

# TA4302F

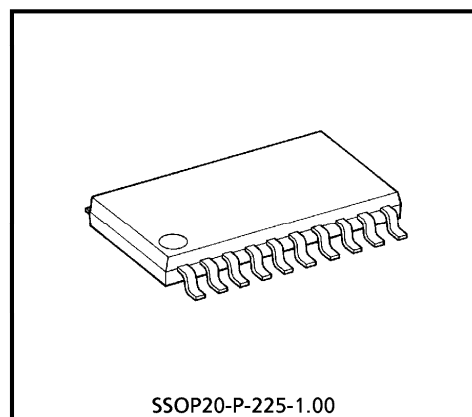
## DOWN CONVERTER FOR CATV

### DESCRIPTION

The TA4302F is a monolithic IC to down-convert the L-band signal for the CATV 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.

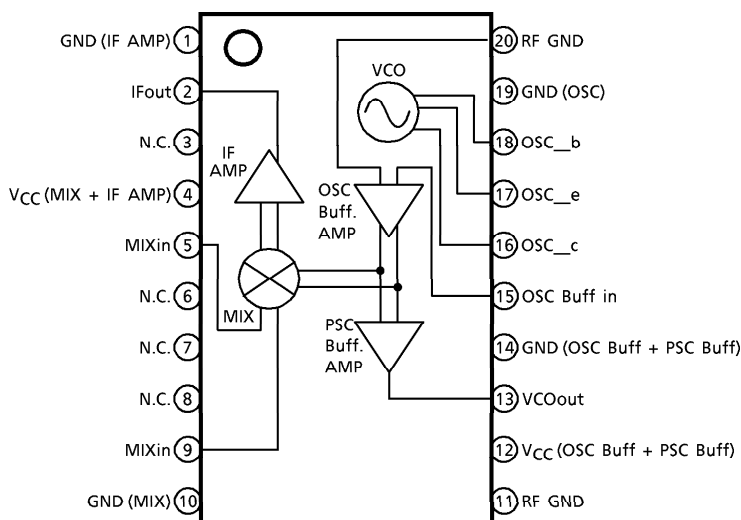
### FEATURES

- Single 5 V power supply operation
- Local oscillator output circuit for PLL
- Low Phase Noise local oscillator

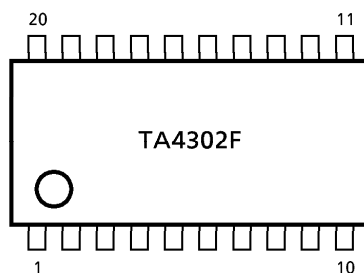


Weight : 0.17 g (Typ.)

### PIN CONNECTION / FUNCTION BLOCK DIAGRAM



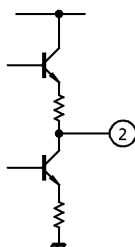
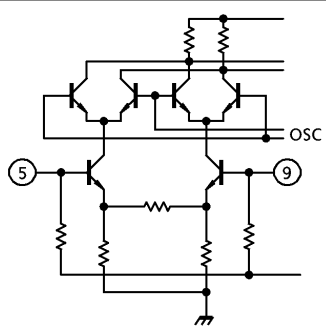
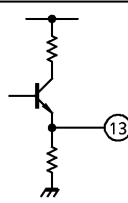
### MARKING



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**PIN DESCRIPTION**

PIN No.	PIN SYMBOL	PIN VOLTAGE	DESCRIPTION	EQUIVALENT CIRCUIT
1	GND	0	IF amp GND pin	—
2	IFout	2.2	IF output pin	
3	NC	—	—	—
4	V <sub>CC</sub> (Amp)	5.0	MIX IF amp power pin	—
5	MIXin-1	1.6	RF input pin	
6	NC	—	—	—
7	NC	—	—	—
8	NC	—	—	—
9	MIXin-2	1.6	RF GND pin	See the equivalent circuit for pin 5.
10	GND	0	MIX GND pin	—
11	GND	0	GND pin for OSC buffer amp and PSC buffer amp	—
12	V <sub>CC</sub> (Buff)	5.0	Power pin for OSC buffer amp and PSC buffer amp	—
13	VCOout	1.4	Output pin for local oscillator signal from PSC buffer amp	
14	GND (Buff)	0	GND pin for OSC buffer amp and PSC buffer amp	—

PIN No.	PIN SYMBOL	PIN VOLTAGE	DESCRIPTION	EQUIVALENT CIRCUIT
15	OSC Buff in	1.4	Input pin for local oscillator signal from OSC buffer amp	
16	OSC-c	5.0	OSC collector pin, power pin, or local oscillator signal output pin	
17	OSC-e	1.6	OSC emitter pin	
18	OSC-b	2.4	OSC base pin	
19	GND (OSC)	0	OSC GND pin	—
20	RF GND	1.4	RF GND pin	See the equivalent circuit for pin 5.

**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)	6	
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) 100 cm<sup>2</sup> × 1.6 t (Cu layer area : 36%) on glass epoxy resins.

**RECOMMENDED OPERATING RANGE**

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Supply Voltage	V <sub>CC</sub> (Amp, OSC)	4.5~5.5	V

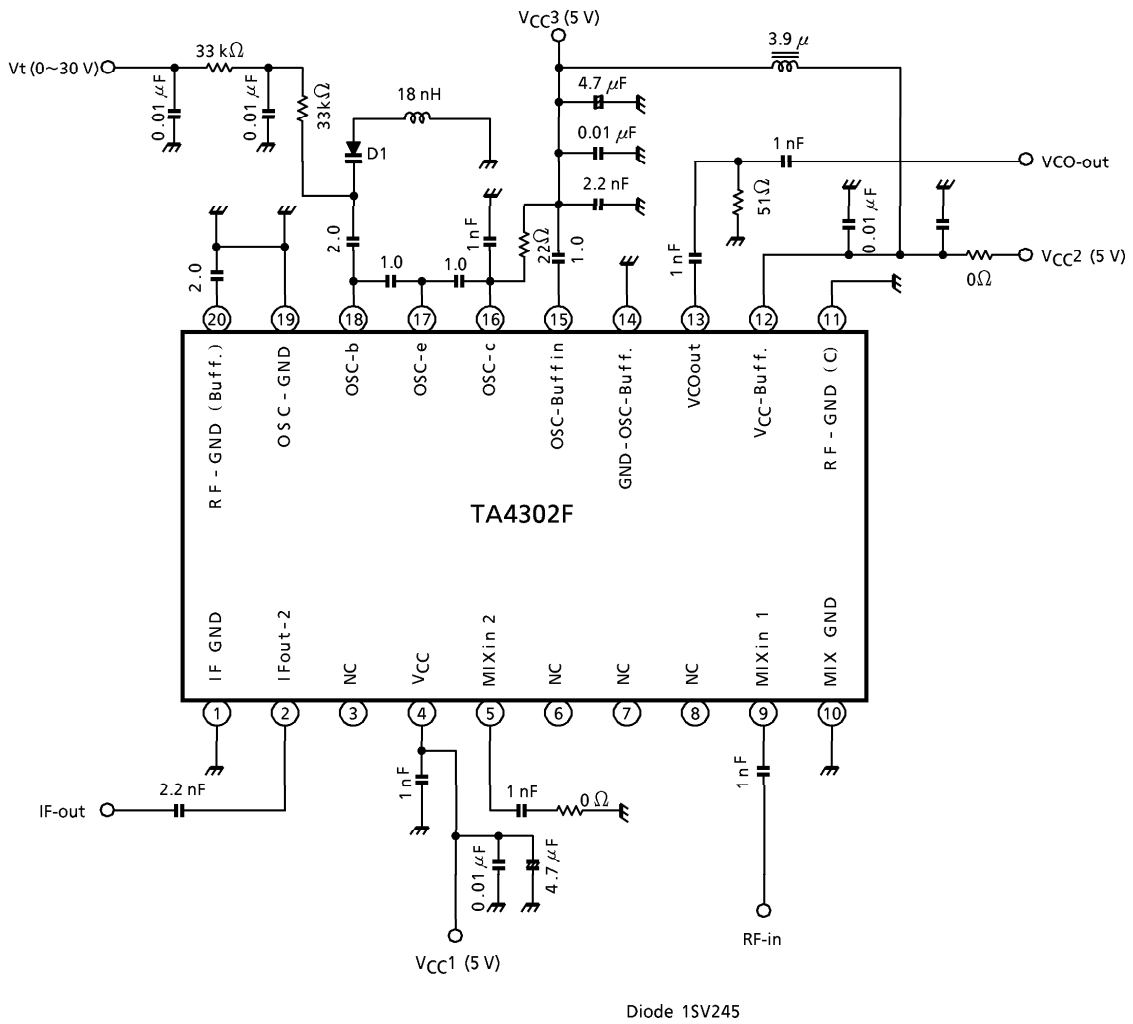
**ELECTRIC CHARACTERISTICS** (Reference) (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>CC</sub> (Amp)	1	V <sub>CC</sub> = 5.0 V, No RF input	34	42	50	mA
Supply Current	I <sub>CC</sub> (OSC)	1	V <sub>CC</sub> = 5.0 V, No RF input	27	32	40	mA
Conversion Gain	G <sub>c</sub>	1	f <sub>in</sub> = 955 MHz, f <sub>IF</sub> = 45 MHz	—	18	23	dB
Noise Figure	NF	1	f <sub>in</sub> = 955 MHz (SSB), f <sub>IF</sub> = 45 MHz	—	17.0	—	dB
Saturation Output	P <sub>o</sub> (sat)	1	f <sub>in</sub> = 955 MHz, f <sub>IF</sub> = 45 MHz	—	(*) +9	—	dBmW
Third-order Intercept	IP3	1	f <sub>in</sub> = 949, 955 MHz f <sub>IF</sub> = 39, 45 MHz	—	+15	—	dBmW
Phase Noise	P / N	1	f <sub>osc</sub> = 910 MHz, 10 kHz offset	—	-85	-80	dBc / Hz
Oscillator Output Power	VCOout	1	f <sub>osc</sub> = 910 MHz	—	-5	—	dBmW

(\*) IP3 : P<sub>in</sub> = -25 dBmW

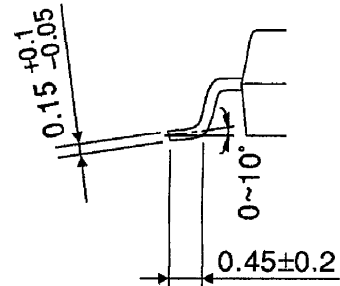
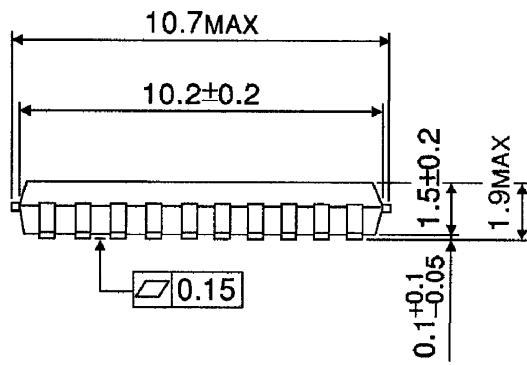
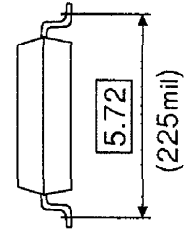
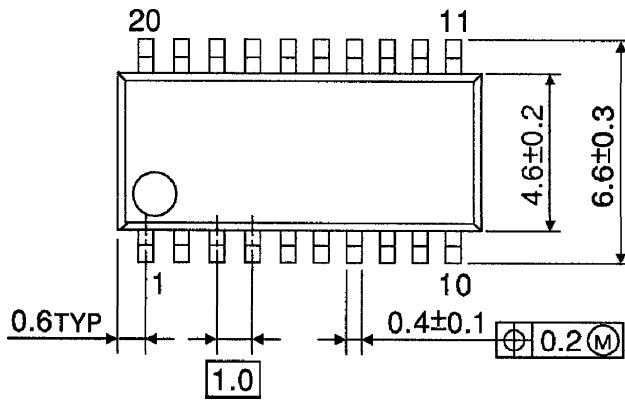
(Note) All electrical characteristics measured in Supply Voltage 5.0 V / Amp, 5.0 V / OSC.

TEST CIRCUIT 1



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

Unit : mm



Weight : 0.17 g (Typ.)