

TOSHIBA GaAs LINEAR INTEGRATED CIRCUIT GaAs MONOLITHIC

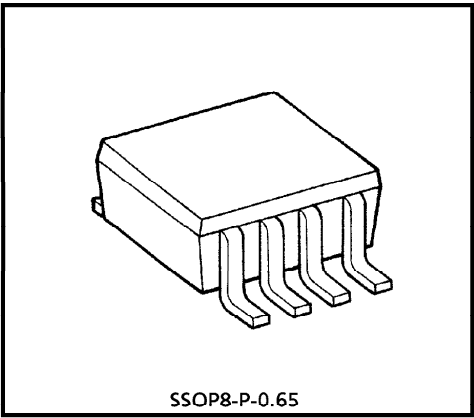
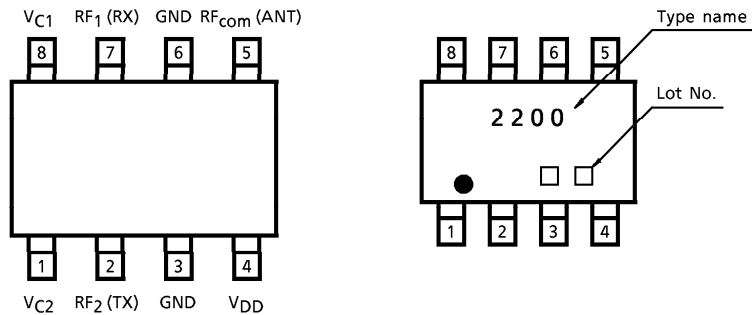
TG2200F

1.9GHz BAND ANTENNA SWITCH  
(PHS DIGITAL CORDLESS TELEPHONE)

FEATURES

- CONTROL VOLTAGE : 0V / 3V

PIN CONNECTION (TOP VIEW) MARKING



Weight : 0.02g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC              | SYMBOL | RATING   | UNIT |
|-----------------------------|--------|----------|------|
| Supply Voltage              | VDD    | 5        | V    |
| Control Voltage             | VC1    | 5        | V    |
|                             | VC2    | 5        | V    |
| Input Power                 | Pi     | 1        | W    |
| Operating Temperature Range | Topr   | - 40~85  | °C   |
| Storage Temperature Range   | Tstg   | - 55~125 | °C   |

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

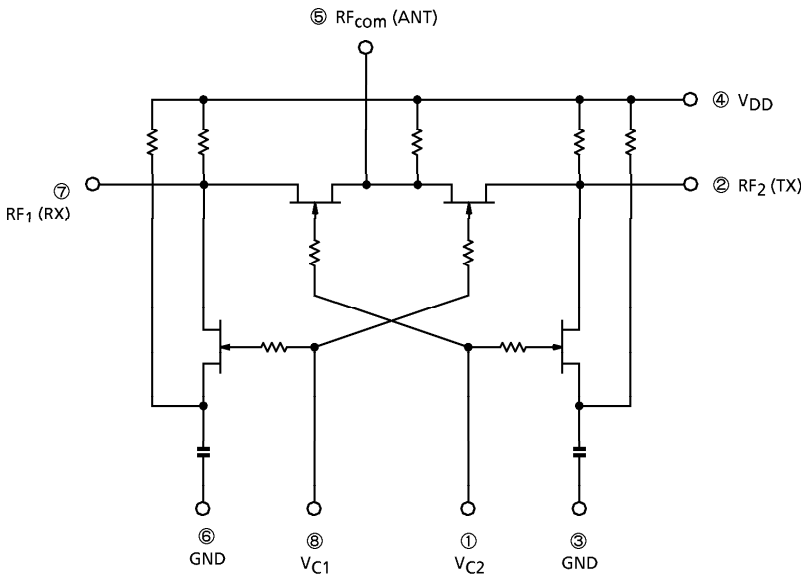
| CHARACTERISTIC                       | SYMBOL        | TEST CIRCUIT | TEST CONDITION                                                              | MIN. | TYP. | MAX. | UNIT    |
|--------------------------------------|---------------|--------------|-----------------------------------------------------------------------------|------|------|------|---------|
| Frequency Range                      | $f_{range}$   | —            | —                                                                           | 1895 | —    | 1918 | MHz     |
| Insertion Loss                       | $L_{OSS} (1)$ | 1            | $V_{C1} = 3V$ , $V_{C2} = 0V$ ,<br>$P_i = 22dBmW$                           | —    | —    | 2.0  | dB      |
|                                      | $L_{OSS} (2)$ |              | $V_{C1} = 0V$ , $V_{C2} = 3V$ ,<br>$P_i = 0dBmW$                            | —    | —    | 1.5  | dB      |
| Isolation                            | $ISL (1)$     | 1            | $V_{C1} = 3V$ , $V_{C2} = 0V$ ,<br>$P_i = 22dBmW$                           | 18   | —    | —    | dB      |
|                                      | $ISL (2)$     |              | $V_{C1} = 0V$ , $V_{C2} = 3V$ ,<br>$P_i = 0dBmW$                            | 20   | —    | —    | dB      |
| Switching Time                       | $t_{sw}$      | —            | $V_{C1} = 3V$ , $V_{C2} = 0V$<br>or<br>$V_{C1} = 0V$ , $V_{C2} = 3V$        | —    | 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   | —    | dBmW    |
| Adjacent Channel Leakage Power Ratio | $P_{adj}$     | 1            | $V_{C1} = 3V$ , $V_{C2} = 0V$<br>$P_i = 22dBmW$ (Note), $\Delta f = 600kHz$ | —    | —    | -60  | dB      |

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

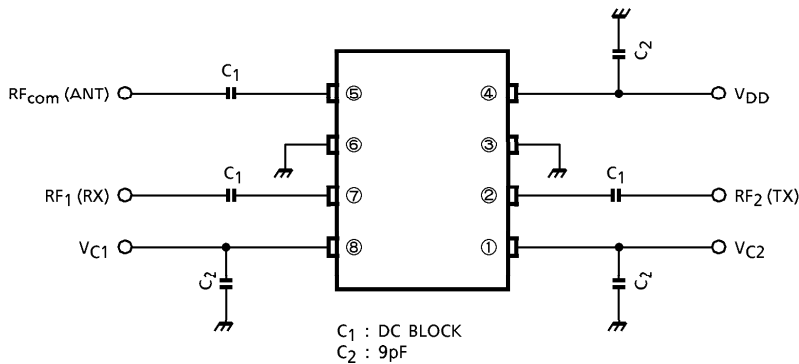
## TRUTH TABLE

| 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> |
|-----------------------|-------------------------|----------------------|----------------------|-------------|-----------------|-----------------|
| L <sub>LOSS</sub> (1) | P <sub>O</sub>          | 50Ω<br>TERMINATION   | P <sub>i</sub>       | 22dBmW      | 3V              | 0V              |
| L <sub>LOSS</sub> (2) | P <sub>i</sub>          | P <sub>O</sub>       | 50Ω<br>TERMINATION   | 0dBmW       | 0V              | 3V              |
| ISL (1)               | 50Ω<br>TERMINATION      | P <sub>O</sub>       | P <sub>i</sub>       | 22dBmW      | 3V              | 0V              |
| ISL (2)               | P <sub>i</sub>          | 50Ω<br>TERMINATION   | P <sub>O</sub>       | 0dBmW       | 0V              | 3V              |
| P <sub>O1dB</sub>     | P <sub>O</sub>          | 50Ω<br>TERMINATION   | P <sub>i</sub>       | —           | 3V              | 0V              |
| P <sub>adj</sub>      | P <sub>O</sub>          | 50Ω<br>TERMINATION   | P <sub>i</sub>       | 22dBmW      | 3V              | 0V              |

CAUTION

This device is electrostatic sensitivity. Please handle with caution.

