

High Power SP3T Switch with Logic Control

Description

This IC can be used in wireless communication systems, for example, W-CDMA handsets.

The IC has on-chip logic for operation with 2 CMOS control inputs.

The Sony JPHEMT process is used for low insertion loss and on-chip logic circuit.

Features

- Low insertion loss: 0.3dB@1.95GHz, 0.35dB@2.14GHz
- 2 CMOS compatible control line
- Small package size: 12-pin UQFN

Applications

Antenna switch for cellular handsets
W-CDMA

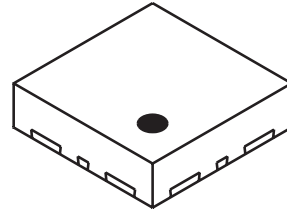
Structure

GaAs JPHEMT MMIC

Absolute Maximum Ratings (Ta = 25°C)

- | | | | |
|-------------------------|------------------|-------------|----|
| • Bias voltage | V _{DD} | 7 | V |
| • Control voltage | V _{ctl} | 5 | V |
| • Operation temperature | T _{opr} | -35 to +85 | °C |
| • Storage temperature | T _{stg} | -65 to +150 | °C |

12 pin UQFN (Plastic)

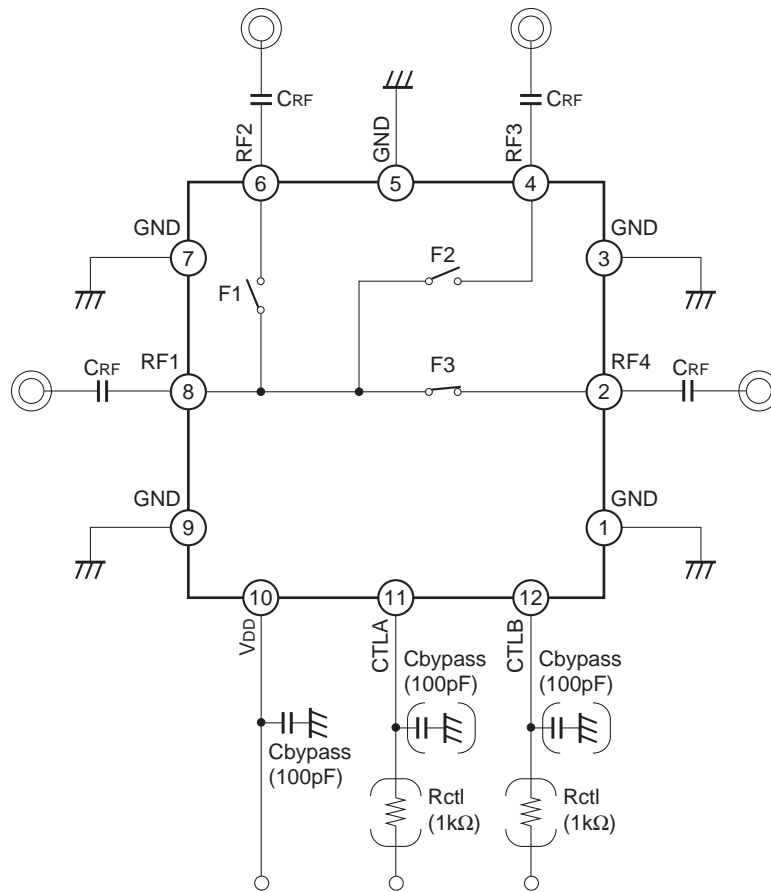


GaAs MMIC's are ESD sensitive devices. Special handling precautions are required.

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Block Diagram and Recommended Circuit



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

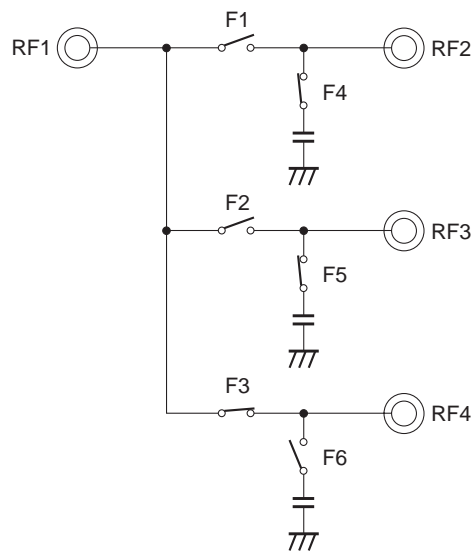
- Rctl: This resistor is used to improve ESD performance. 1kΩ is recommended.
- CRF: This capacitor is used for RF De-coupling and must be used all application.
- Cbypass: This capacitor is used for DC line filtering. 100pF is recommended.

Truth Table

State	CTLA	CTLB	ON State	F1	F2	F3	F4	F5	F6
1	H	H	RF1 – RF2	ON	OFF	OFF	OFF	ON	ON
2	L	H	RF1 – RF3	OFF	ON	OFF	ON	OFF	ON
3	H/L	L	RF1 – RF4	OFF	OFF	ON	ON	ON	OFF

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Block Diagram



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DC Bias Condition

(Ta = 25°C)

Item	Min.	Typ.	Max.	Unit
Vctl (H)	2.0	2.85	3.6	V
Vctl (L)	0	—	0.4	V
VDD	2.5	2.85	3.6	V

Electrical Characteristics

(Ta = 25°C)

Item	Symbol	State	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	1	RF1 – RF2, 1920 to 1980MHz		0.30	0.55	dB
			2110 to 2170MHz		0.35	0.60	dB
		2	RF1 – RF3, 1920 to 1980MHz		0.30	0.55	dB
			2110 to 2170MHz		0.35	0.60	dB
		3	RF1 – RF4, 1920 to 1980MHz		0.30	0.55	dB
			2110 to 2170MHz		0.35	0.60	dB
Isolation	ISO.	2, 3	RF1 – RF2, 1920 to 2170MHz	20	30		dB
		1, 3	RF1 – RF3, 1920 to 2170MHz	20	30		dB
		1, 2	RF1 – RF4, 1920 to 2170MHz	20	30		dB
VSWR	VSWR		50Ω		1.2	1.5	—
Switching speed	TSW				5	10	μs
ACLR	ACLR1	±5MHz	*1		–60	–50	dBc
	ACLR2	±10MHz	*1		–65	–55	dBc
Harmonics	2fo		*1		–70	–55	dBc
	3fo		*1		–70	–55	dBc
Bias current	IDD		VDD = 2.85V		0.07	0.15	mA
Control current	Ictl		Vctl (H) = 2.85V		14	25	μA

*1 Pin = 25dBm, 0/2.85V control, VDD = 2.85V, 1920 to 1980MHz

[查询"CXG1174UR"供应商](#)**Pin Description**

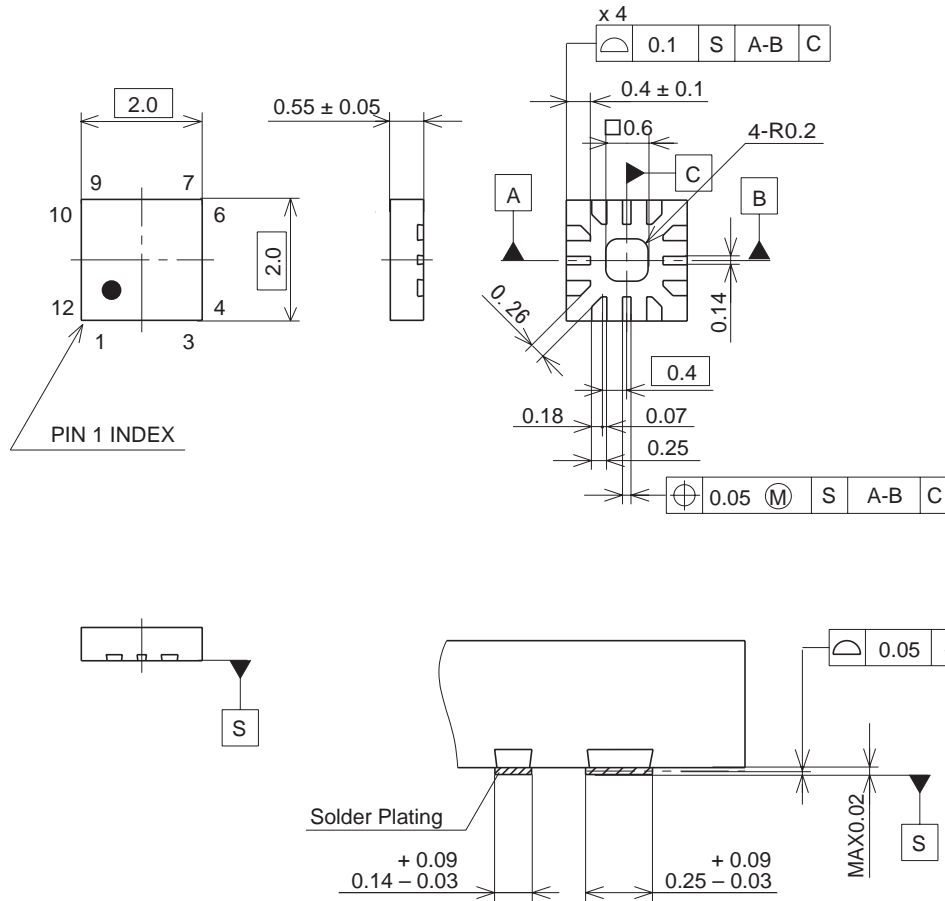
Pin No.	Symbol	Description
2	RF4	RF input/output. Connect capacitor (recommended value: 100pF) in use
4	RF3	RF input/output. Connect capacitor (recommended value: 100pF) in use
6	RF2	RF input/output. Connect capacitor (recommended value: 100pF) in use
8	RF1	RF input/output. Connect capacitor (recommended value: 100pF) in use
10	V _{DD}	DC power supply
11	CTLA	Logic control
12	CTLB	Logic control
1, 3, 5, 7, 9	GND	GND

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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