SONY

CXG1090TN

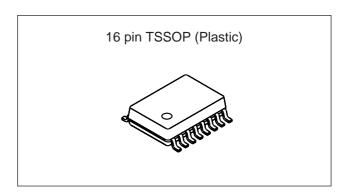
High Power 2 × 4 Antenna Switch MMIC with Integrated Control Logic

Description

The CXG1090TN is a high power antenna switch MMIC. The CXG1090TN is suited to connect Tx/Rx to one of 4 antennas in cellular handset such as PDC.

The CXG1090TN has the integrated control logic and can be operated with CMOS input.

This IC is designed using the Sony's GaAs J-FET process which enable the CXG1090TN to be operated with low voltage.



Features

• Low insertion loss: 0.30dB (Typ.)@900MHz, 0.40dB (Typ.)@1.5GHz

Small package: TSSOP-16pin
High power handling: PldB: 37dBm
CMOS compatible input control
Low bias voltage: VDD = 3.0V

Applications

 2×4 antenna switch for digital cellular telephones such as PDC handsets.

Structure

GaAs J-FET MMIC

Absolute Maximum Ratings

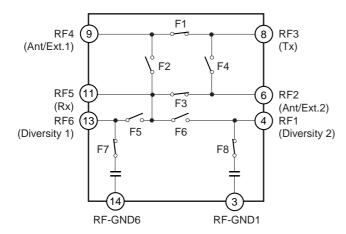
Bias voltage
 Control voltage
 VDD
 V @Ta = 25°C
 V @Ta = 25°C
 V @Ta = 25°C

Operating temperature Topr -35 to +85 °C
 Storage temperature Tstg -65 to +150 °C

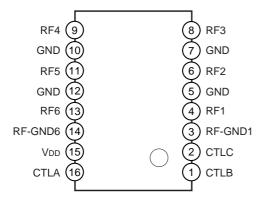
GaAs MMICs are ESD sensitive devices. Special handling precautions are required.

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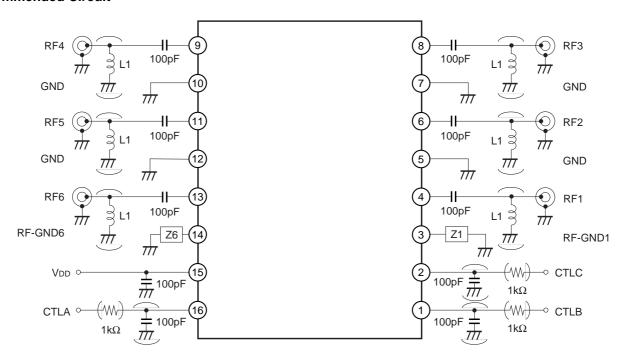
Block Diagram



Package Outline/Pin Configuration



Recommended Circuit



Truth Table

Control			ON	F1	F2	F3	F4	C E	Ee	F7	F8
CTLA	CTLB	CTLC	ON	ГІ	Г	гэ	F4	F5	F6	Г/	ГО
Н	L	L	RF3 → RF2	OFF	ON	OFF	ON	OFF	OFF	ON	ON
Н	L	Н	RF3 → RF4	ON	OFF	ON	OFF	OFF	OFF	ON	ON
L	L	L	RF5 → RF2	ON	OFF	ON	OFF	OFF	OFF	ON	ON
L	L	Н	RF5 → RF4	OFF	ON	OFF	ON	OFF	OFF	ON	ON
L	Н	L	RF5 → RF6	OFF	OFF	OFF	OFF	ON	OFF	OFF	ON
L	Н	Н	RF5 → RF1	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF

DC Bias Condition

(Ta = 25°C)

Parameter	Min.	Тур.	Max.	Unit
Vctl (H) A to C	2.4		3.6	V
Vctl (L) A to C	0		0.8	V
VDD	2.8		3.2	V

Electrical Characteristics

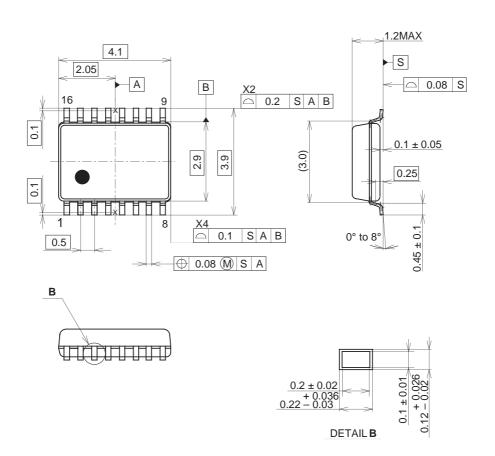
(Vctl (L) = 0V, Vctl (H) = 3V, Ta = 25°C)

Parameter		Frequency	Condition	Min.	Typ	Max.	Unit
Faiailletei	DE0 DE0			IVIII I.	Тур.		
	RF3-RF2	889 to 960MHz	,		0.32	0.55	dB
	RF3-RF4	889 to 960MHz	Pin = 29.5dBm, VDD = 2.8 to 3.0V		0.30	0.55	dB
Insertion loss	RF5-RF2	810 to 885MHz	Pin = 7dBm, V _{DD} = 2.8 to 3.0V		0.55	0.85	dB
miscrition loss	RF5-RF4	810 to 885MHz	Pin = 7dBm, VDD = 2.8 to 3.0V		0.55	0.85	dB
	RF5-RF1	810 to 885MHz	Pin = 7dBm, VDD = 2.8 to 3.0V		0.5	0.8	dB
	RF5-RF6	810 to 885MHz	Pin = 7dBm, VDD = 2.8 to 3.0V		0.5	0.8	dB
	RF3-RF2	889 to 960MHz	Pin = 29.5dBm, V _{DD} = 2.8 to 3.0V	17	19		dB
	RF3-RF4	889 to 960MHz	Pin = 29.5dBm, VDD = 2.8 to 3.0V	17	21		dB
Isolation	RF5-RF2	810 to 885MHz	Pin = 7dBm, V _{DD} = 2.8 to 3.0V	17	21		dB
Isolation	RF5-RF4	810 to 885MHz	Pin = 7dBm, V _{DD} = 2.8 to 3.0V	17	19		dB
	RF5-RF1	810 to 885MHz	Pin = 7dBm, VDD = 2.8 to 3.0V	27	34		dB
	RF5-RF6	810 to 885MHz	Pin = 7dBm, VDD = 2.8 to 3.0V	20	25		dB
VSWR	Each ON Port	810 to 960MHz				1.4	
ACP (±50kHz)	RF3-RF2	889 to 960MHz	Pin = 29.5 dBm, V _{DD} = 3.0 V*1		-67	-57	dBc
ACP (±30KHZ)	RF3-RF4	669 to 960ivinz	Pin = 29.5dBm, Vdd = 2.8V*1		-67	-55	dBc
ACP (±100kHz)	RF3-RF2	889 to 960MHz	Pin = 29.5dBm, Vdd = 3.0V*1		-75	-65	dBc
ACF (±100KHZ)	RF3-RF4	869 to 960IVITI2	Pin = 29.5dBm, Vdd = 2.8V*1		-75	-62	dBc
2nd harmonics	RF3-RF2	889 to 960MHz	Pin = 29.5dBm, Vdd = 3.0V*1		-67	-60	dBc
211d Hairilonics	RF3-RF4	889 to 900ivii 12	Pin = 29.5 dBm, V _{DD} = 2.8 V*1		-67	-57	dBc
3nd harmonics	RF3-RF2	889 to 960MHz	Pin = 29.5dBm, Vdd = 3.0V*1		-67	-60	dBc
Silu Hairilonics	RF3-RF4	009 10 9001017	Pin = 29.5dBm, Vdd = 2.8V*1		-67	-57	dBc
Control current					85	150	μΑ
Bias current			VDD = 3.0V		0.45	1	mA
Dias current			VDD = 2.8V		0.4	0.9	mA
Switching speed					1.0	5.0	μs

^{*1} Input Signal: ACP (\pm 50kHz) < -65dBc, APC (\pm 100kHz) < -75dBc, 2nd harmonics < -65dBc, 3rd harmonics < -65dBc

Package Outline Unit: mm

16PIN TSSOP(PLASTIC)



PACKAGE STRUCTURE

SONY CODE	TSSOP-16P-L01
EIAJ CODE	
JEDEC CODE	

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.03g