

TOSHIBA GaAs Linear Integrated Circuit GaAs Monolithic

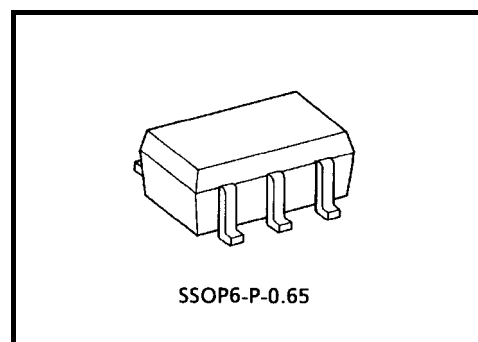
TG2210FT

RF SPDT Switch

Switch the receive filter for mobile communication.
Switch the diversity antenna.
Switch the local signal.

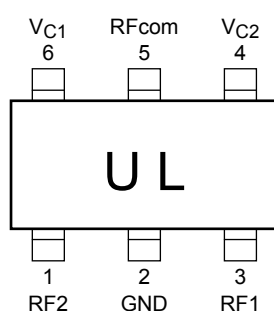
Features

- Low insertion Loss: LOSS = 0.4dB (typ.)
- High isolation: ISL = 30dB (typ.)
- Low voltage operation: $V_C = 0\text{ V}/2.5\text{ V}$
- Small package: TU6 package ($2.0 \times 1.25 \times 0.6\text{ mm}$)



Weight: 0.0045 g (typ.)

Pin Connection, Marking (top view)



Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Control voltage	V_{C1}	5	V
	V_{C2}	5	V
Input power	P_i	1	W
Operating temperature range	T_{opr}	$-40\sim 85$	$^\circ\text{C}$
Storage temperature range	T_{stg}	$-55\sim 125$	$^\circ\text{C}$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

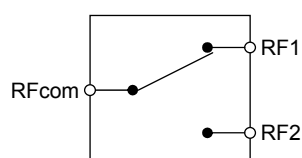
Caution

This device is sensitive to electrostatic discharge. When using this device, please ensure that all tools and equipment are earthed.

Electrical Characteristics (f = 1 GHz, Ta = 25°C, Zg = Zl = 50 Ω)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Insertion Loss	LOSS (1)	1	$V_{C1} = 2.5 \text{ V}$, $V_{C2} = 0 \text{ V}$, $P_i = 0 \text{ dBmW}$	—	0.4	0.7	dB
	LOSS (2)	1	$V_{C1} = 0 \text{ V}$, $V_{C2} = 2.5 \text{ V}$, $P_i = 0 \text{ dBmW}$	—	0.4	0.7	dB
Isolation	ISL (1)	1	$V_{C1} = 2.5 \text{ V}$, $V_{C2} = 0 \text{ V}$, $P_i = 0 \text{ dBmW}$	27	30	—	dB
	ISL (2)	1	$V_{C1} = 0 \text{ V}$, $V_{C2} = 2.5 \text{ V}$, $P_i = 0 \text{ dBmW}$	27	30	—	dB
Input power at 1dB gain compression	$P_{1\text{dB}}$	1	$V_{C1} = 2.5 \text{ V}$, $V_{C2} = 0 \text{ V}$ or $V_{C1} = 0 \text{ V}$, $V_{C2} = 2.5 \text{ V}$	18	—	—	dBmW
Control current	I_{C1}	—	$V_{C1} = 0 \text{ V}$, $V_{C2} = 3 \text{ V}$ or $V_{C1} = 3 \text{ V}$, $V_{C2} = 0 \text{ V}$	—	—	0.01	mA
	I_{C2}	—		—	—	0.01	mA
Switching time	t_{sw}	—	$V_{C1} = 0 \text{ V}$, $V_{C2} = 2.5 \text{ V}$ or $V_{C1} = 2.5 \text{ V}$, $V_{C2} = 0 \text{ V}$	—	200	—	ns

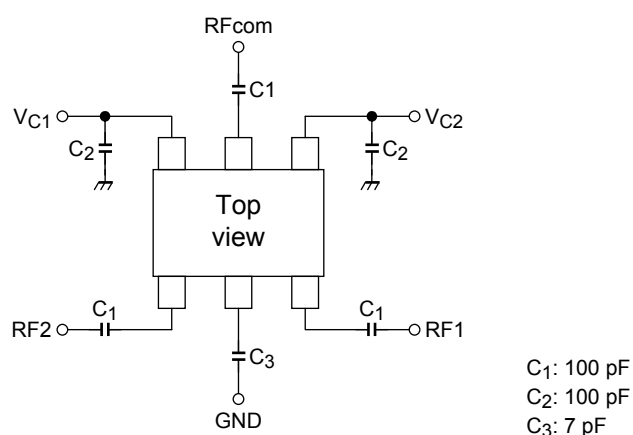
Block Diagram



Switch Condition

Control Voltage	Switch Condition
$V_{C1} = 2.5 \text{ V}$ $V_{C2} = 0 \text{ V}$	RFcom — RF1 OFF RFcom — RF2 ON
$V_{C1} = 0 \text{ V}$ $V_{C2} = 2.5 \text{ V}$	RFcom — RF1 ON RFcom — RF2 OFF

Test Circuit 1 (RF Test Circuit)



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

Recommend Capacity

	1 GHz	1.6 GHz	2.4 GHz
C ₁	100 pF	100 pF	100 pF
C ₂	100 pF	100 pF	100 pF
C ₃	7 pF	3 pF	1.5 pF

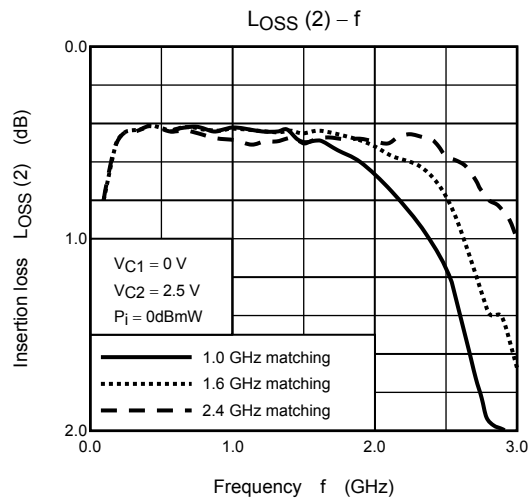
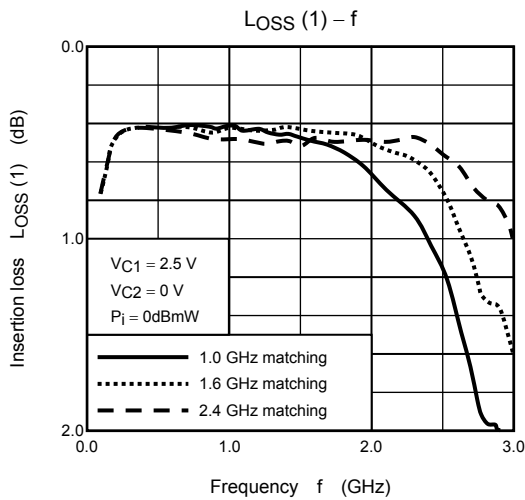
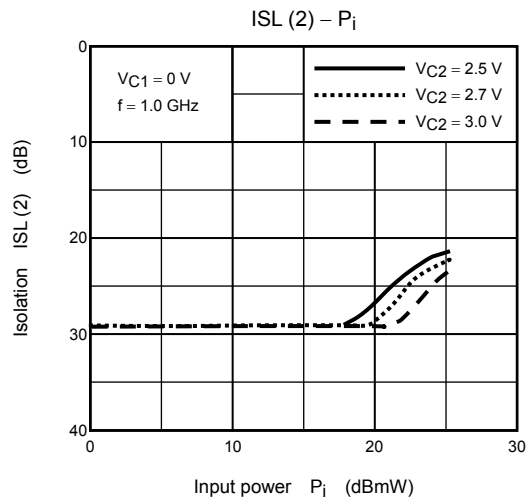
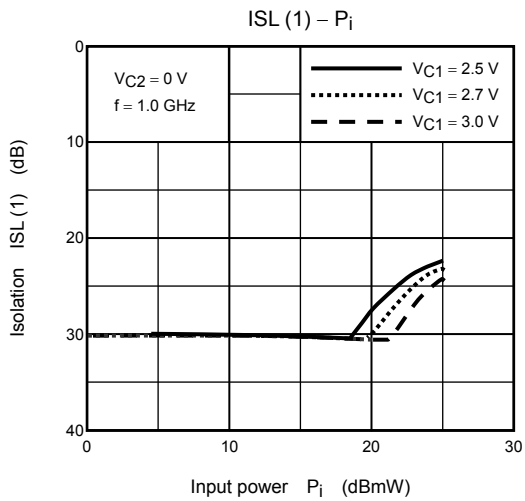
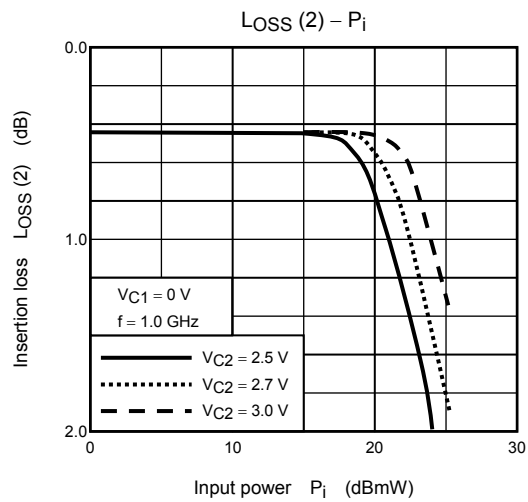
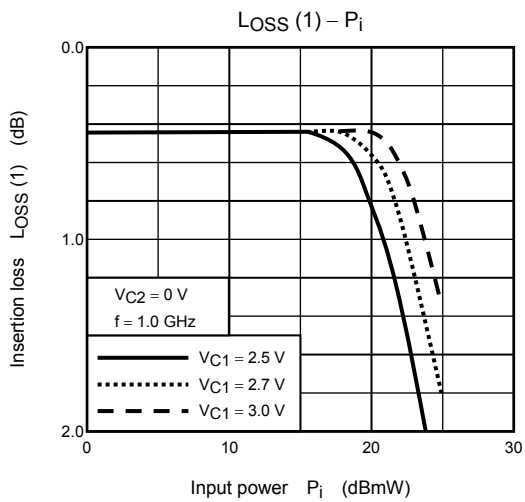
Notice

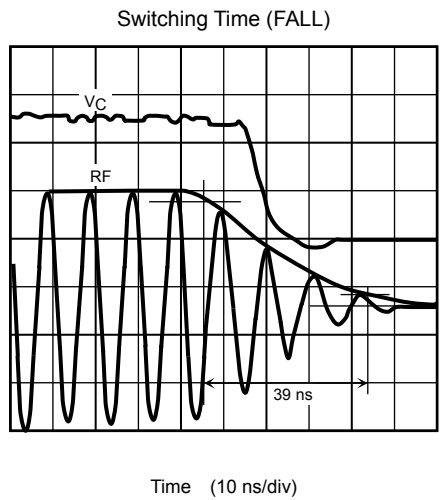
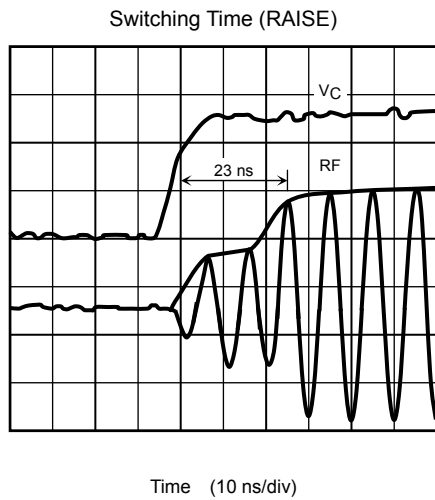
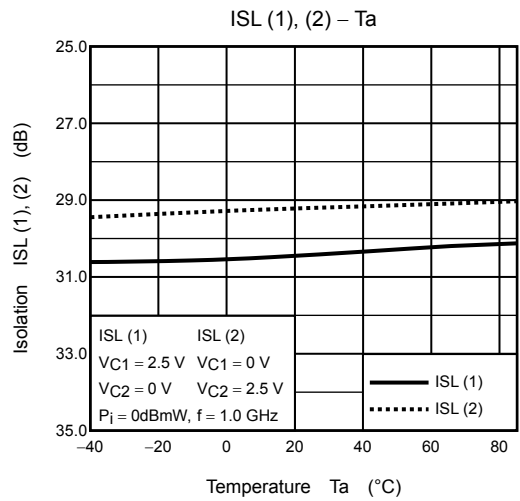
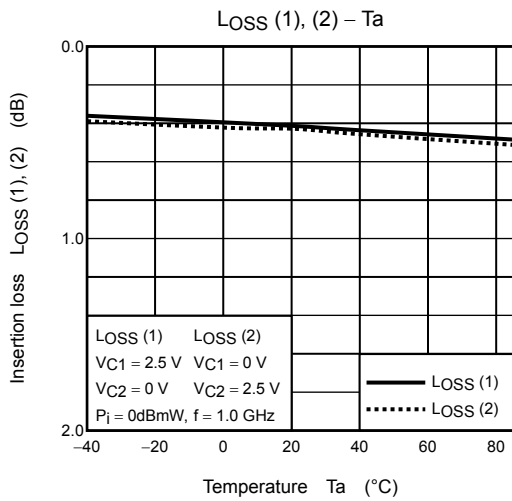
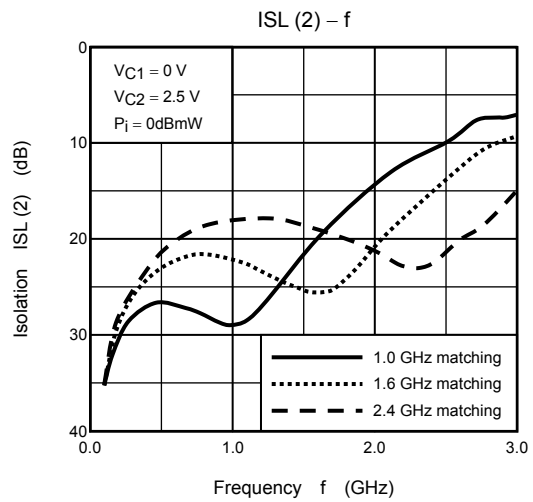
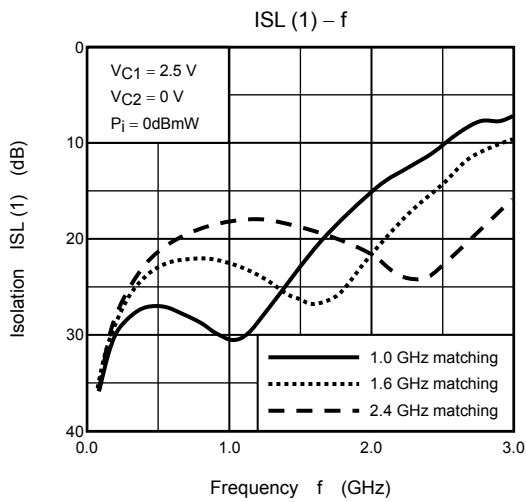
The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

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.

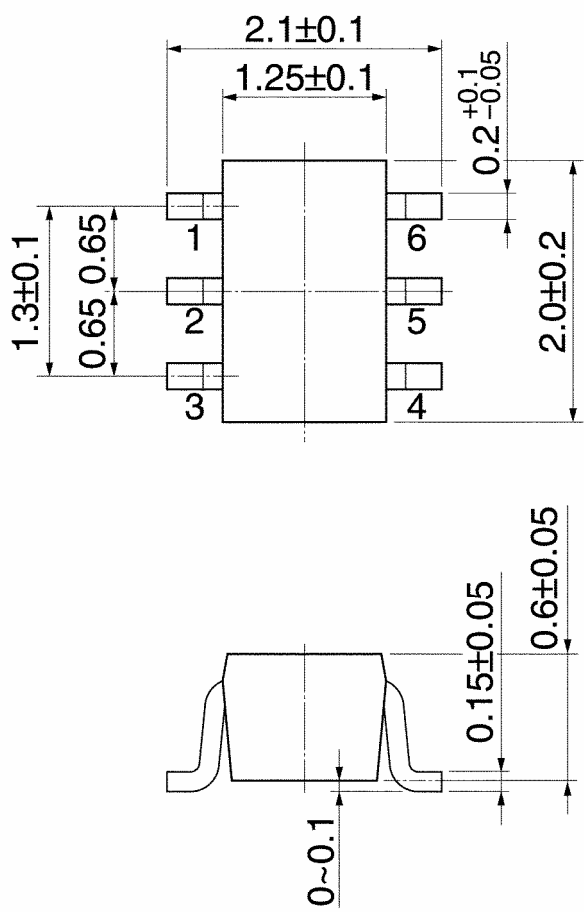




Package Dimensions

SSOP6-P-0.65

Unit: mm



Weight: 0.0045 g (typ.)

RESTRICTIONS ON PRODUCT USE

20070701-EN

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