

Description

The CXG1199UR is a SPDT (Single Pole Dual Throw) switch and suitable for middle power wireless communication systems, for example, cellular phones, Bluetooth and WLAN.
Low insertion loss is realized by the Sony JPHEMT process.
(Applications: Cellular phones, Bluetooth and WLAN)

Features

- ◆ Low insertion loss

Package

Small package: 12-pin UQFN (2.0mm × 2.0mm × 0.6mm (Max.))

Structure

GaAs JPHEMT MMIC

Absolute Maximum Ratings

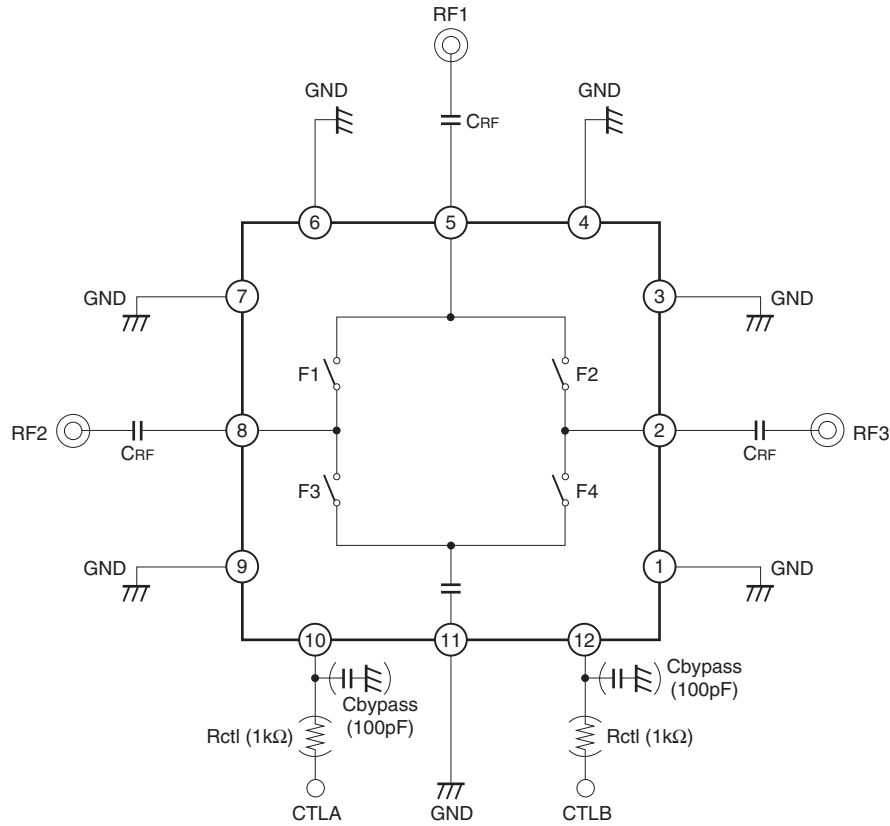
(Ta = 25°C)

| | | | |
|-------------------------|------|-------------|---------------------------|
| ◆ Control voltage | Vctl | 5 | V |
| ◆ Operating temperature | Topr | −35 to +85 | °C (for general use) |
| | | −40 to +85 | °C (for Bluetooth & WLAN) |
| ◆ Storage temperature | Tstg | −65 to +150 | °C |

This IC is ESD sensitive device. Special handling precautions are required.

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Block Diagram and Recommended Circuit



When using this IC, the following external components are needed:
 Rctl: This resistor is for improving ESD performance. 1kΩ is recommended.
 CRF: This capacitor is for RF decoupling and needed for all applications.
 Cbypass: This capacitor is for DC line filtering. 100pF is recommended.

Truth Table

| CTLA | CTLB | ON Path | F1 | F2 | F3 | F4 |
|------|------|-----------|-----|-----|-----|-----|
| L | H | RF1 – RF2 | ON | OFF | OFF | ON |
| H | L | RF1 – RF3 | OFF | ON | ON | OFF |

DC Bias Condition

(Ta = 25°C)

| Item | Min. | Typ. | Max. | Unit | Condition |
|------------|------|------|------|------|-------------|
| Vctl (H)*1 | 2.0 | 2.8 | 3.6 | V | Pin = 15dBm |
| Vctl (H)*2 | 1.65 | 1.8 | 1.95 | V | Pin = 5dBm |
| Vctl (L) | 0 | — | 0.4 | V | — |

*1 General use

*2 Bluetooth & WLAN



Electrical Characteristics

1. Electrical Characteristics for General Use

(Ta = 25°C)

| Item | Symbol | Path | Condition | Min. | Typ. | Max. | Unit |
|-----------------|--------|-----------|---------------|------|------|------|------|
| Insertion loss | IL | RF1 – RF2 | 0.5 to 1.0GHz | — | 0.20 | 0.30 | dB |
| | | | 1.0 to 2.0GHz | — | 0.25 | 0.35 | dB |
| | | | 2.0 to 2.5GHz | — | 0.35 | 0.45 | dB |
| | | RF1 – RF3 | 0.5 to 1.0GHz | — | 0.20 | 0.30 | dB |
| | | | 1.0 to 2.0GHz | — | 0.25 | 0.35 | dB |
| | | | 2.0 to 2.5GHz | — | 0.35 | 0.45 | dB |
| Isolation | ISO. | RF1 – RF2 | 0.5 to 1.0GHz | 25 | 32 | — | dB |
| | | | 1.0 to 2.0GHz | 25 | 31 | — | dB |
| | | | 2.0 to 2.5GHz | 20 | 27 | — | dB |
| | | RF1 – RF3 | 0.5 to 1.0GHz | 25 | 32 | — | dB |
| | | | 1.0 to 2.0GHz | 25 | 31 | — | dB |
| | | | 2.0 to 2.5GHz | 20 | 27 | — | dB |
| VSWR | VSWR | — | 0.5 to 1.0GHz | — | 1.2 | 1.5 | — |
| | | | 1.0 to 2.0GHz | — | 1.2 | 1.5 | — |
| | | | 2.0 to 2.5GHz | — | 1.2 | 1.5 | — |
| Control current | Ictl | — | Vctl = 2.8V | — | 2 | 6 | μA |

Common condition: Pin = 15dBm, Vctl (H) = 2.8V, Vctl (L) = 0V, All RF ports are 50Ω terminated.

2. Electrical Characteristics for Bluetooth & WLAN

(Ta = 25°C)

| Item | Symbol | Path | Condition | Min. | Typ. | Max. | Unit |
|-----------------|--------|-----------|---------------|------|------|------|------|
| Insertion loss | IL | RF1 – RF2 | 2.0 to 2.5GHz | — | 0.35 | 0.50 | dB |
| | | RF1 – RF3 | 2.0 to 2.5GHz | — | 0.35 | 0.50 | dB |
| Isolation | ISO. | RF1 – RF2 | 2.0 to 2.5GHz | 20 | 27 | — | dB |
| | | RF1 – RF3 | 2.0 to 2.5GHz | 20 | 27 | — | dB |
| VSWR | VSWR | — | 2.0 to 2.5GHz | — | 1.2 | 1.5 | — |
| Control current | Ictl | — | Vctl = 1.8V | — | 1 | 3 | μA |
| Switching speed | TSW | — | | — | 0.1 | 1 | μs |

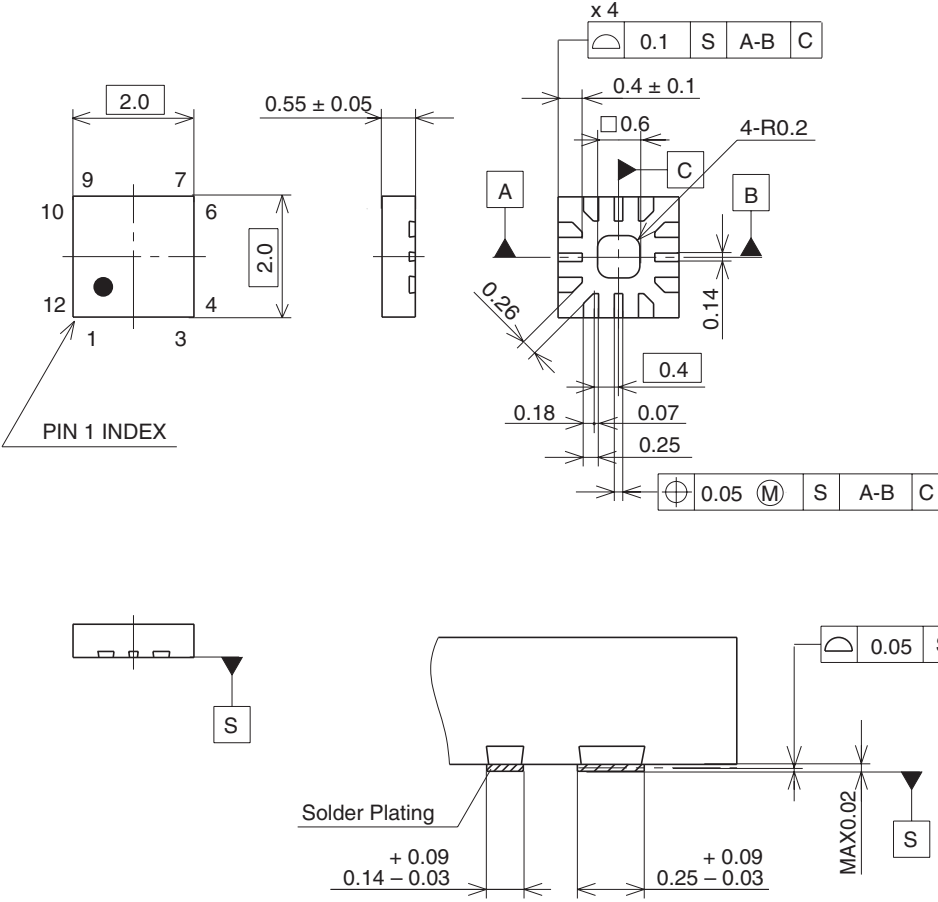
Common condition: Pin = 5dBm, Vctl (H) = 1.8V, Vctl (L) = 0V, All RF ports are 50Ω terminated.



Package Outline

(Unit: mm)

12PIN UQFN (PLASTIC)



TERMINAL SECTION

Note:Cutting burr of lead are 0.05mm MAX.

| | |
|------------|-------------|
| SONY CODE | UQFN-12P-01 |
| EIAJ CODE | _____ |
| JEDEC CODE | _____ |

PACKAGE STRUCTURE

| | |
|------------------|----------------|
| PACKAGE MATERIAL | EPOXY RESIN |
| LEAD TREATMENT | SOLDER PLATING |
| LEAD MATERIAL | COPPER ALLOY |
| PACKAGE MASS | 0.01g |

LEAD PLATING SPECIFICATIONS

| | |
|--------------------|-----------------|
| ITEM | SPEC. |
| LEAD MATERIAL | COPPER ALLOY |
| SOLDER COMPOSITION | Sn-Bi Bi:1-4wt% |
| PLATING THICKNESS | 5-18μm |