

TOSHIBA GaAs Linear Integrated Circuit GaAs Monolithic

# TG2206F

## RF SPDT Swith

Switch The Receive Filter for Mobile Communication

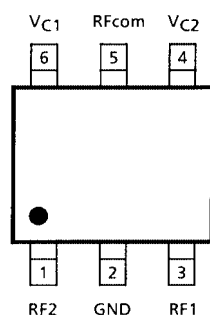
Switch The Diversity Antenna

Switch The Local Signal

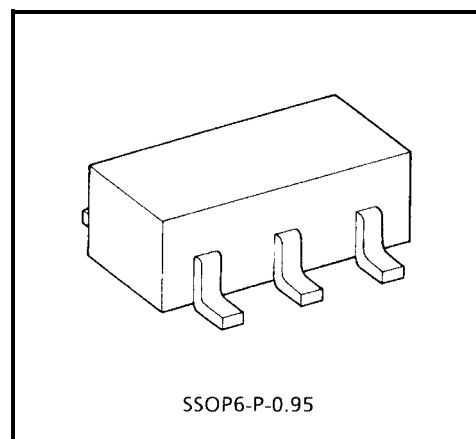
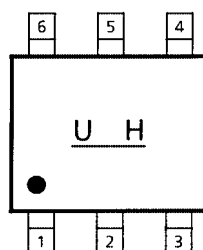
## Features

- Low insertion loss:  $LOSS = 0.4\text{dB}$  (typ.)
- Hight isolation:  $ISL = 28\text{dB}$  (typ.)
- Low voltage operation:  $V_C = 0\text{ V}/2.5\text{ V}$
- Small package: SM6 package ( $2.9 \times 1.6 \times 1.1\text{ mm}$ )

## Pin Assignment (top view)



## Marking



Weight: 0.014 g (typ.)

## Maximum Ratings (Ta = 25°C)

| Characteristic              | Symbol    | Rating  | Unit |
|-----------------------------|-----------|---------|------|
| 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   |

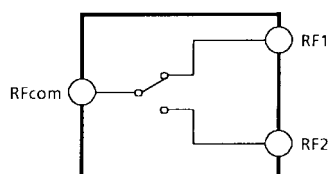
## Caution

This device is electrostatic sensitivity. Please handle with caution.

## Electrical Characteristics (f = 1 GHz, Ta = 25°C, Z<sub>g</sub> = Z<sub>l</sub> = 50 Ω)

| Characteristics                      | Symbol            | Test Circuit | Test Condition                                                                                   | Min | Typ. | Max  | Unit |
|--------------------------------------|-------------------|--------------|--------------------------------------------------------------------------------------------------|-----|------|------|------|
| Insertion loss                       | LOSS (1)          | 1            | V <sub>C1</sub> = 2.5 V, V <sub>C2</sub> = 0 V, P <sub>i</sub> = 0dBmW                           | —   | 0.4  | 0.7  | dB   |
|                                      | LOSS (2)          | 1            | V <sub>C1</sub> = 0 V, V <sub>C2</sub> = 2.5 V, P <sub>i</sub> = 0dBmW                           | —   | 0.4  | 0.7  |      |
| Isolation                            | ISL (1)           | 1            | V <sub>C1</sub> = 2.5 V, V <sub>C2</sub> = 0 V, P <sub>i</sub> = 0dBmW                           | 25  | 28   | —    | dB   |
|                                      | ISL (2)           | 1            | V <sub>C1</sub> = 0 V, V <sub>C2</sub> = 2.5 V, P <sub>i</sub> = 0dBmW                           | 25  | 28   | —    |      |
| Output power at 1dB gain compression | P <sub>o1dB</sub> | 1            | V <sub>C1</sub> = 2.5 V, V <sub>C2</sub> = 0 V or V <sub>C1</sub> = 0 V, V <sub>C2</sub> = 2.5 V | 15  | 20   | —    | dBmW |
| Control current                      | I <sub>C1</sub>   | —            | V <sub>C1</sub> = 0 V, V <sub>C2</sub> = 3 V or V <sub>C1</sub> = 3 V, V <sub>C2</sub> = 0 V     | —   | —    | 0.01 | mA   |
|                                      | I <sub>C2</sub>   | —            |                                                                                                  | —   | —    | 0.01 |      |
| Switching time                       | t <sub>sw</sub>   | —            | V <sub>C1</sub> = 0 V, V <sub>C2</sub> = 3 V or V <sub>C1</sub> = 3 V, V <sub>C2</sub> = 0 V     | —   | 0.01 | —    | μs   |

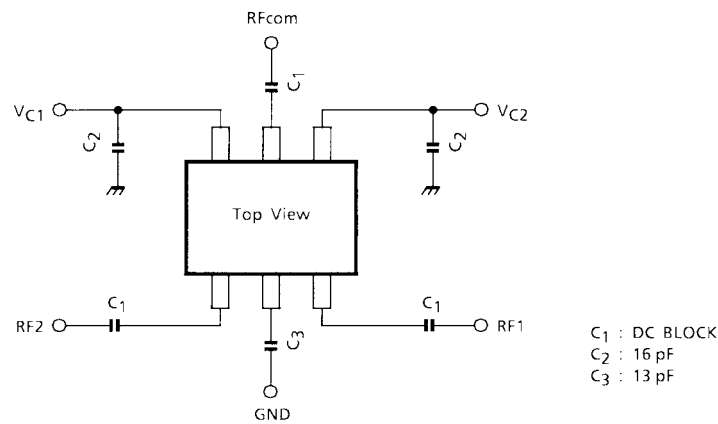
## Block Diagram



## Switch Condition

| Control Voltage         | Switch Condition            |
|-------------------------|-----------------------------|
| V <sub>C1</sub> = 2.5 V | RF <sub>Com</sub> - RF1 OFF |
| V <sub>C2</sub> = 0 V   | RF <sub>Com</sub> - RF2 ON  |
| V <sub>C1</sub> = 0 V   | RF <sub>Com</sub> - RF1 ON  |
| V <sub>C2</sub> = 2.5 V | RF <sub>Com</sub> - RF2 OFF |

## Test Circuit 1 (RF Test Circuit)



Please fix the value of each capacity for using frequency and circuit.

## Notice

The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

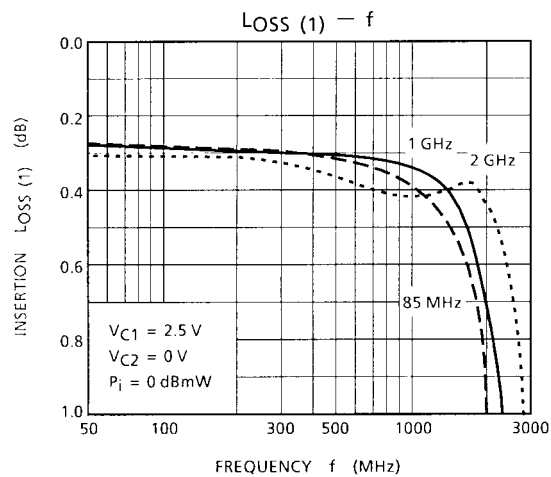
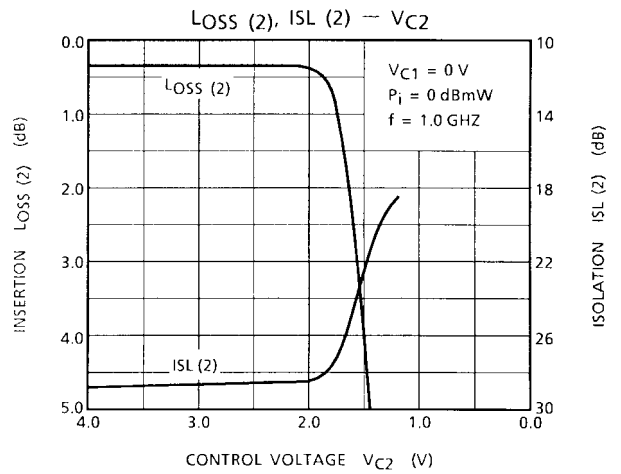
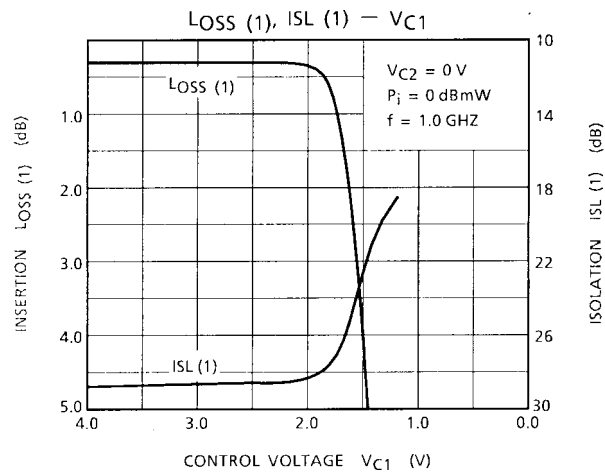
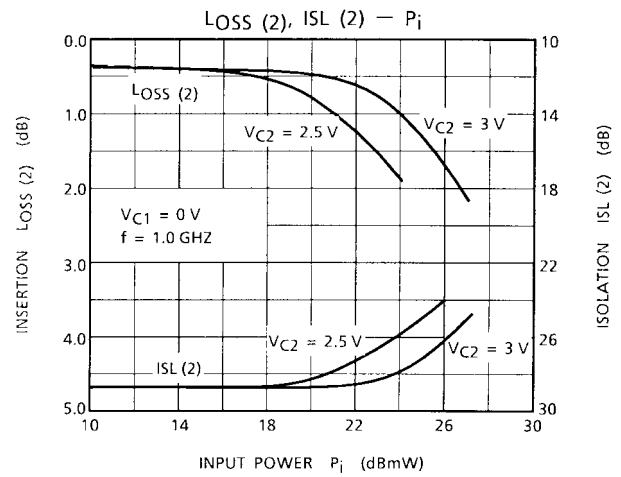
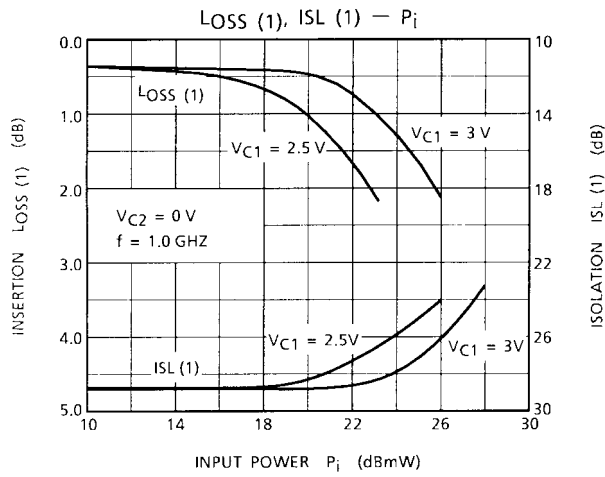
Moreover, these example application circuits are not intended for mass production, since the high-frequency characteristics (the AC characteristics) of these devices will be affected by the external components which the customer uses, by the design of the circuit and by various other conditions.

It is the responsibility of the customer to design external circuits which correctly implement the intended application, and to check the characteristics of the design.

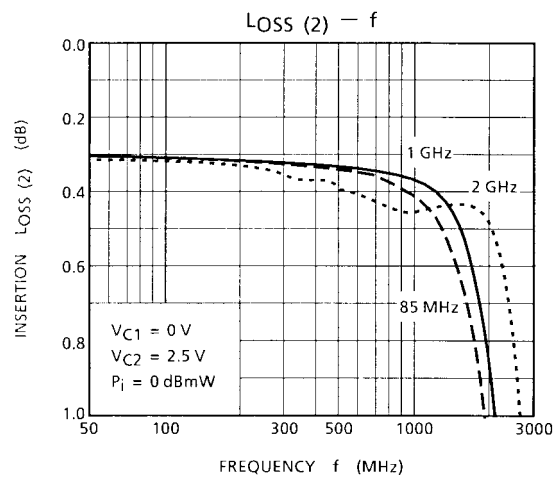
TOSHIBA assume no responsibility for the integrity of customer circuit designs or applications.

## Recommend Capacity

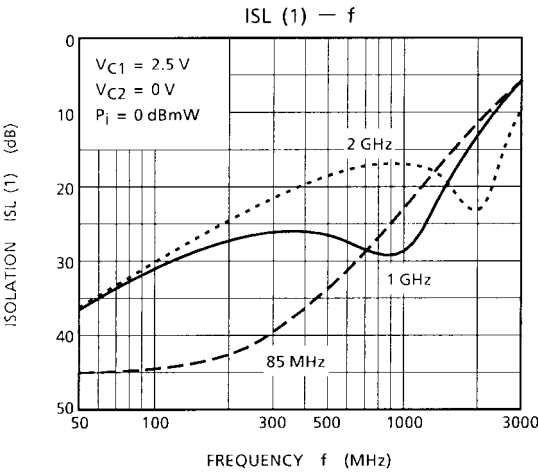
|    | 85 MHz | 0.8~1 GHz | 1.6 GHz | 2 GHz |
|----|--------|-----------|---------|-------|
| C1 | 100 pF | 100 pF    | 22 pF   | 9 pF  |
| C2 | 100 pF | 16 pF     | 10 pF   | 9 pF  |
| C3 | 150 pF | 13 pF     | 4 pF    | 3 pF  |



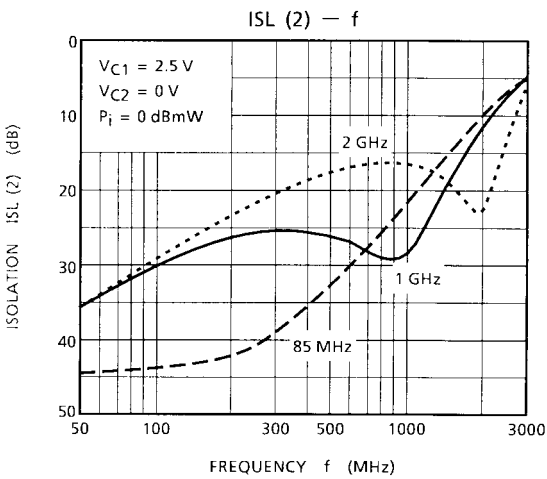
This curve shows the frequency characteristics when recommended capacitance for each frequency added.



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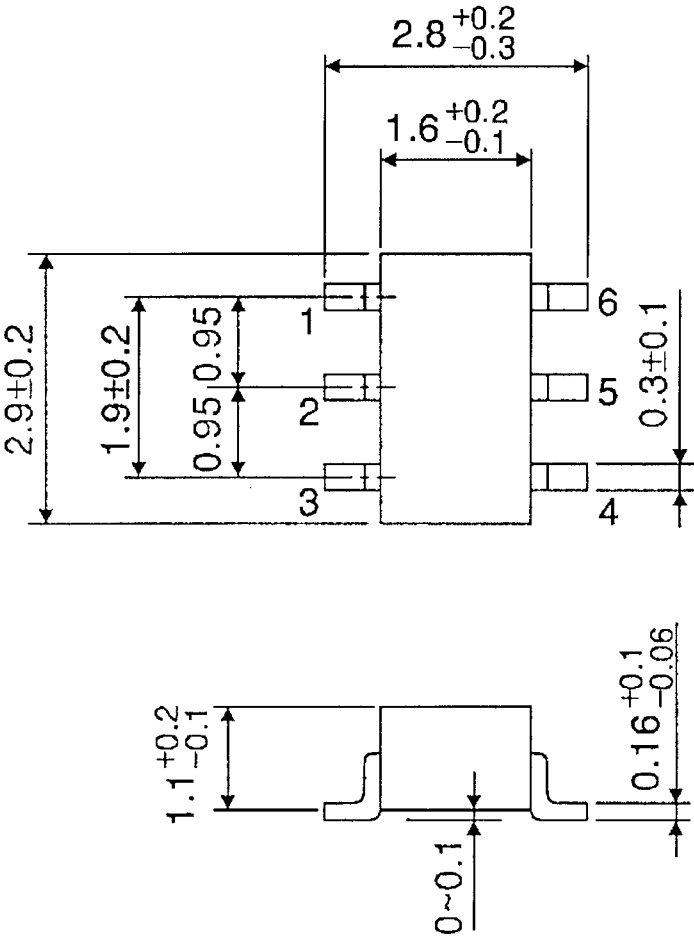


This curve shows the frequency characteristics when recommended capacitance for each frequency added.

Package Dimensions

SSOP6-P-0.95

Unit : mm



Weight : 0.014 g (Typ.)

**RESTRICTIONS ON PRODUCT USE**

020704EBC

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