

High-Frequency SPDT Antenna Switch

Description

The CXG1022TM is an antenna switch MMIC. This IC is designed using the Sony's GaAs J-FET process and operates at a single positive power supply with an ultra-small package.

Features

- Single positive power supply operation
- Insertion loss 0.4 dB (Typ.) at 2.0 GHz
- Medium power switching

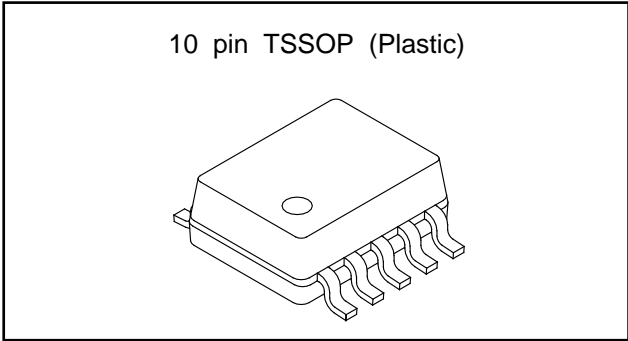
| | | |
|-------------|--------|----------------------------|
| P1dB (Typ.) | 29 dBm | at 2.0 GHz |
| | | $V_{CTL} (H)=3.0\text{ V}$ |
| | 33 dBm | at 2.0 GHz |
| | | $V_{CTL} (H)=4.0\text{ V}$ |
- Ultra-small TSSOP package

Applications

Antenna switch for digital cordless telephones

Structure

GaAs J-FET MMIC



Absolute Maximum Ratings (Ta=25 °C)

- Control voltage V_{ctl} 6 V
- Operating temperature T_{opr} -35 to +85 °C
- Storage temperature T_{stg} -65 to +150 °C

Operating Condition

Control voltage 0/3 V

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Electrical Characteristics

VCTL (L) =0 V, VCTL (H) =3 V, P_{IN}=21.5 dBm

(Ta=25 °C)

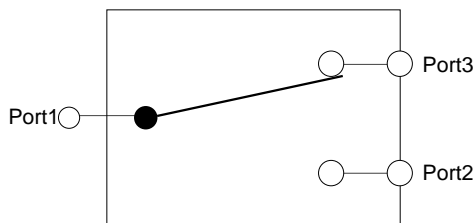
| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------|---------|-----------|------|------|------|------|
| Insertion loss | IL1 | f=1.0 GHz | | 0.3 | 0.6 | dB |
| Isolation | ISO1 | | 28 | 31 | | dB |
| Insertion loss | IL2 | f=2.0 GHz | | 0.4 | 0.8 | dB |
| Isolation | ISO2 | | 23 | 26 | | 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 |

VCTL (L) =0 V, f =2.0 GHz, R_{RF}=200 kΩ

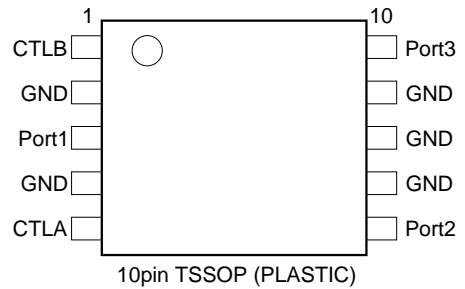
(Ta=25 °C)

| | | | | | | |
|------------------------------------|----------|---------------|----|----|--|-----|
| 1 dB gain compression point output | P1dB (3) | VCTL (H) =3 V | 26 | 29 | | dBm |
| 1 dB gain compression point output | P1dB (4) | VCTL (H) =4 V | 30 | 33 | | dBm |

Block Diagram

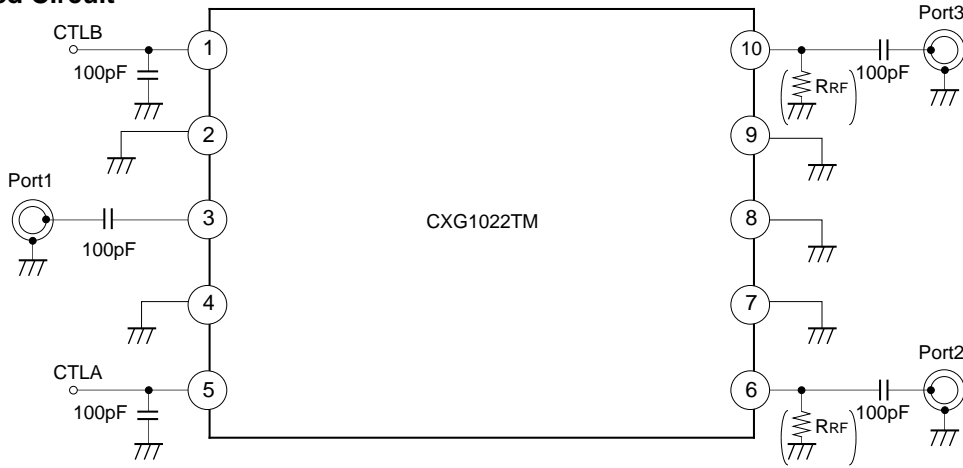


Pin Configuration



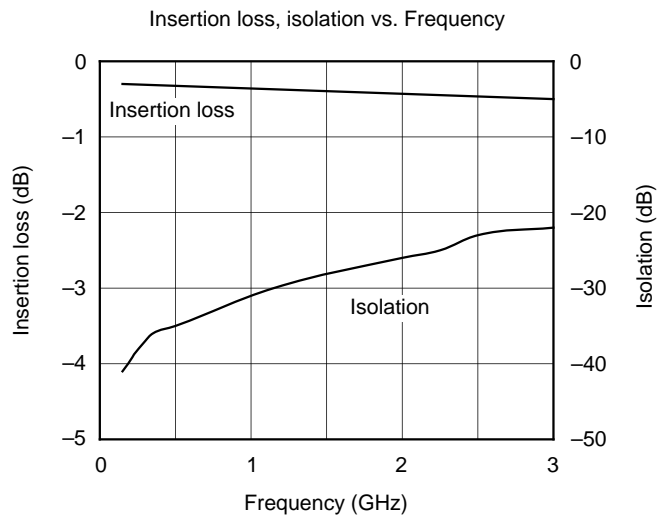
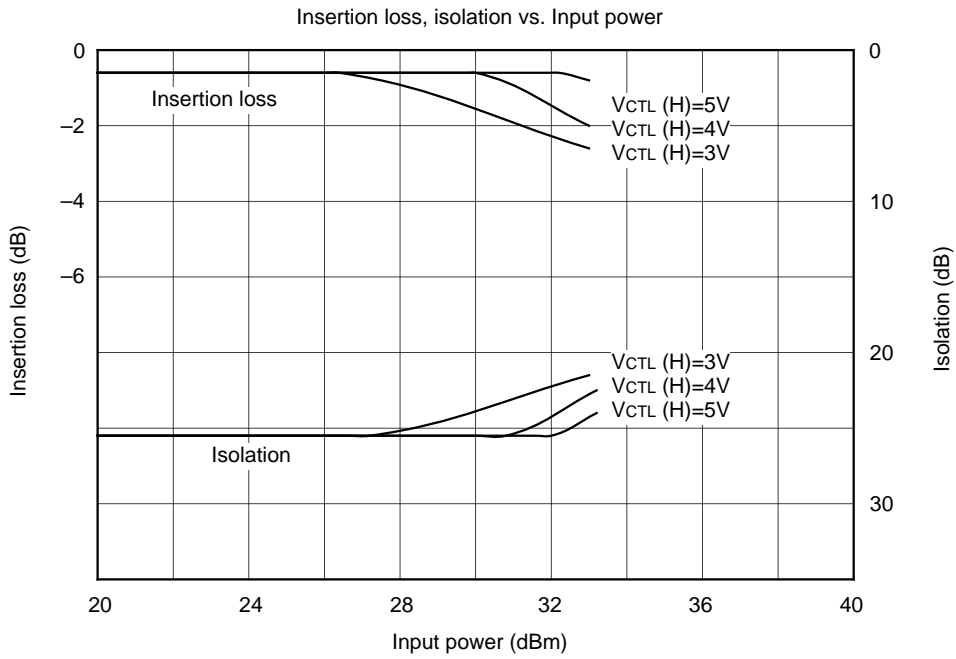
| VCTLA | VCTLB | |
|-------|-------|-----------------------------------|
| High | Low | Port1-Port2 ON Port1-Port3 OFF |
| Low | High | Port1-Port2 OFF Port1-Port3 ON |

Recommended Circuit



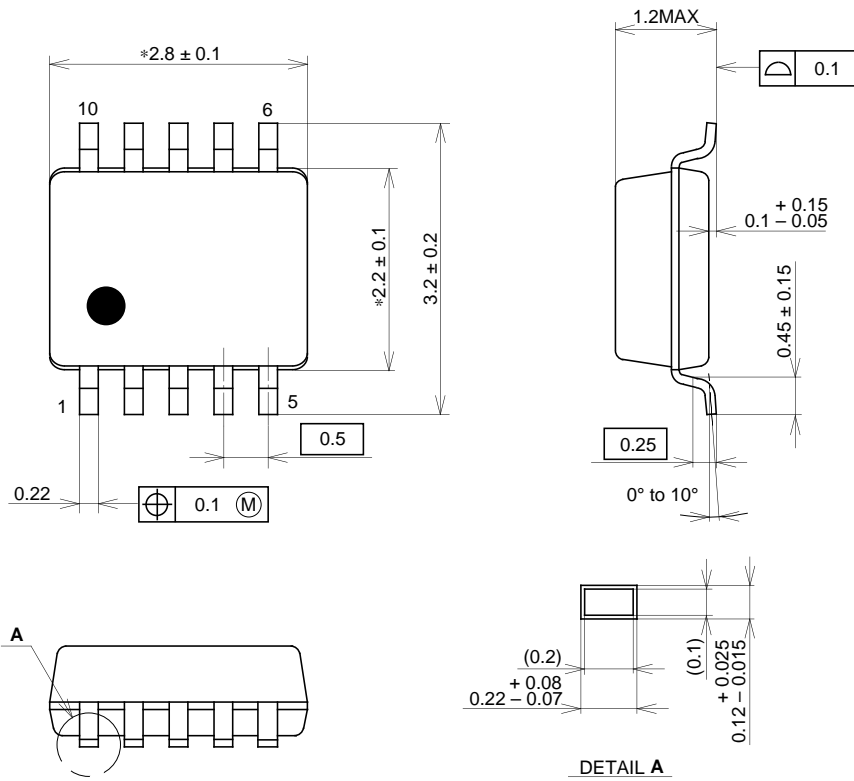
* RRF (200kΩ) is used to stabilized the electrical characteristics at high power signal input

Example of Representative Characteristics (Ta=25 °C)



Package Outline Unit : mm

10PIN TSSOP(PLASTIC)



NOTE: "*" Dimensions do not include mold protrusion.

PACKAGE STRUCTURE

| | |
|------------|---------------|
| SONY CODE | TSSOP-10P-L01 |
| EIAJ CODE | _____ |
| JEDEC CODE | _____ |

| | |
|------------------|----------------|
| PACKAGE MATERIAL | EPOXY RESIN |
| LEAD TREATMENT | SOLDER PLATING |
| LEAD MATERIAL | COPPER ALLOY |
| PACKAGE MASS | 0.02g |