

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7331P, TA7331F**LOW QUIESCENT CURRENT AUDIO POWER AMPLIFIER
FOR MINI / MICRO CASSETTE TAPE RECORDER**

The TA7331P and TA7331F are an audio power amplifier designed for use in low voltage consumer applications.

Especially it is suitable for mini / micro cassette tape recorder and pocket radio applications.

As the quiescent current is only 3mA at 3V, it is best for battery operation.

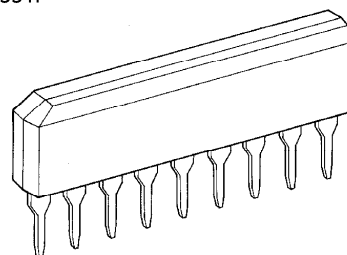
FEATURES

- Operating supply voltage range
: $V_{CC}(\text{opr}) = 2 \sim 5\text{V} \cdots \text{TA7331P}$ ($T_a = 25^\circ\text{C}$)
: $V_{CC}(\text{opr}) = 2 \sim 4\text{V} \cdots \text{TA7331F}$ ($T_a = 25^\circ\text{C}$)
- Low quiescent current : $I_{CCQ} = 3\text{mA}$ (Typ.)
($V_{CC} = 3\text{V}$, $T_a = 25^\circ\text{C}$)
- OTL audio power amplifier
- TA7331F (SO) is standard model of flat package

OUTPUT POWER TABLE ($f = 1\text{kHz}$, $\text{THD} = 10\%$, $T_a = 25^\circ\text{C}$)

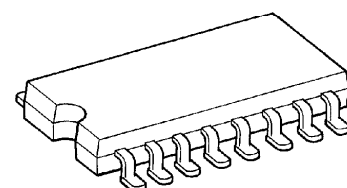
PACKAGE		TA7331P	TA7331F
$V_{CC} = 3\text{V}$	$R_L = 8\Omega$	120mW	120mW
	$R_L = 4\Omega$	200mW	200mW
	$R_L = 8\Omega$ BTL	400mW	400mW
$V_{CC} = 4.5\text{V}$	$R_L = 8\Omega$	300mW	Cannot use
	$R_L = 4\Omega$	500mW	

TA7331P



SIP9-P-2.54A

TA7331F (SO)



SSOP16-P-225-1.00

Weight

SIP9-P-2.54A : 0.92g (Typ.)
SSOP16-P-225-1.00 : 0.14g (Typ.)

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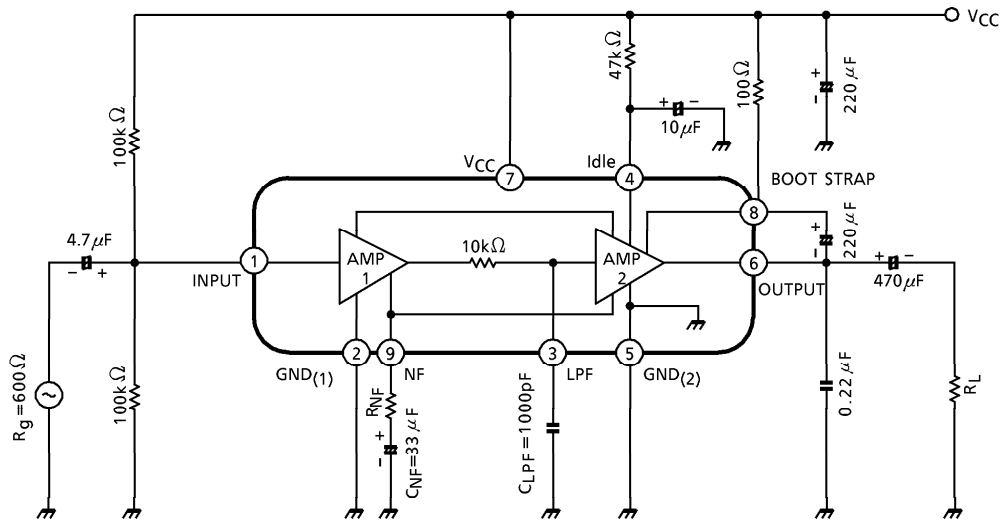
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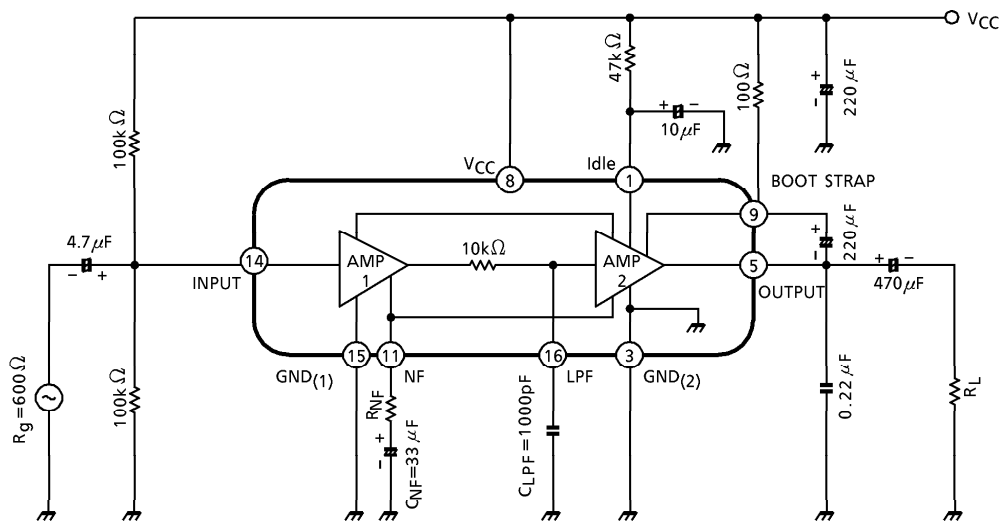
● The information contained herein is subject to change without notice.

TEST CIRCUIT / BLOCK DIAGRAM

TA7331P



TA7331F



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	8	V
Operating Supply Voltage	TA7331P	5	V
	TA7331F	4	
Power Dissipation	TA7331P	700	mW
	TA7331F	350	
Operating Temperature	T _{opr}	− 10~60	°C
Storage Temperature	T _{stg}	− 55~150	°C

(Note) Derated above 25°C in the proportion of 5.6mW/°C for TA7331P and 2.8mW/°C for the TA7331F.

ELECTRICAL CHARACTERISTICS

TA7331P

Unless otherwise specified, V_{CC} = 3V, f = 1kHz, R_L = 4Ω, Ta = 25°C

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _{CCQ} (1)	—		—	3	5	mA
	I _{CCQ} (2)	—	V _{CC} = 4.5V	—	5	6.5	
Voltage Gain	G _V (1)	—	R _{NF} = 0Ω, C _{NF} = 33μF	47	50	53	dB
	G _V (2)	—	R _{NF} = 82Ω, C _{NF} = 33μF	—	40	—	
Output Power	P _O (1)	—	THD = 10%	170	200	—	mW
	P _O (2)	—	R _L = 8Ω, THD = 10%, V _{CC} = 4.5V	—	300	—	
Total Harmonic Distortion	THD (1)	—	P _O = 100mW, R _{NF} = 0Ω	—	1.0	5	%
	THD (2)	—	P _O = 50mW, R _{NF} = 0Ω, R _L = 8Ω	—	0.8	—	
Output Noise Voltage	V _{no}	—	R _g = 1kΩ, BPF ≒ 50Hz~20kHz	—	0.2	0.4	mV _{rms}

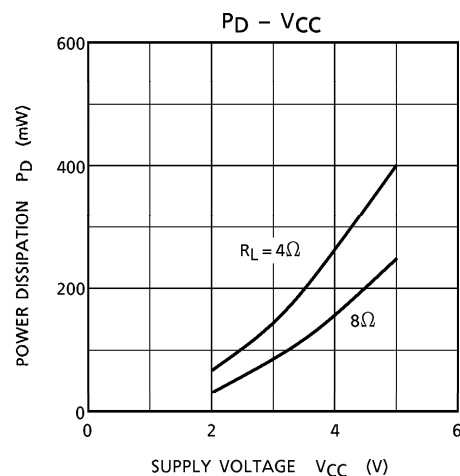
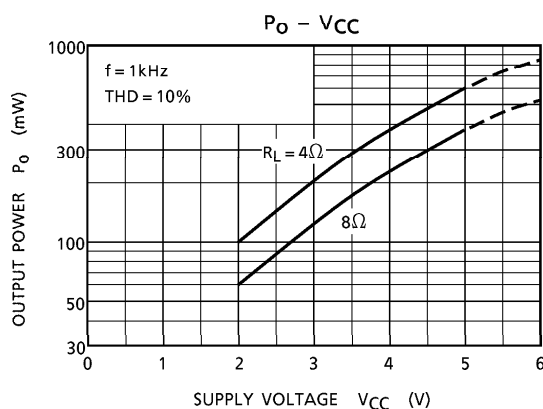
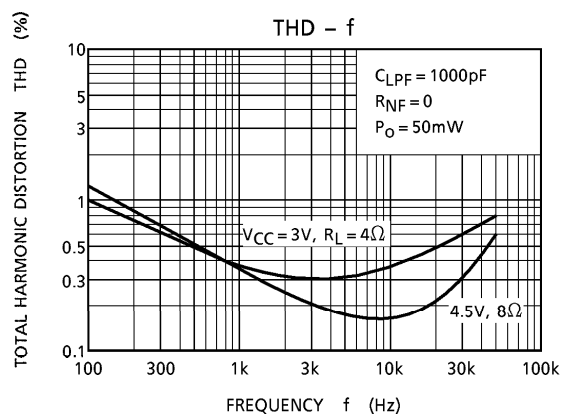
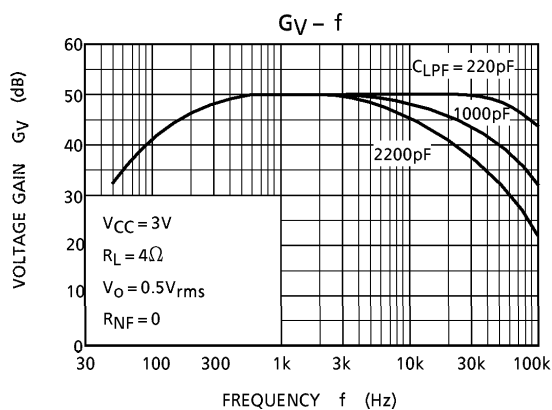
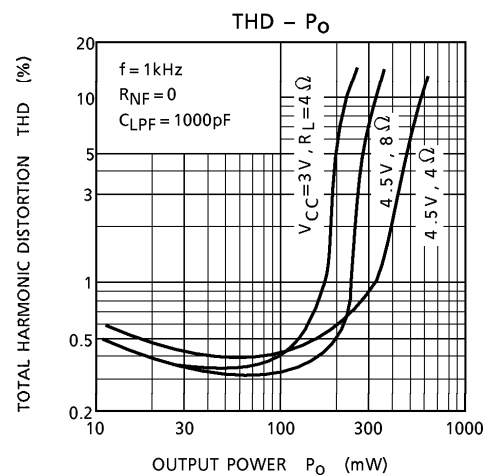
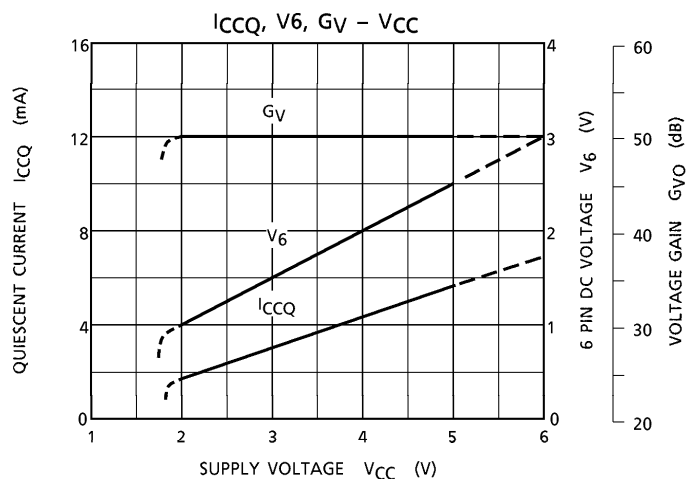
TA7331F

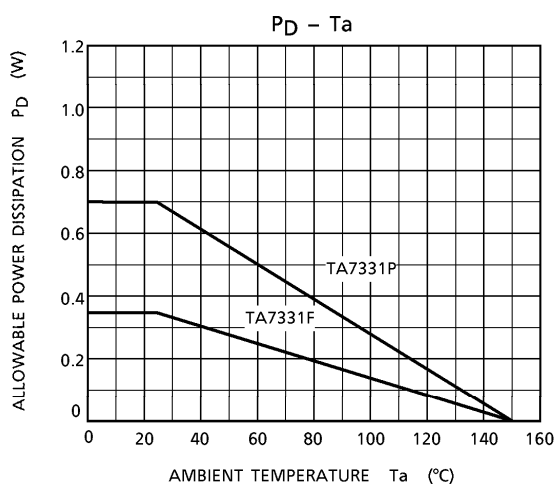
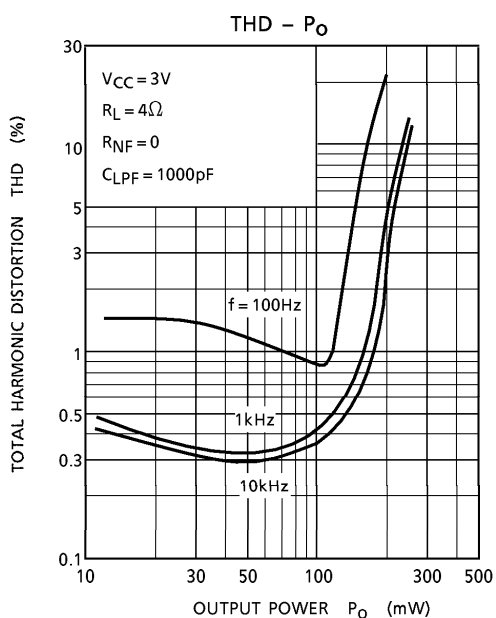
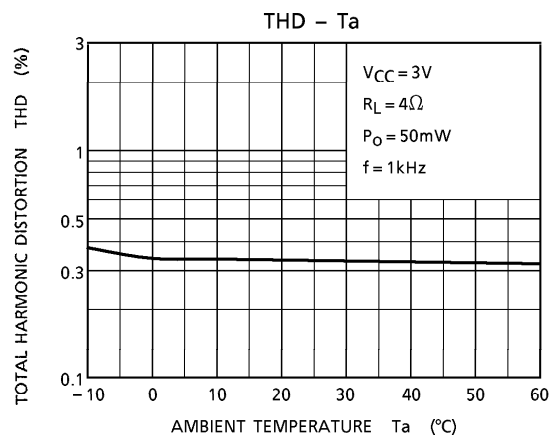
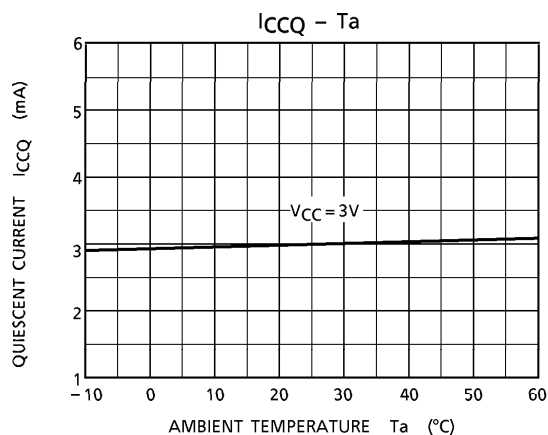
Unless otherwise specified, V_{CC} = 3V, f = 1kHz, R_L = 4Ω, Ta = 25°C

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I _{CCQ} (1)	—		—	3	5	mA
Voltage Gain	G _V (1)	—	R _{NF} = 0Ω, C _{NF} = 33μF	47	50	53	dB
	G _V (2)	—	R _{NF} = 82Ω, C _{NF} = 33μF	—	40	—	
Output Power	P _O (1)	—	THD = 10%	170	200	—	mW
Total Harmonic Distortion	THD (1)	—	P _O = 100mW, R _{NF} = 0Ω	—	1.0	5	%
	THD (2)	—	P _O = 50mW, R _{NF} = 0Ω, R _L = 8Ω	—	0.8	—	
Output Noise Voltage	V _{no}	—	R _g = 1kΩ, BPF ≒ 50Hz~20kHz	—	0.2	0.4	mV _{rms}

CHARACTERISTIC CURVES

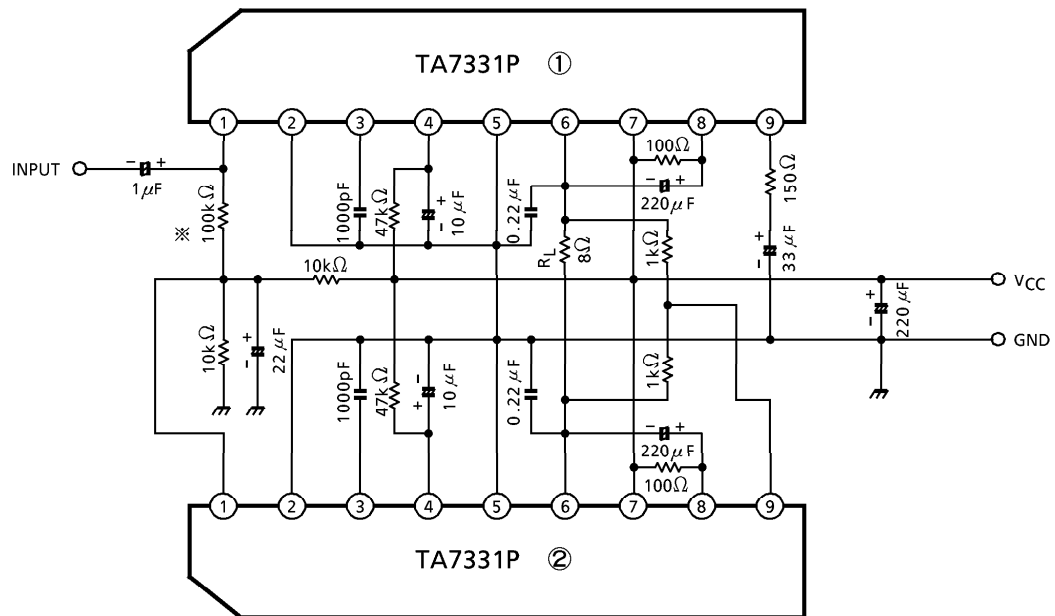
(Note) Data above $V_{CC} = 4V$ is only TA7331P.





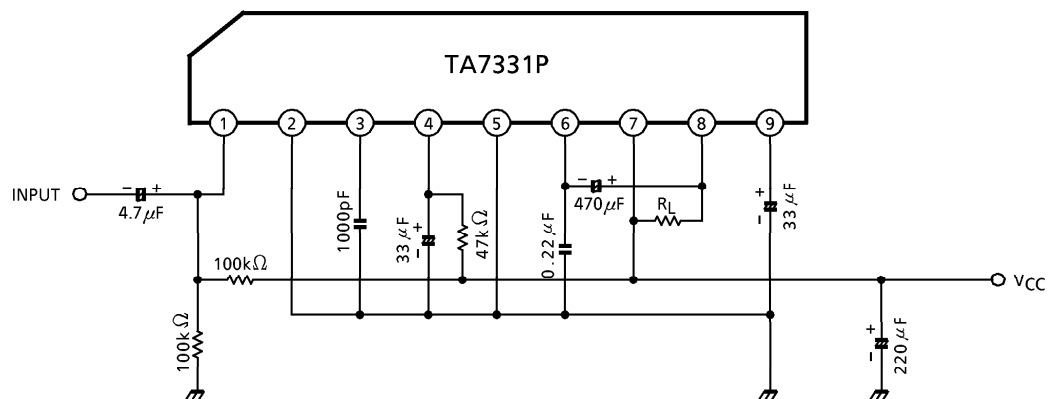
TA7331P

APPLICATION 1 (BTL CONNECTION)

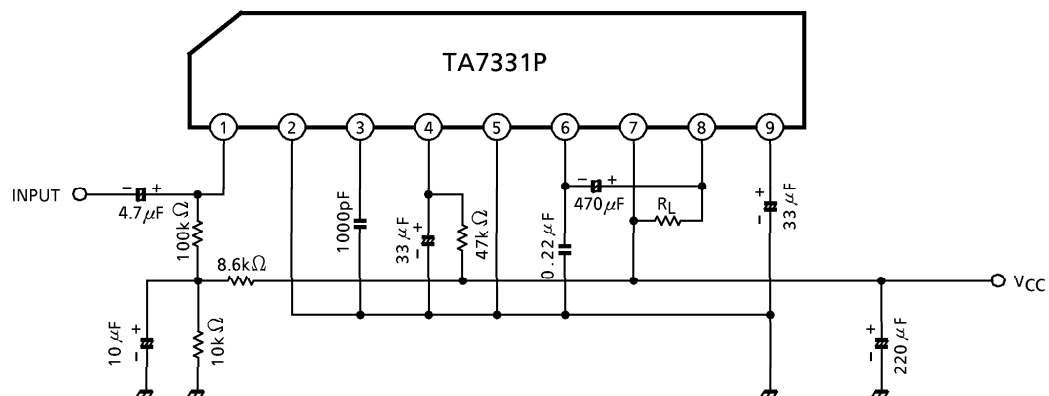


※ It is necessary to adjust to I_{CCQ} .

APPLICATION 2 (FEW EXTERNAL PARTS)

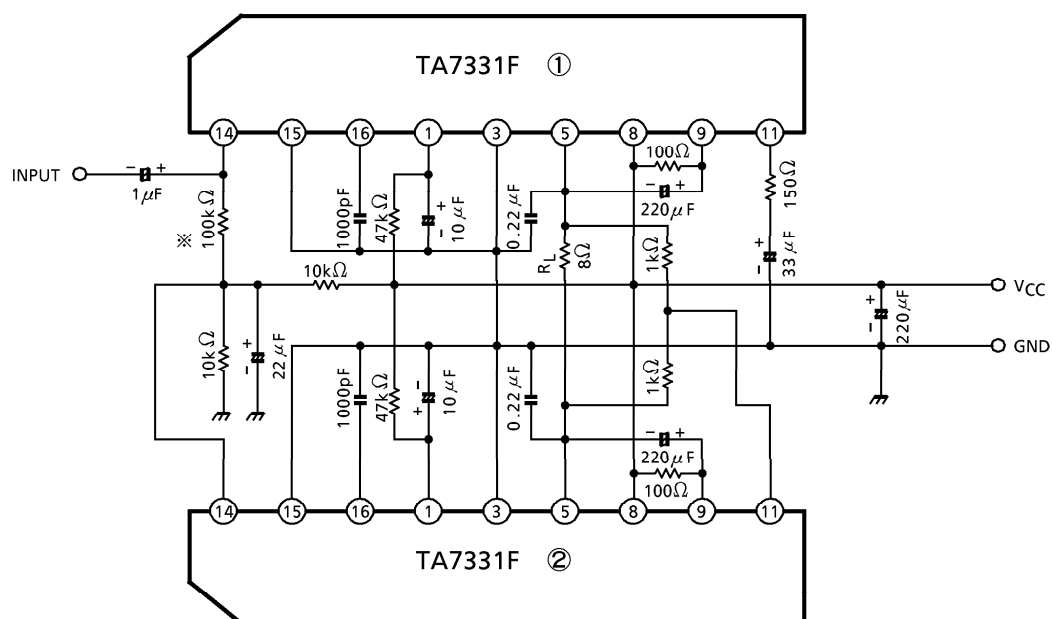


APPLICATION 3



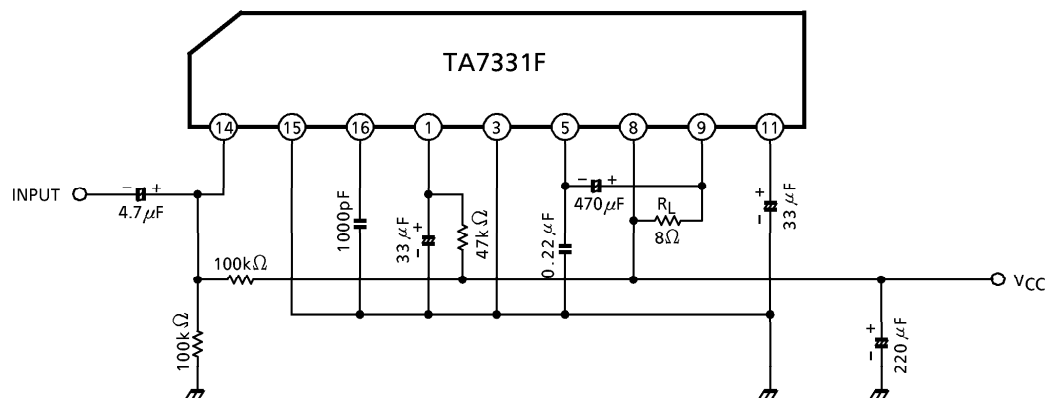
TA7331F

APPLICATION 1 (BTL CONNECTION)

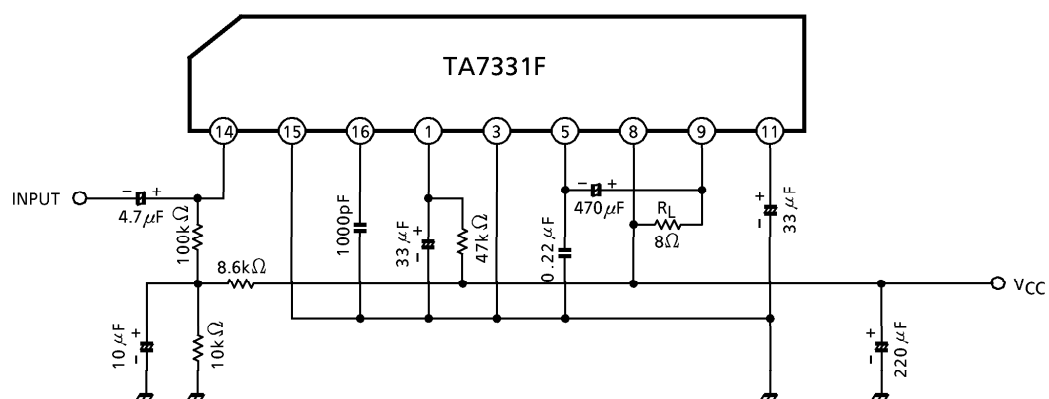


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APPLICATION 2 (FEW EXTERNAL PARTS)

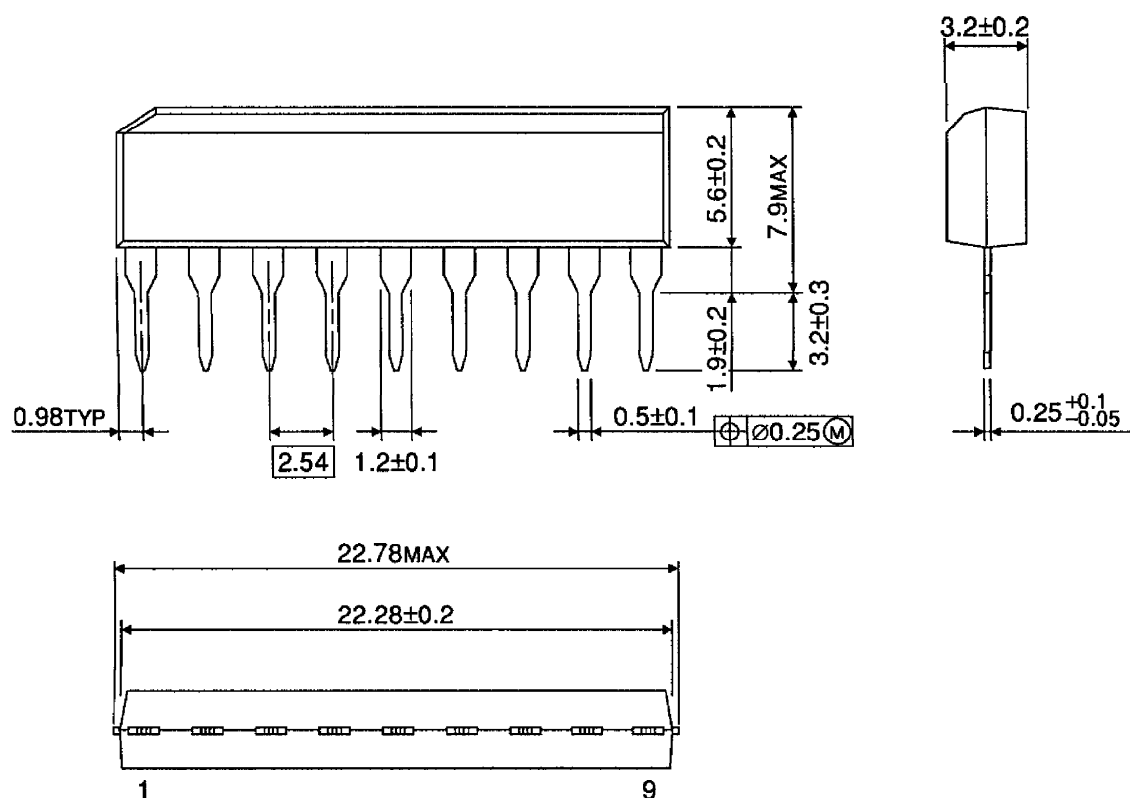


APPLICATION 3



OUTLINE DRAWING
SIP9-P-2.54A

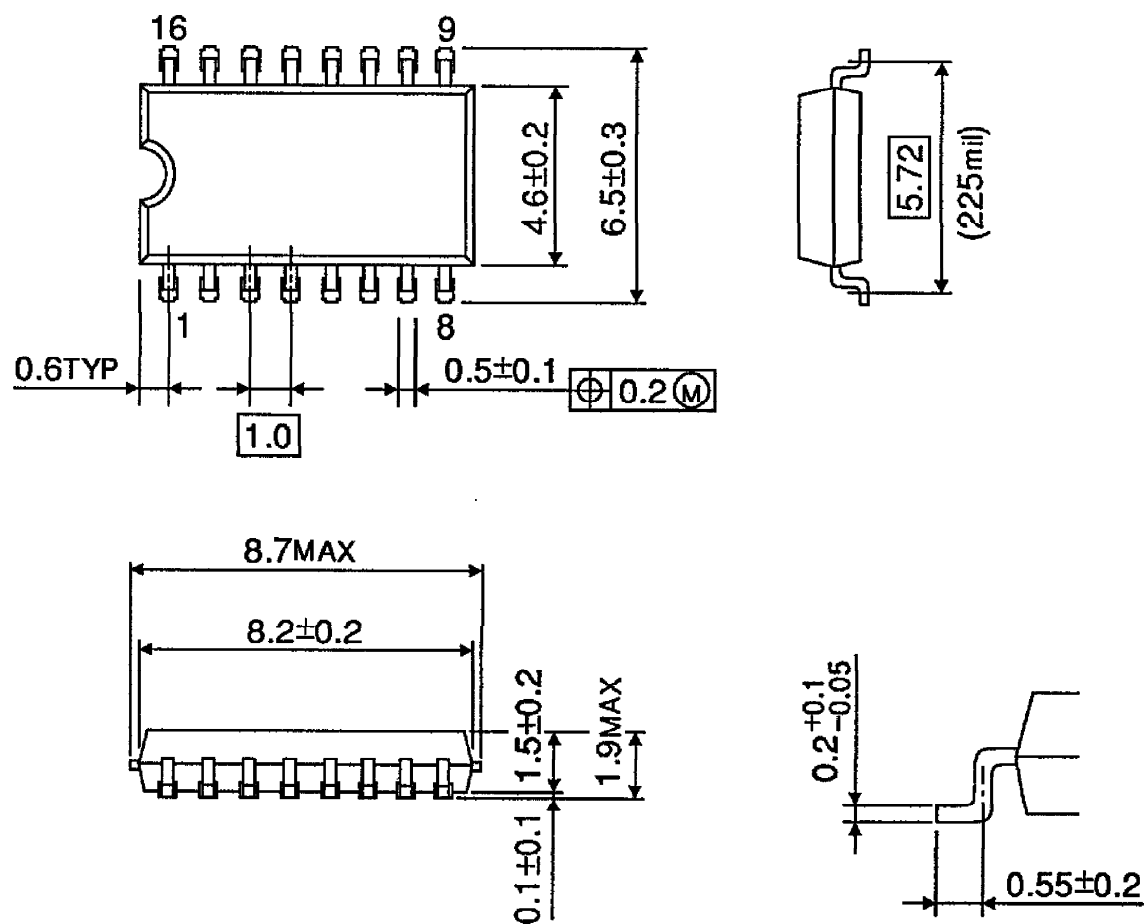
Unit : mm



Weight : 0.92g (Typ.)

OUTLINE DRAWING
SSOP16-P-225-1.00

Unit : mm



Weight : 0.14g (Typ.)