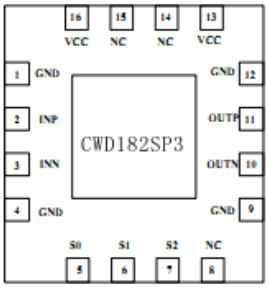
Performance Features

- Operating frequency band: DC ~ 26GHz
- Single sideband phase noise: -156dBc@100KHz N=2
- Output Power: 1dBm
- Power consumption: 101mA
- Package size: QFN 3*3 16 L

Typical Applications

- Cellular/3G Infrastructure

Functional Block Diagram



Overview

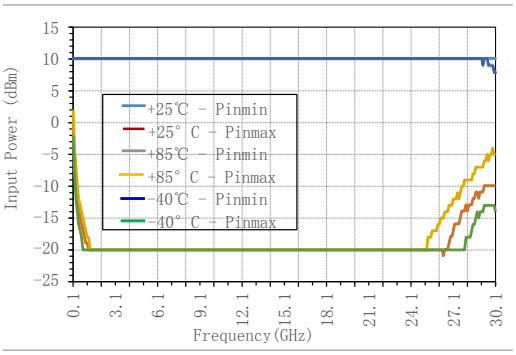
The CWD182SP3 is a low-noise programmable crossover with N=1, 2, 4, 8, 16, 32, 64, 128, in a 3*3mm QFN16 package, operating from DC to 26GHz, with phase noise below -156dBc@100kHz under typical operating conditions.

Electrical performance table (TA=-40 ℃ ~ +85 ℃ , VCC = 3 ~ 3.6V)

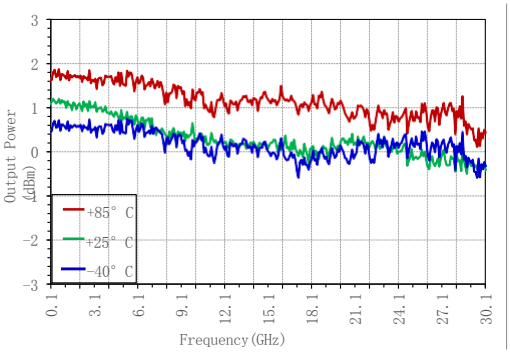
Parameter Name	Minimum value	Typical values	Maximum value	Unit	Test conditions
Input Frequency Range	0.1		26	GHz	Input Sine Wave
	DC		0.1	GHz	Input square wave with swing rate greater than 2V/ns
Input power range	-18		+8	dBm	fin=1~24G
	-10		+8	dBm	fin=24~26G
Output power		1		dBm	
Phase noise @1kHz		-150		dBc	fin=8G, Pin=0dBm, DIV2
Phase noise @10kHz		-155		dBc	
Phase noise @ 100kHz		-156		dBc	
Phase noise @ 1MHz		-157		dBc	
Phase noise @1kHz		-153		dBc	fin=8G, Pin=0dBm, DIV4
Phase noise @10kHz		-158		dBc	
Phase noise @ 100kHz		-159		dBc	
Phase noise @ 1MHz		-159		dBc	
Phase noise @1kHz		-146		dBc	fin=16G, Pin=0dBm, DIV2
Phase noise @10kHz		-149		dBc	
Phase noise @ 100kHz		-152		dBc	
Phase noise @ 1MHz		-152		dBc	
Phase noise @1kHz		-146		dBc	fin=16G, Pin=0dBm, DIV4
Phase noise @10kHz		-153		dBc	
Phase noise @ 100kHz		-154		dBc	
Phase noise @ 1MHz		-154		dBc	
Power consumption current		101		mA	DIV=8

Test Curve

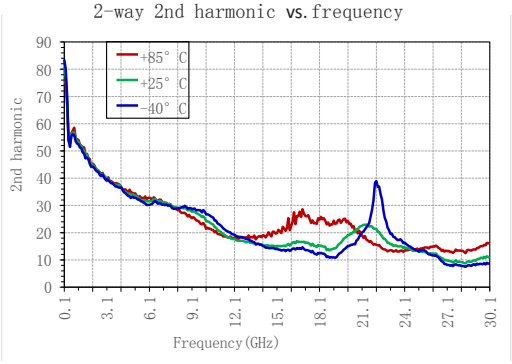
2-way RFOUT crossover sensitivity vs. frequency



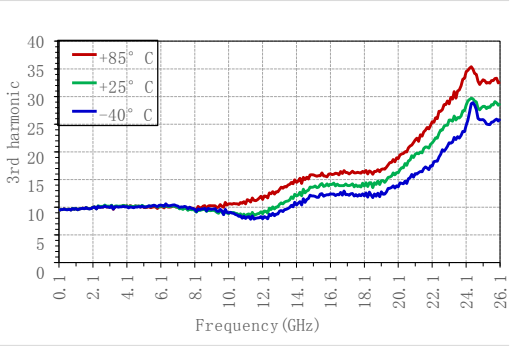
2-division RFOUT output power vs. frequency @Pin=0dBm



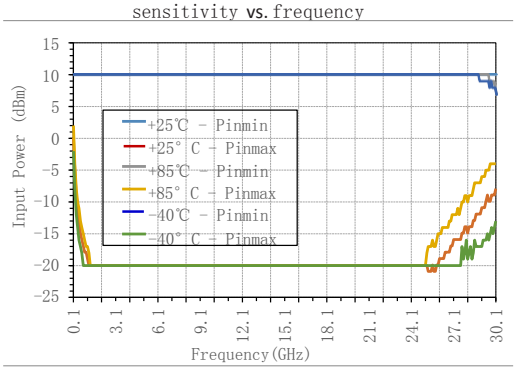
2-way 2nd harmonic vs. frequency



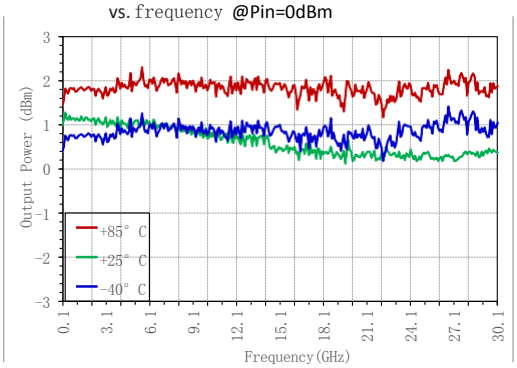
2nd division 3rd harmonic vs. frequency



4-division RFOUT crossover sensitivity vs. frequency



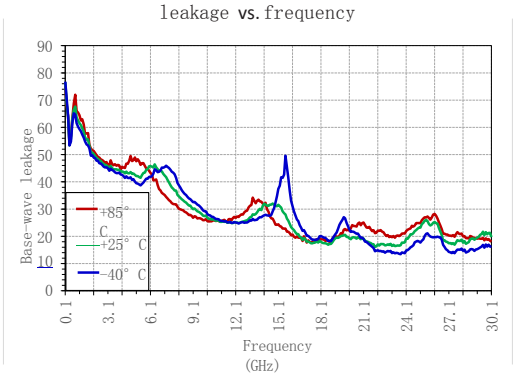
4-division RFOUT output power vs. frequency @Pin=0dBm



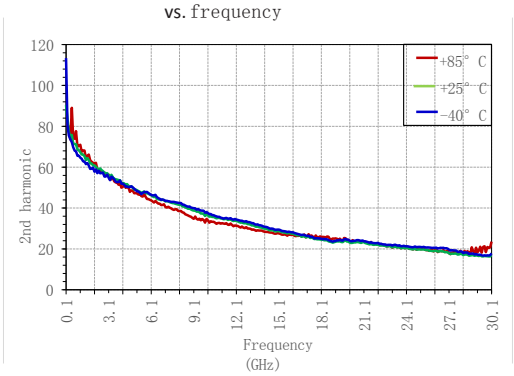
Chengdu Cuiwei Electronic Co.,LTD
Address: No. 5, Gaopeng East Road, Gaoxin District, Chengdu, China
E-mail:sales@cdcwtec.com
Website: www.cdcwtec.com

Test Curve

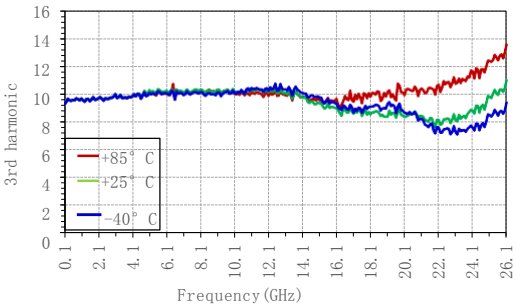
4-division Base-wave leakage vs. frequency



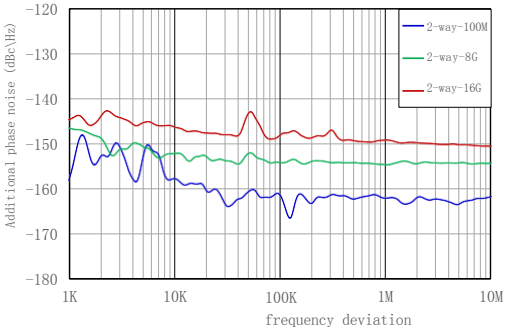
4-way 2nd harmonic vs. frequency



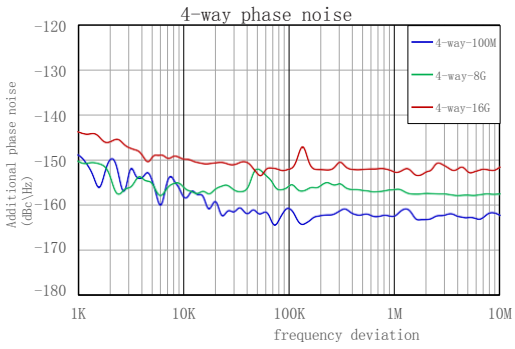
4 division 3rd harmonic vs frequency



2-way phase noise



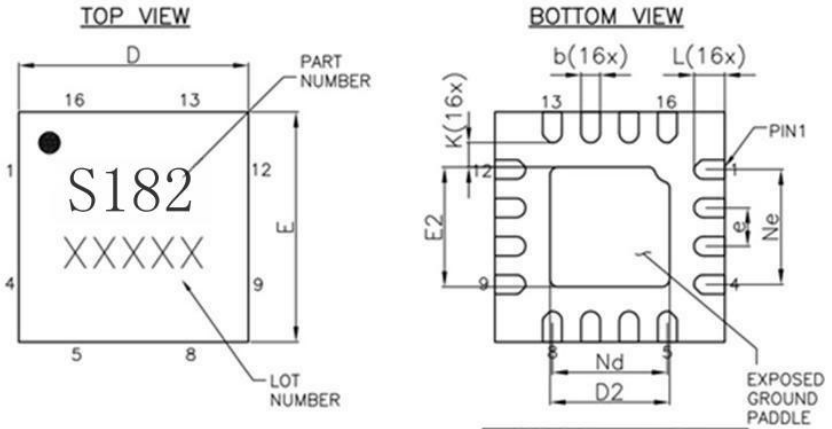
4-way phase noise



Absolute Maximum

Parameters	Scope
VCC	-0.3V~3.6V
IO Port	-0.3V~VCC+0.3V
Operating temperature	-40℃~85℃
Storage temperature	-65℃~150℃
ESD(HBM)	1000V

Chip Package Outline Diagram



SP3-5 Dimension Table (unit:mm)			
Symbol	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.20Ref	
b	0.18	0.25	0.30
D	2.90	3.00	3.10
D2	1.60	1.70	1.80
e		0.50BSC	
Ne		1.50BSC	
Nd		1.50BSC	
E	2.90	3.00	3.10
E2	1.60	1.70	1.80
K	0.20	---	---
L	0.20	0.30	0.40
aaa		0.08	

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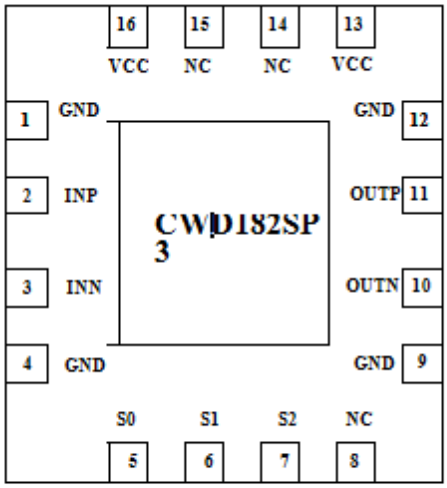
Pad shape and description

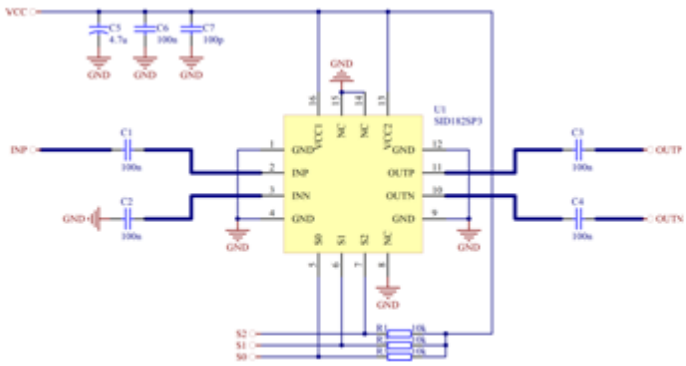


PIN nubmer	Designation	Description
1、4、9、12	GND	Grounding port
2	INP	RF isotropic input port
3	INN	RF reverse input port
5、6、7	S0~S2	Logic input, controlling the number of divisions, internally integrated under 80kΩ
10	OUTN	Crossover reverse output port
11	OUTP	Crossover isotropic output port
13、16	VCC	Power port

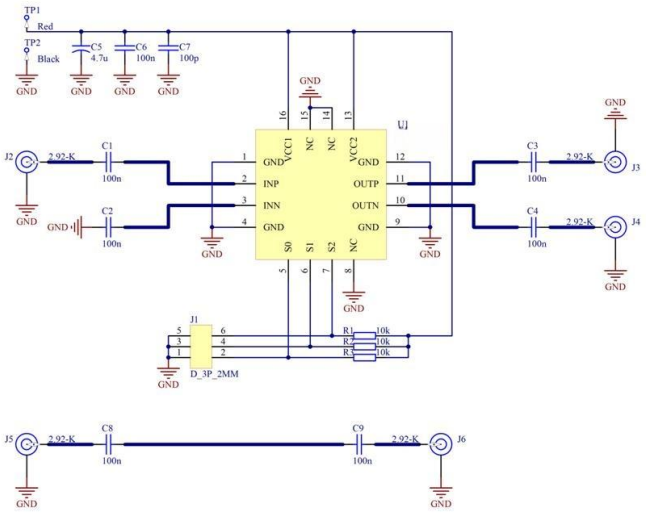
Control instructions

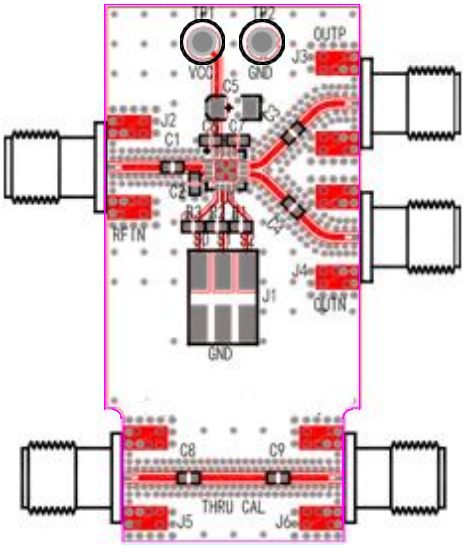
S2	S1	S0	分频数 MOD
0	0	0	1
0	0	1	2
0	1	0	4
0	1	1	8
1	0	0	16
1	0	1	32
1	1	0	64
1	1	1	128

Typical application diagram



Evaluation Board Circuit Diagram





Designator	Description
C1, C2, C3. C4, C6	Multilayer Ceramic Capacitor 0402 100nF
C5	Tantalum capacitor 1206 4.7uF
C7	Multilayer Ceramic Capacitor 0402 100pF
R1, R2, R3	Resistance 0402 10kΩ
J1	2.0mm DC pins
J2, J3, J4	2.92-K PCB Connectors
TP1, TP2	DC test terminal
U1	CWD182SP3
J2, J3, J4 Recommended for Nanjing Aowen D360B12E01-023 2.92-K connectors	
NC indicates that the port is not used or the device is not soldered. The outside of the chip NC port can be connected to GND.	

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