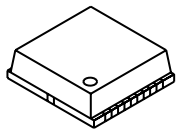
SONY

CXG1144EN

High Power DPDT Switch with Logic Control

10 pin VSON (Plastic)



Description

The CXG1144EN is a high power DPDT switch MMIC. This IC can be used in wireless communication systems, for example, CDMA handsets with GPS. The CXG1144EN can be operated by one CMOS control line. The Sony's J-FET process is used for low insertion loss and on-chip logic circuit.

Features

- Low insertion loss: 0.30dB @900MHz,
  0.45dB @1900MHz
- High linearity: IIP3 (Typ.) = 65dBm
- 1 CMOS compatible control line
- Small package size: 10-pin VSON

Applications

- Dual-band cellular handsets
- CDMA with GPS, dual-band CDMA

Structure

GaAs J-FET MMIC

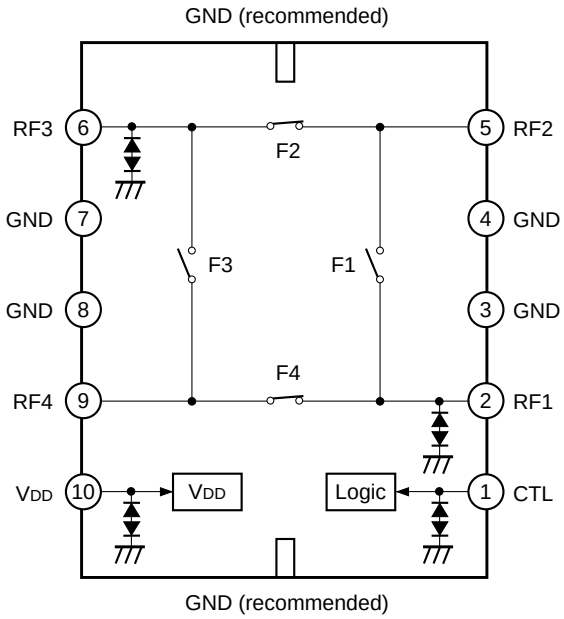
Absolute Maximum Ratings (Ta = 25°C)

• Bias voltage	V_{DD}	7	V
• Control voltage	Vctl	5	V
• Operating temperature	Topr	–35 to +85	°C
• Storage temperature	Tstg	–65 to +150	°C

GaAs MMICs are ESD sensitive devices. Special handling precautions are required.

E02748-PS

Block Diagram and Terminal Arrangement Figure



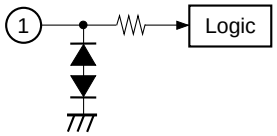
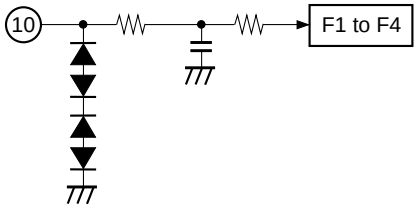
Truth Table

CTL	ON state	OFF state	F1	F2	F3	F4
L	RF1 – RF2, RF3 – RF4	RF2 – RF3, RF4 – RF1	ON	OFF	ON	OFF
H	RF2 – RF3, RF4 – RF1	RF1 – RF2, RF3 – RF4	OFF	ON	OFF	ON

Pin Description 1

Pin No.	Symbol	Description
1	CTL	Control signal input
2	RF1	RF signal input
3	GND	GND
4	GND	GND
5	RF2	RF signal output
6	RF3	RF signal input
7	GND	GND
8	GND	GND
9	RF4	RF signal output
10	V_{DD}	Power supply input

Pin Description 2

Pin No.	Symbol	Equivalent circuit
1	CTL	
10	V_{DD}	

DC Bias Condition (Ta = 25°C)

Item	Min.	Typ.	Max.	Unit
Vctl (H)	2.0	3.0	3.6	V
Vctl (L)	0	—	0.4	V
V_{DD}	2.7	3.0	3.6	V

Electrical Characteristics (Ta = 25°C, V_{DD} = 3.0V)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	900MHz		0.30	0.55	dB
		1.9GHz		0.45	0.70	dB
Isolation	ISO.	900MHz	18	21		dB
		1.9GHz	14	16		dB
VSWR	VSWR	50Ω		1.2		—
Harmonics	2fo	*1		–75	–60	dBc
		*3		–75	–60	dBc
	3fo	*1		–75	–60	dBc
		*3		–75	–60	dBc
Input IP3	IIP3	*2	55	65		dBm
		*4	55	65		dBm
1dB compression input power	P1dB	V_{DD} = 2.8V	32	35		dBm
Switching speed	TSW			1	5	µs
Bias current	I_{DD}	V_{DD} = 3.0V		55	200	µA
Control current	Ictl	Vctl (H) = 3V		40	100	µA

Condition

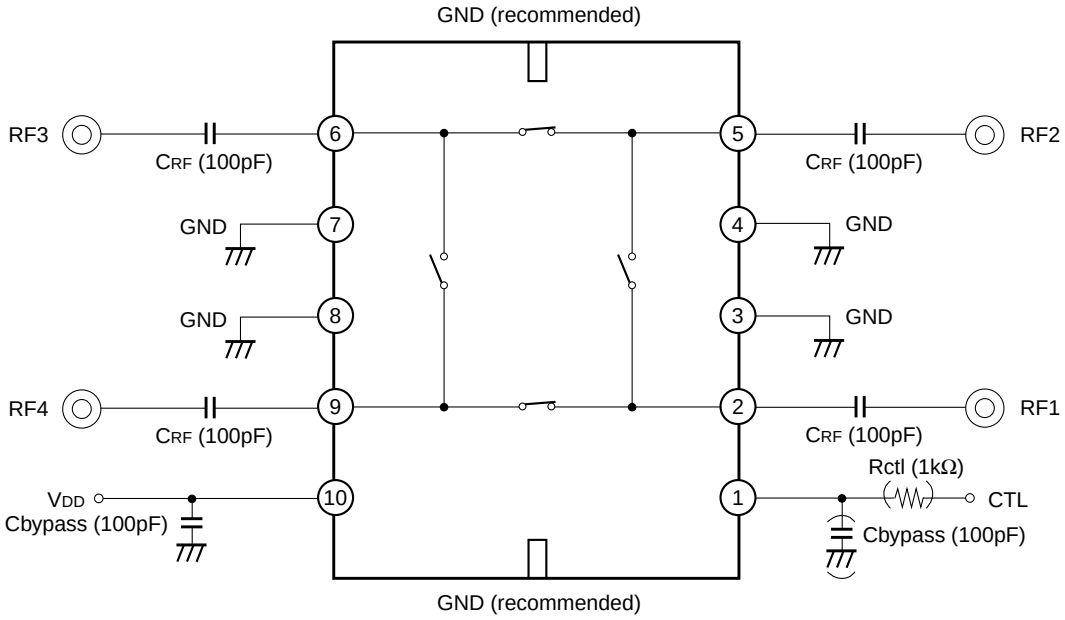
*1 Pin = 25dBm, 0/3V control, V_{DD} = 3.0V, 900MHz

*2 Pin = 25dBm (900MHz) +25dBm (901MHz), 0/3V control, V_{DD} = 3.0V

*3 Pin = 25dBm, 0/3V control, V_{DD} = 3.0V, 1.9GHz

*4 Pin = 25dBm (1.9GHz) +25dBm (1.901GHz), 0/3V control, V_{DD} = 3.0V

Electrical Characteristics Measurement Circuit



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

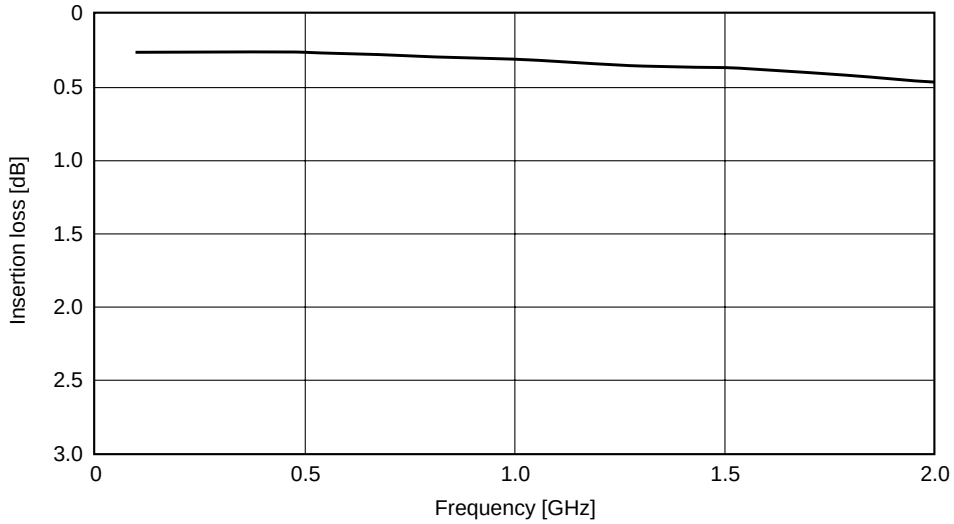
Rctl: This resistor is used to improve ESD performance. 1kΩ is recommended.

C_{RF}: This capacitor is used for RF de-coupling and must be used for all applications. 100pF is recommended.

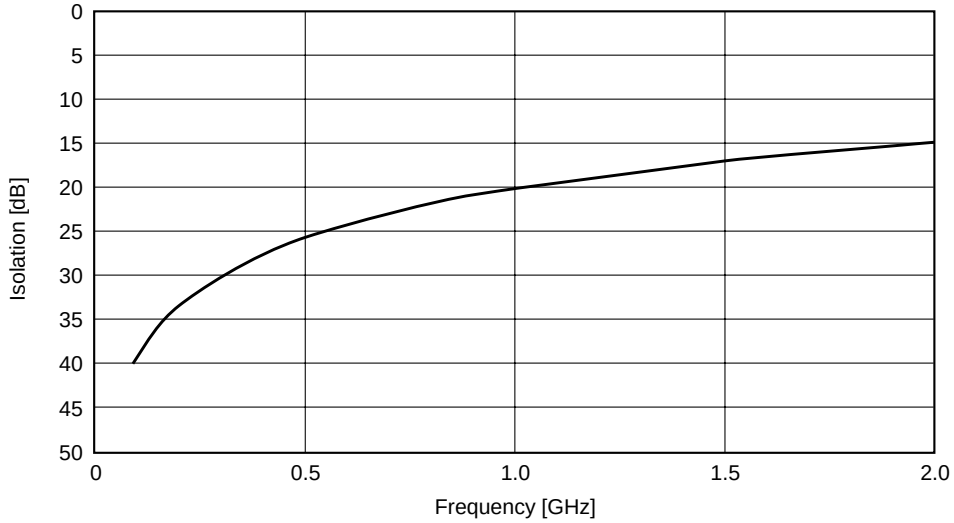
Cbypass: This capacitor is used for DC line filtering. 100pF is recommended.

Typical Characteristics

Frequency vs. Insertion loss

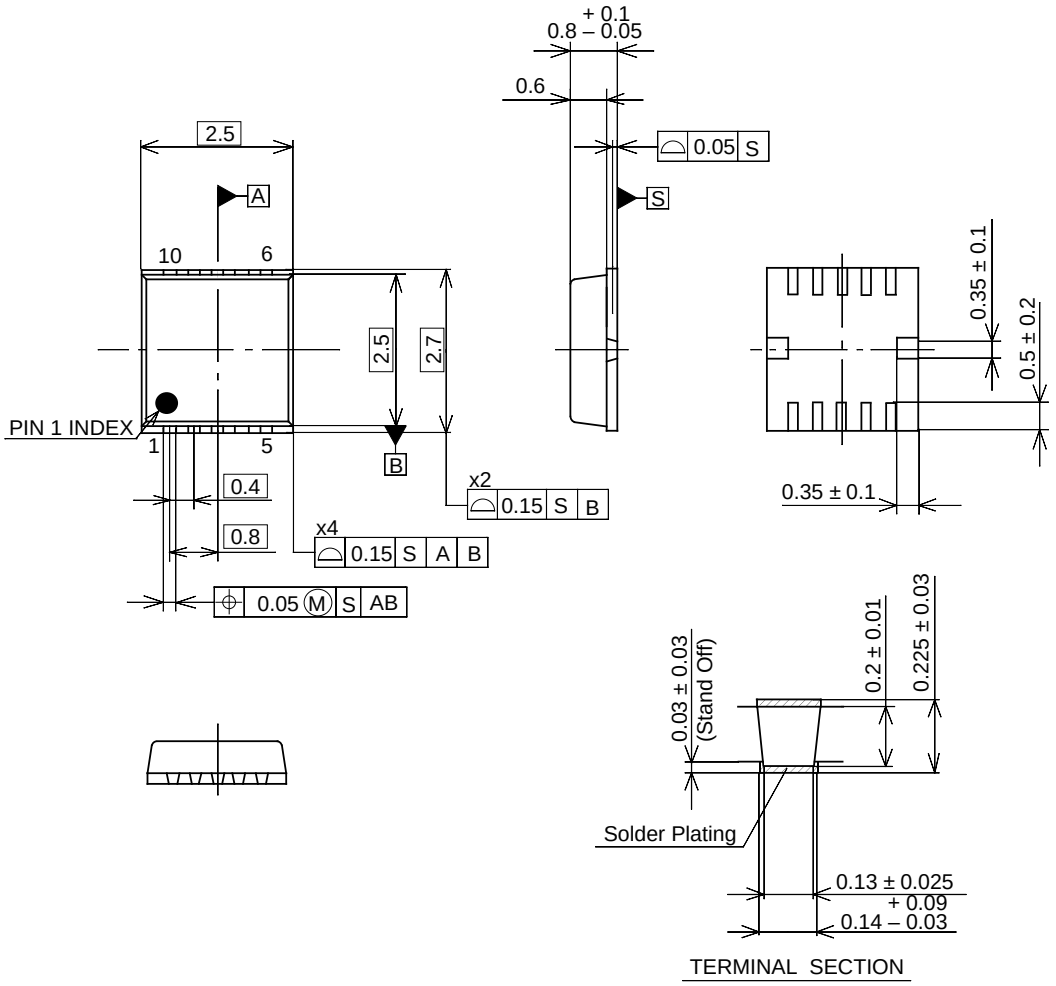


Frequency vs. Isolation



Package Outline Unit: mm

10PIN VSON(PLASTIC)



NOTE: 1) The dimensions of the terminal section apply to the ranges of 0.1mm and 0.25mm from the end of a terminal.

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.013g

SONY CODE	VSON-10P-01
EIAJ CODE	————
JEDEC CODE	————

LEAD SPECIFICATIONS

ITEM	SPEC.
LEAD MATERIAL	COPPER ALLOY
LEAD TREATMENT	Sn-Bi 2.5%
LEAD TREATMENT THICKNESS	5-18µm