

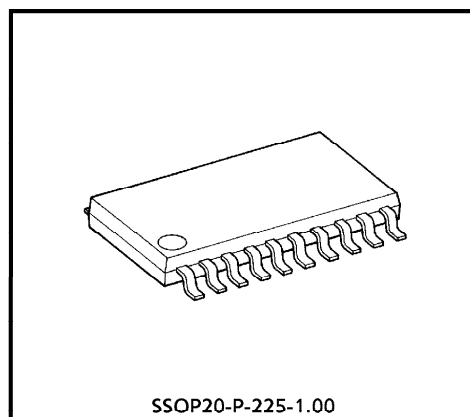
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA4301F

DOWN CONVERTER FOR BS TUNER IC

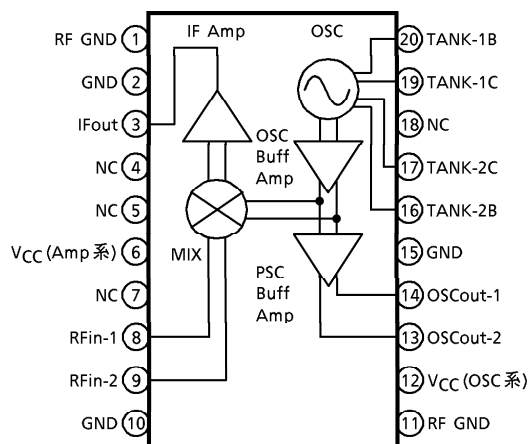
FEATURES

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

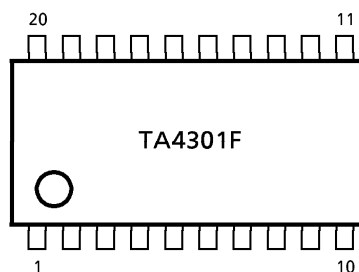


Weight : 0.17g (Typ.)

PIN CONNECTION FUNCTION BLOCK DIAGRAM



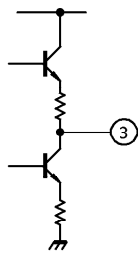
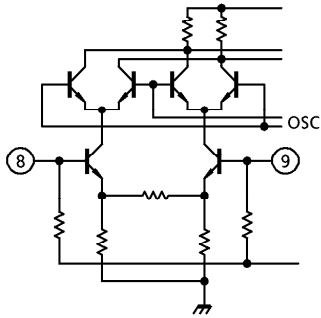
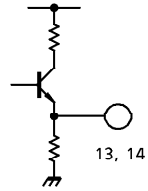
MARKING



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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 _{CC} (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 _{CC} (OSC)	4.35	Supply Voltage Pin for OSC, OSC Buff Amp, PSC Buff Amp, Req.	—
13	OSCCout-2	1.36	OSC Output Pin 2	
14	OSCCout-1	1.36	OSC Output Pin 1	
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 _{CC} (Amp)	6	V
	For OSC	V _{CC} (OSC)	5.5	
Total Power Dissipation		P _D (Note)	1100	mW
Operating Temperature		T _{opr}	− 20~85	°C
Storage Temperature		T _{stg}	− 45~150	°C

(Note) 100cm² × 1.6t (Cu layer area : 36%) on glass epoxy resins.

RECOMMENDED OPERATING RANGE

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Supply Voltage	V _{CC} (Amp)	4.5~5.5	V
Supply Voltage	V _{CC} (OSC)	4.2~5.0	V
Input Frequency Range	f _{in}	900~1600	MHz
IF Input Frequency Range	f _{IF}	350~550	MHz

ELECTRIC CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I _{CC} (Amp)	1	V _{CC} = 5V, No RF input	29	32	41	mA
Supply Current	I _{CC} (OSC)	1	V _{CC} = 4.35V, No RF input	29	36	45	mA
C. Gain	G _c	1	f _{in} = 1.6GHz, f _{IF} = 400MHz	14	21	25	dB
Noise Figure	NF	1	f _{in} = 1.6GHz, f _{IF} = 400MHz	—	18	22	dB
Po (sat)	Po (sat)	1	f _{in} = 1.6GHz, f _{IF} = 400MHz	5	10	—	dBmW
IP3	IP3	1	f _{in} = 1.596GHz, 1.6GHz f _{IF} = 400MHz, 404MHz	12	17	24	dBmW
Posc	Posc	1	f _{LO} = 1.6GHz	—	− 4	—	dBmW

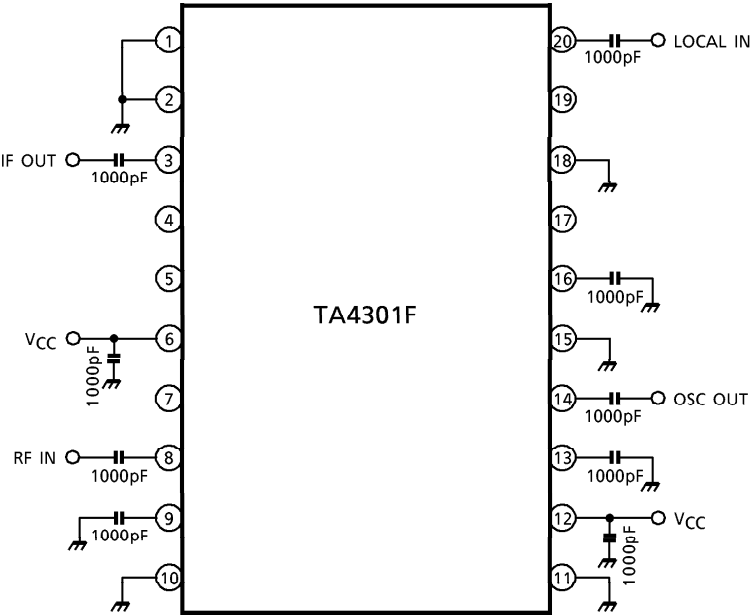
(Note) All electrical characteristics measured in Supply Voltage 5.0V / Amp, 4.35V / OSC.

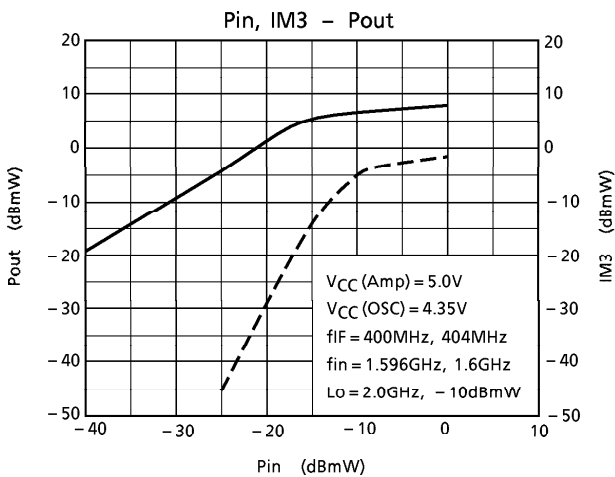
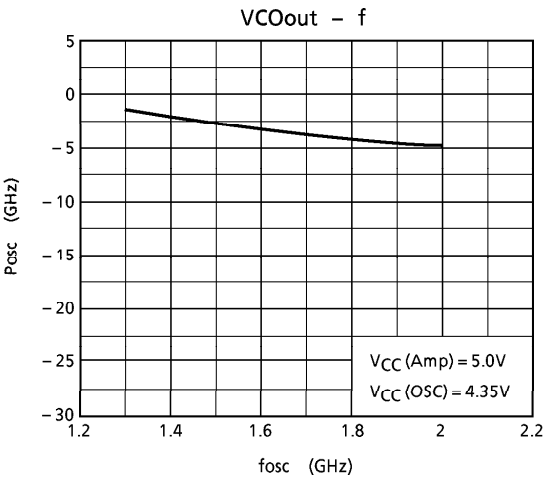
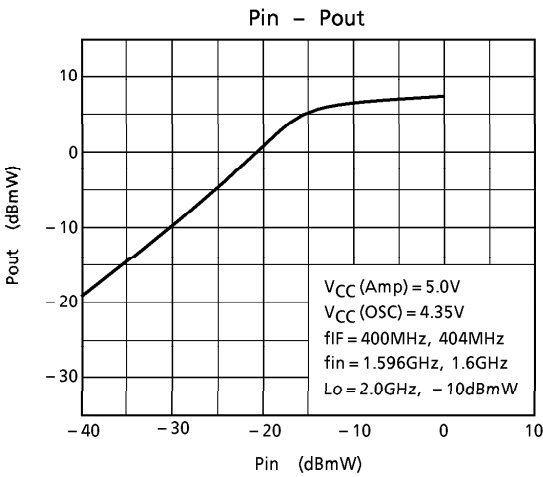
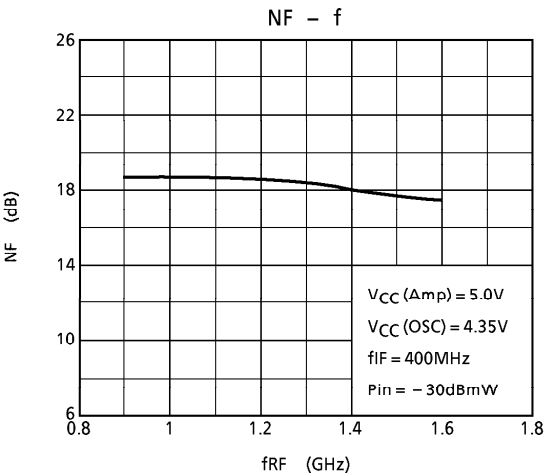
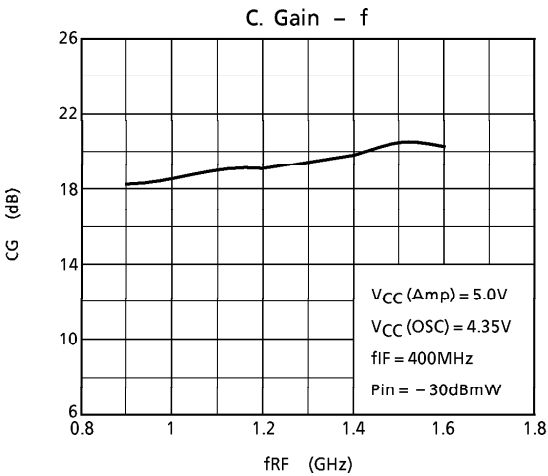
(Reference characteristic)

CHARACTERISTIC	TEST CONDITION	TYP.	UNIT
Rfin-LO Leak Level	f _{LO} = 1.3GHz	− 45	dBmW
Ifout-LO Leak Level	f _{LO} = 1.3GHz	− 20	dBmW
Input Return Loss	f _{in} = 1.6GHz	− 4.5	dB
Output Return Loss	f _{LO} = 1.3GHz	− 5.0	dB

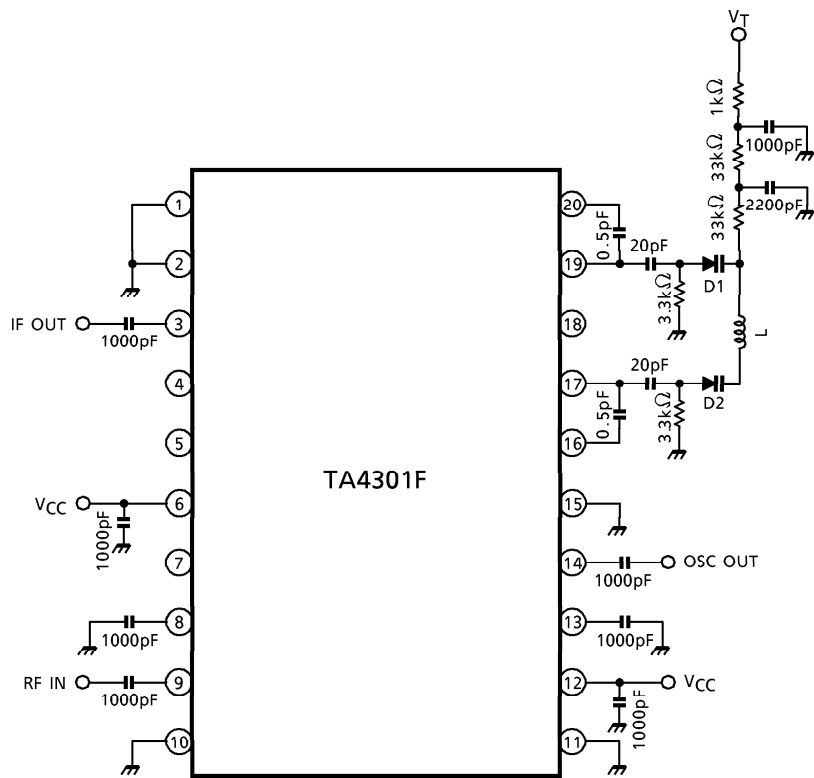
(Note) All electrical characteristics measured in Supply Voltage 5.0V / Amp, 4.35V / OSC.

TEST CIRCUIT 1





APPLICATION CIRCUIT



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