

High Power 2 × 4 Antenna Switch MMIC

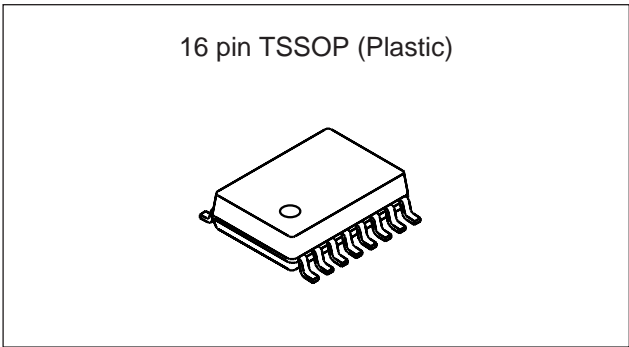
Description

The CXG1063TN is a high power antenna switch MMIC. The CXG1063TN is suited to connect Tx/Rx to one of 4 antennas in cellular handset such as PDC.

This IC is designed using the Sony's GaAs J-FET process which enable the CXG1063TN to be operated with low voltage.

Features

- Low Control voltage
- Low Insertion Loss: 0.4dB (Typ.) @900MHz, 0.5dB (Typ.) @1.5GHz
- Small Package: TSSOP-16pin
- High Power Handling: PldB: 36dBm @V_{DD} = V_{ctl} (H) = 4V



Absolute Maximum Ratings (Ta = 25°C)

- Control voltage V_{ctl} 7 V
- Operating temperature Topr -35 to +85 °C
- Storage temperature Tstg -65 to +150 °C

Operating Condition (Ta = 25°C)

Control voltage V_{ctl} (H) – V_{ctl} (L) = 2.5 to 6V

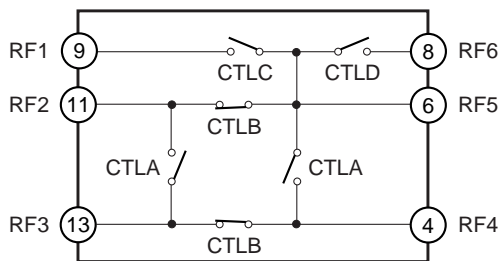
Application

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

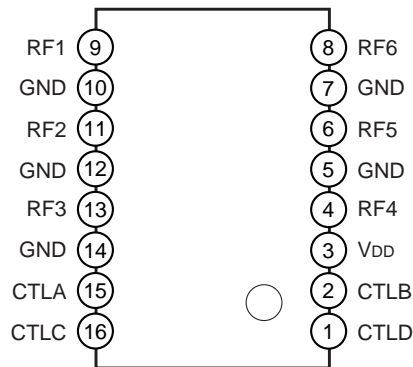
Structure

GaAs J-FET MMIC

Block Diagram



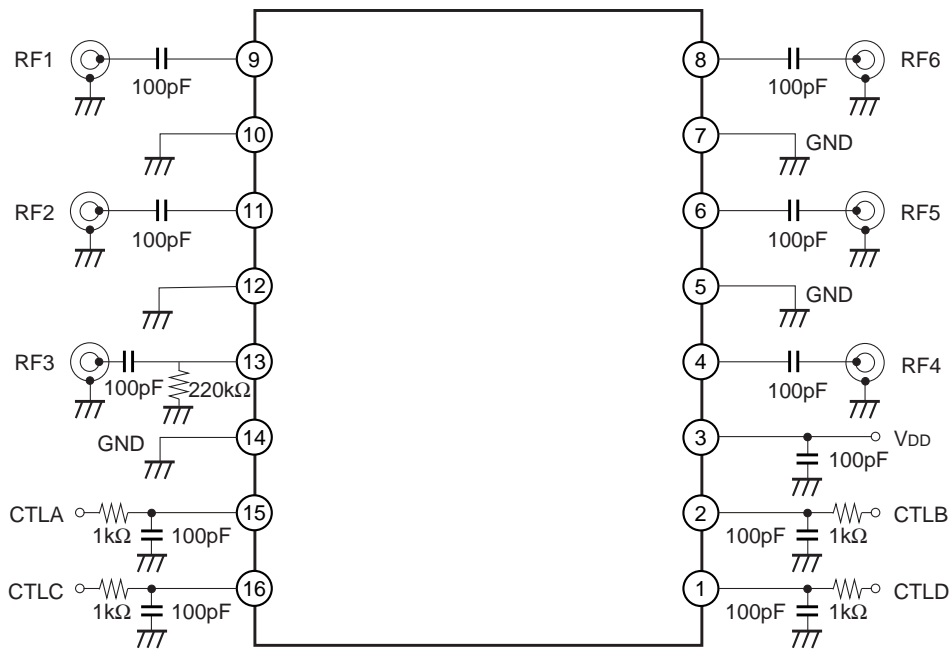
Pin Configuration



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

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Recommended Circuit



Electrical Characteristics

(Ta = 25°C)

Item	Frequency	Condition	Min.	Typ.	Max.	Unit	
Insertion loss	RF3-RF2 RF3-RF4	889MHz to 960MHz	Pin = 30dBm *1, *2		0.40	0.65	dB
	RF5-RF2 RF5-RF4	810MHz to 885MHz	Pin = 10dBm *3		0.55	0.80	dB
	RF5-RF1 RF5-RF6		Pin = 10dBm *3		0.50	0.75	dB
Isolation	RF3-RF2 RF3-RF4	889MHz to 960MHz	Pin = 30dBm *1, *2	18	21		dB
	RF5-RF2 RF5-RF4	810MHz to 885MHz	Pin = 10dBm *3	18	21		dB
	RF5-RF1 RF5-RF6		Pin = 10dBm *3	21	25		dB
VSWR		810MHz to 960MHz			1.3		
ACP (± 50 kHz)	RF3-RF2 RF3-RF4	889MHz to 960MHz	Pin = 30dBm *1, *2, *4		-65	-60	dBc
ACP (± 100 kHz)	RF3-RF2 RF3-RF4	889MHz to 960MHz	Pin = 30dBm *1, *2, *4		-70	-65	dBc
2nd, 3rd harmonics	RF3-RF2 RF3-RF4	889MHz to 960MHz	Pin = 30dBm *1, *2, *4		-65	-60	dBc
Control current Ictl (H)			*1		20	60	μ A
			*2		15	50	μ A
			*3		15	50	μ A
Bias current I _{DD}			*1		40	90	μ A
			*2		25	70	μ A
			*3		25	70	μ A
Switching speed				200		ns	

*1 Vctl (L) = 0V, Vctl (H) = 4V, V_{DD} = 4V*2 Vctl (L) = -2.5V, Vctl (H) = 3V, V_{DD} = 3V*3 Vctl (L) = 0V, Vctl (H) = 3V, V_{DD} = 3V*4 Input signal: ACP (± 50 kHz) < -65dBc, ACP (± 100 kHz) < -75dBc,
2nd harmonics < -65dBc, 3rd harmonics < -65dBc

Electrical Characteristics

(Ta = 25°C)

Item		Frequency	Condition	Min.	Typ.	Max.	Unit
Insertion loss	RF3-RF2 RF3-RF4	1429MHz to 1453MHz	Pin = 30dBm *1, *2		0.50	0.75	dB
	RF5-RF2 RF5-RF4	1477MHz to 1501MHz	Pin = 10dBm *3		0.65	0.90	dB
	RF5-RF1 RF5-RF6		Pin = 10dBm *3		0.60	0.8	dB
Isolation	RF3-RF2 RF3-RF4	1429MHz to 1453MHz	Pin = 30dBm *1, *2	15	18		dB
	RF5-RF2 RF5-RF4	1477MHz to 1501MHz	Pin = 10dBm *3	15	18		dB
	RF5-RF1 RF5-RF6		Pin = 10dBm *3	17	21		dB
VSWR		1429MHz to 1501MHz				1.3	
ACP (±50kHz)	RF3-RF2 RF3-RF4	1429MHz to 1453MHz	Pin = 30dBm *1, *2, *4		-65	-60	dBc
ACP (±100kHz)	RF3-RF2 RF3-RF4	1429MHz to 1453MHz	Pin = 30dBm *1, *2, *4		-70	-65	dBc
2nd, 3rd harmonics	RF3-RF2 RF3-RF4	1429MHz to 1453MHz	Pin = 30dBm *1, *2, *4		-65	-60	dBc
Control current Ictl (H)			*1		20	60	μA
			*2		15	50	μA
			*3		15	50	μA
Bias current I _{DD}			*1		40	90	μA
			*2		25	70	μA
			*3		25	70	μA
Switching speed					200		ns

*1 Vctl (L) = 0V, Vctl (H) = 4V, V_{DD} = 4V

*2 Vctl (L) = -2.5V, Vctl (H) = 3V, V_{DD} = 3V

*3 Vctl (L) = 0V, Vctl (H) = 3V, V_{DD} = 3V

*4 Input signal: ACP (±50kHz) < -65dBc, ACP (±100kHz) < -75dBc,
2nd harmonics < -65dBc, 3rd Harmonics < -65dBc

