SONY

High Power SPDT Switch

CXG1189AXR

Description

The CXG1189AXR is a high power SPDT (Single Pole Doble Throw) switch MMIC used in wireless communication systems, for example, GSM handsets, GSM/UMTS dual mode handsets.
The Sony JPHEMT process is used for low insertion loss.
(Applications: Antenna switch for cellular handsets, GSM, GSM/UMTS dual mode)

Features

- ◆ Low insertion loss: 0.25dB@900MHz, 0.30dB@1.8GHz, 0.35dB@2.17GHz
- ◆ Low harmonics level: –35dBm (Max.)

Package

Small package size: 12-pin XQFN

Structure

GaAs JPHEMT MMIC

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

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Absolute Maximum Ratings

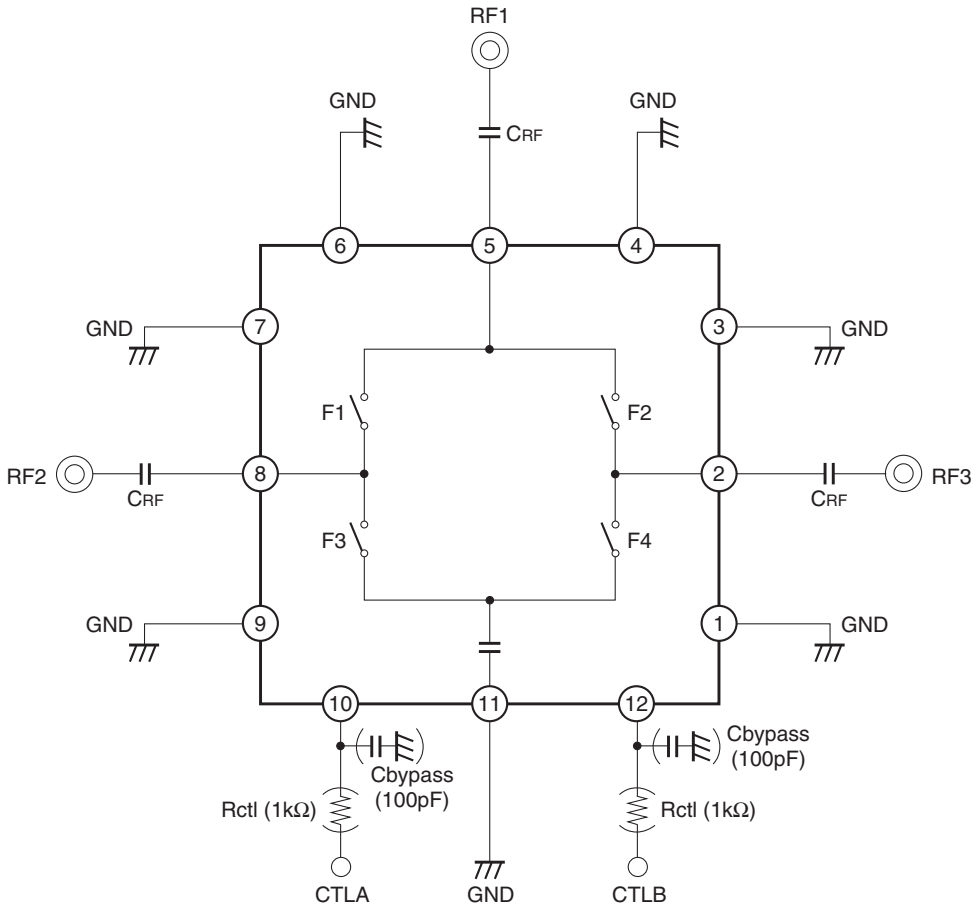
(Ta = 25℃)

◆ Control voltage	Vctl	5	V	
◆ Input power max. [824 to 915MHz]		36	dBm	[Duty cycle = 12.5 to 50%]
◆ Input power max. [1710 to 1910MHz]		34	dBm	[Duty cycle = 12.5 to 50%]
◆ Input power max. [1920 to 1980MHz]		32	dBm	
◆ Operating temperature	Topr	–35 to +85	℃	
◆ Storage temperature	Tstg	–65 to +150	℃	
◆ Maximum power dissipation	PD	400	mW	

・Copper-clad lamination of glass board (4 layers) : 30mm square, t = 0.8mm, FR-4.

Note) Use this product without exceeding the PD value specified in this specification.
If it is used with exceeding the PD value even for a moment, the heat generated by the operation may cause the degradation or breakdown of the product.

Block Diagram and Recommended Circuit



When using this IC, the following external components should be used:

Rctl: This resistor is used to improve ESD performance. 1kΩ is recommended

CRF: This capacitor is used for RF decoupling and must be used for all applications.

Cbypass: This capacitor is used for DC line filtering. 100pF is recommended.

Truth Table

CTLA	CTLB	ON State	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
Vctl (H)	2.6	2.8	3.6	V
Vctl (L)	0	—	0.4	V

Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Path	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	RF1 – RF2	824 to 960MHz		0.25	0.40	dB
			1710 to 1990MHz		0.30	0.45	dB
			1920 to 2170MHz		0.35	0.50	dB
		RF1 – RF3	824 to 960MHz		0.25	0.40	dB
			1710 to 1990MHz		0.30	0.45	dB
			1920 to 2170MHz		0.35	0.50	dB
Isolation	ISO.	RF1 – RF2	824 to 960MHz	25	32		dB
			1710 to 1990MHz	25	31		dB
			1920 to 2170MHz	25	30		dB
		RF1 – RF3	824 to 960MHz	25	32		dB
			1710 to 2170MHz	25	31		dB
			1920 to 2170MHz	25	30		dB
VSWR	VSWR		824 to 960MHz		1.2		—
			1710 to 2170MHz		1.2		—
			1920 to 2170MHz		1.2		—
Harmonics*1	2fo	RF1 – RF2 RF1 – RF3	824 to 915MHz Vctl = 2.8/0V		–45	–35	dBm
	3fo				–42	–35	dBm
	2fo	RF1 – RF2 RF1 – RF3	1710 to 1910MHz Vctl = 2.8/0V		–42	–35	dBm
	3fo				–40	–35	dBm
	2fo	RF1 – RF2 RF1 – RF3	1920 to 1980MHz Vctl = 2.8/0V		–46	–35	dBm
	3fo				–46	–35	dBm
P0.2dB compression input power	P0.2dB	RF1 – RF2 RF1 – RF3	824 to 915MHz Vctl = 2.8/0V	34.5			dBm
		RF1 – RF2 RF1 – RF3	1710 to 1910MHz Vctl = 2.8/0V	32.5			dBm
		RF1 – RF2 RF1 – RF3	1920 to 1980MHz Vctl = 2.8/0V	31			dBm
Control current	Ictl		Vctl = 2.8V		2	6	μA

Electrical characteristics are measured with all RF ports terminated in 50Ω.

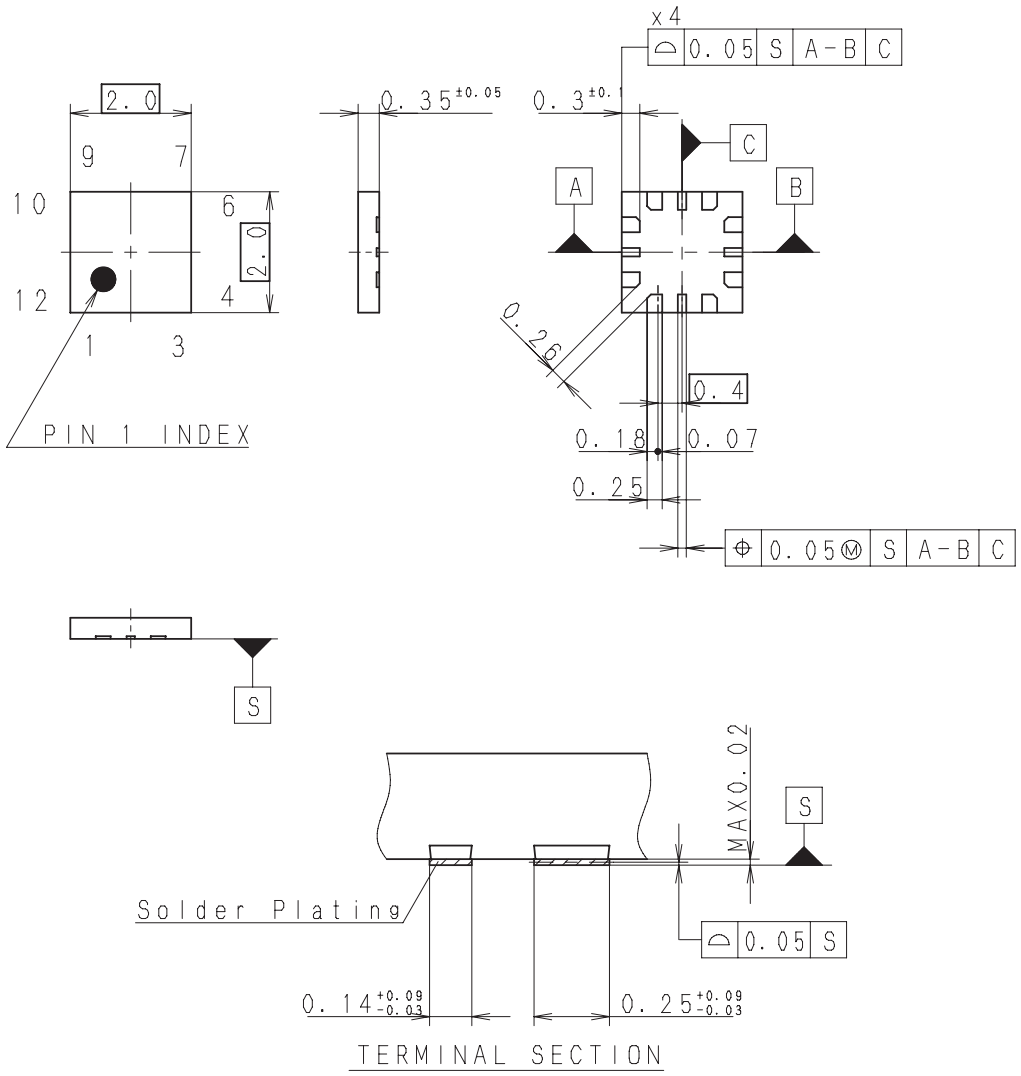
*1 Harmonics measured with Tx inputs harmonically matched. The use of harmonic matching is recommended to ensure optimum performance.

1. Power incident on Tx, Pin = 34dBm, 824 to 915MHz, Vctl (H) = 2.8V, Vctl (L) = 0V
2. Power incident on Tx, Pin = 32dBm, 1710 to 1910MHz, Vctl (H) = 2.8V, Vctl (L) = 0V
3. Power incident on Tx, Pin = 29dBm, 1920 to 1980MHz, Vctl (H) = 2.8V, Vctl (L) = 0V

Package Outline

(Unit: mm)

12PIN XQFN (PLASTIC)



Note:Cutting burr of lead are 0.05mm MAX.

SONY CODE	XQFN-12P-02
JEITA 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