

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA4303F

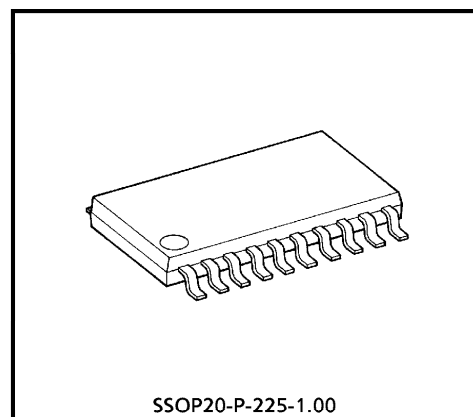
## DOWN CONVERTER FOR BS/CS TUNER IC

### DESCRIPTION

The TA4303F is a monolithic IC to down-convert the L-band (900~2150MHz) signal for the satellite tuners. It's integrated circuits that perform the mixer/oscillator function. They have double-balanced mixer, local oscillator, If amplifier, OSC buffer amplifier and prescaler buffer amplifier circuits.

### FEATURES

- Single chip full band solution, compatible with digital and analog transmissions.
- Single 5V power supply operation
- Full band constant conversion Gain and Noise Figure
- Local oscillator output circuit for PLL
- Low Phase Noise local oscillator

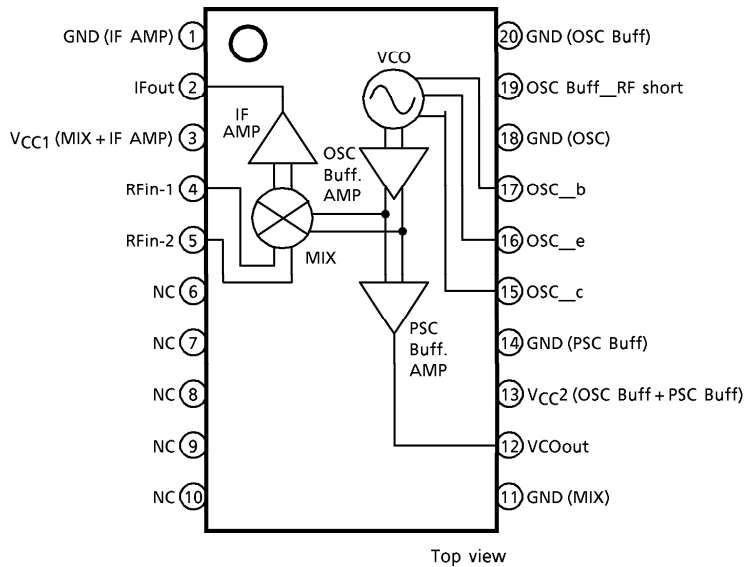


Weight : 0.17g (Typ.)

980508EBA1

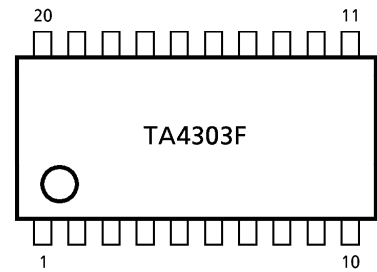
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**PIN CONNECTION FUNCTION BLOCK DIAGRAM**



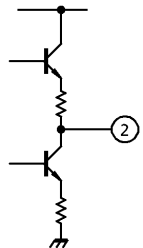
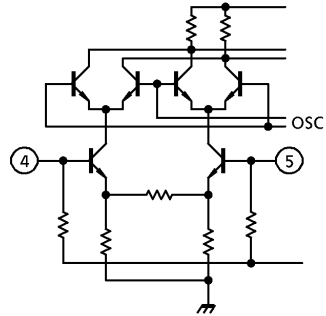
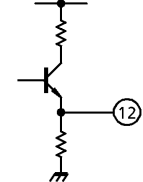
Package : SSOP20-P-225, 1.0mm pitch

**MARKING**



(CAUTION) This devices is electrostatic sensitivity

**EXPLANATION**

PIN No.	PIN NAME	PIN VOLTAGE	EXPLANATION	EQUIVALENT CIRCUIT
1	GND (IF Amp)	0	GND pin for IF Amp.	—
2	IFout	2.2	IF output pin.	
3	VCC1 (MIX + IF Amp)	5.0	Supply voltage for MIX + IF Amp.	—
4	RFin-1	1.7	RF input pin.	
5	RFin-2	1.7	RF input pin.	
6	NC	—	—	—
7	NC	—	—	—
8	NC	—	—	—
9	NC	—	—	—
10	NC	—	—	—
11	GND (MIX)	0	GND pin for MIX.	—
12	VCOout	2.0	OSC output pin.	
13	VCC2 (OSC Buff + PSC Buff)	5.0	Supply voltage pin for OSC Buff + PSC Buff.	—
14	GND (PSC Buff)	0	GND pin for PSC Buff.	—

PIN No.	PIN NAME	PIN VOLTAGE	EXPLANATION	EQUIVALENT CIRCUIT
15	OSC-c	5.0	OSC collector pin, supply voltage pin.	
16	OSC-e	1.8	Emitter pin for OSC.	
17	OSC-b	2.6	Base pin for OSC.	
18	GND (OSC)	0	GND pin for OSC.	
19	RF GND (OSC Buff)	1.4	RF GND pin.	
20	GND (OSC Buff)	0	GND pin for OSC Buff.	—

**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	6	V
Total Power Dissipation	P <sub>D</sub> (Note)	1100	mW
Operating Temperature	T <sub>opr</sub>	-20~85	°C
Storage Temperature	T <sub>stg</sub>	-45~150	°C

(Note) 100cm<sup>2</sup> × 1.6t (Cu layer area : 36%) on glass epoxy resins.

**RECOMMENDED OPERATING RANGE**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub> (Amp)	4.75~5.25	V
Supply Voltage	V <sub>CC</sub> (OSC)	4.75~5.25	V
Input Frequency Range	f <sub>in</sub>	900~2150	MHz
IF Input Frequency Range	f <sub>IF</sub>	350~550	MHz

**ELECTRICAL CHARACTERISTICS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>CC</sub> (Total)	1	V <sub>CC</sub> = 5V, No RF input	61	74	87	mA
Conversion Gain	G <sub>c</sub>	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	14	18	25	dB
Noise Figure	NF	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	—	15	22	dB
Saturation Output	P <sub>o</sub> (sat)	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	5	10	—	dBmW
Third-order Intercept	IP3	1	f <sub>in</sub> = 1.596GHz, 1.6GHz f <sub>IF</sub> = 400MHz, 404MHz	12	17	24	dBmW
Posc	Posc	1	f <sub>LO</sub> = 2.0GHz	-14	-8	—	dBmW

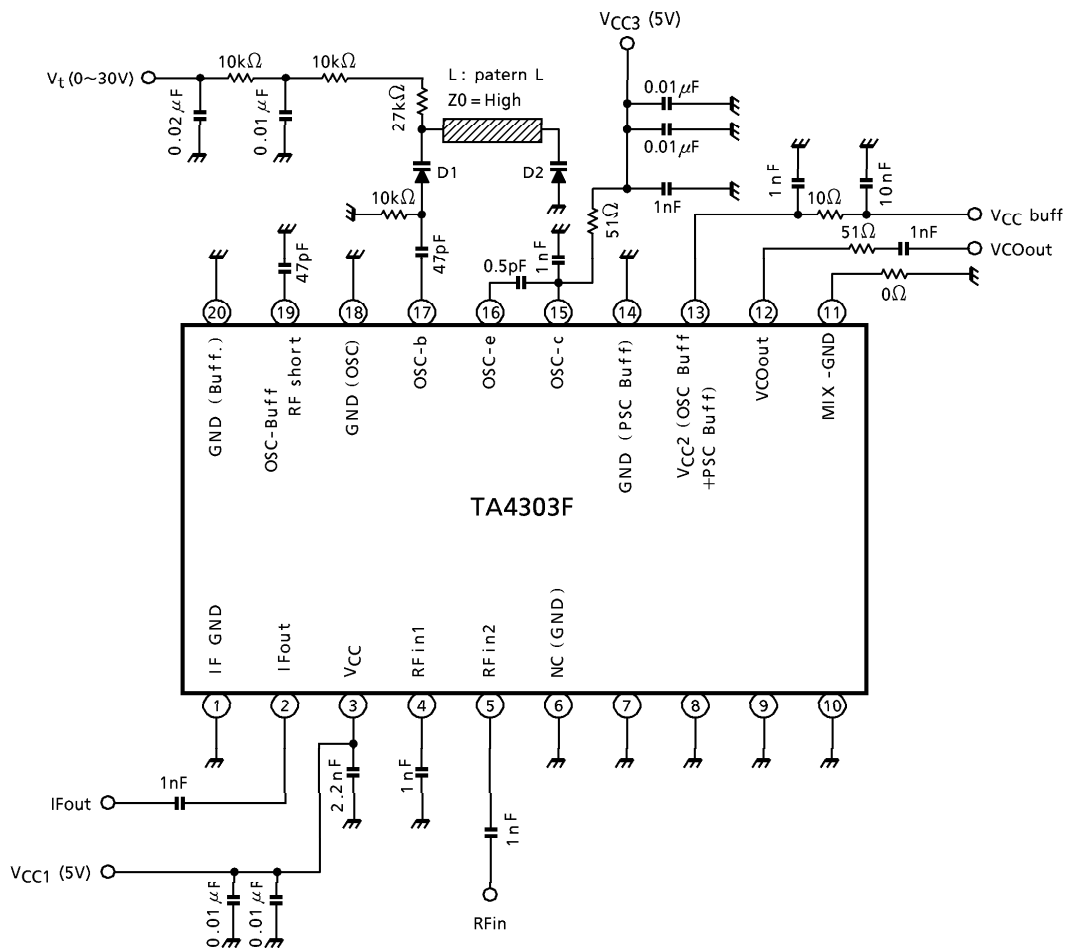
(Note) All electrical characteristics measured in Supply Voltage 5.0V (Amp, OSC, OSC Buffer)

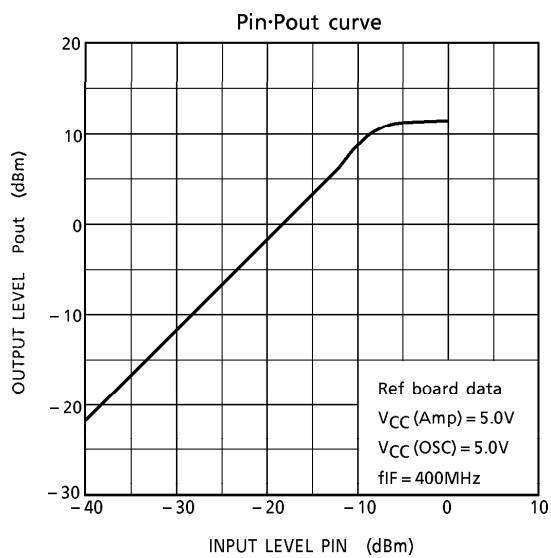
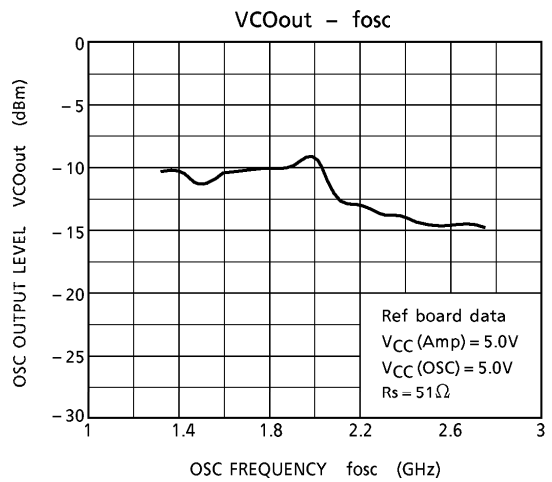
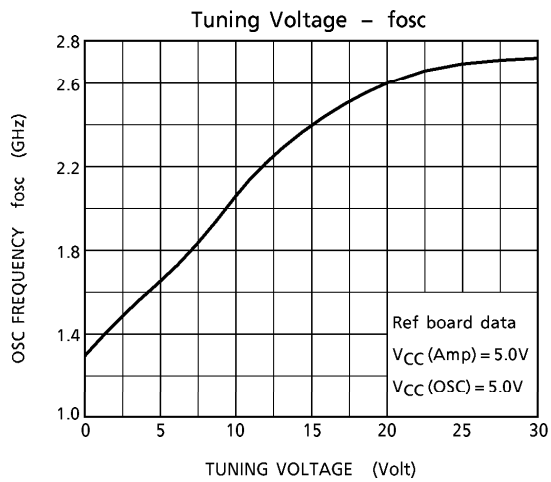
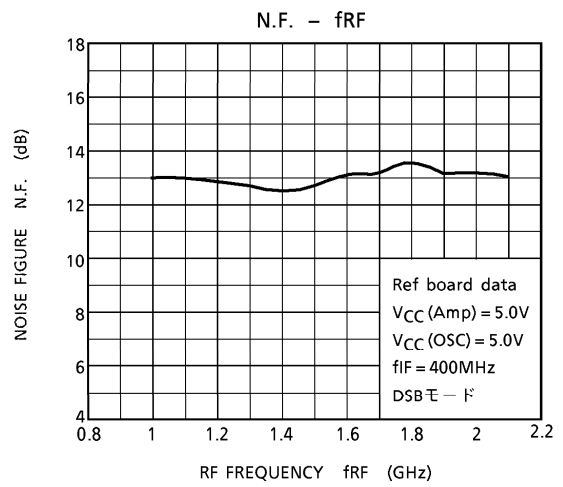
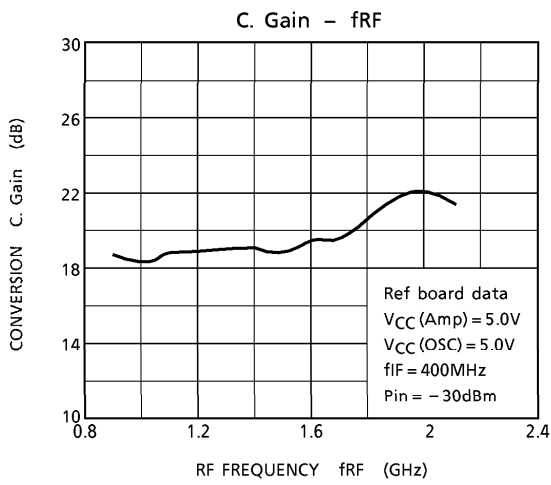
**REFERENCE CHARACTERISTIC**

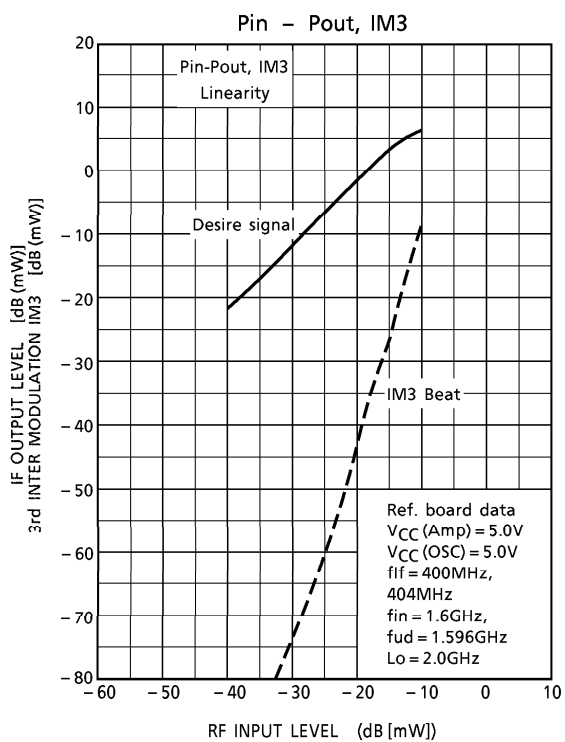
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	TYP.	UNIT
Supply Current	I <sub>CC</sub> (Amp)	1	V <sub>CC</sub> = 5V, No RF input	36	mA
Supply Current	I <sub>CC</sub> (OSC)	1	V <sub>CC</sub> = 5V, No RF input	38	mA

(Note) All electrical characteristics measured in Supply Voltage 5.0V (Amp, OSC, OSC Buffer)

TEST CIRCUIT



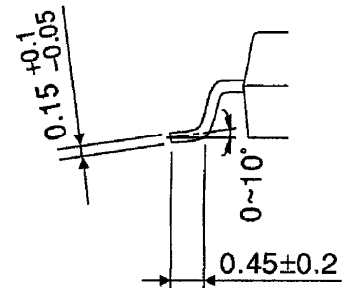
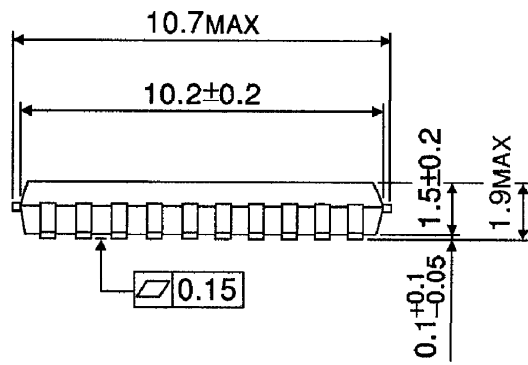
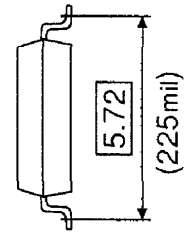
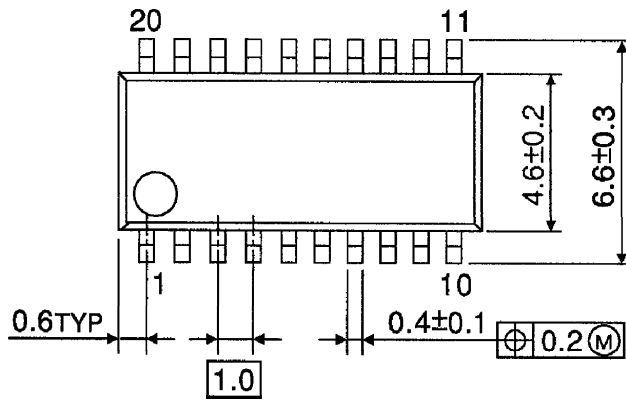






**OUTLINE DRAWING**  
SSOP20-P-225-1.00

Unit : mm



Weight : 0.17g (Typ.)