

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA4107F

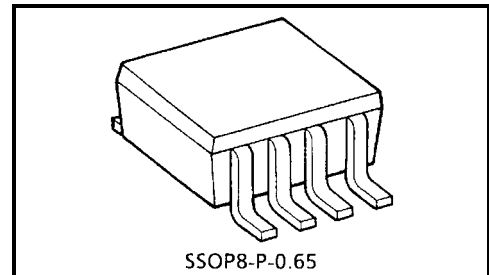
1 GHz Band Down Converter Application

CATV Analog/Digital Tuner

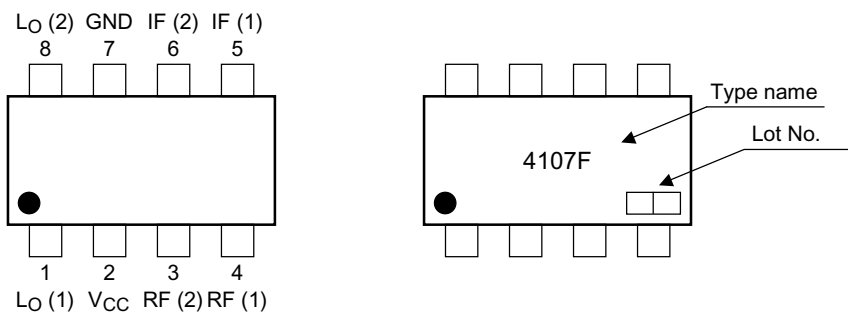
Terrestrial Digital TV Tuner

Features

- Low distortion at high RF signal input (IIP3): +13dBmW
- Performance at low Lo signal input: -5dBmW
- Double balanced Mix circuit
- Small package: SM8 (2.9 × 4.0)
- Recommended operating voltage: VCC = 4.25~4.75 V



Pin Connection, Marking



Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V _{CC}	5.5	V
Power dissipation	P _D (note)	375	mW
Operating temperature range	T _{opr}	-40~85	°C
Storage temperature range	T _{stg}	-55~150	°C

Note: When mounted the glass epoxy board of 2.5 cm² × 1.6 t

Caution

This device is electrostatic sensitivity. Please handle with caution.

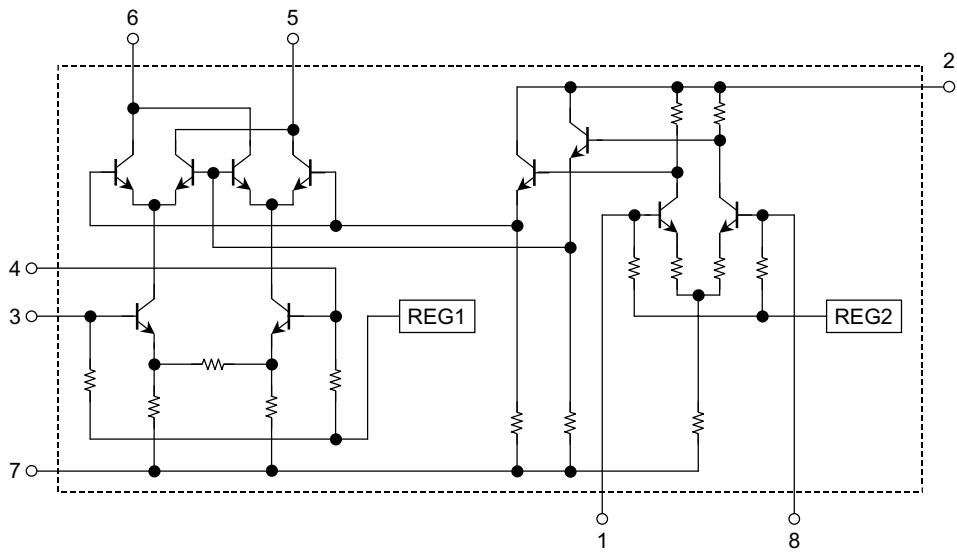
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Electrical Characteristics (V_{CC} = 4.5 V, Ta = 25°C, Z_g = Z_l = 50 Ω)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Circuit current	I _{CC}	non carrier	22.5	29.5	40.5	mA
Conversion gain	C. Gain	RFin = 1 GHz/−15dBmW, Loin = 950 MHz/−5dBmW	−3.5	−0.5	3.5	dB
Input IP3	IIP3	RF (1) = 996 MHz/−15dBmW, RF (2) = 1000 MHz/−15dBmW, Loin = 950 MHz/−5dBmW	8	12	—	dBmW
Noise figure	NF	Loin = 950 MHz/−5dBmW, DSB	—	12	16	dB
RF → L _o Leakage power	P _{RF → Lo}	RFin = 1 GHz/−15dBmW	—	−57	—	dBmW
L _o → RF Leakage power	P _{Lo → RF}	Loin = 950 MHz/−5dBmW	—	−46	—	dBmW

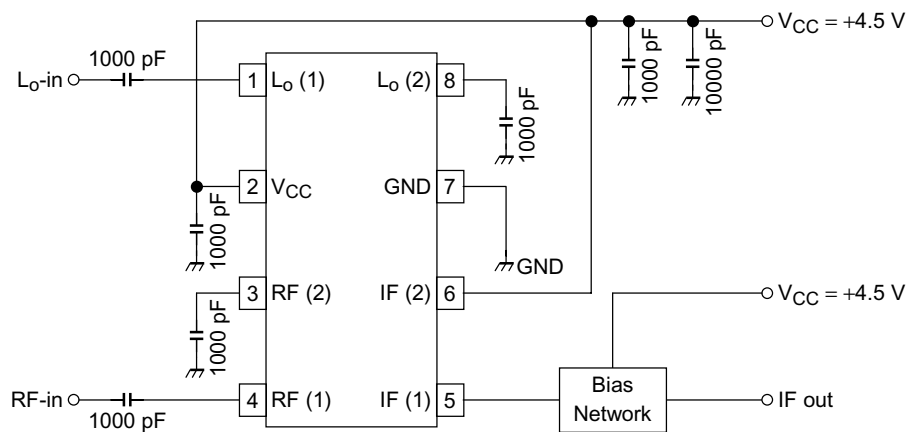
Equivalent Circuit



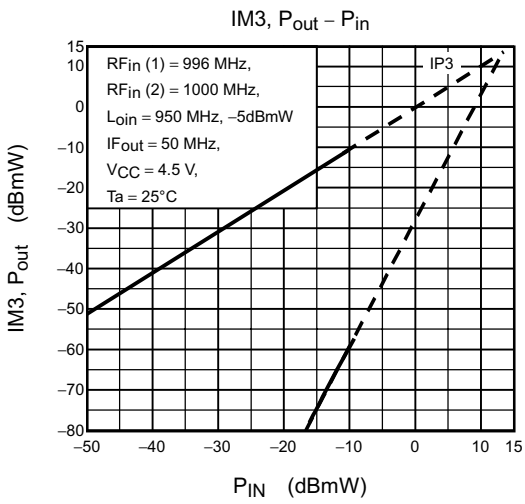
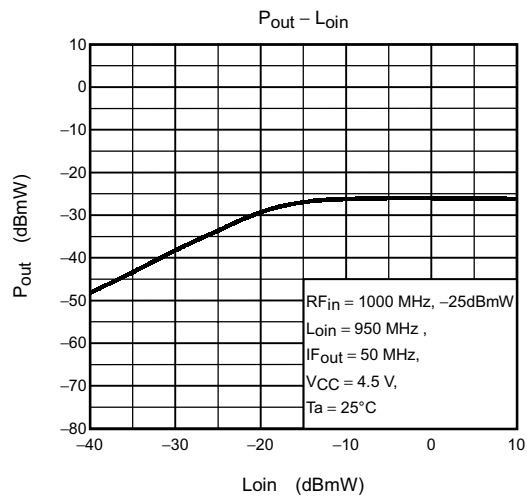
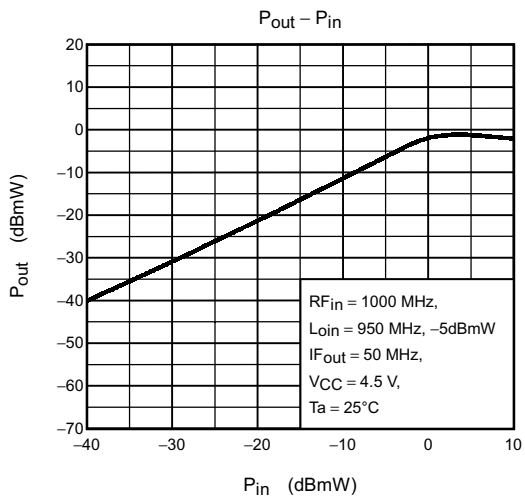
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Test Circuit



Please bias VCC, IF (1) and IF (2) terminals at the same time not to damage.



TA4107F

V_{CC} : 4.5 V/32 mA

IF Amp.MT4S04

V_{CC} : 5.0 V/32 mA

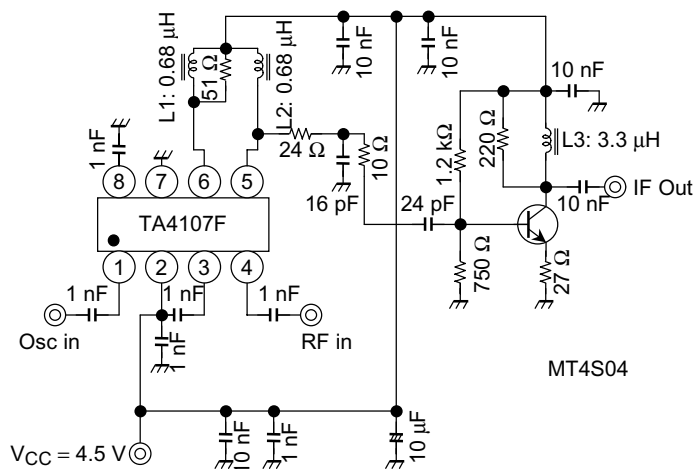
$$R_{Fin} = 1400/1401 \text{ MHz}/-20 \text{ dBmW}$$
$$f_{out} = 44/45\text{MHz}$$

Loin = 1356 MHz/Pin = -5 dBmW

C.G. = 18 dB

$$NF = 12.5 \text{ dB (DSB)}$$

IIP3 = + 12 dBmW

$$IP3_{out} = +30 \text{ dBmW}$$


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.

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Package Dimensions

SSOP8-P-0.65

Unit : mm

