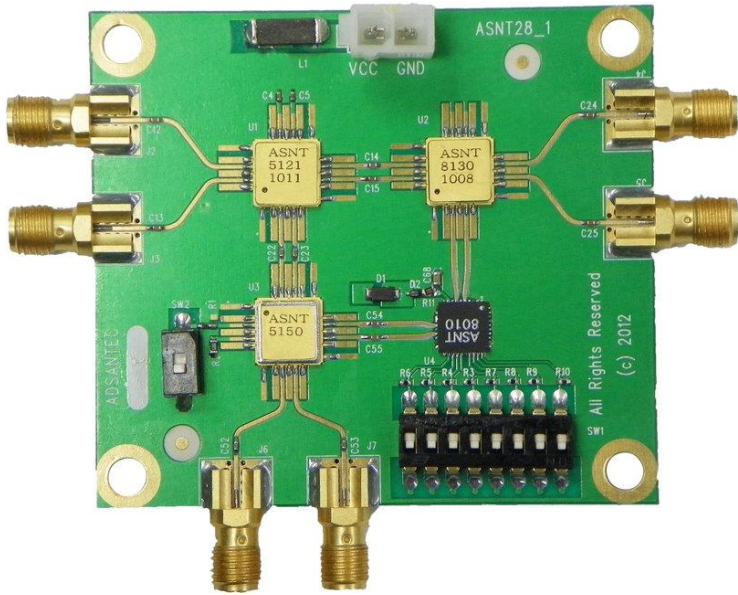




## ASNT\_28\_1 2kHz-32GHz Clock Divide-by-4/1-to-512



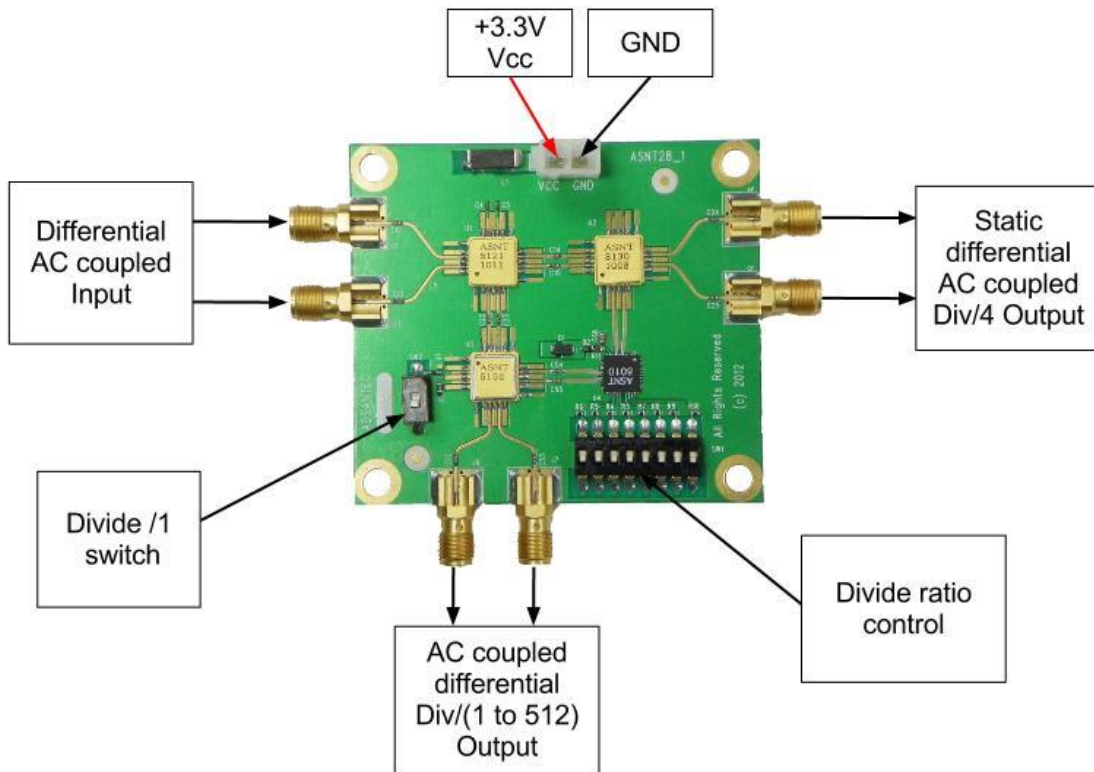
- Broadband frequency range from 2kHz – 32GHz
- Minimal insertion jitter
- Fast rise/fall times
- 50% duty cycle for all divide ratios
- Selectable divide output up to 512
- Selectable divide-by-1 output for buffering
- Second divide-by-4 output
- Single positive +3.3V supply

### DESCRIPTION

The ASNT\_28\_1 system on board functions as a multi-purpose divider for test, prototyping, microwave, and communication applications. There are two differential outputs present; a fixed div/4, and a selectable 1-to-512 divide ratio. All inputs and outputs are AC coupled. The input waveform can be single-ended or differential. High-speed SMA connectors are installed for inputs and outputs. The selectable divide output can be operated single-ended or differentially. Power is supplied through a two pin MOLEX connector.

### APPLICATIONS

The ASNT\_28\_1 divider can be used as a prescaler to extend the useful frequency range for triggering. The second fixed div/4 output can be used to synchronize other devices. The divider can be used in a divide-by-1 mode to buffer low amplitude signals, or provide a differential output from a single-ended signal. The divider can also be used as a prescaler for PLL's or frequency counters.

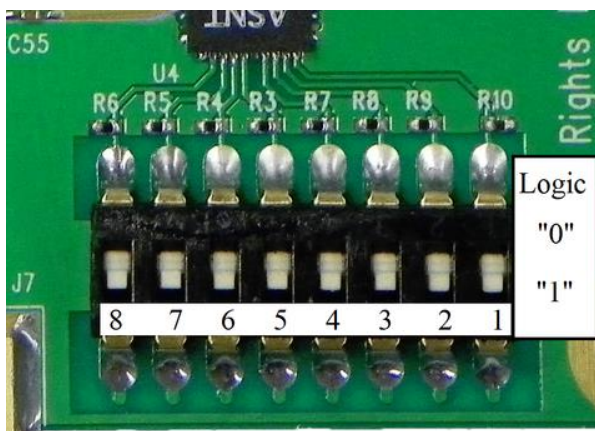


## DIVIDE RATIO CONTROL

The 1-to-512 divide output can be configured to any divide ratio from 1 to 512. All possible divide ratios are given by the following equation  $\{\text{Div/output} = 2^n\}$ , where  $n$  is an integer from 0 to 256. The divide ratio control contains 8 switches which represent 8 bits. The LSB starts at SW1 and the MSB ends at SW8. The binary value of zero gives a decimal  $n$  value of 256. The binary value of 1, gives a decimal  $n$  value of 1. Ascending binary values increases the decimal value of  $n$ . Table 1 shows values of  $n$  with their corresponding binary representation.

Table 1. Binary values for divide ratio

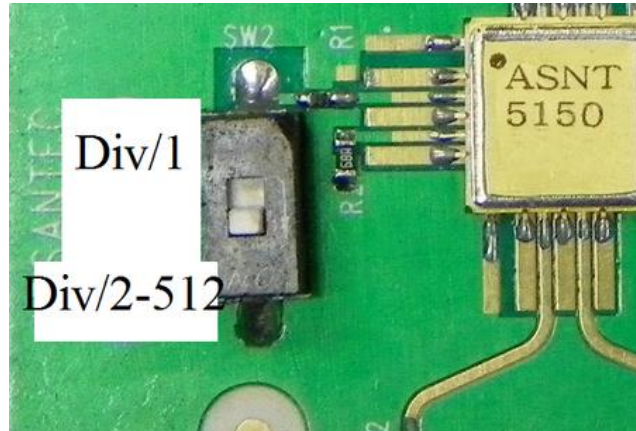
DIP SW #	n
8 7 6 5 4 3 2 1	Divide Ratio
0 0 0 0 0 0 1	1
0 0 0 0 0 1 0	2
0 0 0 0 0 1 1	3
0 0 0 0 1 0 0	4
.	
.	
.	
.	
1 1 1 1 1 1 1 1	255
0 0 0 0 0 0 0 0	256



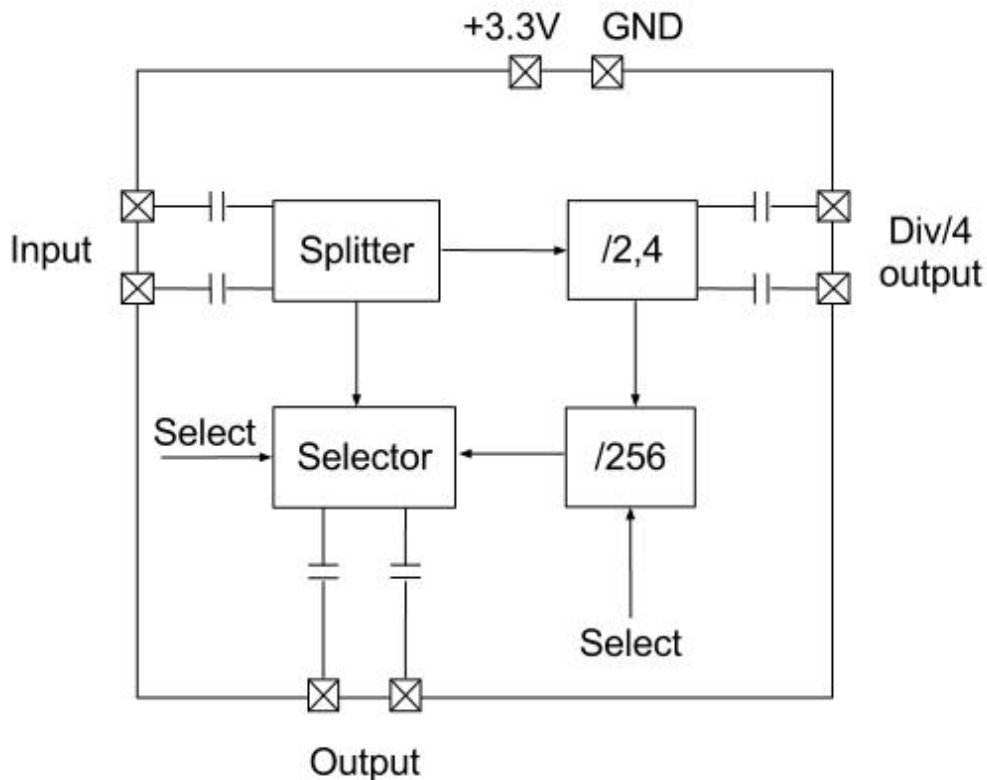


## DIVIDE-BY-1 SWITCH

Switching the divide-by-1 switch to the off Div/1 position will override any divide ratio that is currently set on the divide ratio control and output a divide-by-1. Switching the divide-by-1 switch to the on Div/2-512 position will turn on the divide ratio control.



## FUNCTIONAL BLOCK DIAGRAM





## ELECTRICAL CHARACTERISTICS

Parameter	Min	Typ	Max	Unit	Comments
V <sub>EE</sub>		0		V	External ground
V <sub>CC</sub>	3.1	3.3	3.5	V	
I <sub>VCC</sub>		1000		mA	
Power		3.3		W	
Operating Temperature	-25	50	85	°C	
<b>Input</b>					
Frequency	2.0E-5		32	GHz	
Single-ended Swing	50	400	1000	mV	peak-to-peak
<b>Output (Div/4)</b>					
Frequency	2.0E-5		8	GHz	
Single-ended Swing	380	400	420	mV	peak-to-peak
Rise/Fall Times	10	12	14	ps	20% to 80%
Additive Jitter		<1		ps	peak-to-peak
Duty Cycle	45%	50%	55%		For clock signal
<b>Output (1-to-512 divide)</b>					
Frequency	2.0E-5		32	GHz	
Single-ended Swing	380	400	420	mV	peak-to-peak
Rise/Fall Times	10	12	14	ps	20% to 80%
Additive Jitter		<1		ps	peak-to-peak
Duty Cycle	45%	50%	55%		For clock signal



## REVISION HISTORY

Revision	Date	Changes
1.3.1	05-2013	Revised title Revised description Revised applications Revised divide ratio control
1.2.1	07-2012	Revised formatting
1.2	06-2012	Document filename revised
1.1	04-2012	Modified style Small corrections
1.0	02-2012	Initial release