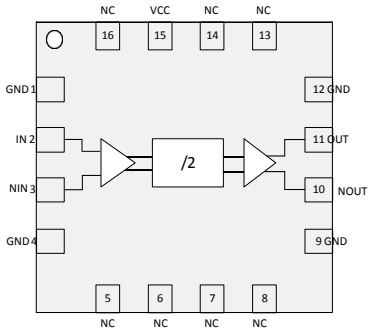
Performance Features

- Operating frequency band: DC ~ 30GHz
- Low power consumption: 36mA
- Output power: -5.1dBm ~ 1.2dBm
- Low phase noise: -154 dBc/Hz@100kHz
- Package size: 16-pin QFN, 3mmx3mm

Typical Applications

- Point-to-Point Communication
- Satellite Communications
- Test measurements
- Instrumentation

Functional Block Diagram



Overview

The CWD002SP3 type fixed crossover covers 30GHz input frequency. Fixed crossover ratio of /2 can be achieved. Features low power consumption and low phase noise.

The CWD002SP3 fixed crossover is a 16-pin 3mmx3mm surface mount leadless plastic package. The pin pad plating is NiPdAu.

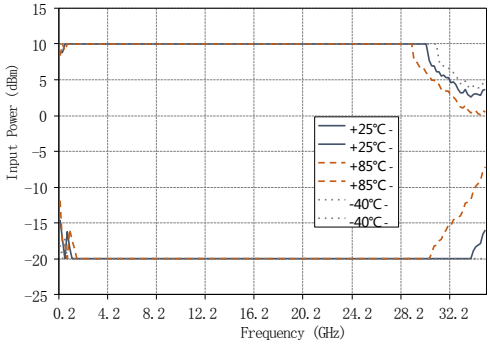
Electrical performance table (TA=+25℃, VCC=3.3V)

Parameter Name		Working conditions	Minimum value	Typical values	Maximum value	Unit
Input Parameters	Maximum RF input frequency	Sine wave input	30			GHz
	Minimum RF input frequency	Sine wave input			0.5*	GHz
	RF input power range	Input frequency 0.5GHz≤Fin<28GHz	-15		8	dBm
		Input frequency 28GHz≤Fin≤30GHz	-15		5	dBm
Output parameters	Output power		-5.1		1.2	dBm
	SSB Phase Noise@100kHz Offset	Fin = 6 GHz, Pin = 0 dBm		-154		dBc/Hz
Current (Icc)				36		mA

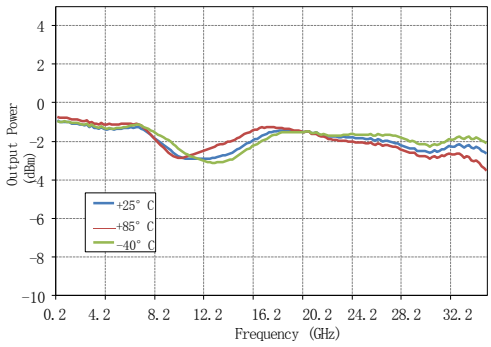
* This indicator is limited by the off-chip input and output capacitance. If the input is a square wave signal, the indicator can reach DC

Test Curve

RFOUT Crossover sensitivity vs. frequency



RFOUT Output Power vs. Frequency @Pin=0dBm



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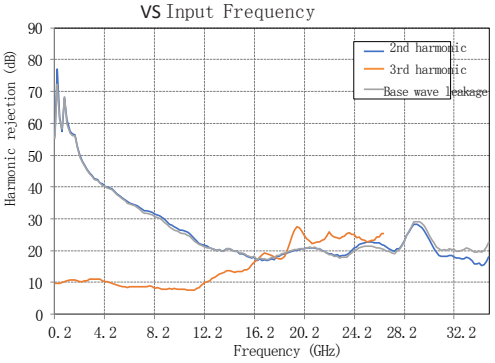
Test Curve

RFOUT Harmonic Rejection
VS Input Frequency



Extreme operating parameters

Bias voltage	3.6V
Storage temperature range	-65℃～+150℃
Operating temperature range	-40℃～+85℃
Static Protection Level (HBM)	Class 1B

Package Information

Model	Packaging Materials	Solder plate plating	MSL level [1]	Package identification [2]	Environmental requirements
CWD002SP3	Green resin compounds	NiPdAu	MSL 3	S002 XXXXX	RoHS compliant

[1] Maximum reflow temperature 260° C
[2] XXXXX is the lot number

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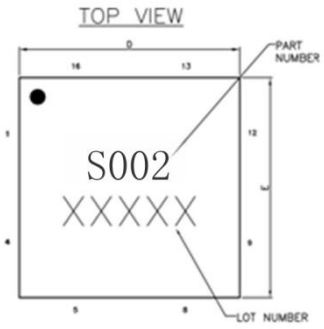
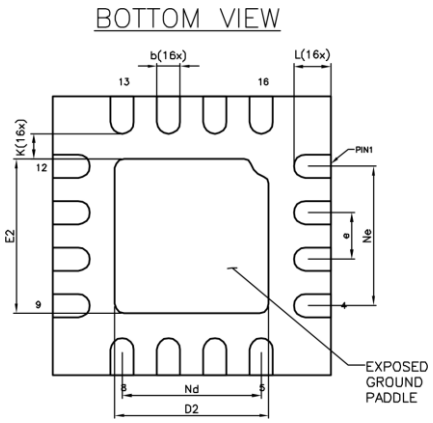
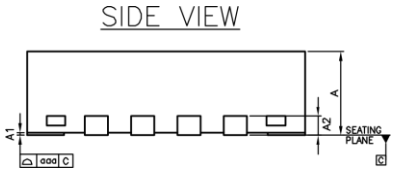
Dimension







Dimension Table (unit:mm)			
Symbol	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.02	0.05
A2		0.203Ref	
b	0.18	0.25	0.30
D	2.90	3.00	3.10
D2	1.51	1.66	1.76
e		0.50BSC	
Ne		1.50BSC	
Nd		1.50BSC	
E	2.90	3.00	3.10
E2	1.51	1.66	1.76
K	0.20	---	---
L	0.30	0.40	0.50
aaa		0.08	

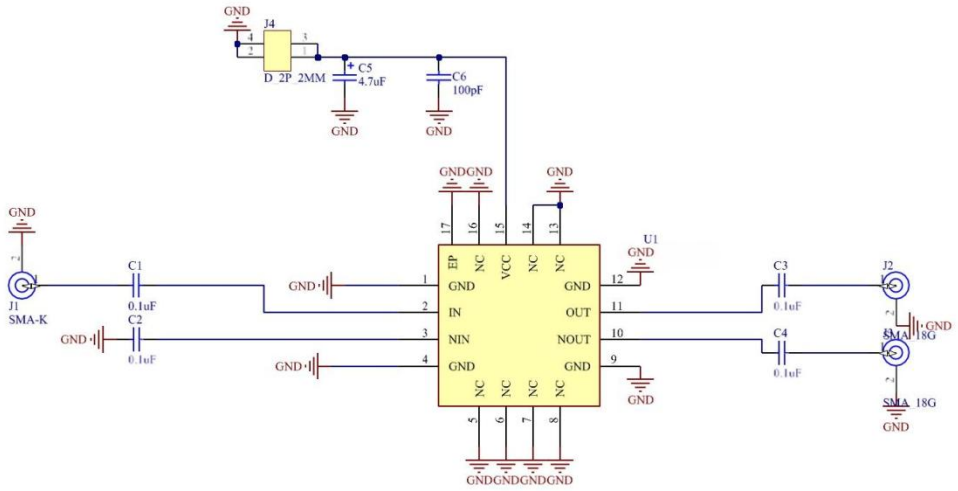
Description:

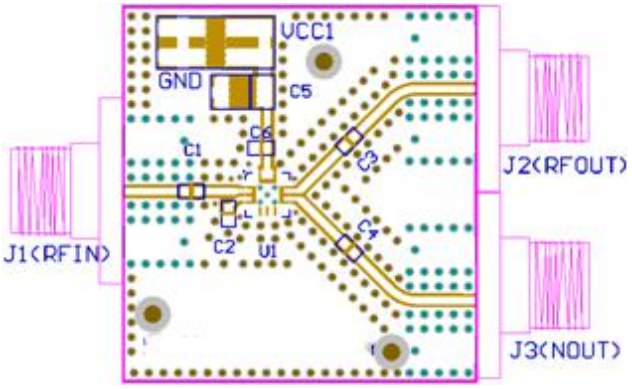
1. Unit: mm
2. Lead frame material: copper alloy
3. Lead spacing tolerance non-cumulative
4. Tube shell surface warpage: not more than 0.05mm
5. All ground pins should be connected to PCB RF ground

Pin Definition

Pin Number	Function Symbols	Function Description	Pin Number	Function Symbols	Function Description
1	GND	RF Ground	9	GND	RF Ground
2	IN	RF input	10	NOUT	RF Output
3	NIN	RF input	11	OUT	RF Output
4	GND	RF Ground	12	GND	RF Ground
5	NC	Vacant	13	NC	Vacant
6	NC	Vacant	14	NC	Vacant
7	NC	Vacant	15	VCC	DC Bias
8	NC	Vacant	16	NC	Vacant

Evaluation Boards





Designator	Description
C1, C2, C3, C4	Multilayer ceramic capacitor 0402 0.1uF
C5	Tantalum capacitor 1206 4.7uF
C6	Multilayer ceramic capacitor 0402 100pF
J1	2.92mm PCB connector
J2, J3	SMA PCB connector
VCC1	2 mm DC pins
U1	CWD002SP3
J1 Recommend to use NJ Aowen D360B12E01-023 type 2.92mm connector. J2,J3 Recommend to use NJ Aowen D550B12E01-048 type SMA connector	

Circuit board material: Rogers 4350B

The circuit board of the device application should be designed in accordance with the design method of RF circuit, the signal line should be designed according to 50 ohm impedance, and the ground pin of the package housing should be grounded nearby (similar to the figure), and there should be enough ground holes to connect the top and bottom ground.

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