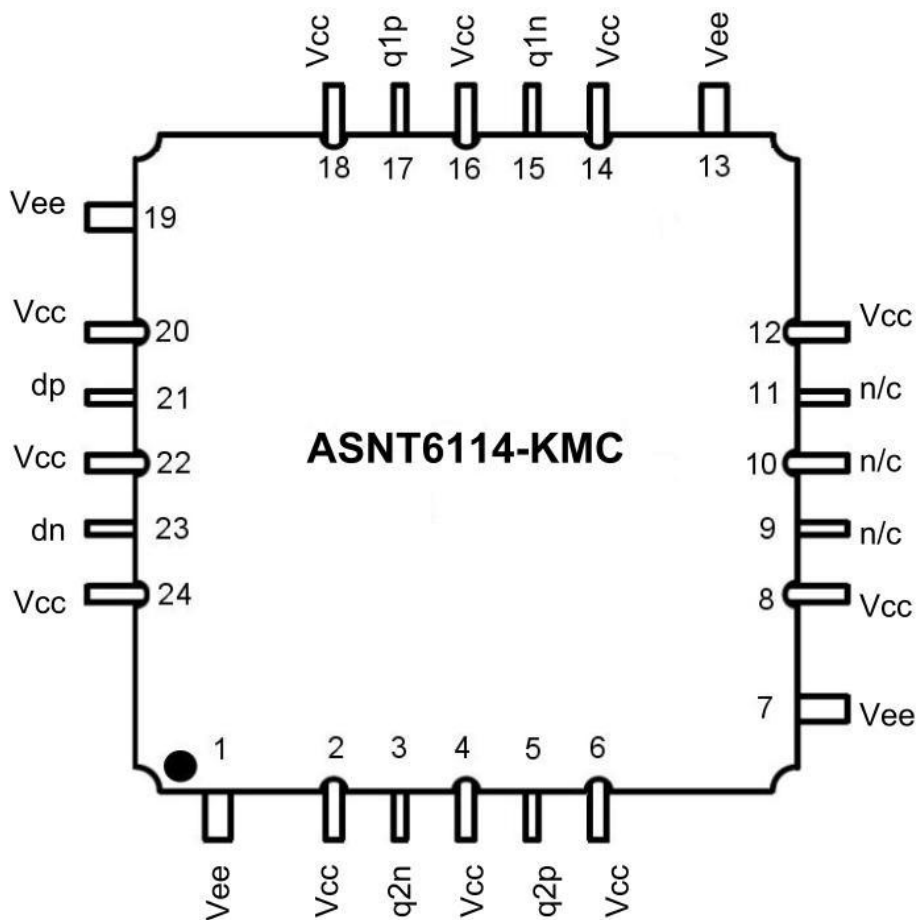




## ASNT6114-KMC 25GHz 1-to-2 Analog Signal Splitter

- DC to 25GHz broadband linear signal splitter.
- One differential CML-type input port and two phase-matched differential CML-type output ports.
- Differential input linearity range up to 1000mV p-p.
- Differential gain of approximately 0dB.
- Low jitter and limited temperature variation over industrial temperature range.
- Single +3.3V or -3.3V power supply.
- Power consumption: 660mW.
- Fabricated in SiGe for high performance, yield, and reliability.
- Custom CQFP 24-pin package.





## DESCRIPTION

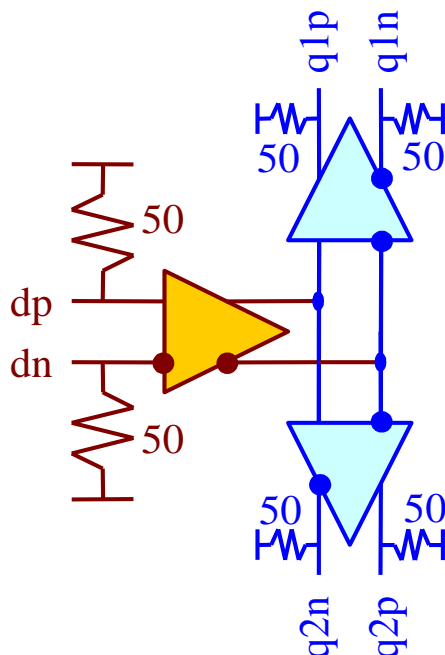


Fig. 1. Functional Block Diagram

ASNT6114-KMC is a temperature stable active analog signal splitter 1-to-2 and is intended for use in high-speed interleaved ADC or similar systems. The IC shown in Fig. 1 can receive a broad-band analog signal at its differential input “dp/dn” and effectively distribute it to two separate phase matched differential outputs “q1p/q1n”, “q2p/q2n” with a nominal gain of 0dB.

The part’s output buffers support the CML-type interface with on chip 50Ohm termination to “vcc” and may be used in either DC or AC coupling modes (see also POWER SUPPLY CONFIGURATION). The differential DC signaling is recommended for the optimal performance. In particular, the output common-mode voltage level of “vcc”-0.55V is guaranteed only in case of external single-ended 50Ohm DC termination to “vcc”.

The part’s input buffer supports the CML-type interface with equivalent on-chip 50Ohm termination and can be used in either DC or AC coupling modes. In the first mode, the input signal’s common mode voltage should comply with the specifications shown in ELECTRICAL CHARACTERISTICS. In the second mode, the input termination provides the required common mode voltage automatically. The differential signaling is recommended for the optimal performance.

## POWER SUPPLY CONFIGURATION

The ASNT6114-KMC can operate with either negative supply (“vcc” = 0.0V=ground and “vee” = -3.3V), or positive supply (“vcc” = +3.3V and “vee” = 0.0V=ground). In case of the positive supply, all I/Os need AC termination when connected to any devices with 50Ohm termination to ground. Different PCB layouts will be needed for each different power supply combination.

**All the characteristics detailed below assume “vcc” = 0.0V and “vee” = -3.3V.**



## ABSOLUTE MAXIMUM RATINGS

Caution: Exceeding the absolute maximum ratings shown in Table 1 may cause damage to this product and/or lead to reduced reliability. Functional performance is specified over the recommended operating conditions for power supply and temperature only. AC and DC device characteristics at or beyond the absolute maximum ratings are not assumed or implied. All min and max voltage limits are referenced to ground (assumed “vcc”).

Table 1. Absolute Maximum Ratings.

Parameter	Min	Max	Units
Supply Voltage (“vee”)		-3.8	V
Power Consumption		0.8	W
RF Input Voltage Swing (SE)		1.4	V
Case Temperature		+90	°C
Storage Temperature	-40	+100	°C
Operational Humidity	10	98	%
Storage Humidity	10	98	%

## TERMINAL FUNCTION

TERMINAL			DESCRIPTION
Name	No.	Type	
dp	21	CML input	Differential data inputs with internal SE 50Ω termination to “vcc”.
dn	23		
q1p	17	CML output	Differential data outputs. Require external SE 50Ω termination to “vcc”.
q1n	15		
q2p	5	CML output	Differential data outputs. Require external SE 50Ω termination to “vcc”.
q2n	3		

### Supply and Termination Voltages

Name	Description	Pin Number
vcc	Positive power supply. (+3.3V or 0)	2, 4, 6, 8, 12, 14, 16, 18, 20, 22, 24
vee	Negative power supply. (0V or -3.3V)	1, 7, 13, 19
n/c	Not connected pins	9, 10, 11



## ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
<b><u>General Parameters</u></b>					
vee	-3.1	-3.3	-3.5	V	±6%
vcc		0.0		V	External ground
Ivee		200		mA	
Power consumption		660		mW	
Junction temperature	0	50	125	°C	
<b><u>HS Input Data (d)</u></b>					
Bandwidth		25		GHz	At -3dB level
Linearity range		1000		mV	Differential p-p
CM Voltage Level	“vcc”-0.6	“vcc”-0.5	“vcc”+0.4	V	
Input Noise Density		1.5		nV/sqrt(Hz)	
S11		-10		dB	DC to 30GHz
<b><u>HS Output Data (q0, q1)</u></b>					
Small Signal Gain		0		dB	Differential, at 10GHz
CM Level		“vcc”-0.55		V	With external 50Ohm DC termination
S22		-8		dB	DC to 30GHz
1dB Compression Point		2.7		dBm	Output-referred, SE, at 20GHz
THD		0.2		%	At V <sub>out</sub> = 400mV p-p, SE

## PACKAGE INFORMATION

The chip die is housed in a custom 24-pin CQFP package. The package’s mechanical information is available on the company’s [website](#). Even though the package provides a center heat slug located on the back side of the package to be used for heat dissipation, ADSANTEC does **NOT** recommend for this section to be soldered to the board. If the customer wishes to solder it, it should be connected to “vcc” plain that is ground for the negative supply or power for the positive supply.

The part’s identification label is ASNT5024-KMC. The first 8 characters of the name before the dash identify the bare die including general circuit family, fabrication technology, specific circuit type, and part version while the 3 digits after the underscore represent the package’s manufacturer, type, and pin out count.

This device complies with the Restriction of Hazardous Substances (RoHS) per EU 2002/95/EC for all six substances.



## REVISION HISTORY

Revision	Date	Changes
1.0	3-2012	First release