

TOSHIBA GaAs LINEAR INTEGRATED CIRCUIT GaAs MONOLITHIC

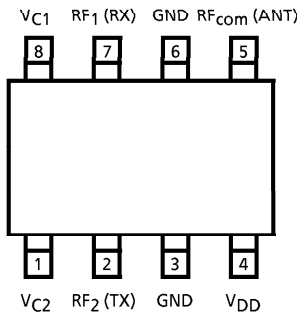
# TG2200AF

## 1.9GHz BAND ANTENNA SWITCH (PHS DIGITAL CORDLESS TELEPHONE)

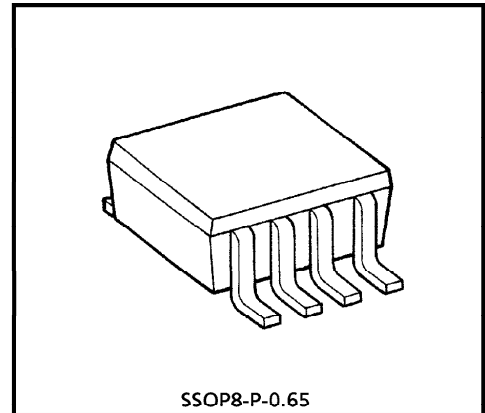
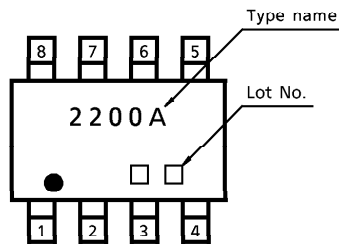
### FEATURES

- LOW INSERTION LOSS :  $L_{OSS} = 0.5\text{dB}$  (Typ.)
- HIGH ISOLATION :  $ISL = 25\text{dB}$  (Typ.)
- CONTROL VOLTAGE :  $0\text{V} / 3\text{V}$

### PIN CONNECTION (TOP VIEW)



### MARKING



Weight : 0.02g (Typ.)

### MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{DD}$	5	V
Control Voltage	$V_{C1}$	5	V
	$V_{C2}$	5	V
Input Power	$P_i$	1	W
Operating Temperature Range	$T_{opr}$	-40~85	°C
Storage Temperature Range	$T_{stg}$	-55~125	°C

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**ELECTRICAL CHARACTERISTICS** ( $V_{DD} = 3V$ ,  $T_a = 25^\circ C$ ,  $Z_g = Z_l = 50\Omega$ )

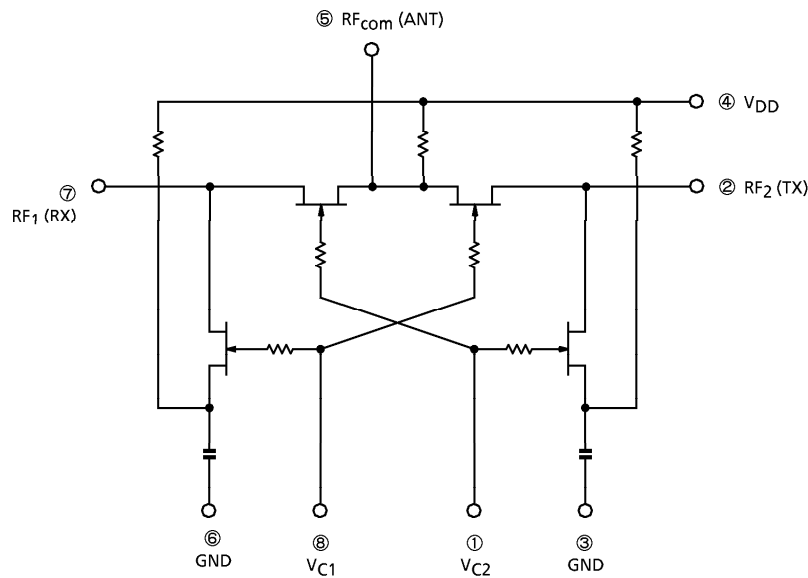
CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Frequency Range	$f_{range}$	—	—	1895	—	1918	MHz
Insertion Loss	LOSS (1)	1	$V_{C1} = 3V$ , $V_{C2} = 0V$ , $P_i = 22dBmW$	—	0.5	1.0	dB
	LOSS (2)	1	$V_{C1} = 0V$ , $V_{C2} = 3V$ , $P_i = 0dBmW$	—	0.5	1.0	dB
Isolation	ISL (1)	1	$V_{C1} = 3V$ , $V_{C2} = 0V$ , $P_i = 22dBmW$	20	25	—	dB
	ISL (2)	1	$V_{C1} = 0V$ , $V_{C2} = 3V$ , $P_i = 0dBmW$	20	25	—	dB
Switching Time	$t_{sw}$	—	$V_{C1} = 3V$ , $V_{C2} = 0V$ or $V_{C1} = 0V$ , $V_{C2} = 3V$	—	0.01	—	$\mu s$
Supply Current	$I_{DD}$			—	—	0.1	mA
Control Current	$I_{C1}$			—	—	0.1	mA
	$I_{C2}$			—	—	0.1	mA
Output Power at 1dB Gain Compression	$P_{o1dB}$	1	$V_{C1} = 3V$ , $V_{C2} = 0V$	—	24	—	dBm W
Adjacent Channel Leakage Power Ratio	$P_{adj}$	1	$V_{C1} = 3V$ , $V_{C2} = 0V$ , $P_i = 22dBmW$ (Note), $\Delta f = 600kHz$	—	—	-60	dB

(Note) Input signal is modulated to  $\pi / 4QPSK$  ( $\alpha = 0.5$ ). Bit rate is 384kbps.

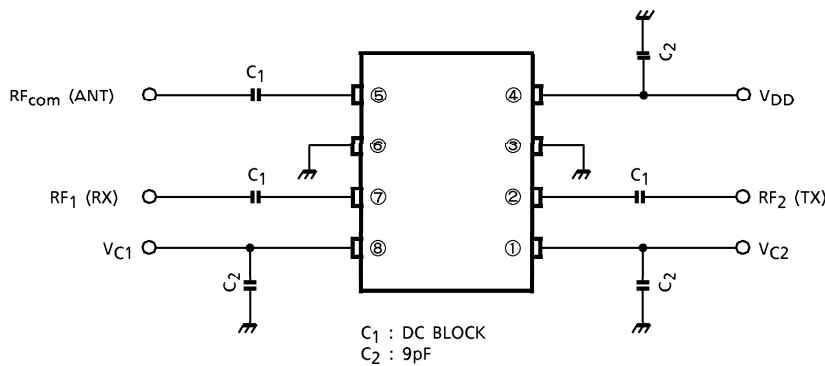
**TRUTH TABLE**

CONTROL VOLTAGE		SWITCH CONDITION	
$V_{C1}$	$V_{C2}$	$RF_{com}$ (ANT)- $RF_1$ (RX)	$RF_{com}$ (ANT)- $RF_2$ (TX)
3V	0V	OFF	ON
0V	3V	ON	OFF

EQUIVALENT CIRCUIT



TEST CIRCUIT 1



RF TEST CONDITION ( $V_{DD} = 3V$ ,  $f = 1.907GHz$ ,  $T_a = 25^{\circ}C$ ,  $Z_g = Z_l = 50\Omega$ )

	RF <sub>com</sub> (ANT)	RF <sub>1</sub> (RX)	RF <sub>2</sub> (TX)	INPUT POWER	V <sub>C1</sub>	V <sub>C2</sub>
LOSS (1)	P <sub>O</sub>	50Ω TERMINATION	P <sub>i</sub>	22dBmW	3V	0V
LOSS (2)	P <sub>i</sub>	P <sub>O</sub>	50Ω TERMINATION	0dBmW	0V	3V
ISL (1)	50Ω TERMINATION	P <sub>O</sub>	P <sub>i</sub>	22dBmW	3V	0V
ISL (2)	P <sub>i</sub>	50Ω TERMINATION	P <sub>O</sub>	0dBmW	0V	3V
P <sub>O</sub> 1dB	P <sub>O</sub>	50Ω TERMINATION	P <sub>i</sub>	—	3V	0V
Padj	P <sub>O</sub>	50Ω TERMINATION	P <sub>i</sub>	22dBmW	3V	0V

CAUTION

This device is electrostatic sensitivity. Please handle with caution.

