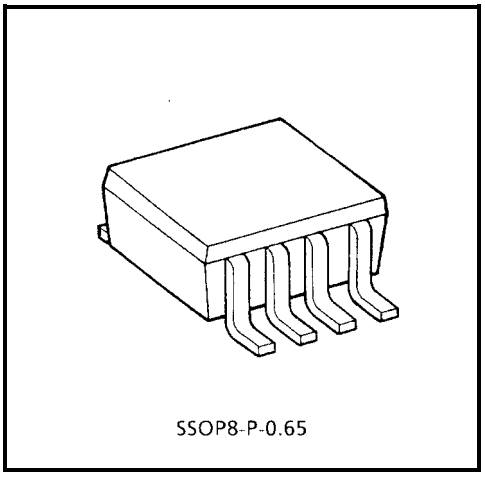
TOSHIBA GaAs Linear Integrated Circuit GaAs Monolithic

TG2006F

1.9 GHz Band Power Amplifier
PHS, Digital Cordless Telecommunication

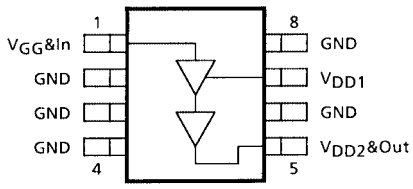
Features

- Positive voltage operation: V_d = 3 V, V_g = 0 or 1 V
- Low current consumption: It = 130 mA (typ.)
- Small package: SM8 package (2.9 × 2.8 × 1.1mm)
- Low cost: Can be achieved minimum function.

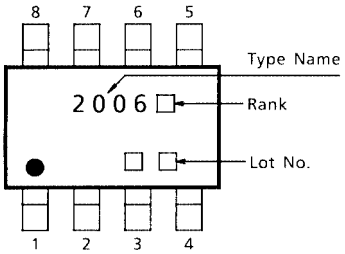


Weight: 0.02 g (typ.)

Pin Assignment (top view)



Marking



Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Supply voltage	V_{DD1}	5	V
	V_{DD2}	5	V
Gate voltage	V_{GG}	1	V
Input power	P_i	10	mW
Power dissipation	P_d (Note1)	250	mW
Operating temperature range	T_{opr}	−40~85	°C
Storage temperature range	T_{stg}	−55~150	°C

Note 1: When mounted on 2.5 cm^2 × 1.6 t glass epoxy board.

Classify Rank

This device is classified by Fig.1.
And satisfy ELECTRICAL CHARACTERISTICS by Vg Condition on each rank.
The rank division is performed for every reel and can't order to choose any rank.

Table 1

Rank	V_g Condition
A	V_g = 0 V
B	V_g = 1 V

Caution

This device is electrostatic sensitivity. Please handle with caution.

Electrical Characteristics
(V_d = 3 V, V_g = (Note2), f = 1.9 GHz, Ta = 25°C, Z_g = Z_l = 50 Ω, 1/2 duty operation) (Note 4)

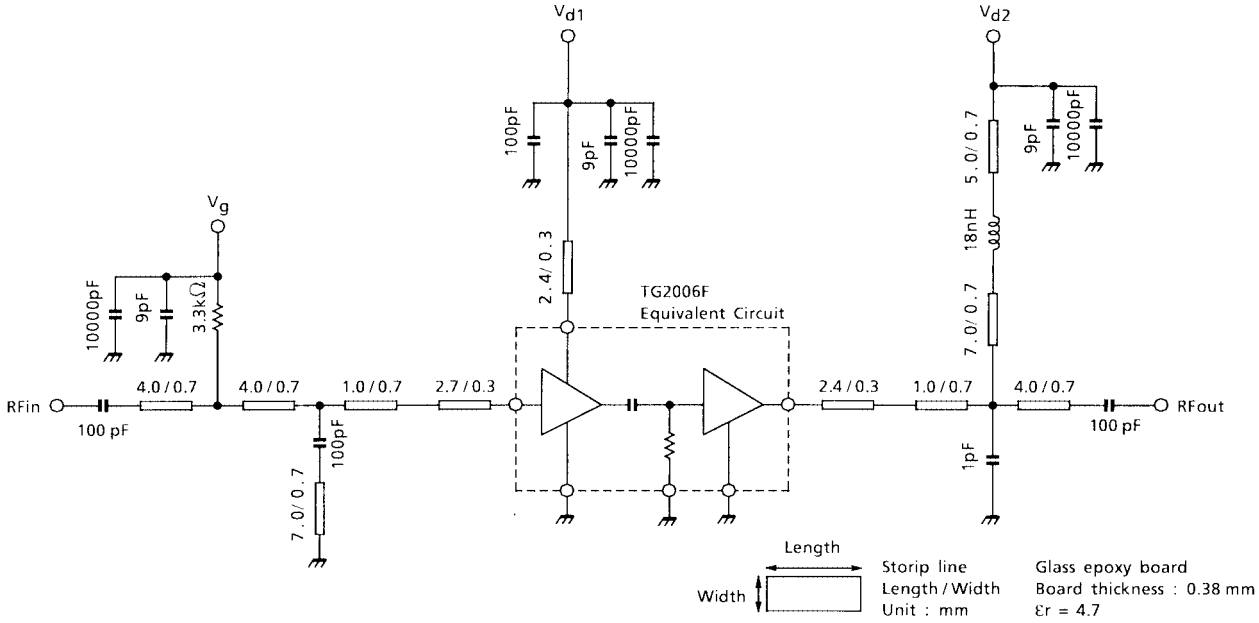
Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Frequency	f_{range}	—	—	1895	—	1918	MHz
Total current	It	1	P_O = 21dBmW, P_i = Regulation	—	130	150	mA
Gate current	IG	1		—	—	1	
Output power	P_O	1	P_i = 1dBmW	21	—	—	dBmW
Small signal gain	G_P	1	P_i = −20dBmW	21	23	—	dB
Adjacent channel leakage power ratio	ACP (1)	1	P_O = 21dBmW, P_i = Regulation (Note 3), Δf = 600 kHz	—	−60	−55	dB
	ACP (2)	1	Δf = 900 kHz	—	−65	−60	
Harmonics	$2f_0$	1	P_O = 21dBmW, P_i = Regulation	—	—	−30	dB
	$3f_0$	1		—	—	−30	
Input VSWR	$VSWR_{in}$	1	P_O = 21dBmW, P_i = Regulation	—	1.5	2.5	—
Load mismatch	—	—	V_d = 4.0V, V_g = (Note 2), P_O = 21dBmW, P_i = Regulation, Z_g = 50 Ω, VSWR Load = 20 : 1 all phase	No Degradation			—
Stability	—	—	V_d = 2.7~4.0V, V_g = (Note 2), P_i = −2dBmW~4dBmW, Z_g = 50 Ω, VSWR Load = 6: 1 all phase	All spurious output than 60dB below desired signal			—

Note 2: V_g Voltage is decided on Fig.1.

Note 3: Input signal is modulated to π/4QPSK (α = 0.5). Bit rate is 384 kbps.

Note 4: $V_d = V_{d1} = V_{d2}$, It = Id1 + Id2

Test Circuit 1 (RF test circuit)



Notice

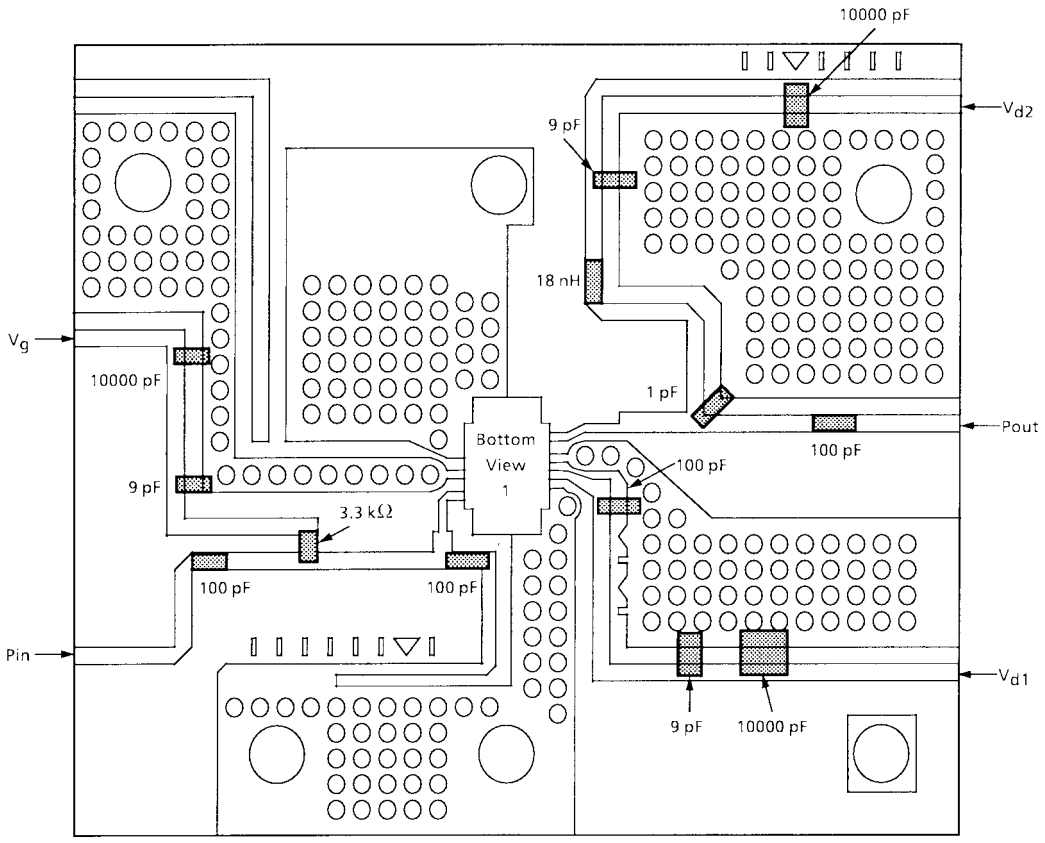
The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

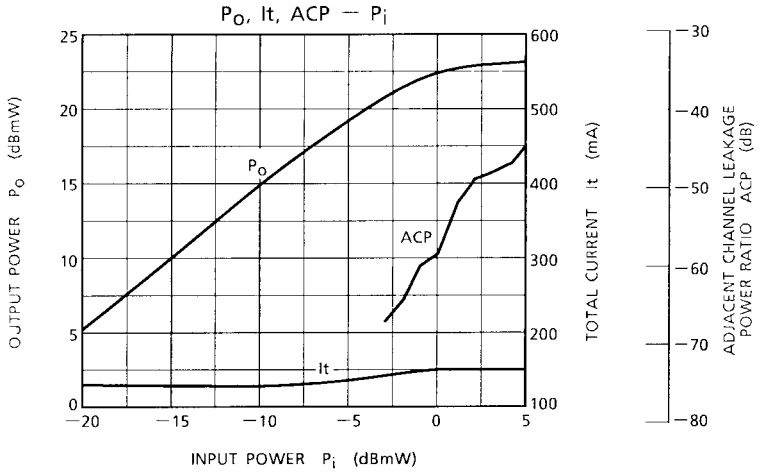
Moreover, these example application circuits are not intended for mass production, since the high-frequency characteristics (the AC characteristics) of these devices will be affected by the external components which the customer uses, by the design of the circuit and by various other conditions.

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.

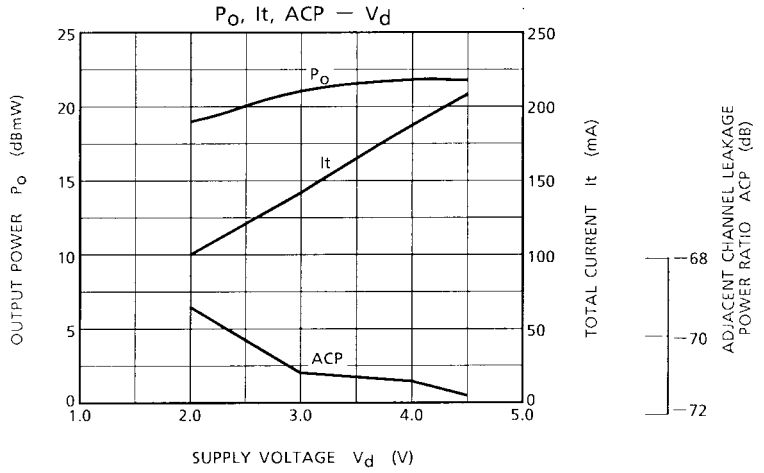
TOSHIBA assume no responsibility for the integrity of customer circuit designs or applications.

RF Test Board

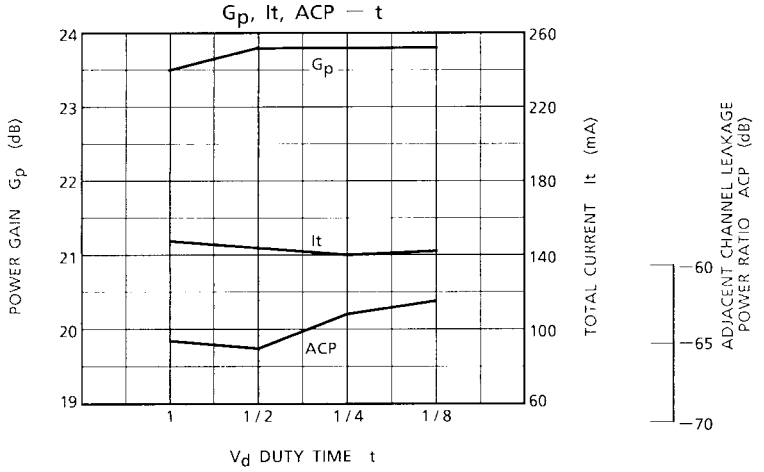




TEST CONDITION
V_d = 3 V
V_g = 1 V
f = 1.9 GHz
V_d operates at 1/2 duty time



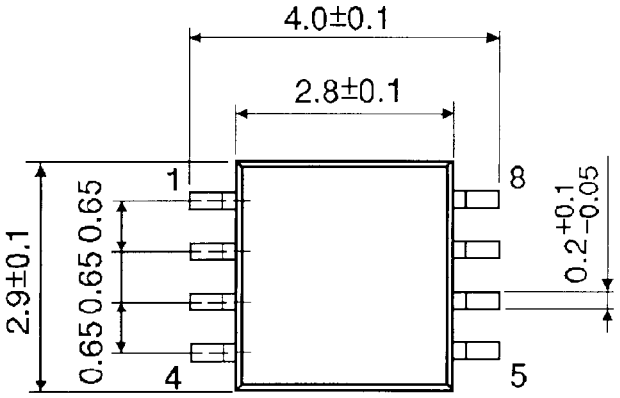
TEST CONDITION
V_g = 1 V
f = 1.9 GHz
P_i = Regulation
V_d operates at 1/2 duty time

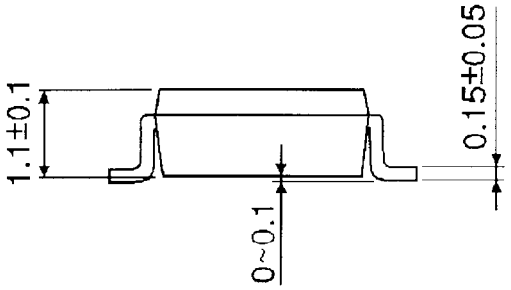


TEST CONDITION
V_d = 3 V
V_g = 1 V
f = 1.9 GHz
P_i = Regulation

Package Dimensions

SSOP8-P-0.65 Unit : mm





Weight : 0.02 g (Typ.)

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