SONY

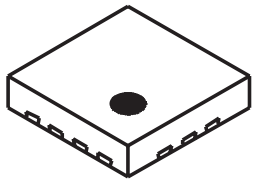
CXG1194UR

SP4T Antenna Switch for GSM

Description

The CXG1194UR is a high power SP4T antenna switch for GSM applications. The low insertion loss on transmit means increased talk time as the Tx power amplifier can be operated at a lower output level. On-chip logic reduces component count and simplifies the PCB layout by allowing direct connection of the switch to digital baseband control lines with the CMOS logic levels. This switch is SP4T, one antenna can be routed to either of the 2Tx or 2Rx ports. It requires 2 CMOS control lines. The Sony GaAs JPHEMT MMIC process is used for low insertion loss.

14 pin UQFN (Plastic)



Features

- Insertion loss (Tx): 0.35dB (Typ.) at 34dBm (GSM900)
  0.45dB (Typ.) at 32dBm (GSM1800)
- Small package size: 14-pin UQFN (2.5mm × 2.5mm × 0.6mm (Max.))

Applications

- GSM dual-band handsets
- GSM/UMTS dual-mode handsets

Structure

GaAs JPHEMT MMIC

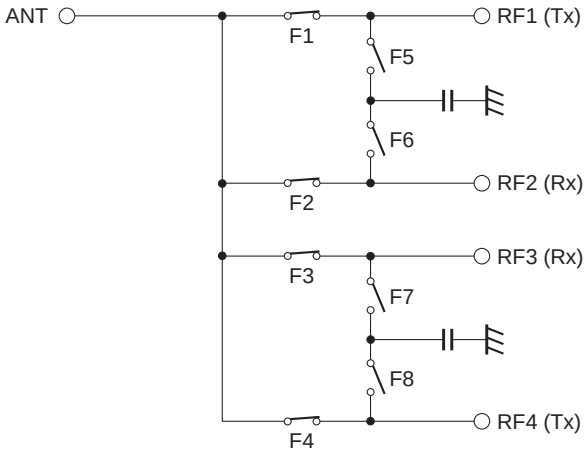
Absolute Maximum Ratings

• Bias voltage	V_{DD}	7V (Ta = 25°C)	
• Control voltage	Vctl	5V (Ta = 25°C)	
• Input power max. (ANT, RF1, RF4)		37dBm (Ta = 25°C)	
• Input power max. (RF2, RF3)		15dBm (Ta = 25°C)	
• Operating temperature		–35 to +85	°C
• Storage temperature		–65 to +150	°C

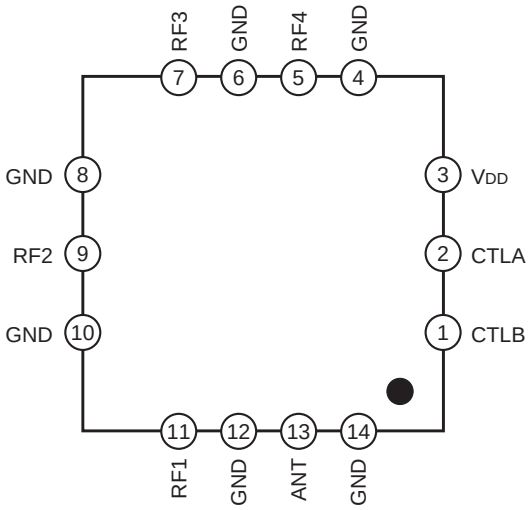
GaAs MMICs are ESD sensitive devices. Special handling precautions are required.
The actual ESD test data will be available later.

E04712-PS

Block Diagram



Pin Configuration



Truth Table

Path	CTLA	CTLB	F1	F2	F3	F4	F5	F6	F7	F8
ANT – RF1	L	L	ON	OFF	OFF	OFF	OFF	ON	ON	ON
ANT – RF2	H	L	OFF	ON	OFF	OFF	ON	OFF	ON	ON
ANT – RF3	L	H	OFF	OFF	ON	OFF	ON	ON	OFF	ON
ANT – RF4	H	H	OFF	OFF	OFF	ON	ON	ON	ON	OFF

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Port	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	ANT – RF1	824 to 960MHz		0.35	0.50	dB
			1710 to 1990MHz		0.45	0.65	dB
		ANT – RF2	824 to 960MHz		0.45	0.60	dB
			1710 to 1990MHz		0.55	0.70	dB
		ANT – RF3	824 to 960MHz		0.45	0.60	dB
			1710 to 1990MHz		0.55	0.70	dB
		ANT – RF4	824 to 960MHz		0.35	0.50	dB
			1710 to 1990MHz		0.45	0.65	dB
Isolation	ISO.	ANT – RF1	824 to 960MHz	25	30		dB
			1710 to 1990MHz	22	26		dB
		ANT – RF2	824 to 960MHz	30	35		dB
			1710 to 1990MHz	25	30		dB
		ANT – RF3	824 to 960MHz	30	35		dB
			1710 to 1990MHz	25	30		dB
		ANT – RF4	824 to 960MHz	30	35		dB
			1710 to 1990MHz	25	30		dB
VSWR	VSWR		824 to 960MHz		1.2		—
			1710 to 1990MHz		1.2		—
Harmonics*	2fo	ANT – RF1	*1		–33	–28	dBm
	3fo				–34	–28	dBm
	2fo		*2		–35	–30	dBm
	3fo				–37	–33	dBm
	2fo	ANT – RF4	*1		–34	–30	dBm
	3fo				–35	–30	dBm
	2fo		*2		–35	–30	dBm
	3fo				–38	–34	dBm
P_{1dB} compression input power	P_{1dB}	ANT – RF1, 4	*1	36			dBm
		ANT – RF1, 4	*2	34			dBm
Control current	Ictl		Vctl = 2.8V		15	40	µA
Supply current	I_{DD}		V_{DD} = 2.8V		0.12	0.23	mA

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

* Harmonics measured with Tx inputs harmonically matched. It is recommended that the harmonic matching is used to ensure optimum performance.

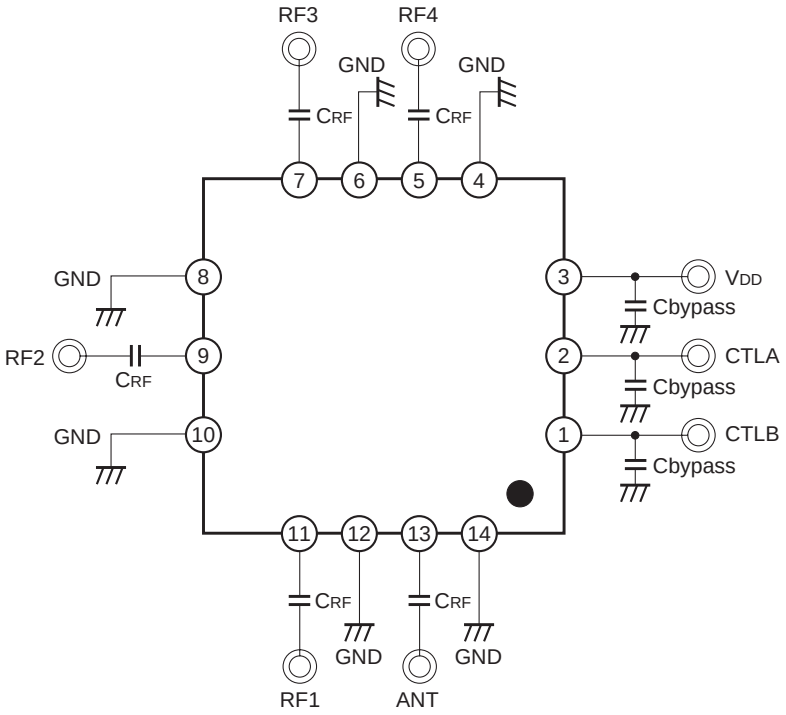
*1 Pin = 34dBm, 824 to 915MHz, V_{DD} = 2.8V

*2 Pin = 32dBm, 1710 to 1910MHz, V_{DD} = 2.8V

DC Bias Condition (Ta = 25°C)

Item	Min.	Typ.	Max.	Unit
Vctl (H)	2.0	2.8	3.6	V
Vctl (L)	0	—	0.4	V
V_{DD}	2.6	2.8	3.6	V

Recommended Circuit



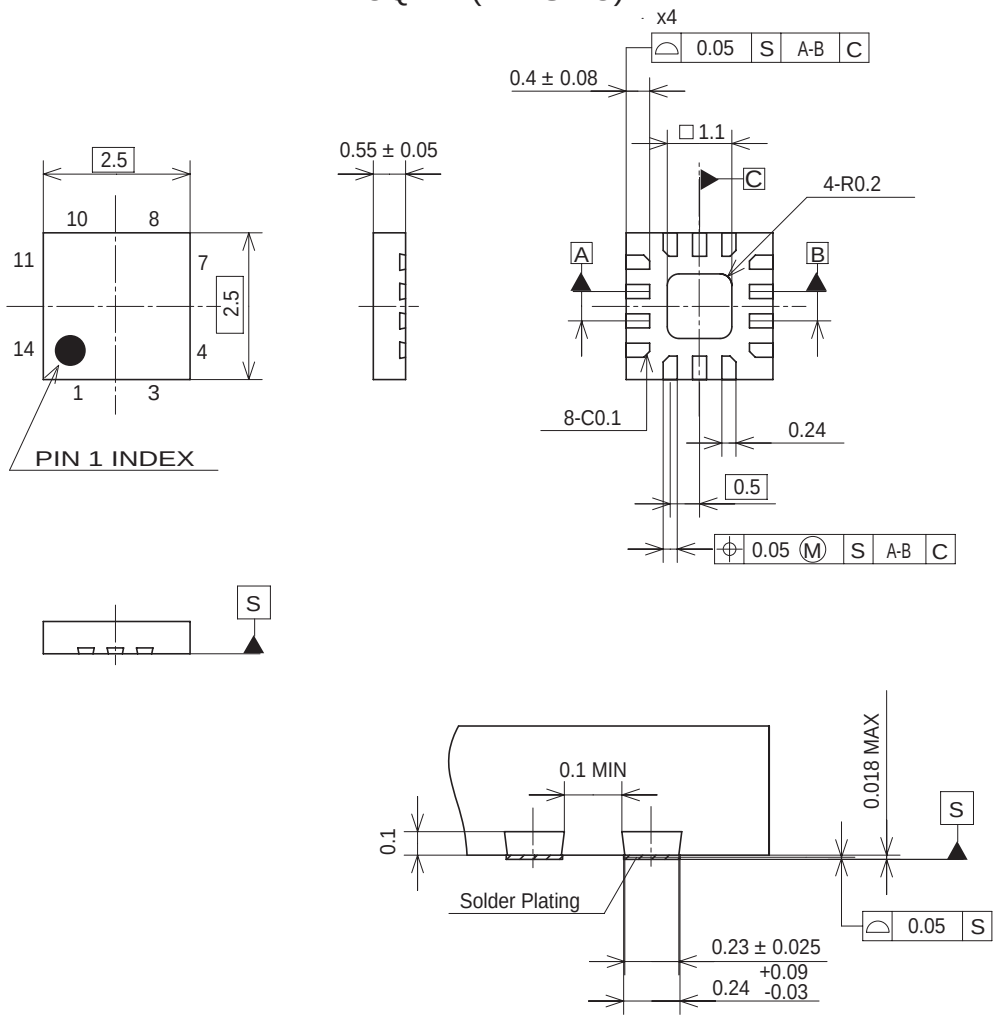
When using this IC, the following external components should be used:

C_{RF}: This capacitor is used for RF decoupling and must be used all applications.

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

Package Outline Unit: mm

14PIN UQFN (PLASTIC)



TERMINAL SECTION

Note:Cutting burr of lead are 0.05mm MAX.

SONY CODE	UQFN-14P-01
EIAJ CODE	————
JEDEC CODE	————

PACKAGE STRUCTURE

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

LEAD PLATING SPECIFICATIONS

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