SONY

CXG1068N

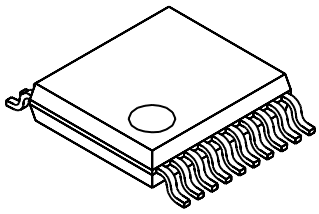
SP4T Antenna Switch for GSM Dual band

Description

The CXG1068N is a high power antenna switch MMIC for use in Dualband GSM handsets.

One antenna can be routed to either of the 2Tx or 2Rx ports. This IC is designed using the Sony's GaAs J-FET process which enable the CXG1068N to be operated with low voltage.

20 pin SSOP (Plastic)



Features

- Low control voltage
- Low insertion loss : 0.5 dB (Typ.) @900 MHz
  0.65 dB (Typ.) @1.8 GHz
- Small package :
  SSOP-20pin (Pin interval of 0.5 mm pitch)
- High power handling :
  P1dB : 38 dBm (Typ.) 0/5 V control
- Harmonics :
  –31 dBm (Max.) Pin=35 dBm, 0/5 V control

Applications

- Dualband GSM 900/GSM 1800 or GSM 900/GSM 1900 handsets.
- Dualmode GSM/DECT handsets.

Structure

GaAs J-FET MMIC

Operating Conditions (Ta=25 °C)

Control voltage

Vctl (H)–Vctl (L): 2.5 to 5 V

GaAs MMICs are ESD sensitive devices. Special handling precautions are required.

E98920A8X-TE

Truth Table

ON Pass	CTL 1	CTL 2	CTL 3	$\overline{\text{CTL 3}}$	CTL 4	$\overline{\text{CTL 4}}$
Ant.-Tx1	H	L	L	H	L	H
Ant.-Tx2	L	H	L	H	L	H
Ant.-Rx1	L	L	H	L	L	H
Ant.-Rx2	L	L	L	H	H	L

Electrical Characteristics 1 (Ta=25 °C)

	Symbol	Port	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	Ant-Tx1, Tx2	*1		0.5	0.7	dB
			*2		0.65	0.85	dB
		Ant-Rx1, Rx2	*3		0.6	0.8	dB
			*4		0.85	1.05	dB
Isolation	ISO	Ant-Tx1, Tx2	*1, *3	20	24		dB
			*2, *4	17	20		dB
		Ant-Rx1, Rx2	*1, *3	25	30		dB
			*2, *4	20	25		dB
VSWR	VSWR				1.2	1.4	
Harmonics	2fo	Ant-Tx1, Tx2	*1			–31	dBm
	3fo		*2			–31	dBm
1dB compression Input power	P1dB	Ant-Tx1, Tx2	*1	35	38		dBm
			*2	34	37		dBm
Switching speed TSW	TSW				100	500	ns
Control current	Ictl				150	300	µA
Bias current	I_{DD}				60	120	µA

*1 : Pin=34.5 dBm, 880 to 915 MHz, V_{DD}=5 V, 0/5 V Control

*2 : Pin=32 dBm, 1710 to 1785 MHz, V_{DD}=5 V, 0/5 V Control

*3 : Pin=10 dBm, 925 to 960 MHz, V_{DD}=3 V, 0/3 V Control

*4 : Pin=10 dBm, 1805 to 1880 MHz, V_{DD}=3 V, 0/3 V Control

Electrical Characteristics 2 (Ta=–35 to +85 °C)

	Symbol	Port	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	Ant-Tx1, Tx2	*1		0.5	0.9	dB
			*2		0.65	1.05	dB
		Ant-Rx1, Rx2	*3		0.6	1.0	dB
			*4		0.85	1.25	dB
Isolation	ISO	Ant-Tx1, Tx2	*1, *3	20	24		dB
			*2, *4	17	20		dB
		Ant-Rx1, Rx2	*1, *3	25	30		dB
			*2, *4	20	25		dB
VSWR	VSWR				1.2	1.4	
Harmonics	2fo	Ant-Tx1, Tx2	*1			–30	dBm
	3fo		*2			–30	dBm
1dB compression Input power	P1dB	Ant-Tx1, Tx2	*1	35	38		dBm
			*2	34	37		dBm
Switching speed TSW	TSW				100	500	ns
Control current	Ictl				150	350	µA
Bias current	I_{DD}				60	150	µA

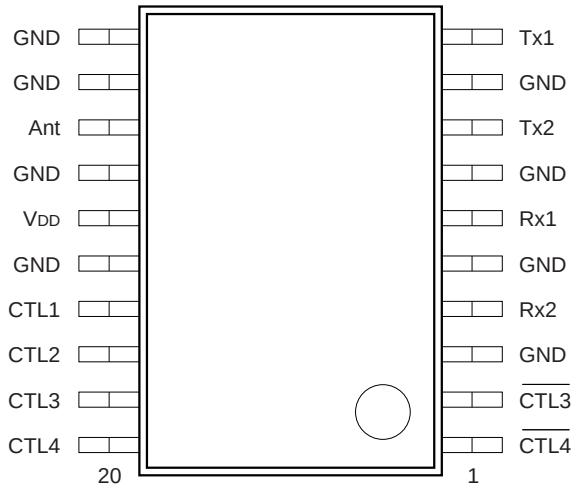
*1 : Pin=34.5 dBm, 880 to 915 MHz, V_{DD}=5 V, 0/5 V Control

*2 : Pin=32 dBm, 1710 to 1785 MHz, V_{DD}=5 V, 0/5 V Control

*3 : Pin=10 dBm, 925 to 960 MHz, V_{DD}=3 V, 0/3 V Control

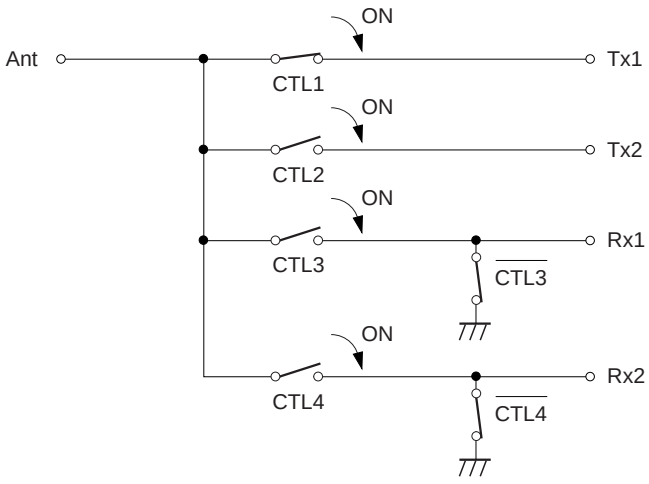
*4 : Pin=10 dBm, 1805 to 1880 MHz, V_{DD}=3 V, 0/3 V Control

Package Outline/Pin Configuration

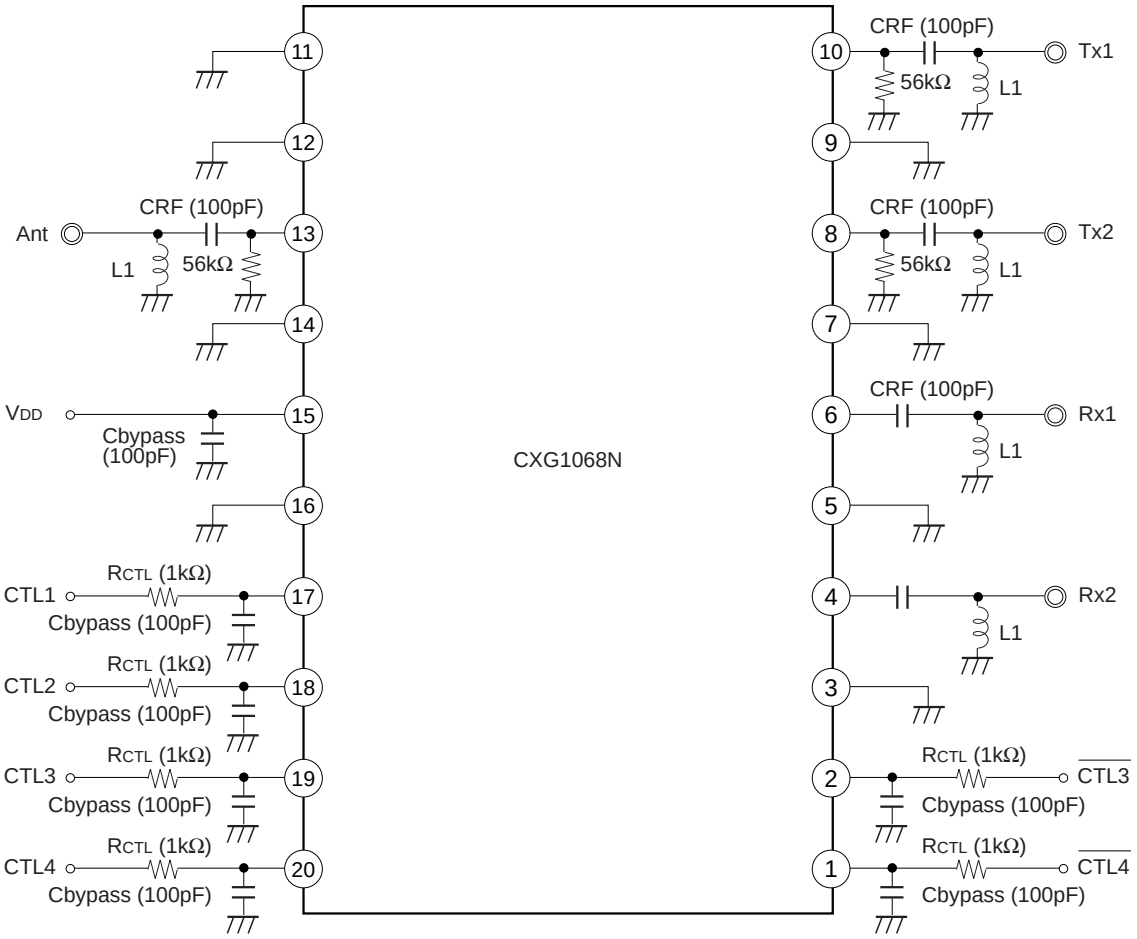


20pin SSOP Package

Block Diagram



Recommended Circuit



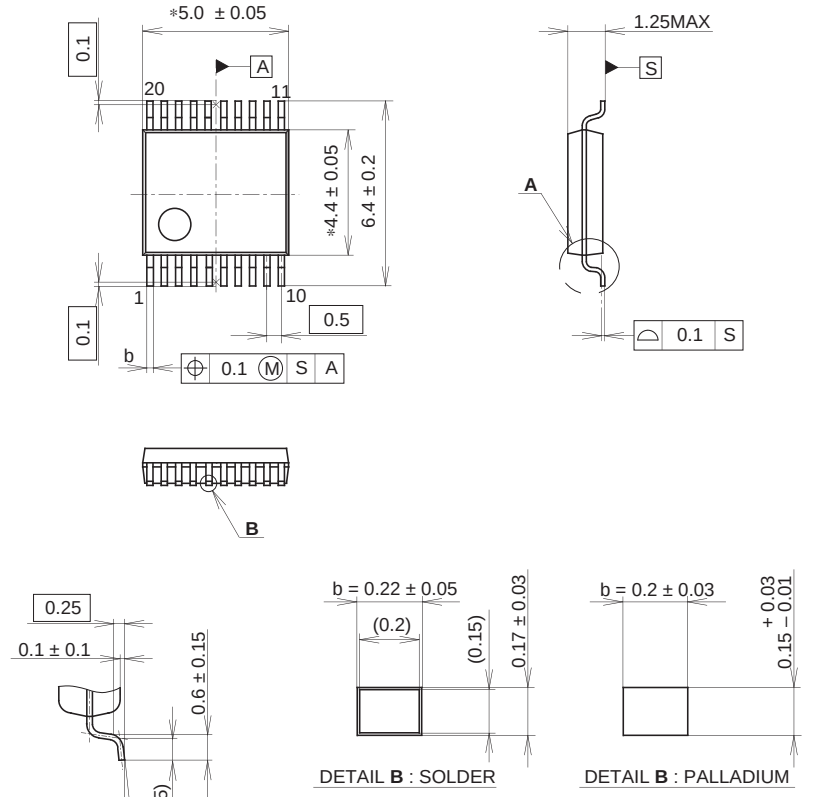
∗ Recommended to use DC blocking capacitors (CRF) and bypass capacitors (Cbypass).
Rctl : This resistor is used to give improved ESD performance. 1 kΩ is recommended.
L1 : This inductor is used to give improved ESD performance.

Absolute Maximum Ratings (Ta=25 °C)

• Control voltage		7	V
• Operating temperature	Topr	–35 to +85	°C
• Storage temperature	Tstg	–65 to +150	°C

Package Outline Unit : mm

20PIN SSOP(PLASTIC)



NOTE: Dimension "*" does not include mold protrusion.

SONY CODE	SSOP-20P-L03
EIAJ CODE	SSOP020-P-0044
JEDEC CODE	————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.1g