

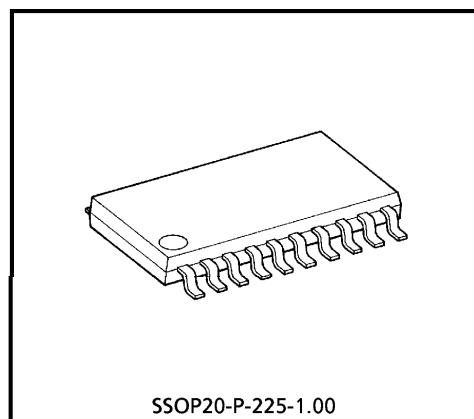
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

# TA4301F

## DOWN CONVERTER FOR BS TUNER IC

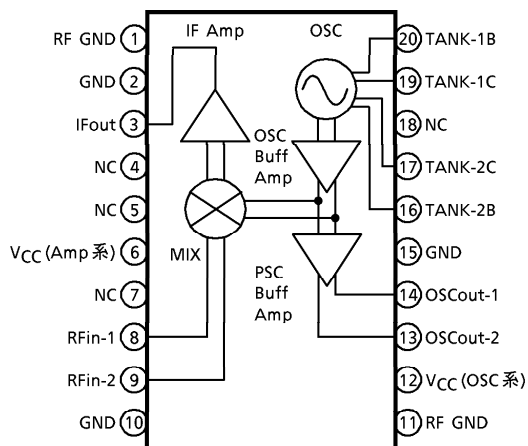
### FEATURES

- Wide band operation (~1.6GHz)
- Operating supply voltage  $V_{CC} = 5V$
- OSC output pin and connect with PLL IC
- SSOP 20 pin small package

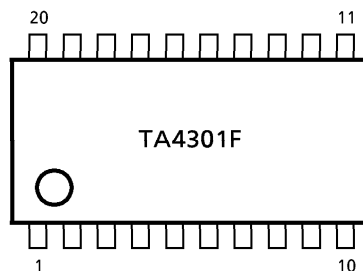


SSOP20-P-225-1.00  
Weight : 0.17g (Typ.)

### PIN CONNECTION FUNCTION BLOCK DIAGRAM



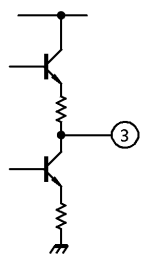
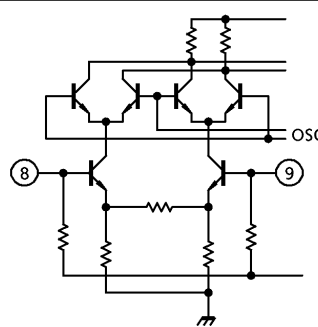
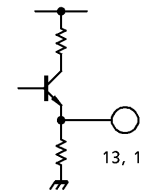
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**EXPLANATION**

PIN No.	PIN NAME	PIN VOLTAGE	EXPLANATION	EQUIVALENT CIRCUIT
1	RF GND	0	GND Pin for OSC, OSC Buff Amp, PSC Buff Amp	—
2	GND	0	GND Pin for IF Amp, MIX	—
3	IFout	2.25	IF Output PIN	
4	NC	—	—	—
5	NC	—	—	—
6	V <sub>CC</sub> (Amp)	5.0	Supply Voltage for MIX, IF Amp	—
7	NC	—	—	—
8	RFin-1	1.74	RF Input Pin	
9	RFin-2	1.74		
10	GND	0	GND Pin for IF Amp, MIX	—
11	RF GND	0	GND Pin for PSC Buff Amp	—
12	V <sub>CC</sub> (OSC)	4.35	Supply Voltage Pin for OSC, OSC Buff Amp, PSC Buff Amp, Req.	—
13	OSCOut-2	1.36	OSC Output Pin 2	
14	OSCOut-1	1.36		
15	GND	0	GND Pin for OSC, OSC Buff Amp, PSC Buff Amp, Req.	—

PIN No.	PIN NAME	PIN VOLTAGE	EXPLANATION	EQUIVALENT CIRCUIT
16	TANK-2B	1.4	Base Pin for OSC	
17	TANK-2C	3.28	Collector Pin for OSC	
18	NC	—	—	
19	TANK-1C	3.28	Collector Pin for OSC	
20	TANK-1B	1.4	Base Pin for OSC	

**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage	For Amp	V <sub>CC</sub> (Amp)	6	V
	For OSC	V <sub>CC</sub> (OSC)	5.5	
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	VALUE	UNIT
Supply Voltage	V <sub>CC</sub> (Amp)	4.5~5.5	V
Supply Voltage	V <sub>CC</sub> (OSC)	4.2~5.0	V
Input Frequency Range	f <sub>in</sub>	900~1600	MHz
IF Input Frequency Range	f <sub>IF</sub>	350~550	MHz

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

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>CC</sub> (Amp)	1	V <sub>CC</sub> = 5V, No RF input	29	32	41	mA
Supply Current	I <sub>CC</sub> (OSC)	1	V <sub>CC</sub> = 4.35V, No RF input	29	36	45	mA
C. Gain	G <sub>c</sub>	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	14	21	25	dB
Noise Figure	NF	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	—	18	22	dB
Po (sat)	Po (sat)	1	f <sub>in</sub> = 1.6GHz, f <sub>IF</sub> = 400MHz	5	10	—	dBmW
IP3	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> = 1.6GHz	—	-4	—	dBmW

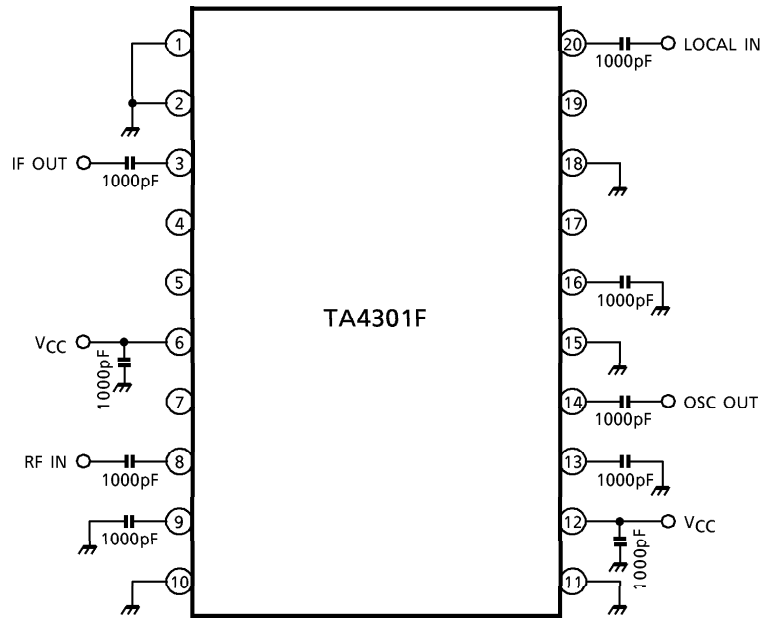
(Note) All electrical characteristics measured in Supply Voltage 5.0V / Amp, 4.35V / OSC.

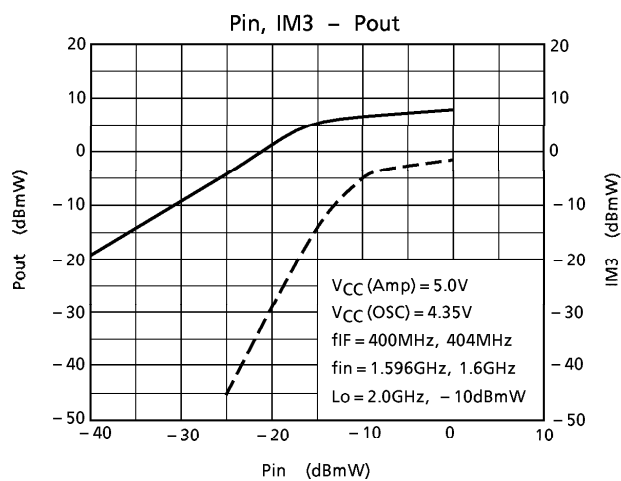
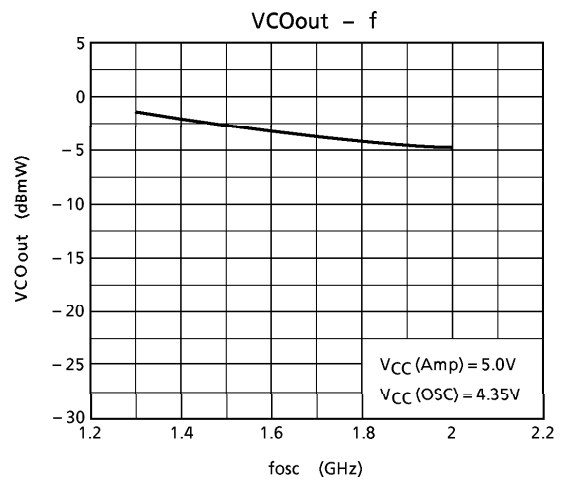
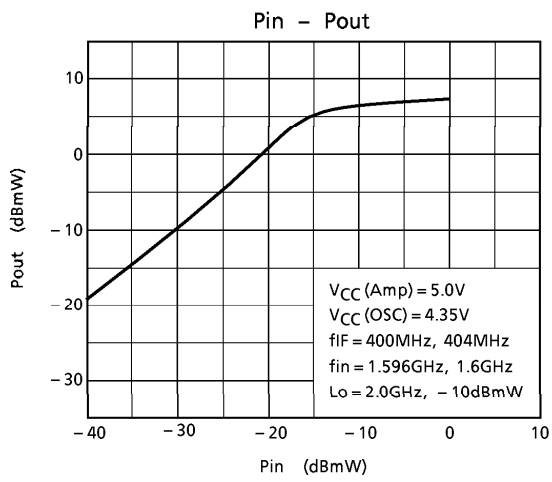
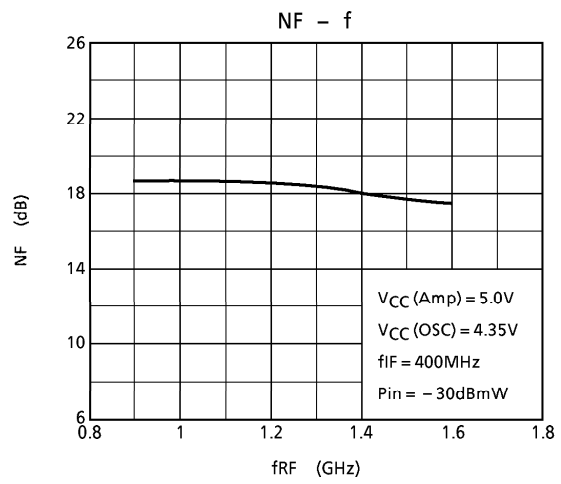
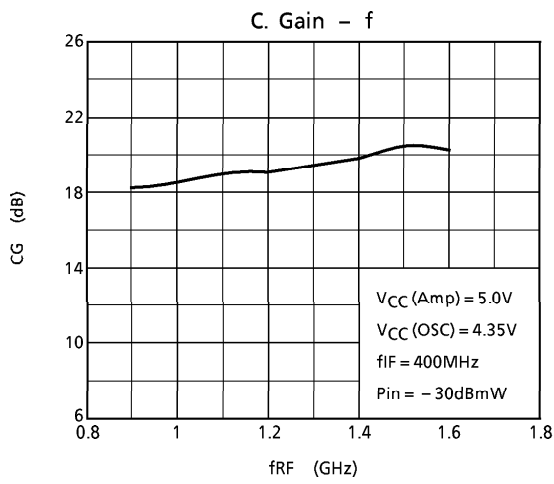
(Reference characteristic)

CHARACTERISTIC	TEST CONDITION	TYP.	UNIT
R <sub>fin</sub> -LO Leak Level	f <sub>LO</sub> = 1.3GHz	-45	dBmW
I <sub>fout</sub> -LO Leak Level	f <sub>LO</sub> = 1.3GHz	-20	dBmW
Input Return Loss	f <sub>in</sub> = 1.6GHz	-4.5	dB
Output Return Loss	f <sub>LO</sub> = 1.3GHz	-5.0	dB

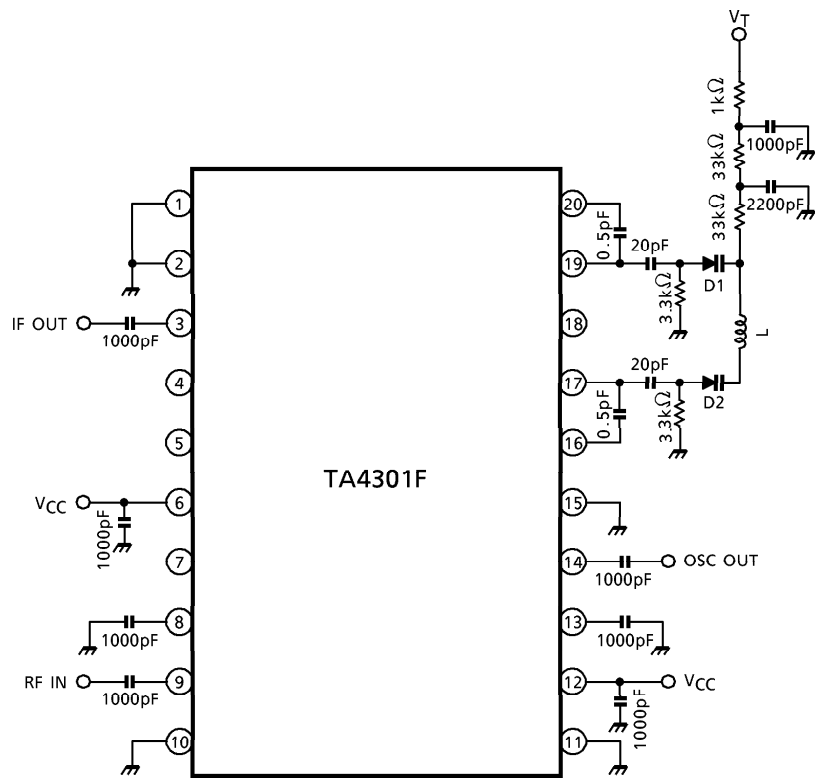
(Note) All electrical characteristics measured in Supply Voltage 5.0V / Amp, 4.35V / OSC.

TEST CIRCUIT 1





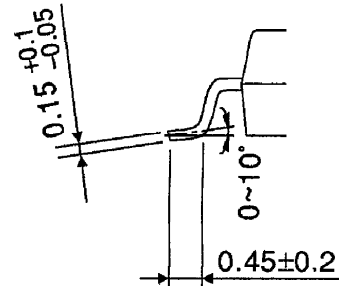
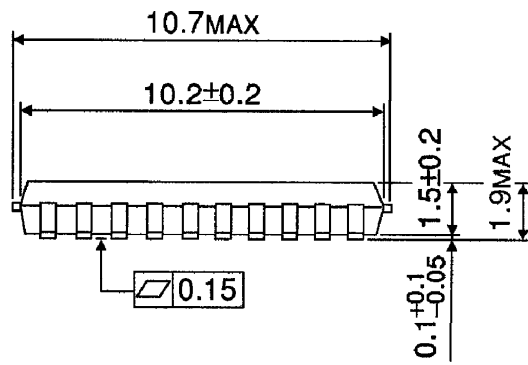
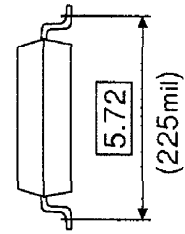
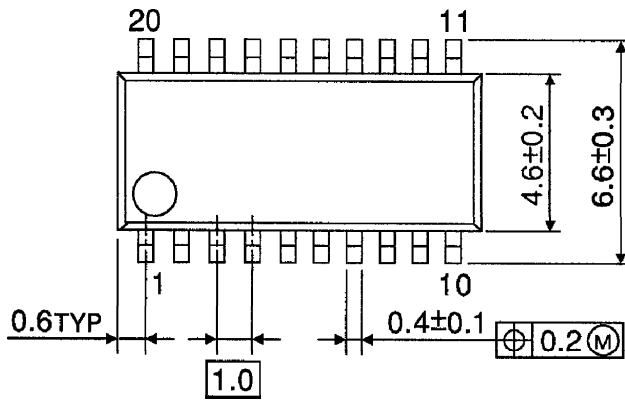
APPLICATION CIRCUIT



D1, D2 : 1SV245  
 L : COIL 0.3d,  $\phi$ 2.0, 1.5T (10nH)

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

Unit : mm



Weight : 0.17g (Typ.)