

High Isolation SPDT Switch

Description

The CXG1008N is a high isolation SPDT switch suitable for Digital Cellular applications, Cable TV and so on. This device is part of a growing family of MMIC Antenna switches for digital cellular and cordless radios. It uses the state-of-the-art Sony GaAs JFET process.

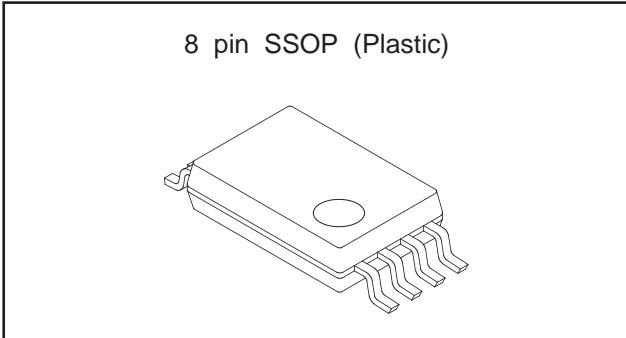
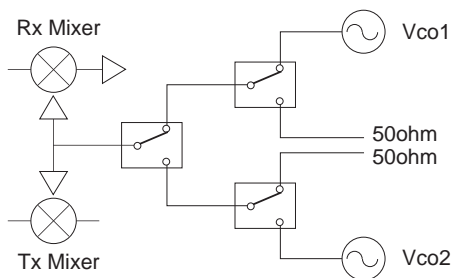
Features

- Positive voltage supply only
- Ultra high isolation, typically 58 dB (GSM 900)
- Low insertion loss, typically 0.7 dB at 20 dBm input level (GSM 900)
- Stable Characteristics over wide temperature range
- Fast switching-50 ns Typical
- Low current consumption, 50 μ A typical at 3.0 V
- 8 pin SSOP package (3.0 \times 6.4 mm)

Applications

- Basestation LO switching
(GSM900/1800/1900, PHS)
- Other Low Power SPDT applications requiring high isolation (e.g. Cable TV)

Typical Basestation Application

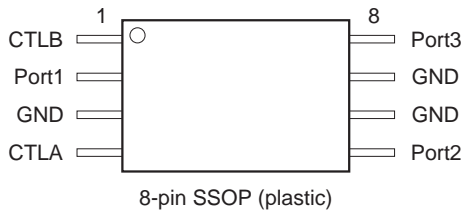


ESD

As with other GaAs semiconductors, ESD precautions must be adhered to.

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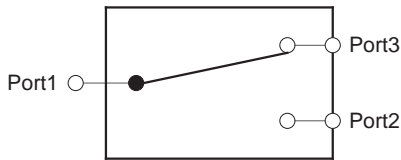
Schematic/Pinout



Pin No.	FUNCTION
1	CONTROL B
2	RF PORT 1
3	GROUND
4	CONTROL A
5	RF PORT 2
6	GROUND
7	GROUND
8	RF PORT 3

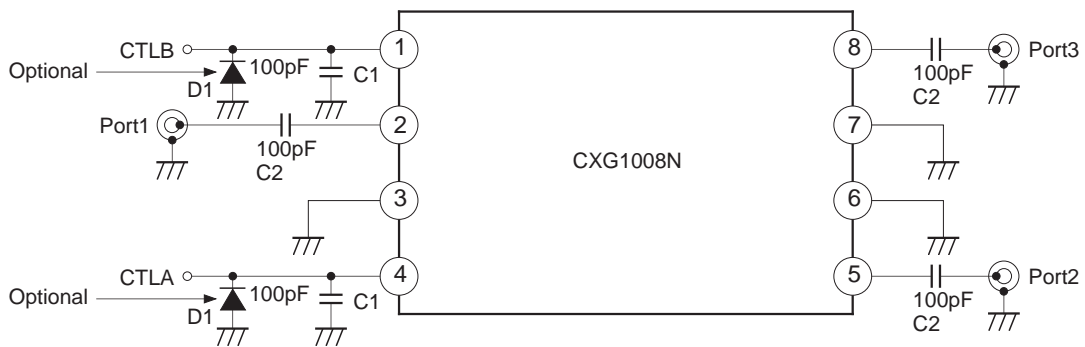
Block Diagram/Truth Table

Block Diagram



VCTLA	VCTLB	
High	Low	Port1-Port2 ON Port1-Port3 OFF
Low	High	Port1-Port2 OFF Port1-Port3 ON

External Circuitry



When using the CXG1008N, the following external components should be used:

- C1: This is used for signal line filtering. 100 pF is recommended.
- C2: This is used for RF De-coupling and must be used in all applications. 100 pF is recommended.
- D1: 6.2 V Zener diodes may be incorporated at the Control lines, as indicated, in order to give improved ESD performance if necessary.

Application GSM900/1800/1900 Basestation LO switching

Electrical Characteristics

Measurement Conditions, Vctl (L)=0 V, Vctl (H)=5 V, Ta=25 °C

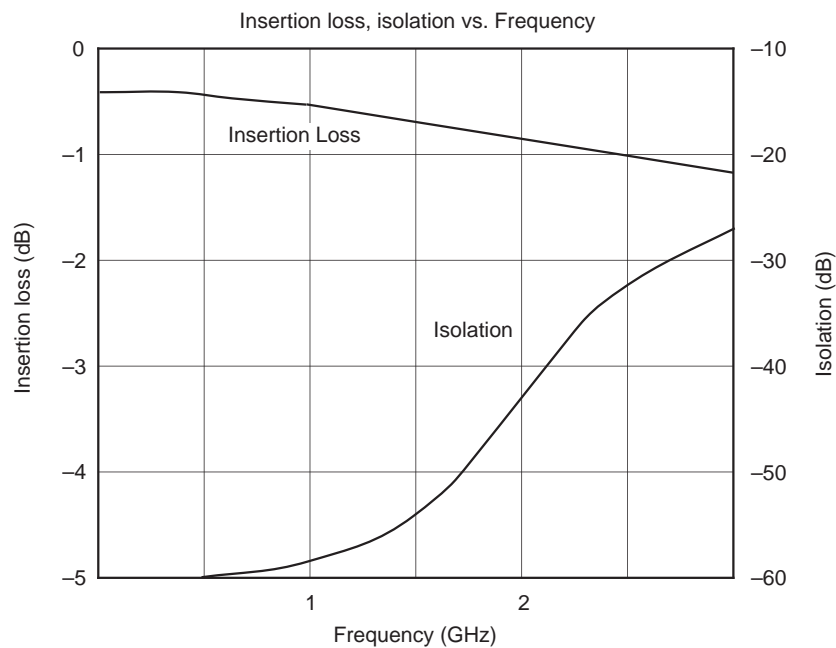
Parameter	Min.	Typ.	Max.	Unit
Insertion loss @ 900 MHz		0.7	*1.1 (1.2)	dB
Isolation @ 900 MHz	(51) 52	58		dB
Insertion loss @ 1500 MHz		0.75	1.15 (1.25)	dB
Isolation @ 1500 MHz	(46) 47	52		dB
Insertion loss @ 1900 MHz		0.8	*1.2 (1.3)	dB
Isolation @ 1900 MHz	(41) 42	47		dB
VSWR ≤ 2 GHz		1.3	1.5	
Switching Time		50		ns
Control Current (3 V)		50	100	μA
P1 dB (Vctl=3 V)		24		dBm
P1 dB (Vctl=4 V)		26		dBm
P1 dB (Vctl=5 V)		28		dBm

*() Temperature Range -35 to +85 °C

Frequency Characteristics

Measurement Conditions: Vctl (L)=0 V, Vctl (H)=5 V, Pin=0 dBm CW, T=25 °C

Example of Representative Characteristics (Ta=25 °C)



Application Cable TV

Electrical Characteristics

Measurement Conditions, Vctl (L)=0 V, Vctl (H)=3 V, Pin=10 dBm

Ta=25 °C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL1	f=1.0 GHz		0.7	1.1	dB
Isolation	ISO1		52	57		dB
Insertion loss	IL2	f=2.0 GHz		0.8	1.2	dB
Isolation	ISO2		38	43		dB
Input VSWR	VSWRIN			1.3	1.5	
Output VSWR	VSWROUT			1.3	1.5	
Switching time	TSW			50		ns
Control pin current	Ictl			50	100	μA

ESD Precautions

As this is a GaAs MMIC, ESD precautions must be adhered to, as outlined Sony's standard Data Book. Please contact Sony if detailed ESD performance data is required.

Absolute Maximum Ratings (Ta=25 °C)

• Control voltage	Vctl	6	V
• Operating temperature	Topr	-35 to +85	°C
• Storage temperature	Tstg	-65 to +150	°C
• Input Power	Pin	30	dBm

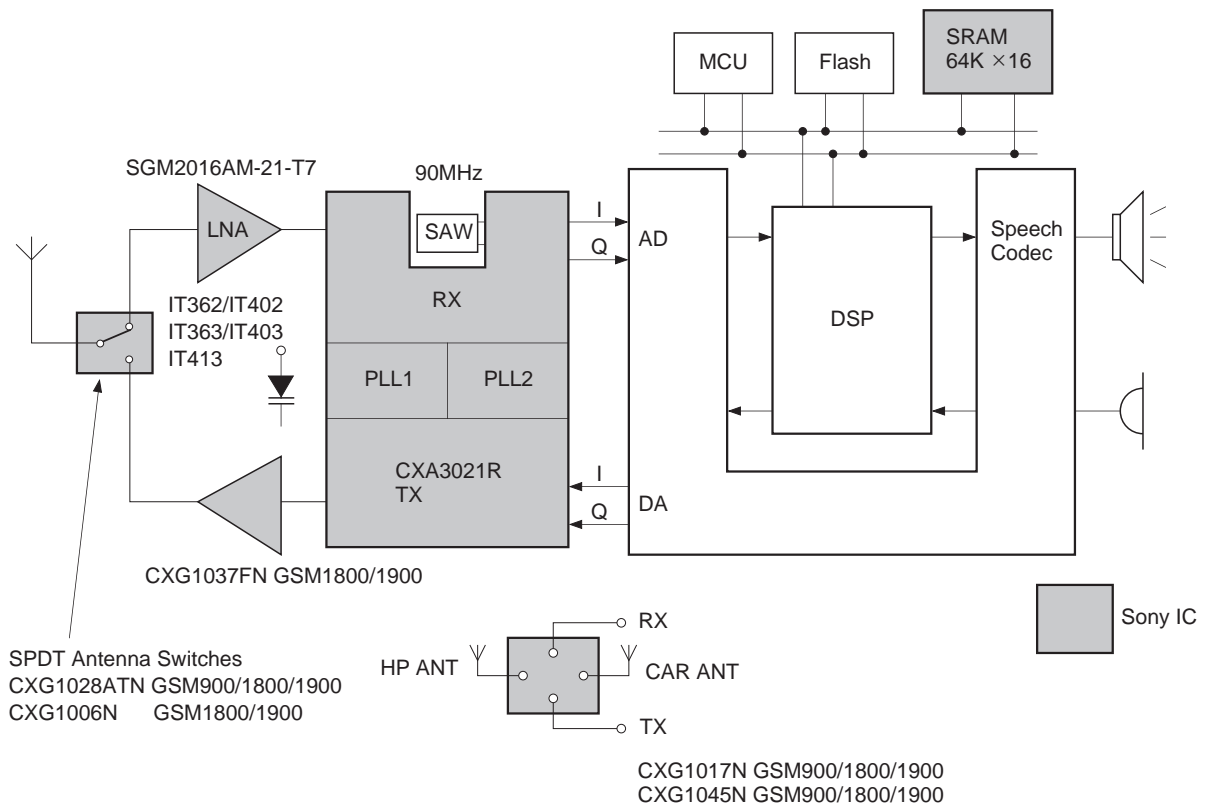
Tape and Reel Information

This device is available in Tape and Reel. Order CXG1008N-T4

Reel Quantity: 1000 pieces/reel

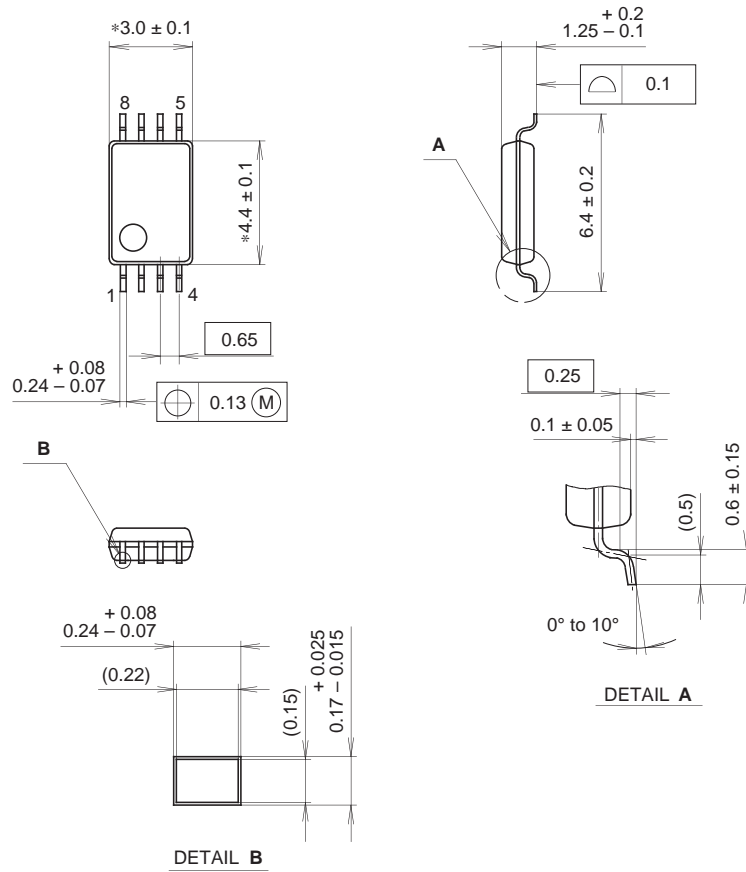
Reel Dimensions: 254 mm plastic reel: 16 mm width embossed taping.

Sony GSM Lineup



Package Outline Unit : mm

8PIN SSOP (PLASTIC)



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

PACKAGE STRUCTURE

SONY CODE	SSOP-8P-L01
EIAJ CODE	SSOP008-P-0044
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER / PALLADIUM PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.04g