

## DESCRIPTION

The CBS8112 is a broadband CMOS silicon-on-insulator (SOI), single-pole, double-throw (SPDT) switch in a lead-free 1 mm 6-lead QFN package. Typical applications are for 802.11 a/b/g/n. Other applications include test equipment requiring ultra fast switching speeds. Designed for high linearity and low insertion loss, this SPDT switch maintains low loss up to 7.2 GHz.

## BLOCK DIAGRAM

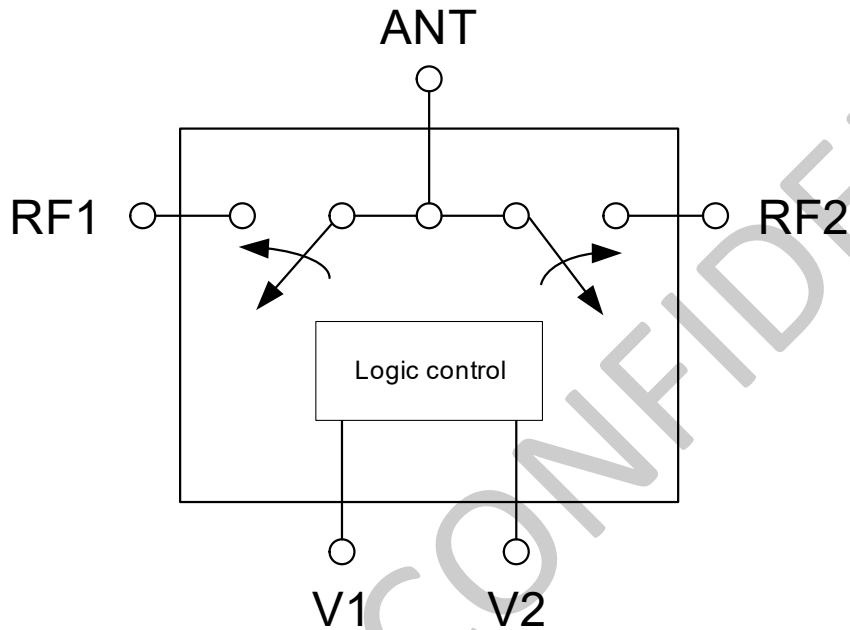


Figure 1. CBS8112 Block Diagram

## FEATURES

- High Isolation: >25dB @ 0.5~7.2 GHz
- Low Insertion Loss: 0.4-1.05 dB @ 0.5~7.2 GHz
- Input 0.1dB compression point: 33dBm
- Chip Size: 1x1x0.45(mm)
- Low switching time: 100ns

## APPLICATIONS

This switch is suitable 0.5 – 7.2 GHz applications:

- WLAN 802.11a/b/g/n networks
- WLAN repeaters
- ISM band radios
- Low power transmitting and receiving systems

## PIN-OUT DIAGRAM

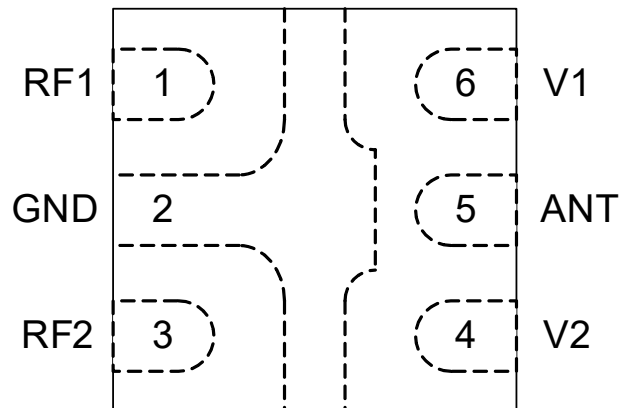


Figure 2. CBS8112 Pin out (Top View)

## PIN ASSIGNMENTS

Pin	Name	Description	Pin	Name	Description
1	RF1	RF Output 1	4	V2	Voltage Control 2
2	GND	Ground	5	ANT	Antenna Port
3	RF2	RF Output 2	6	V1	Voltage Control 1

## ABSOLUTE MAXIMUM RATINGS

Parameters	Test Condition	Min	Max	Units
RF Input Power	F0=2.45GHz, CW, VSWR=1:1, TA=25 °C		+33	dBm
Control Voltage Range (V1 & V2)	TA=25 °C	-0.3	+3.6	V
Storage Temperature		-55	+150	°C
Operating Temperature		-40	+90	°C
Electrostatic Discharge (All Pins)	Human Body Model (HBM)	1000		V
	Charged Device Model (CDM)	1000		V

Note:

Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

## CBS8112 ELECTRICAL SPECIFICATIONS<sup>1</sup>

Parameters	Symbol	Test Condition	Min	Typ.	Max	Units
<b>(V<sub>CH</sub>=3.3V, V<sub>CL</sub>=0V, PIN=0dBm, 50 Ohm System; Temp = 25°C)</b>						
Operation Frequency			0.5		7.2	GHz
Insertion Loss	I.L.	F0=0.5 to 0.96GHz F0=1.71 to 2.17GHz F0=2.17 to 2.69GHz F0=3.6 to 3.8GHz F0=4.8 to 5.0GHz F0=5.0 to 6.0GHz F0=6.0 to 7.2GHz	-	0.34 0.42 0.45 0.50 0.55 0.70 0.85	0.40 0.47 0.55 0.60 0.65 0.80 1.05	dB
Isolation	ISO.	F0=0.5 to 0.96GHz F0=1.71 to 2.17GHz F0=2.17 to 2.69GHz F0=3.6 to 3.8GHz F0=4.8 to 5.0GHz F0=5.0 to 6.0GHz F0=6.0 to 7.2GHz	50 40 35 30 28 25 20	55 45 40 34 32 28 25		dB
Input Power for 0.1dB Compression	P0.1dB	0.5-6.0GHz		33	-	dBm
Input Third Order Intercept	IIP3	F0=2.45GHz @17dBm/tone Δf=1MHz F0=5.80GHz @17dBm/tone Δf=1MHz	52	61	-	dBm
2 <sup>nd</sup> Harmonic	2f0	F0=0.8 to 2.7GHz @24dBm F0=4.8 to 6.0GHz @24dBm	90 85	98 95	-	dBc
3 <sup>rd</sup> Harmonic	3f0	F0=0.8 to 2.7GHz @24dBm F0=4.8 to 6.0GHz @24dBm	75 75	82 80	-	dBc
Voltage Standing Wave Ratio (All Pins)	VSWR	0.5-6.0GHz	1.2:1	1.5:1	-	
Error Vector Magnitude	EVM	802.11a, 54Mbps, Pin≤27dBm 802.11g, 54Mbps, Pin≤27dBm	2.5 2.5	-	-	%

## LOGIC TRUTH TABLE

V1	V2	RF Channel Operating Mode
Low	High	ANT to RF1 On
High	Low	ANT to RF2 On

## EVALUATION BOARD ASSEMBLY DRAWING

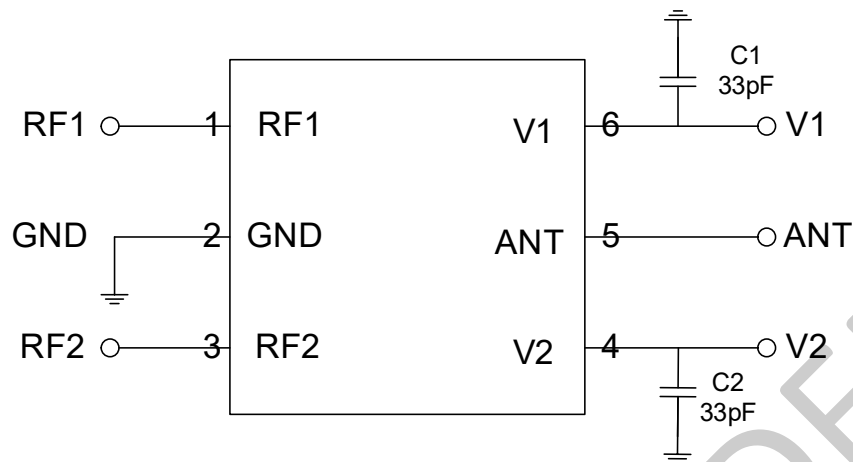


Figure 3. Evaluation Board Assembly Drawing

## BILL OF MATERIALS

Component	Value	Size	Vendor	Part Number	Note
C1, C2	33pF	0402	Murata		

## TYPICAL PART MARKING

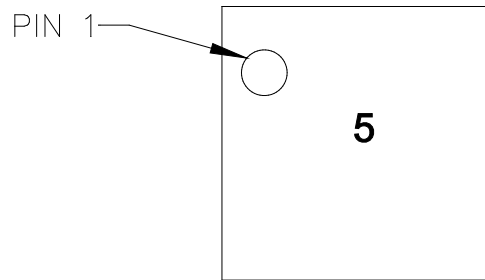
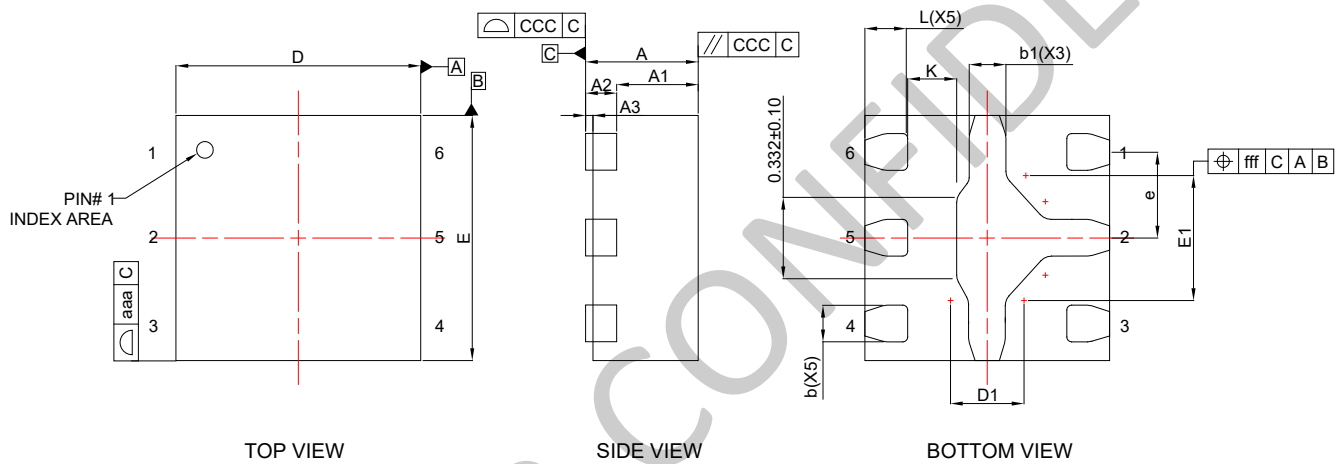


Figure 4. Typical Part Marking for the CBS8112

## PACKAGE DIMENSIONS (All Dimensions in mm):



Item	Symbol	Minimum	Normal	Maximum
Body Size	D		1.0BSC	
	E		1.0BSC	
Exposed Pad Size	D1	0.20	0.30	0.40
	E1	0.41	0.51	0.61
Total Thickness	A	0.40	0.45	0.50
Molding Thickness	A1	-	0.32	-
LF Thickness	A2		0.127REF	
Stand Off	A3	0.00	0.02	0.05
Lead Width	b	0.10	0.15	0.20
Lead Width	b1	0.10	0.15	0.20
Lead Length	L	0.125	0.175	0.225
Lead Pitch	e		0.350BSC	
The space from terminals of lead to exposed pad	k		0.2MIN	
Package Edge Tolerance	aaa		0.10	
Lead Offset	bbb		0.07	
Molding Flatness	ccc		0.10	
Coplanarity	eee		0.08	
Exposed Pad Offset	fff		0.10	

Figure 5. CBS8112 Package Dimension

## CONTACT INFORMATION

For the latest specifications, additional product information, worldwide sales and distribution locations:

**Web:** [www.chipbetter.com](http://www.chipbetter.com)

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