

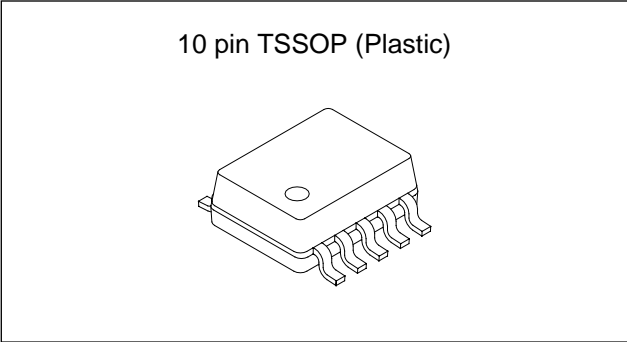
SP3T Antenna Switch for TDMA800/1900/AMPS800 Triple Mode Application

Description

The SP3T is a high power antenna switch MMIC for use in TDMA800/1900/AMPS800 triple mode handsets. One Antenna can be routed to one of AMPS, PCS Tx and PCS Rx. This IC is designed using the Sony's JFET process for low insertion loss.

Features

- Low second harmonics < -31dBm at 29dBm @2.8V
- Low insertion loss: 0.3dB (Ant. – AMPS)
- Small package size: TSSOP-10pin (3.2mm × 2.8mm)



Applications

TDMA800/1900/AMPS800 triple mode handsets.

Structure

GaAs J-FET MMIC

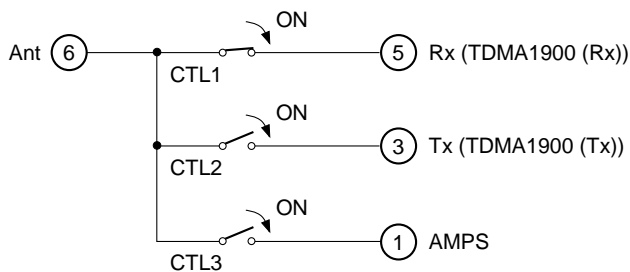
Absolute Maximum Ratings (Ta = 25°C)

- | | | | | |
|-------------------------|---|-------------|----|--|
| • Control voltage | V _{CTL} | 5 | V | |
| | V _{CTL} (H) – V _{CTL} (L) | 5 | V | |
| • Operating temperature | Topr | -35 to +85 | °C | |
| • Storage temperature | Tstg | -60 to +150 | °C | |

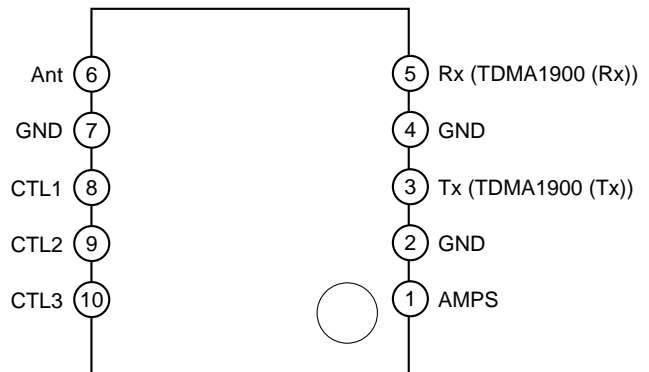
Notes on Handling

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

Block Diagram

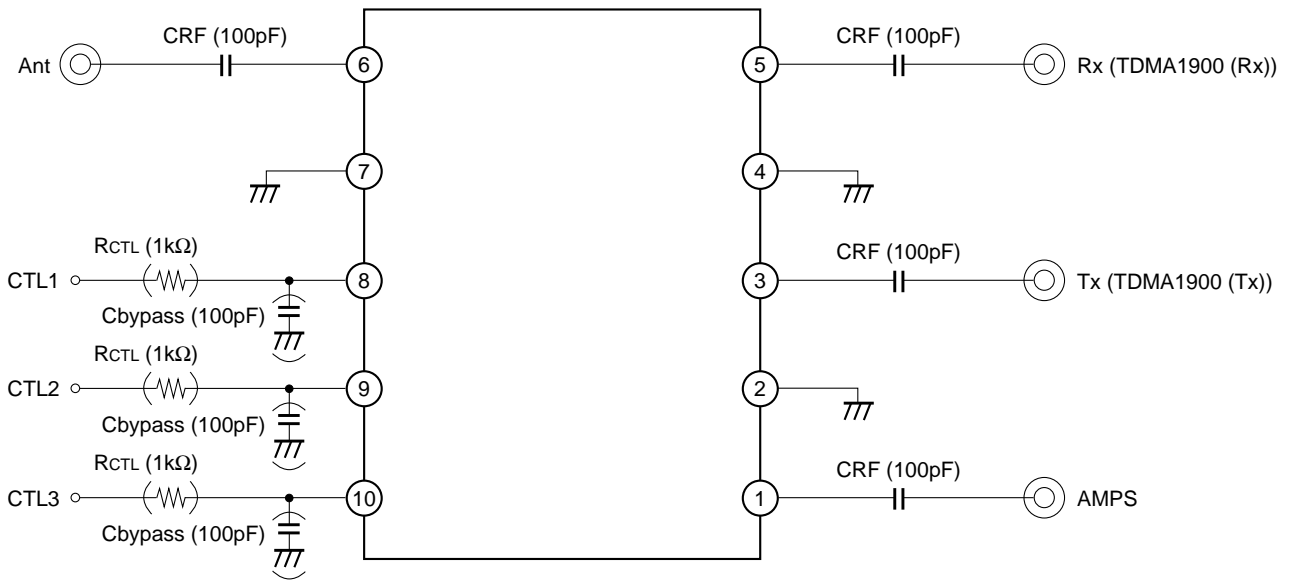


Pin Configuration



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Recommended Circuit



When using this IC, the following external parts 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 for all applications. 100pF is recommended.

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

Truth Table

On Pass	CTL1	CTL2	CTL3
Ant – Rx (TDMA1900 (Rx))	H	L	L
Ant – Tx (TDMA1900 (Tx))	L	H	L
Ant – AMPS	L	L	H

Electrical Characteristics

$V_{CTL} = 0/2.8V$ control.

All measurements are made in a 50Ω system, and unused ports are terminated with 50Ω .

($T_a = 25^\circ C$)

Item	Symbol	Port	Condition	Min.	Typ.	Max.	Unit
Insertion loss	IL	Ant – Tx	*1	—	0.60	0.85	dB
		Ant – Rx	*2	—	0.65	0.90	dB
		Ant – AMPS	*3	—	0.30	0.55	dB
Isolation	ISO.	Ant – Tx		14	16	—	dB
		Ant – Rx		14	16	—	dB
		Ant – AMPS		18	21	—	dB
VSWR	VSWR			—	1.2	1.5	—
Harmonics	2fo	Ant – Tx	*1, *3	—	–45	–31	dBm
	3fo	Ant – AMPS		—	–40	–31	dBm
1dB compression input power	P1dB	Ant – Tx Ant – AMPS	$V_{CTL} = 2.8V$	32	35	—	dBm
Switching speed	TSW			—	100	500	ns
Control current	I _{CTL}		*4	—	5	20	μA

*1 Pin = 29dBm, 1900MHz

*2 Pin = 10dBm, 1900MHz

*3 Pin = 29dBm, 800MHz

*4 No signal input

