

SONY

CXG1008N

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.

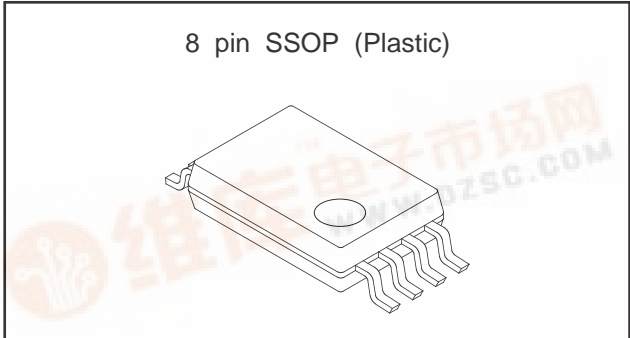
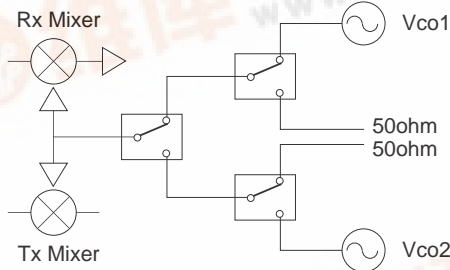
Features

- 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



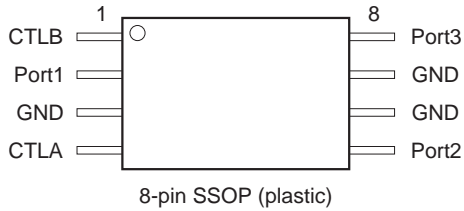
ESD

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

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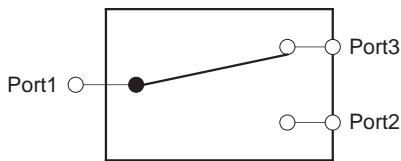
Schematic/Pinout



| 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 |

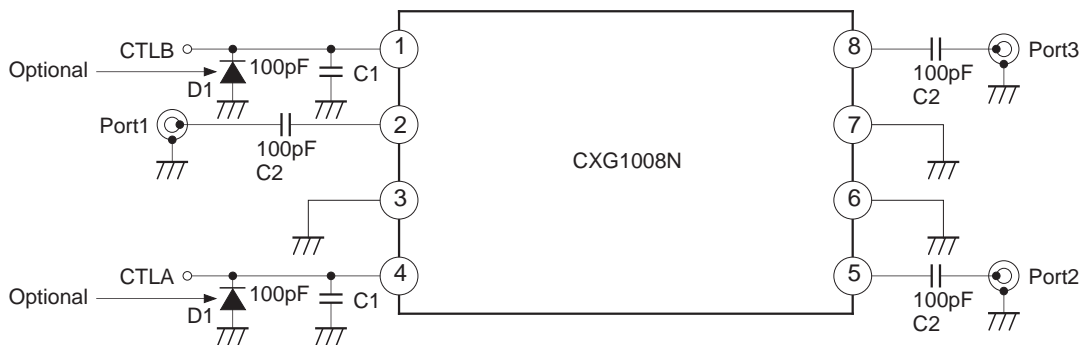
Block Diagram/Truth Table

Block Diagram



| V _{CTLA} | V _{CTLB} | |
|-------------------|-------------------|-----------------------------------|
| 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

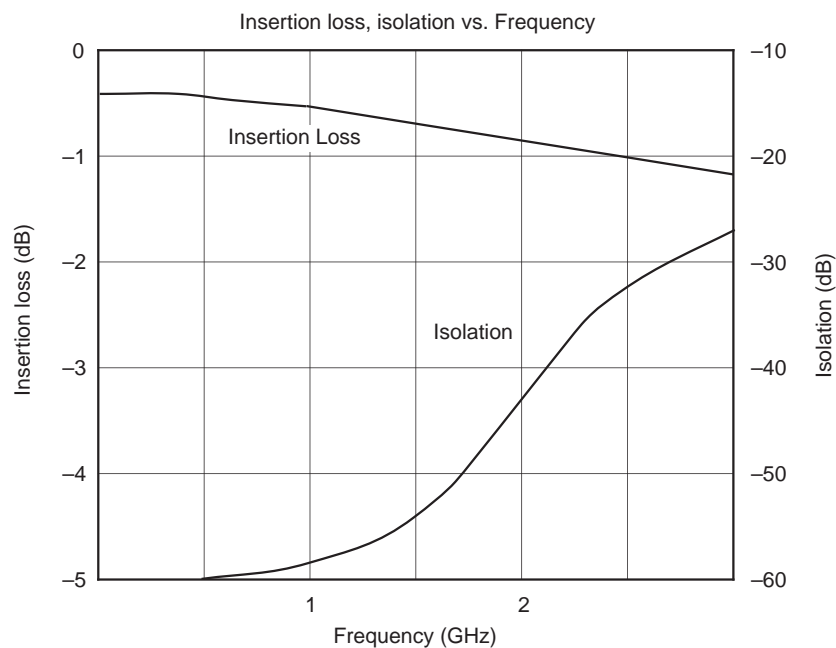
| Parameter | Min. | Typ. | Max. | Unit |
|---------------------------|---------|------|-------------|------|
| Insertion loss @ 900 MHz | | 0.7 | *1.1 (1.2) | dB |
| Isolation @ 900 MHz | (51) 52 | 58 | | dB |
| Insertion loss @ 1500 MHz | | 0.75 | 1.15 (1.25) | dB |
| Isolation @ 1500 MHz | (46) 47 | 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 |

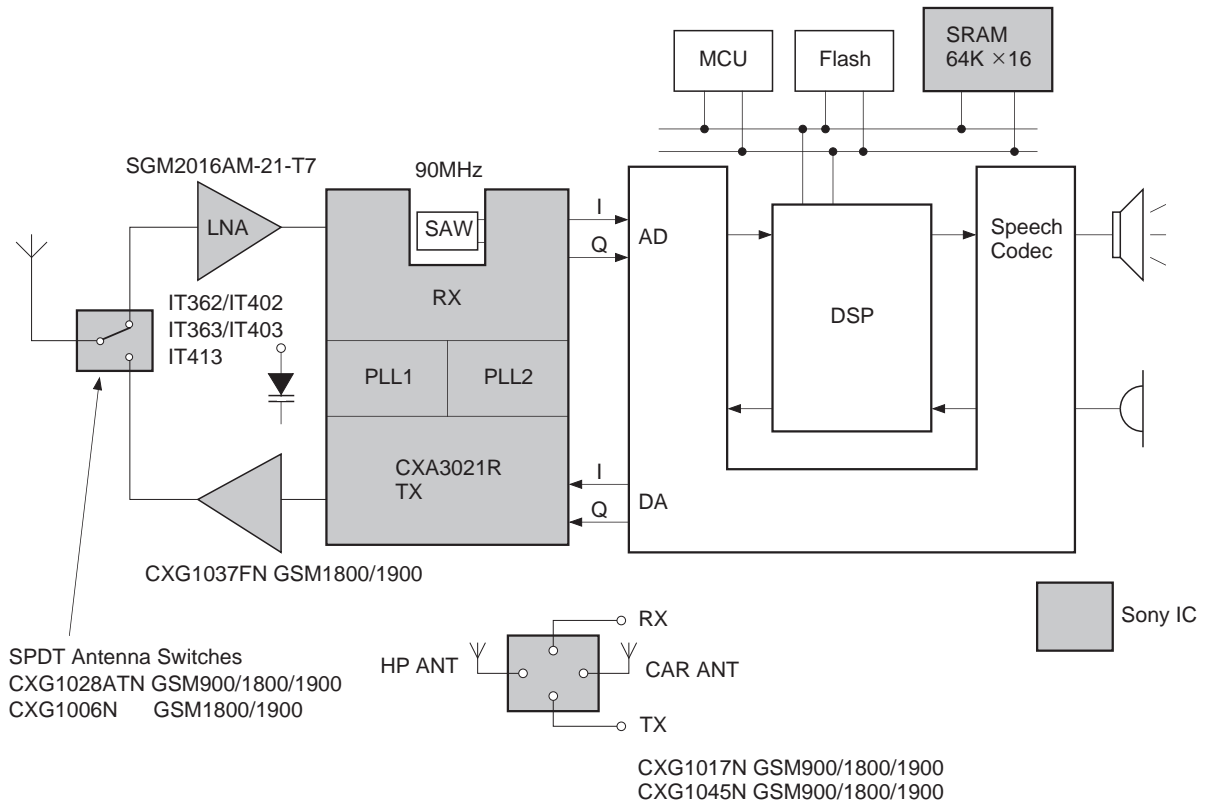
Tape and Reel Information

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

Reel Quantity: 1000 pieces/reel

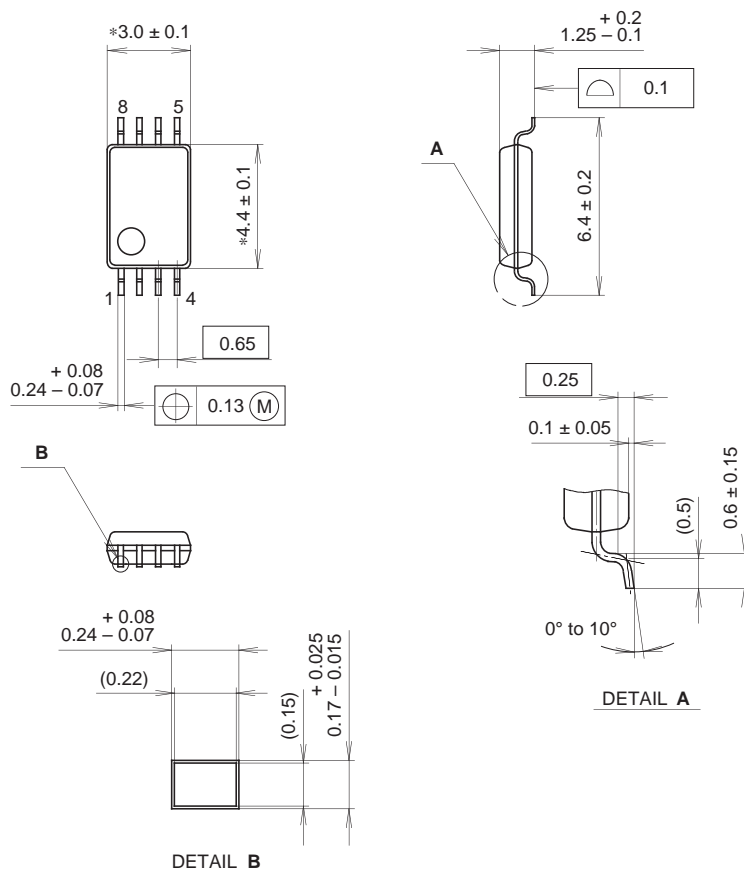
Reel Dimensions: 254 mm plastic reel: 16 mm width embossed taping.

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 |