

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA7331P, TA7331F

LOW QUIESCENT CURRENT AUDIO POWER AMPLIFIER FOR MINI / MICRO CASSETTE TAPE RECORDER

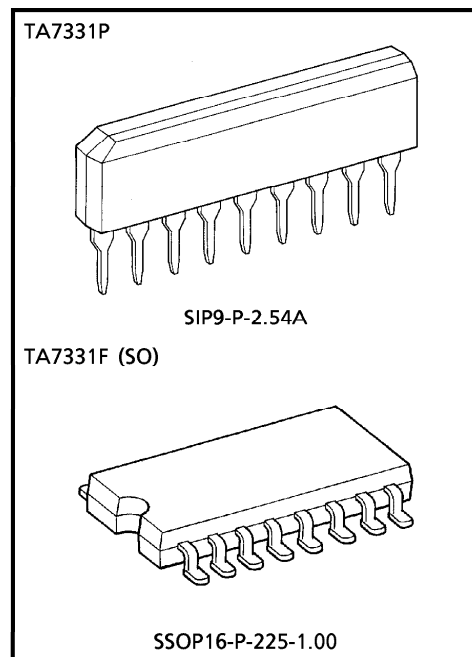
The TA7331P and TA7331F are an audio power amplifier designed for use in low voltage consumer applications. Especially it is suitable for mini / micro cassette tape recorder and pocket radio applications. As the quiescent current is only 3mA at 3V, it is best for battery operation.

FEATURES

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

OUTPUT POWER TABLE (f = 1kHz, THD = 10%, T_a = 25°C)

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



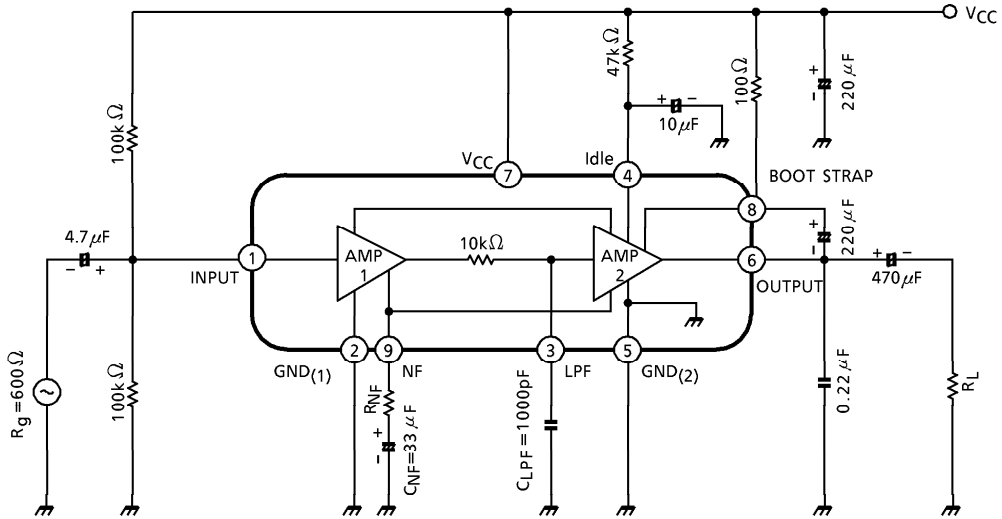
Weight
 SIP9-P-2.54A : 0.92g (Typ.)
 SSOP16-P-225-1.00 : 0.14g (Typ.)

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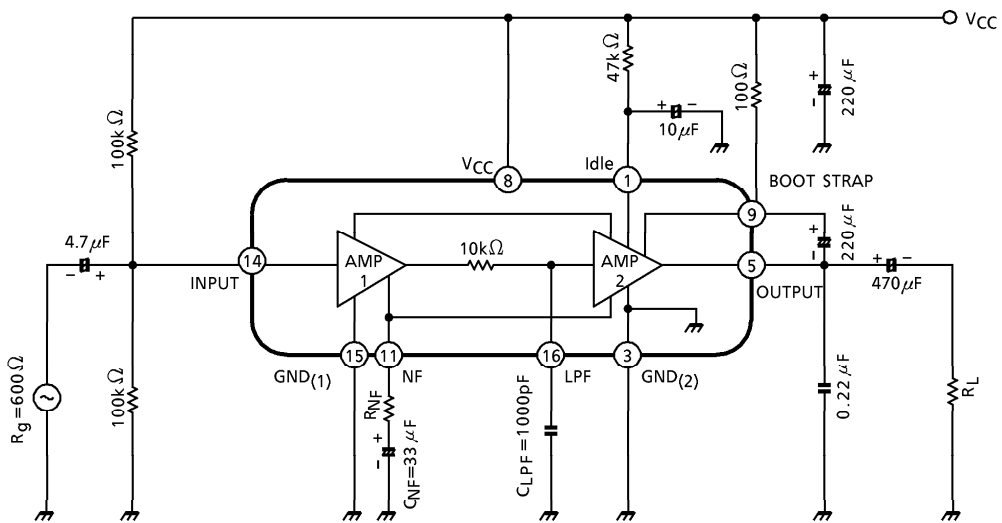
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TEST CIRCUIT / BLOCK DIAGRAM

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}

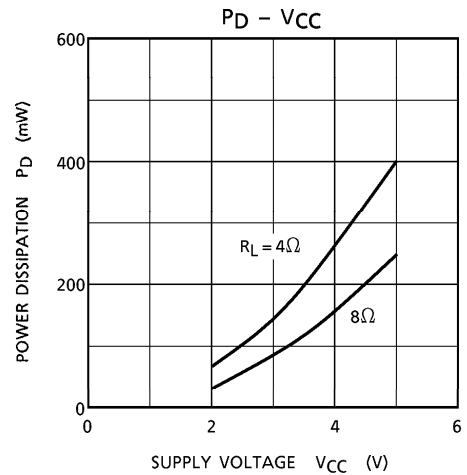
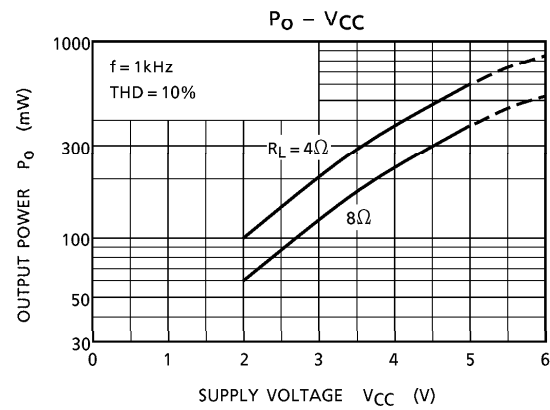
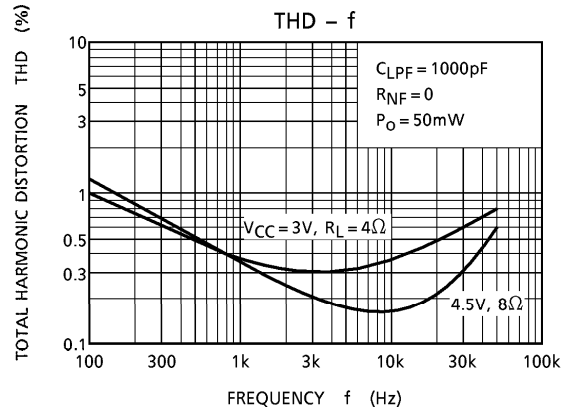
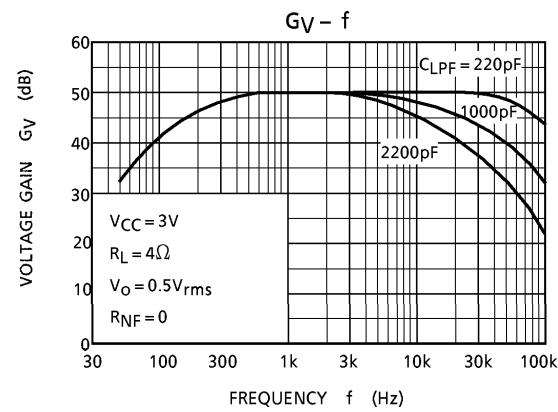
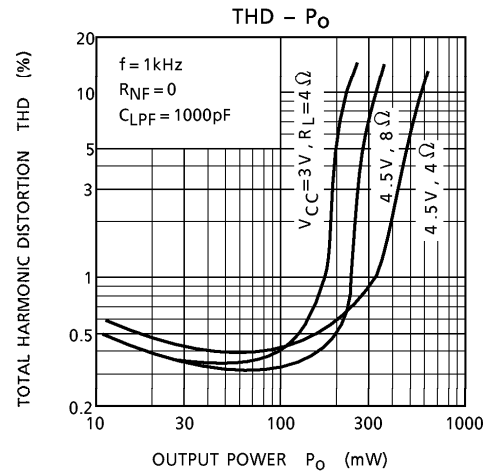
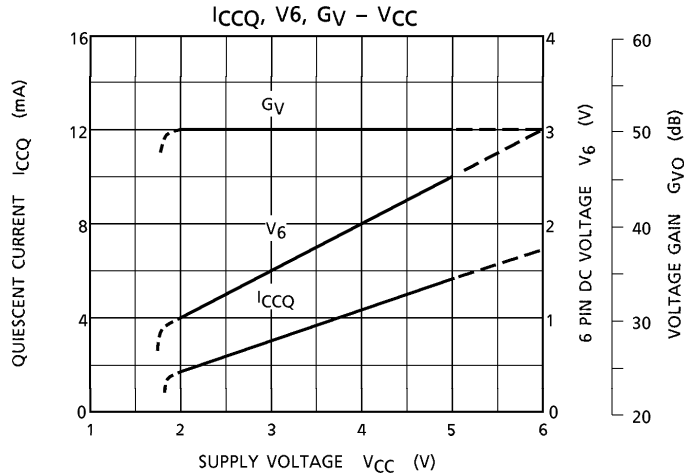
TA7331F

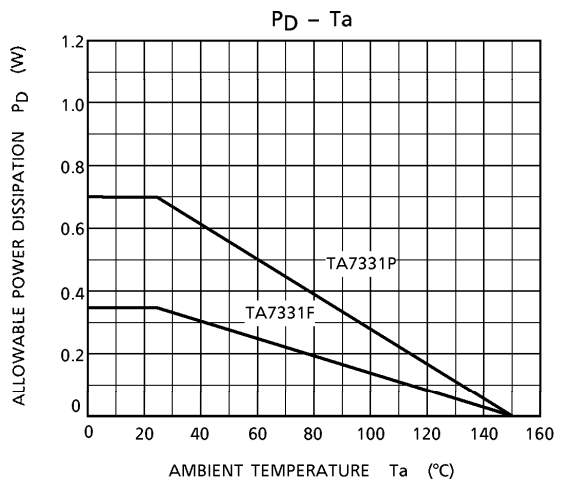
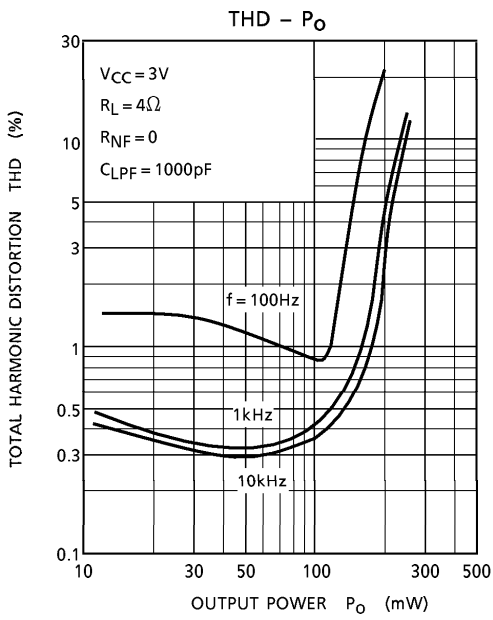
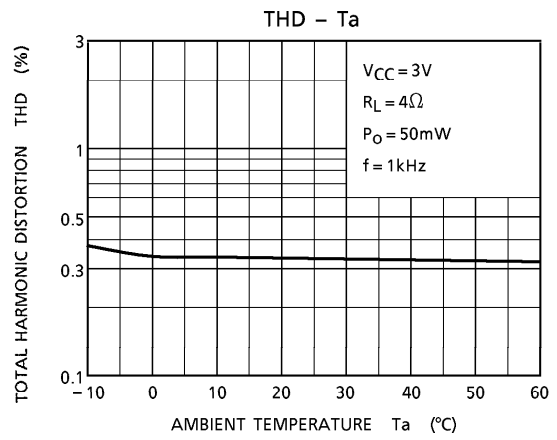
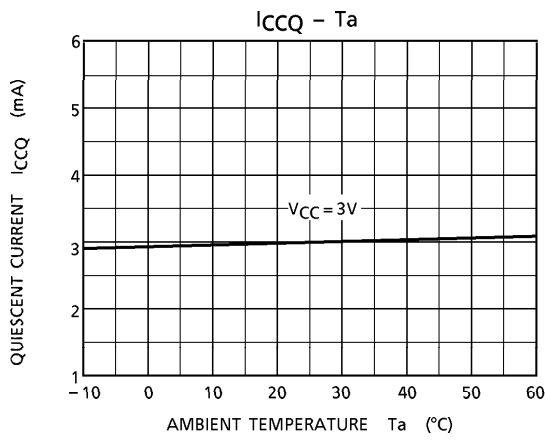
Unless otherwise specified, V_{CC} = 3V, f = 1kHz, R_L = 4Ω, Ta = 25°C

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
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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

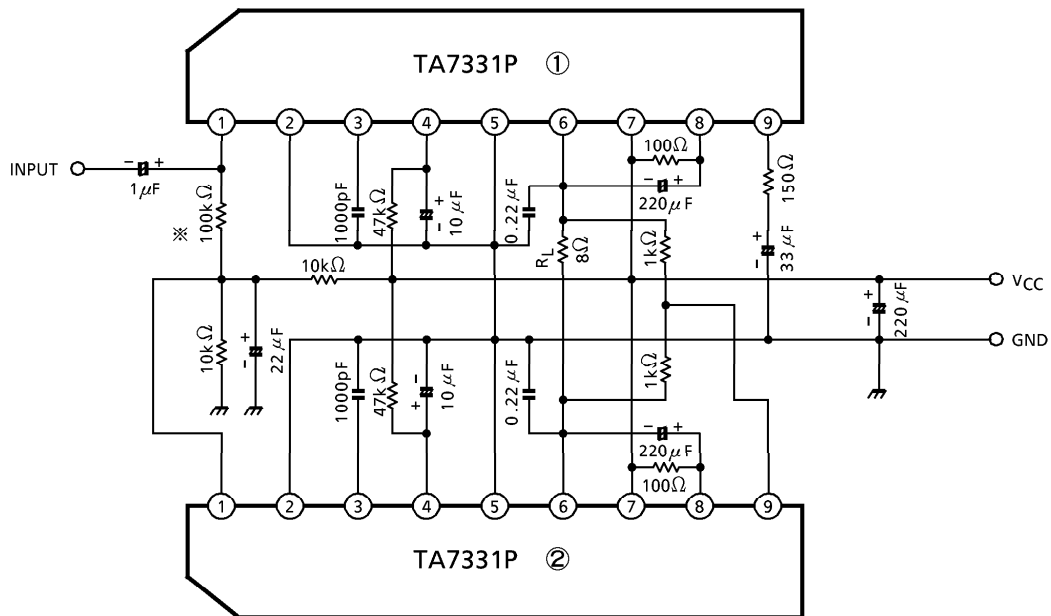
(Note) Data above $V_{CC} = 4V$ is only TA7331P.





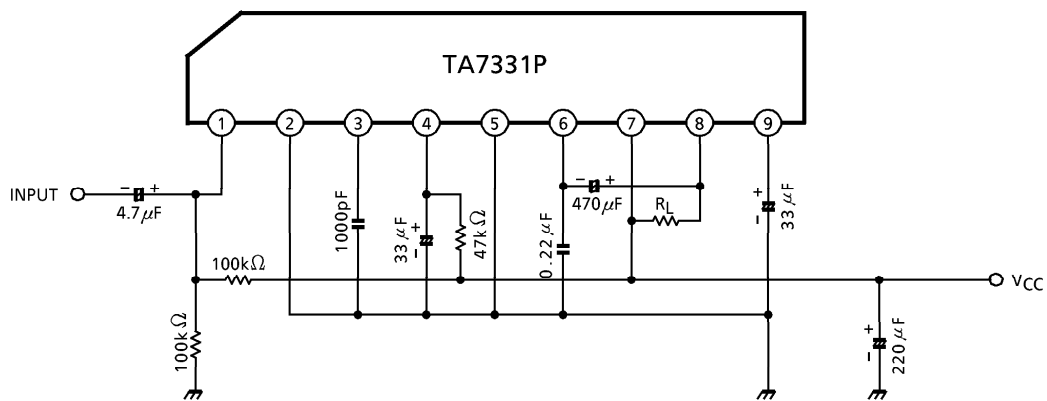
TA7331P

APPLICATION 1 (BTL CONNECTION)

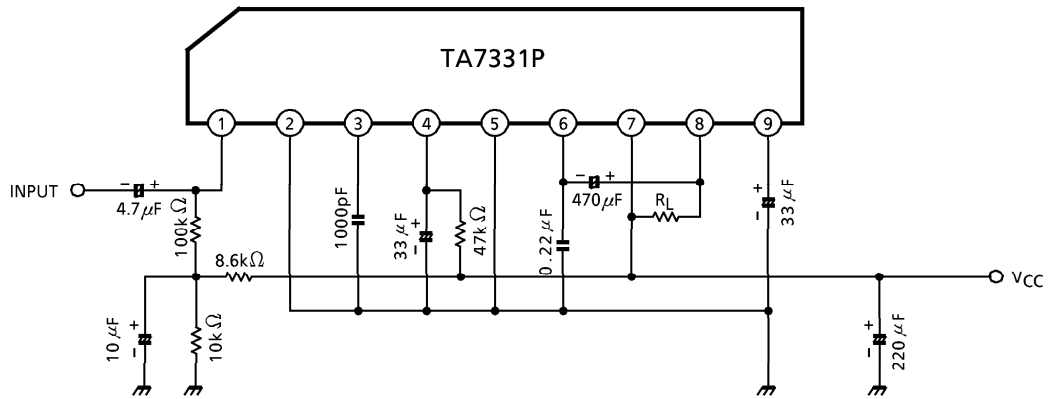


※ It is necessary to adjust to I_{CCQ}.

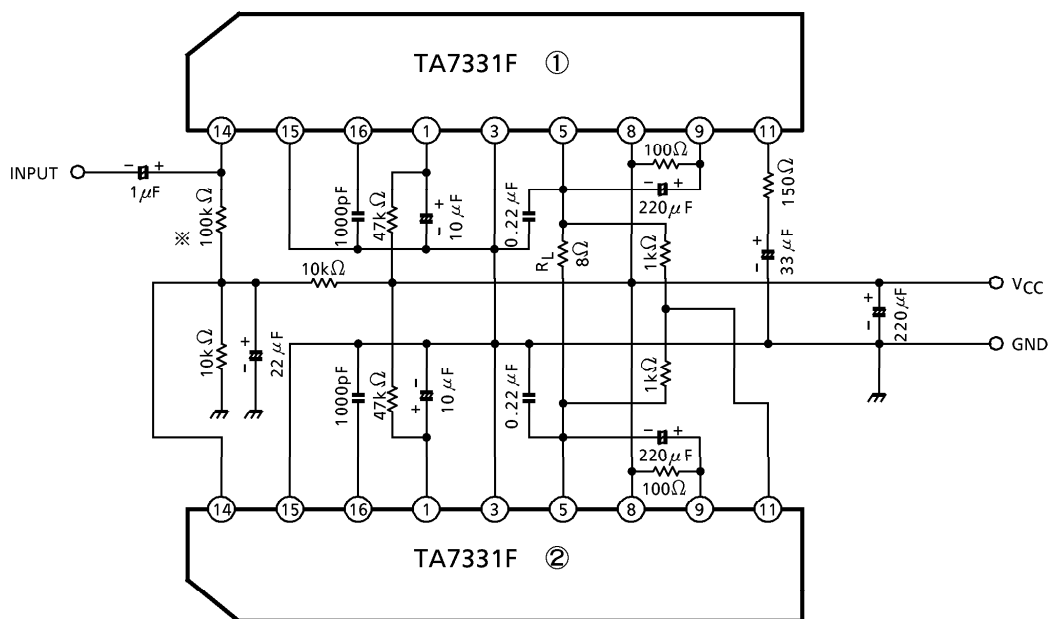
APPLICATION 2 (FEW EXTERNAL PARTS)



APPLICATION 3

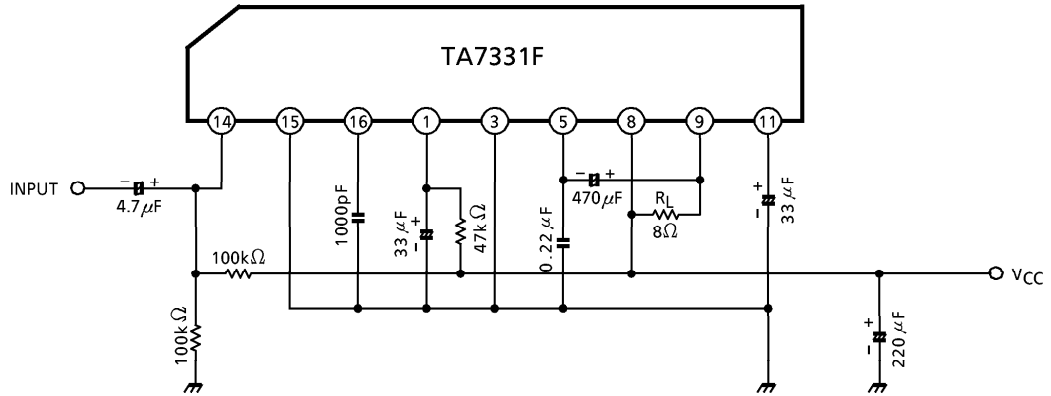


TA7331F
APPLICATION 1 (BTL CONNECTION)

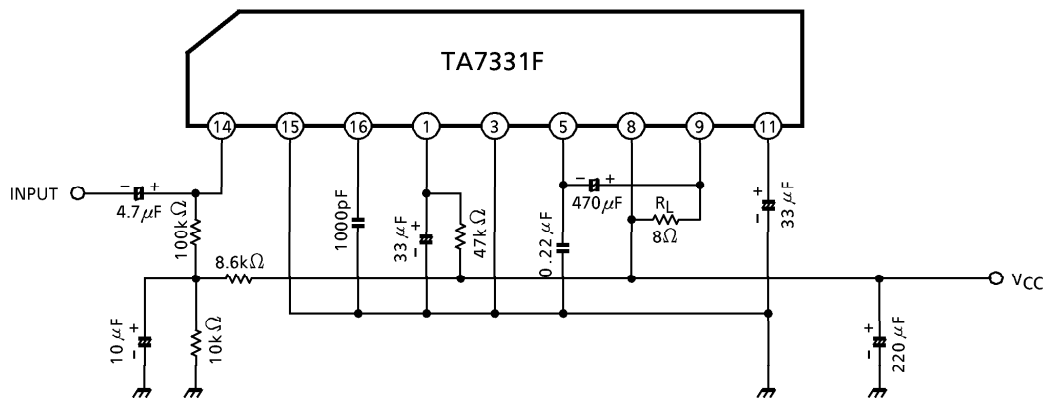


※ It is necessary to adjust to I_{CCQ}.

APPLICATION 2 (FEW EXTERNAL PARTS)

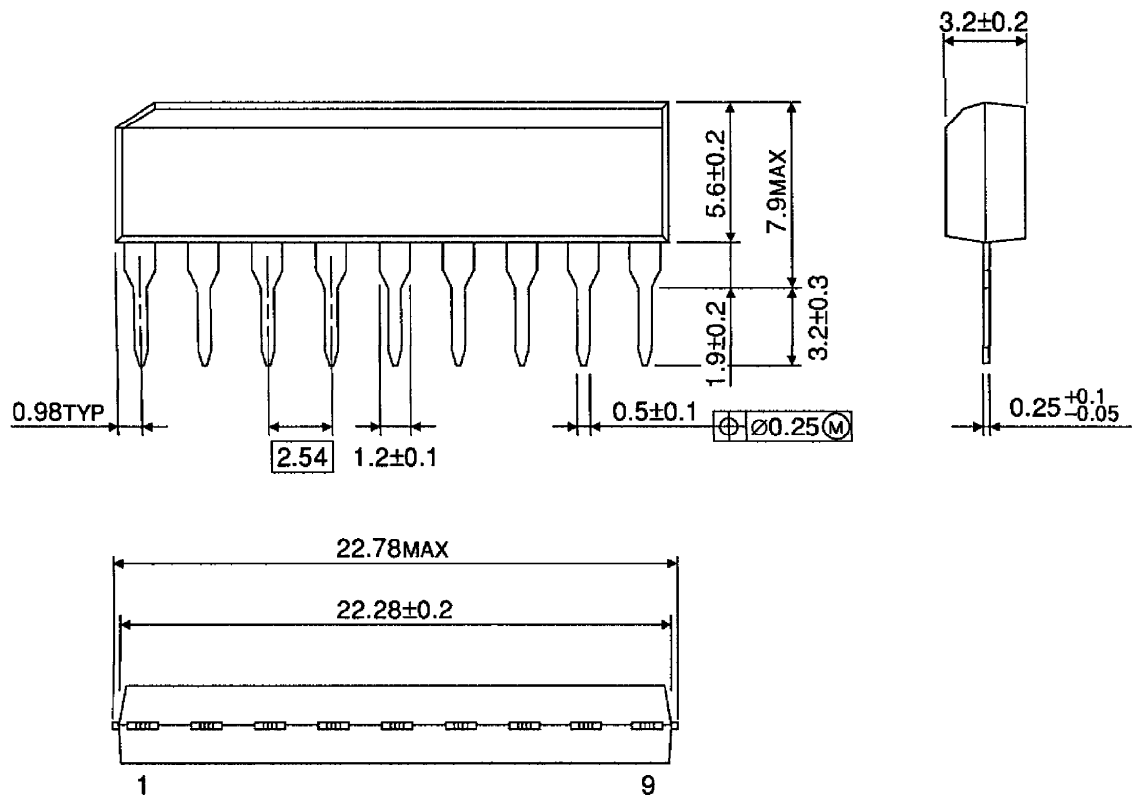


APPLICATION 3



OUTLINE DRAWING
SIP9-P-2.54A

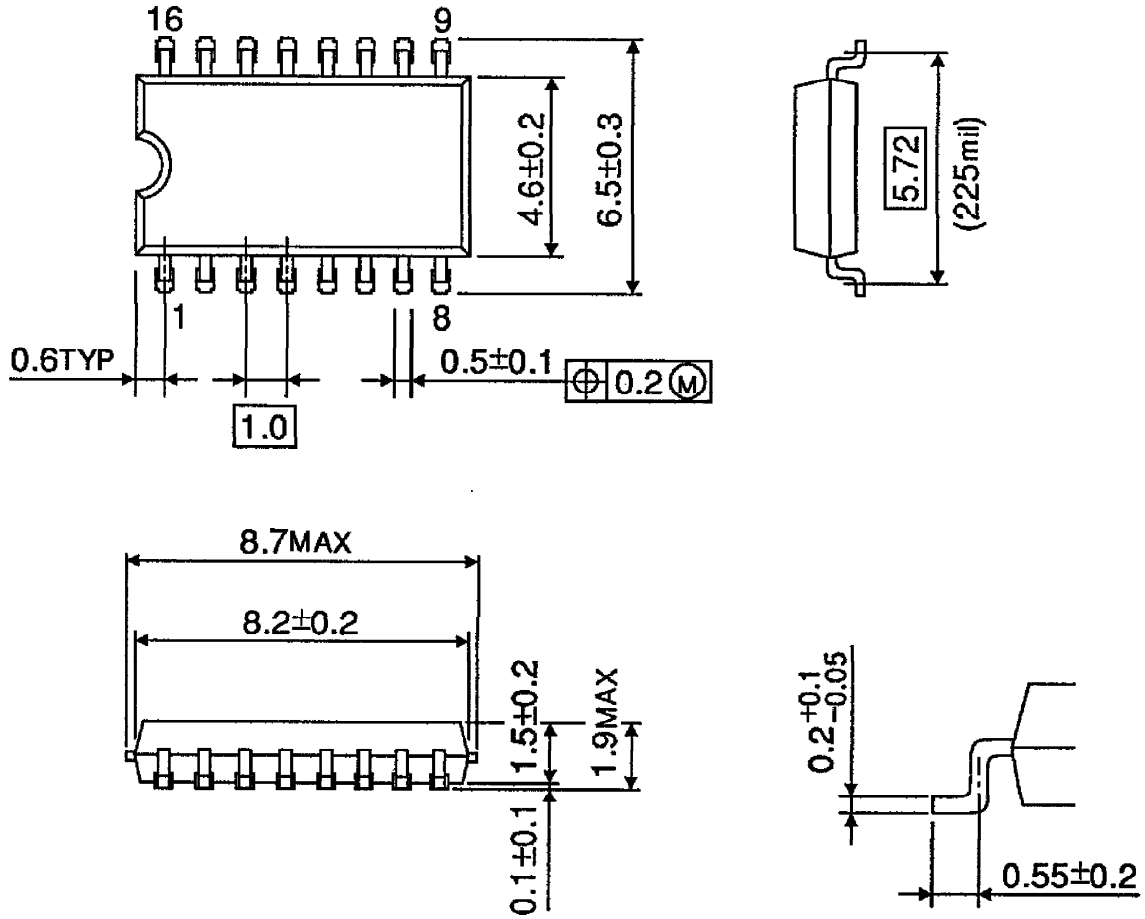
Unit : mm



Weight : 0.92g (Typ.)

OUTLINE DRAWING
SSOP16-P-225-1.00

Unit: mm



Weight: 0.14g (Typ.)