SONY

CXG1060N

## High-Frequency SPDT Antenna Switch

Description

The CXG1060N is a high power antenna switch MMIC to connect Tx/Rx to one of 4 antennas. This IC is designed using the Sony's GaAs J-FET process and operates at a single positive power supply.

Features

- Single positive power supply operation
- Low insertion loss   0.4 dB (Typ.)   at 1.0 GHz
                                         (Tx Port)
- Isolation   21 dB (Typ.)   at 1.0 GHz
                               (Tx Port)
- High power switching
  P1 dB (Typ.)   32 dBm   at 1.5 GHz
                            V_{CTL} (H)=3.0 V
                  35 dBm   at 1.5 GHz
                            V_{CTL} (H)=4.0 V

16 pin SSOP (Plastic)

Absolute Maximum Ratings (Ta=25 °C)

- Supply voltage V_{DD} 8   V
- Control voltage   Vctl (H)–Vctl (L)   8   V
- Operating temperature Topr   –35 to +85   °C
- Storage temperature   Tstg   –65 to +150   °C
- Input Power   Pin (RF2, RF3, RF4)   37   dBm
   Pin (RF1, RF5, RF6)   30   dBm
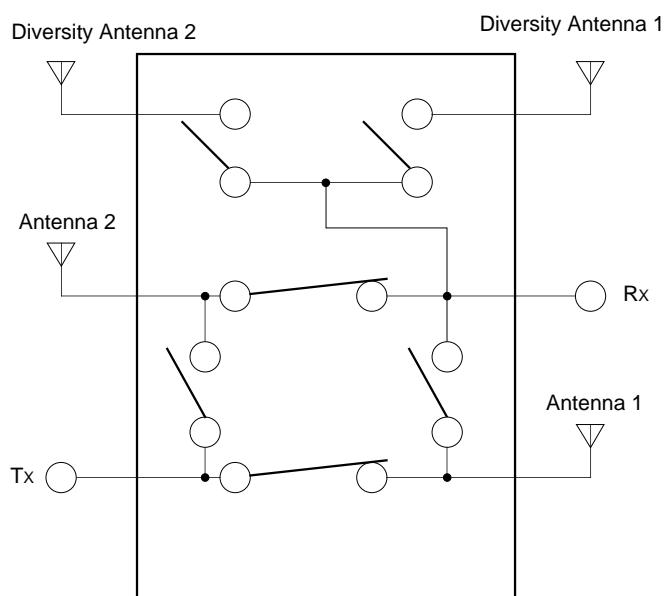
Applications

Antenna switch for digital cellular telephones
(PDC 1.5 GHz)

Structure
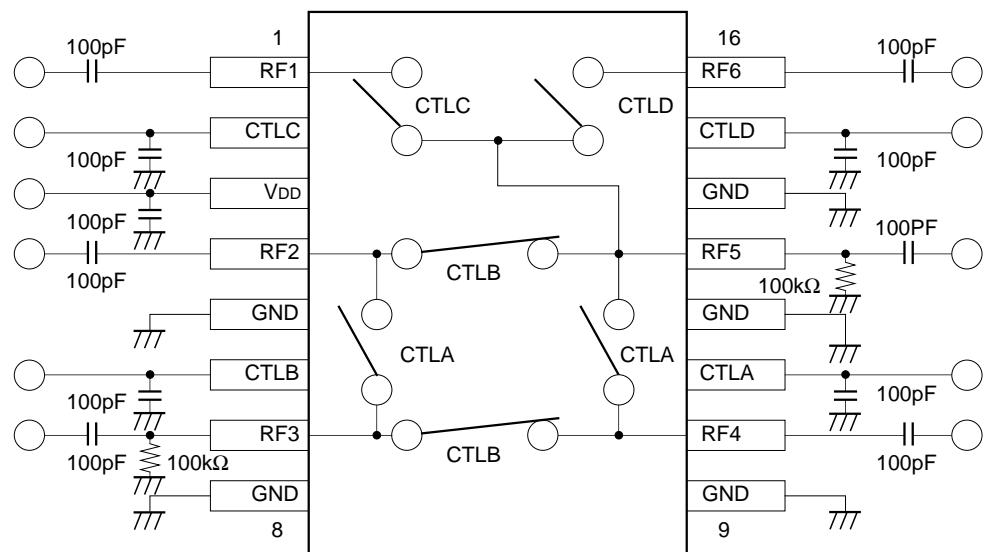
GaAs J-FET MMIC

Function Block Diagram

E96Z30-TE

Pin Configuration and Recommended Circuit

Logic Table

ON-Port	CTLA	CTLB	CTLC	CTLD
RF3–RF2	H	L	H or L	H or L
RF3–RF4	L	H	H or L	H or L
RF5–RF2	L	H	L	L
RF5–RF4	H	L	L	L
RF5–RF6	L	L	L	H
RF5–RF1	L	L	H	L

Recommended Operating Conditions
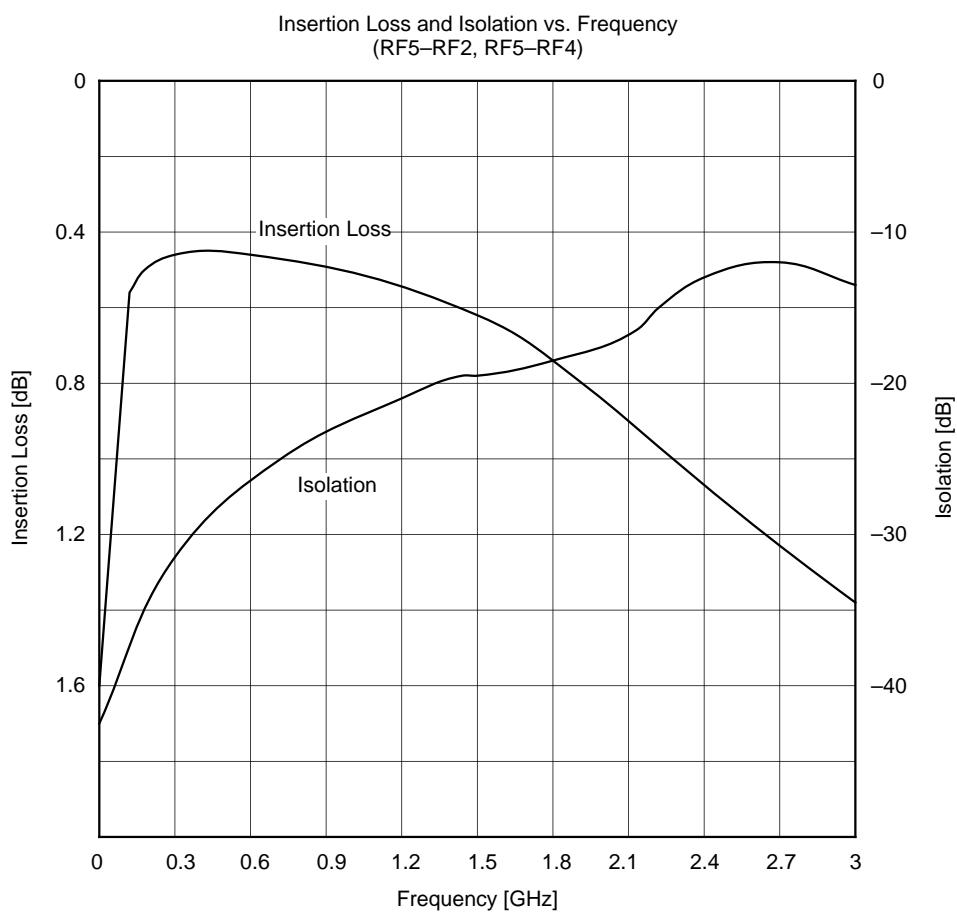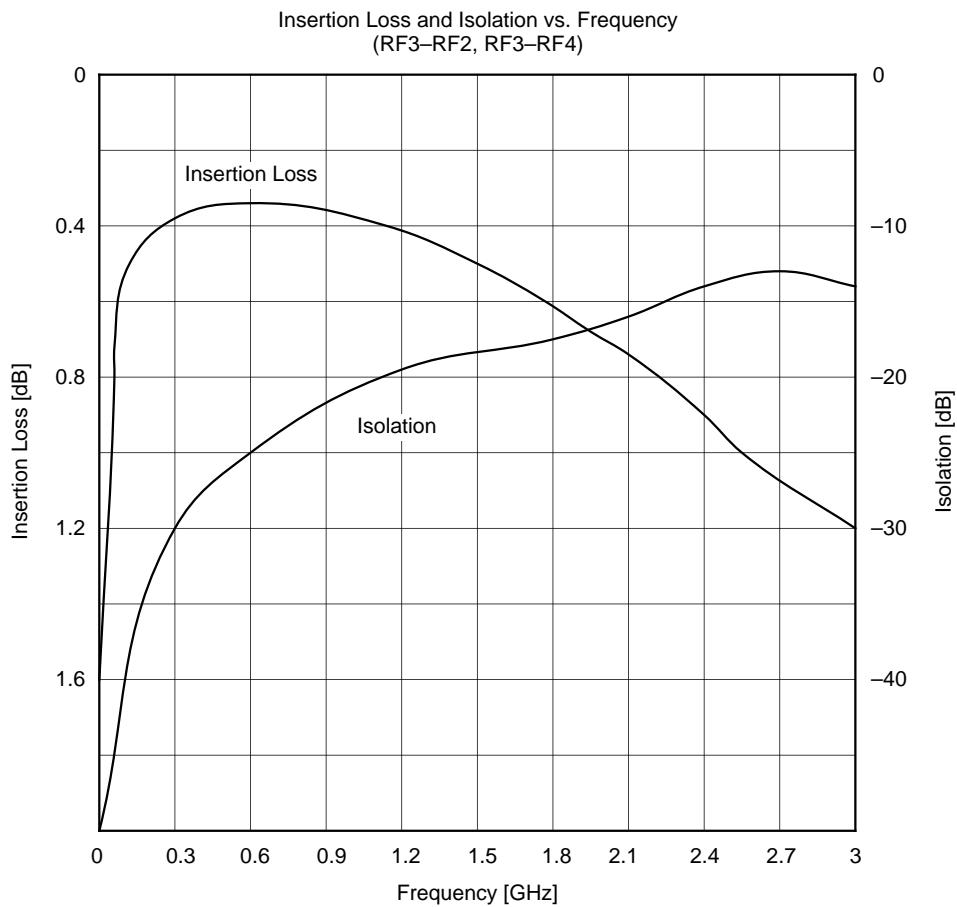
Item	Symbol	Min.	Typ.	Max.
Control Voltage (high)	Vctl (H)			6
Control Voltage (low)	Vctl (L)	−6		
Difference of Control Voltage	Vctl (H)–Vctl (L)			6
Supply voltage	V_{DD}	Vctl (H)–0.6	Vctl (H)–0.5	Vctl (H)–0.4
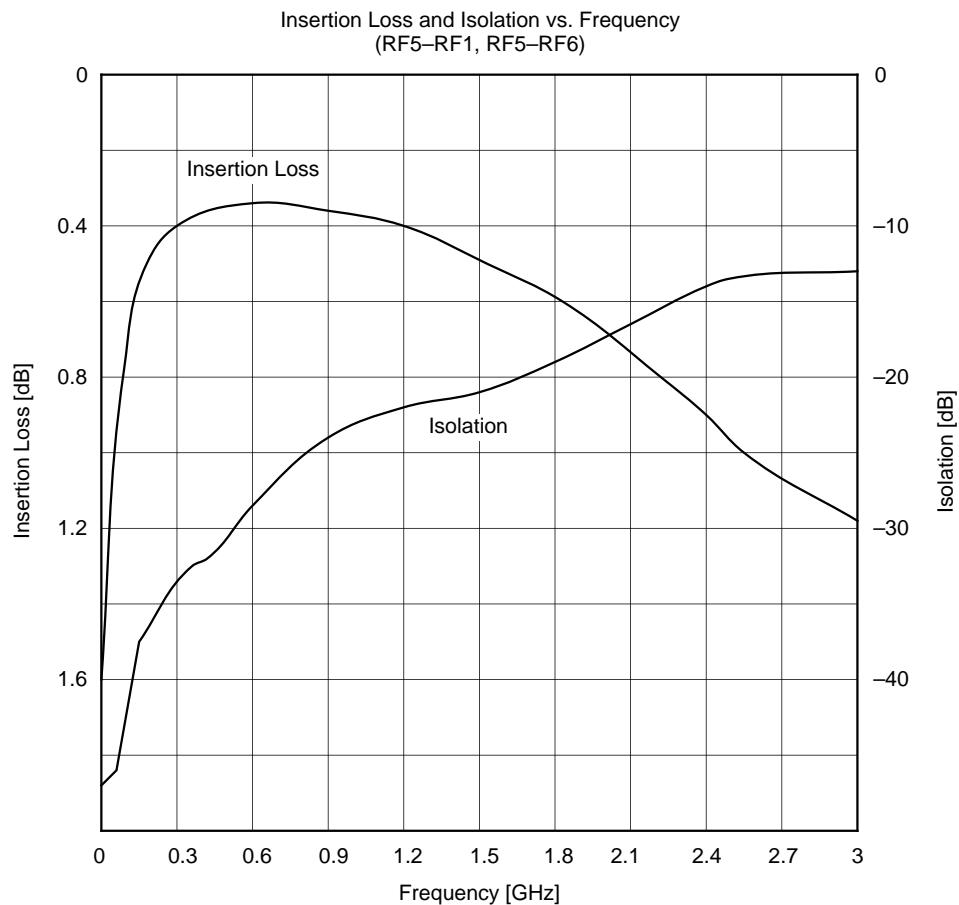
Electrical Characteristics
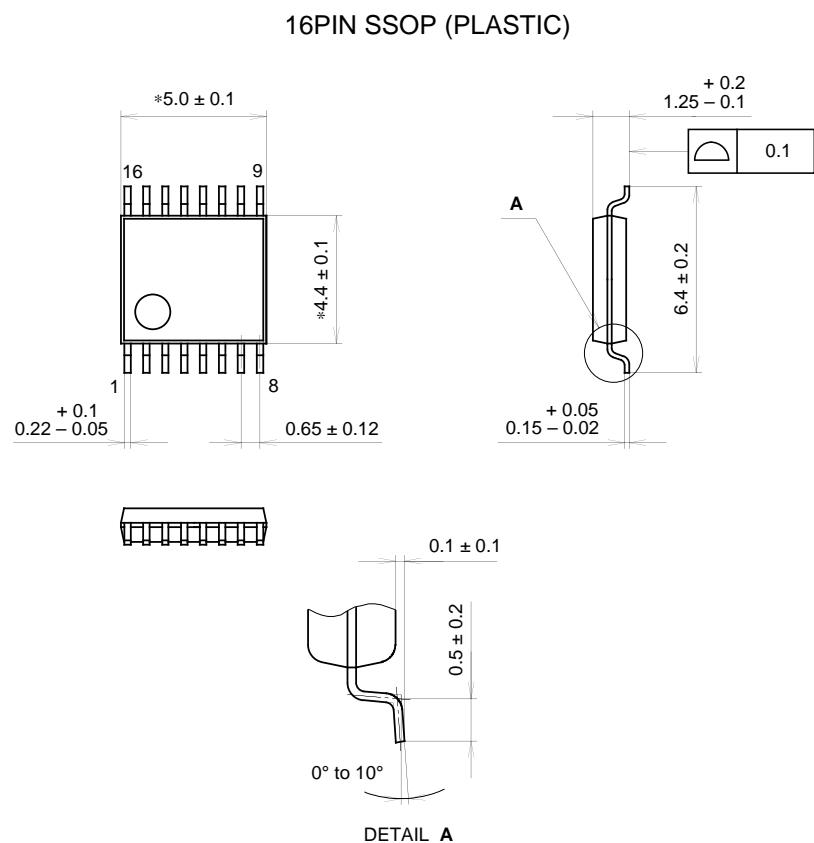
(Ta=25 °C)

Item	Symbol	Signal Passes	Test Condition	Frequency	Min.	Typ.	Max.	Unit
Insertion Loss	IL.	RF3–RF2 RF3–RF4	*2 Pin=30 dBm	1 GHz		0.4	0.65	dB
				1.5 GHz		0.5	0.8	
				2 GHz		0.7	1.0	
		RF5–RF2	*2 Pin=20 dBm	1 GHz		0.5	0.8	
				1.5 GHz		0.65	0.95	
				2 GHz		0.9	1.2	
		RF5–RF4	*2 Pin=20 dBm	1 GHz		0.6	0.9	
				1.5 GHz		0.75	1.05	
				2 GHz		1.2	1.5	
		RF5–RF1 RF5–RF6	*2 Pin=20 dBm	1 GHz		0.4	0.7	
				1.5 GHz		0.5	0.8	
				2 GHz		0.7	1.0	
Isolation	ISO.	RF3–RF2 RF3–RF4 RF5–RF2 RF5–RF4	*2 Pin=30 dBm	1 GHz	18	21		dB
				1.5 GHz	15	18		
				2 GHz	12	15		
		RF5–RF1 RF5–RF6	*2 Pin=20 dBm	1 GHz	21	24		
				1.5 GHz	17	20		
				2 GHz	15	18		
VSWR	VS.	RF3–RF2 RF3–RF4	*2 Pin=30 dBm	0.1 to 2 GHz		1.3	1.5	
		RF5–RF2 RF5–RF4 RF5–RF1 RF5–RF6	*2 Pin=20 dBm	0.1 to 2 GHz		1.3	1.5	
1 dB Compression Power	P1 dB	RF3–RF2 RF3–RF4	*3	1.5 GHz	30	32		dBm
			*2	1.5 GHz	33	35		
			*1	1.5 GHz	35	37		
		RF5–RF2 RF5–RF4 RF5–RF1 RF5–RF6	*3	1.5 GHz	22	24		
			*2	1.5 GHz	25	27		
			*1	1.5 GHz	27	29		
Switching Time	tSW			0.1 to 2 GHz			200	nsec
Control Current	Ictl							µA
			*2				100	
Supply Current	IDD							µA
			*2				100	

*1 : Vctl (H)=5 V, Vctl (L)=0 V, VDD=4.5 V   *3 : Vctl (H)=3 V, Vctl (L)=0 V, VDD=2.5 V

*2 : Vctl (H)=4 V, Vctl (L)=0 V, VDD=3.5 V

Insertion Loss and Isolation vs. Frequency
(RF3–RF2, RF3–RF4)

Insertion Loss

Isolation

Insertion Loss [dB]

Isolation [dB]

Frequency [GHz]

Insertion Loss and Isolation vs. Frequency
(RF5–RF2, RF5–RF4)

Insertion Loss

Isolation

Insertion Loss [dB]

Isolation [dB]

Frequency [GHz]

Insertion Loss and Isolation vs. Frequency
(RF5–RF1, RF5–RF6)

Package Outline   Unit : mm

16PIN SSOP (PLASTIC)

∗5.0 ± 0.1

16   9

∗4.4 ± 0.1

1   8

+ 0.1
0.22 − 0.05   0.65 ± 0.12

+ 0.2
1.25 − 0.1

0.1

A

6.4 ± 0.2

+ 0.05
0.15 − 0.02

0.1 ± 0.1

0.5 ± 0.2

0° to 10°

DETAIL **A**

NOTE: Dimension "∗" does not include mold protrusion.

SONY CODE	SSOP-16P-L01
EIAJ CODE	SSOP016-P-0044
JEDEC CODE	——————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER / PALLADIUM PLATING
LEAD MATERIAL	COPPER / 42 ALLOY
PACKAGE WEIGHT	0.1g