DESCRIPTION

The CBS8348 is a broadband GaAs pHEMT MMIC SPDT switch in a lead-free 2 mm 8-lead PDFN package. Typical applications are for WLAN IEEE 802.11a + b/g, and MIMO. Other applications include test equipment requiring ultra fast switching speeds. Designed for low insertion loss, this SPDT switch maintains low loss up to 10 GHz.

The CBS8348 is fabricated using a 0.5 micron gate length GaAs pHEMT process. The process features full passivation for performance and reliability.

BLOCK DIAGRAM

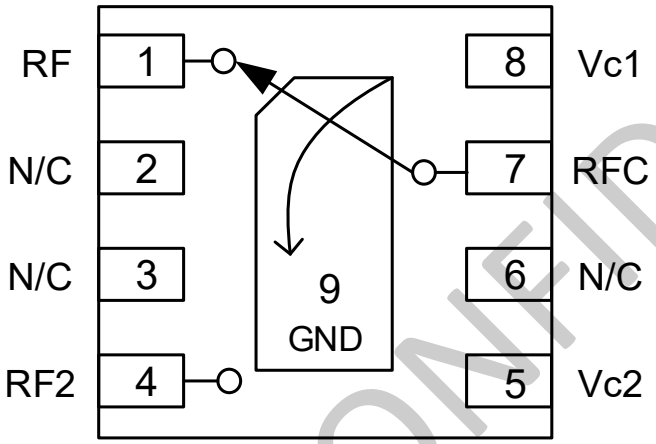

Figure 1. CBS8348 Block Diagram

FEATURES

- High Isolation: >25dB @ DC~10 GHz
- Low Insertion Loss: 0.7-1.8 dB @ DC~10 GHz
- Non-Refl ective Design
- Chip Size: 2x2x0.75(mm)
- 802.11a + b/g and MIMO Applications
- Test and Measurement and Low/Medium Power
- Telecommunication Applications up to 10 GHz
- Broadband Performance: DC~10 GHz
- Fast Settling for Low Gate Lag Requirements

APPLICATIONS

This switch is suitable DC - 10 GHz applications：

- Fiber Optics
- Microwave Radio
- Military
- Space
- VSAT

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PIN-OUT DIAGRAM

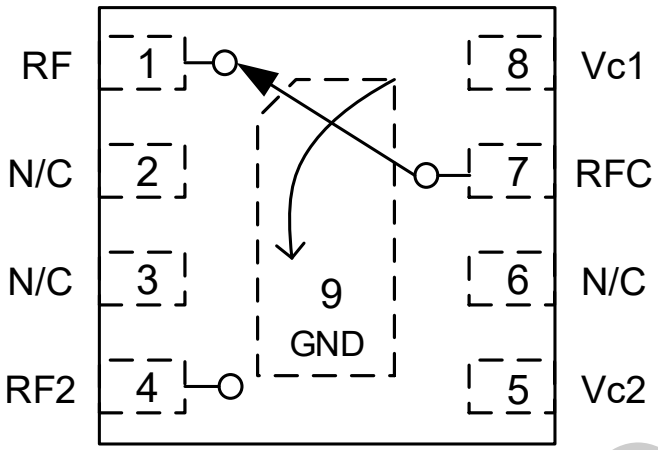

Figure 2. CBS8348 Pin out (Top View)

PIN ASSIGNMENTS

Pin	Name	Description	Pin	Name	Description
1	RF1	RF Output 1	6	N/C	No Connection
2	N/C	No Connection	7	RFC	RF Common
3	N/C	No Connection	8	Vc1	Voltage Control 1
4	RF2	RF Output 2	9	Paddle	RF and DC Ground
5	Vc2	Voltage Control 2			

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ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Min	Max	Units
RF Input Power (Vctl = +5V)			+34	dBm
Control Voltage Range (A & B)		-0.5	+7.5	V
Channel Temperature			+150	°C
Storage Temperature		-65	+150	°C
Operating Temperature		-55	+85	°C
ESD Sensitivity (HBM)	$V_{Vc1, Vc2}$		±1	KV
	$V_{RF1, RF2, RFC}$ (Each single RF-in/out port versus GND, with 27 nH shunt inductor)		±8	KV

CBS8348 ELECTRICAL SPECIFICATIONS[1]

Parameters	Symbol	Test Condition	Min	Typ.	Max	Units
(With 0/+3.3V Control, 50 Ohm System; Temp = 25ºC)						
Operation Frequency			DC		10	GHz
Insertion Loss	I.L.	DC-10GHz	-	0.8	1.8	dB
Isolation	ISO.	DC-10GHz	16	22	47	dB
Return Loss	R.L.	DC-10GHz	16	20	40	dB
Input Power for 0.1dB Compression	P0.1dB	DC-10GHz	26	29	-	dBm
Input Power for 1dB Compression	P1dB	DC-10GHz	30.5	32	-	dBm
Input Third Order Intercept (2 Tone input power = +5dBm/tone,10MHz Spacing)	IIP3	DC-10GHz	41	45	-	dBm
2nd Harmonic		2.4 GHz 5.3 GHz 5.8 GHz	80	82	-	dB
3rd Harmonic		2.4 GHz 5.3 GHz 5.8 GHz	82	85	-	dB
Logical Control Voltage (High)			2.9	3.3	5	V
Logical Control Voltage (Low)					0.2	V
Switching Characteristics tRISE, tFALL (10/90% RF) tON, tOFF (50% CTL to 10/90% RF)			-	 10 30	-	ns
Control Current				1		uA

CONTROL VOLTAGES

STATE	Bias Condition
Low	0 to -0.2V@1 uA Max.
High	+3.3V@1uA Typ. to +7.5V@10uA Max.

LOGIC TRUTH TABLE

Control Input		Signal Path State	
A	B	RF1 to RFC	RF2 to RFC
High(+3.3V)	Low(0V)	ON	ISO
Low(0V)	High(+3.3V)	ISO	ON

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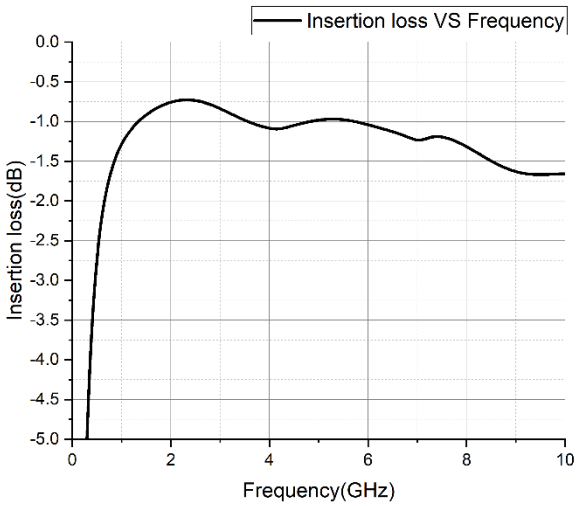
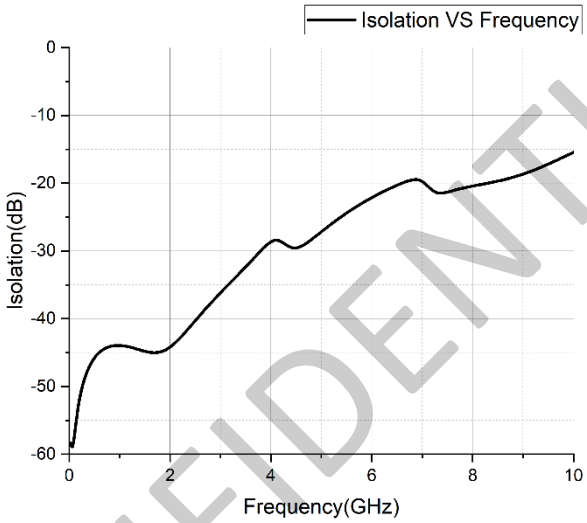
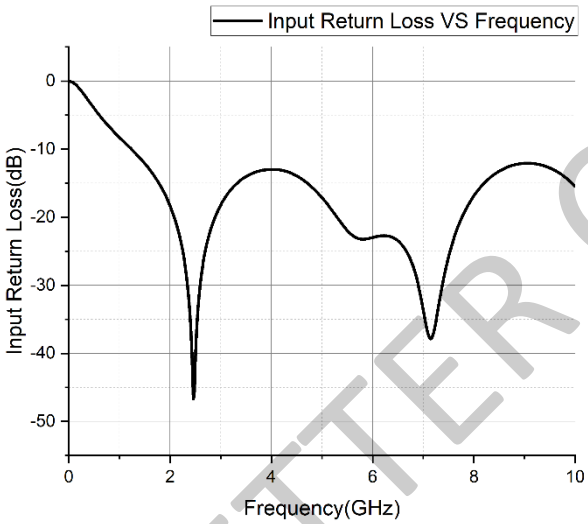
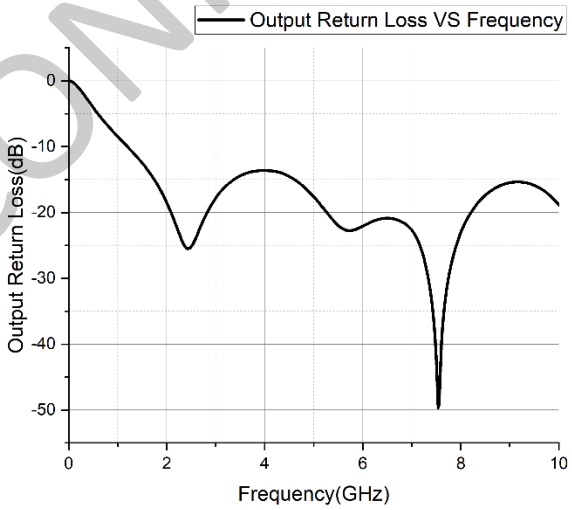
PERFORMANCE PLOTS

RF1/RF2 to RFC S-parameter









Note: DC block capacitor 8pF Vc=+3.3V Temp = 25ºC

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EVALUATION BOARD ASSEMBLY DRAWING

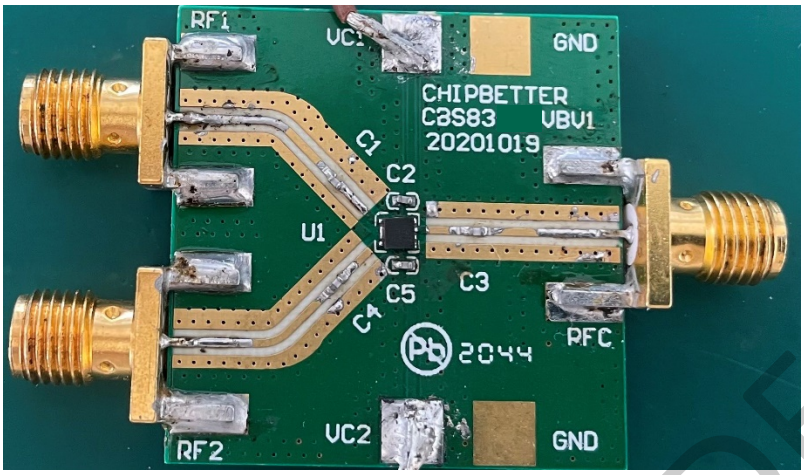

Figure 3. Evaluation Board Assembly Drawing

BILL OF MATERIALS

Component	Value	Size	Vendor	Part Number	Note
C1	8pF	0402	Murata	GRM0225C1E1R0BA03D	DC block capacitor
C2	220pF	0402	Murata	GRM022R71C102KE14D	Bypass capacitor
C3	8pF	0402	Murata	GRM0225C1E1R0BA03D	DC block capacitor
C4	8pF	0402	Murata	GRM0225C1E1R0BA03D	DC block capacitor
C5	220pF	0402	Murata	GRM022R71C102KE14D	Bypass capacitor

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TYPICAL PART MARKING

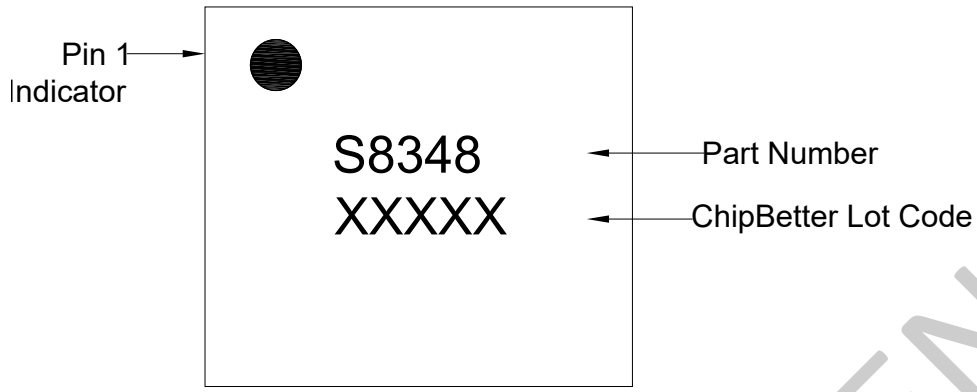

Figure 4. Typical Part Marking for the CBS8348

PACKAGE DIMENSIONS (All Dimensions in mm):

Symbol \ Size	Min(mm)	Nom(mm)	Max(mm)	Symbol \ Size	Min(mm)	Nom(mm)	Max(mm)
A	0.70	0.75	0.80	e		0.50BSC	
A1	0.00	0.02	0.05	E	1.95	2.00	2.05
b	0.18	0.25	0.30	E2	0.65	0.70	0.75
b1		0.18REF		L	0.25	0.30	0.35
c		0.20REF		h	0.15	0.20	0.25
D	1.95	2.00	2.05		L/F Carrier size (mm):1.10*1.80		
D2	1.15	1.20	1.25				

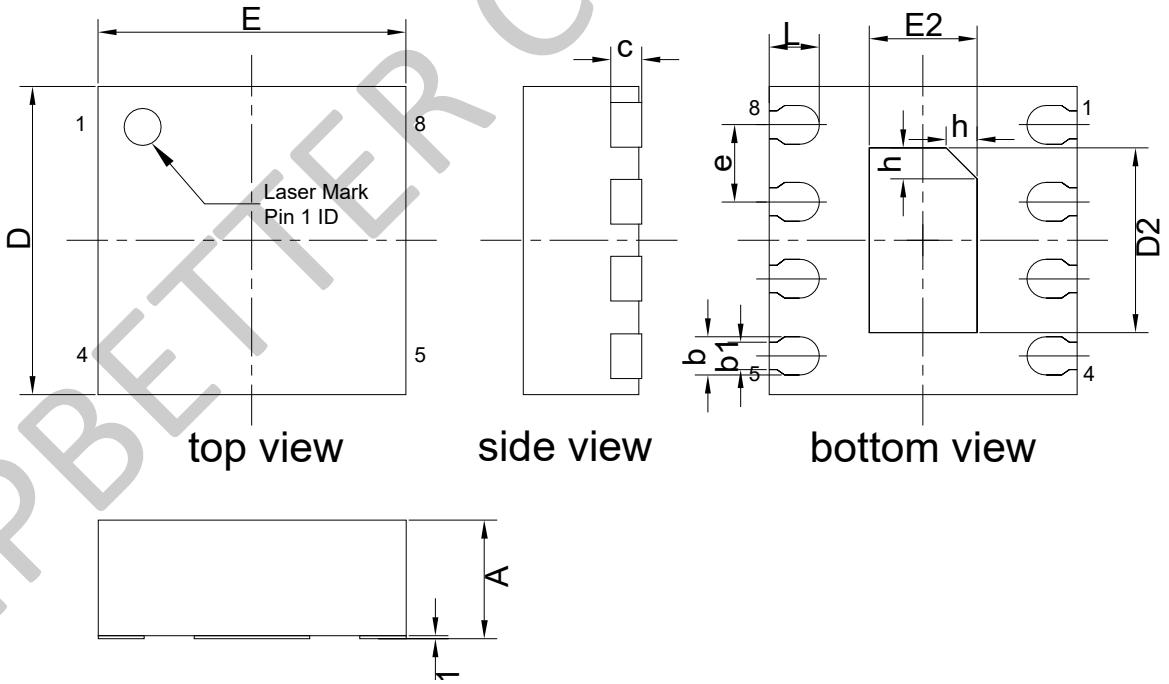

Figure 5. CBS8348 Package Dimension

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CONTACT INFORMATION

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