


Figure 5: Branding Specification

ORDERING INFORMATION

ORDER NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
APS3628RS34P8	-5 °C to +85 °C	24 Pin 4 mm x 4 mm x 1 mm LPCC (QFN)	2,500 piece Tape & Reel

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