

TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

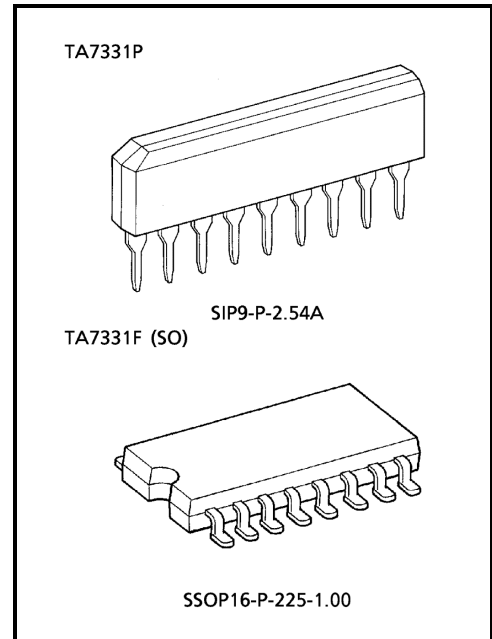
TA7331P, TA7331F

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
: $V_{CC(opr)} = 2\sim 5V$... TA7331P ($T_a = 25^\circ C$)
 $V_{CC(opr)} = 2\sim 4V$... TA7331F ($T_a = 25^\circ C$)
- Low quiescent current: $I_{CCQ} = 3mA$ (typ.)
($V_{CC} = 3V, T_a = 25^\circ C$)
- TA7331F (SO) is standard model of flat package



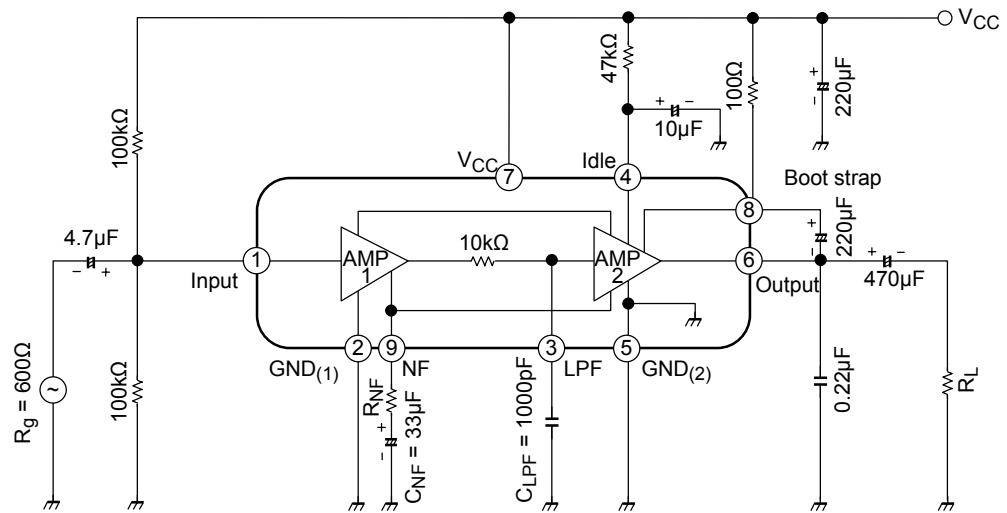
Weight
SIP9-P-2.54A: 0.92g (typ.)
SSOP16-P-225-1.00: 0.14g (typ.)

Output Power Table (f = 1kHz, THD = 10%, $T_a = 25^\circ C$)

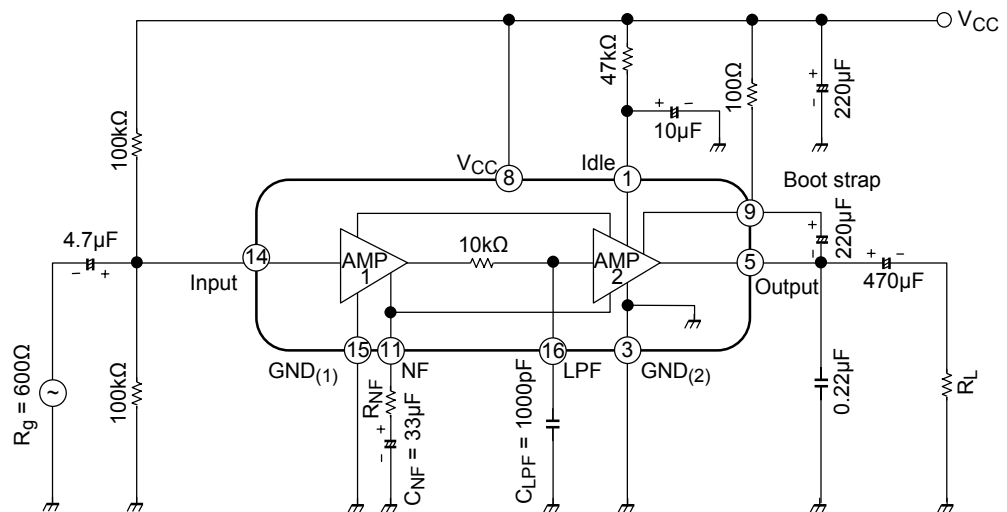
Condition	Package	TA7331P	TA7331F
		$V_{CC} = 3V$	$R_L = 8\Omega$
$V_{CC} = 3V$	$R_L = 4\Omega$	200mW	200mW
	$R_L = 8\Omega$ BTL	400mW	400mW
	$V_{CC} = 4.5V$	$R_L = 8\Omega$	300mW
$R_L = 4\Omega$	500mW		

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	V _{CC}	5	V
	TA7331F		4	
Power dissipation	TA7331P	P _D (Note)	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 Circuit	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}

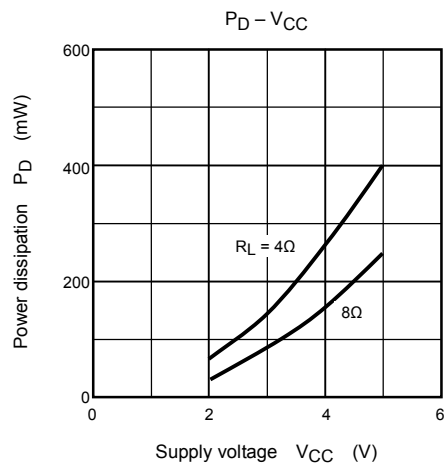
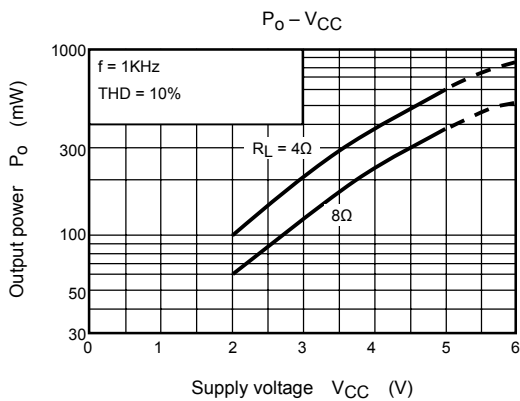
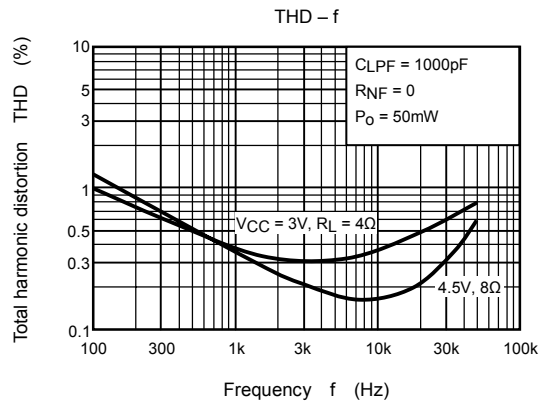
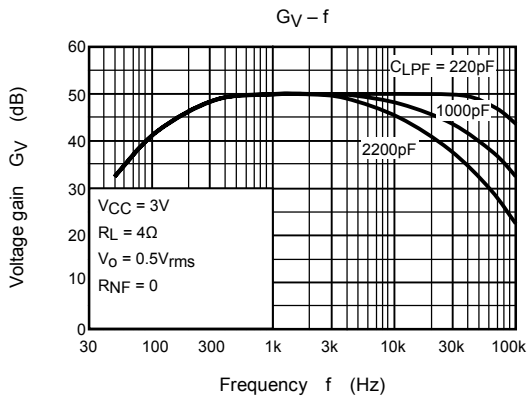
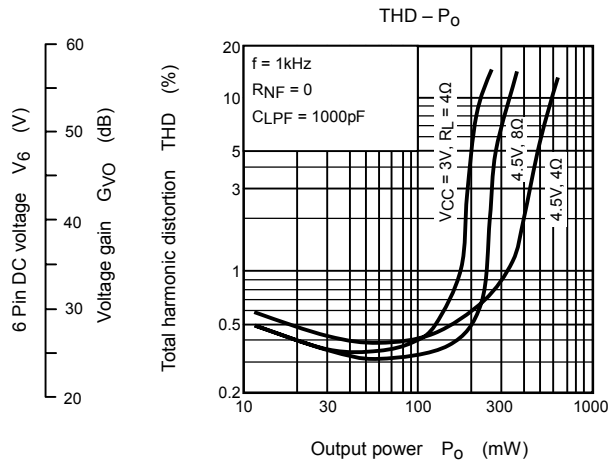
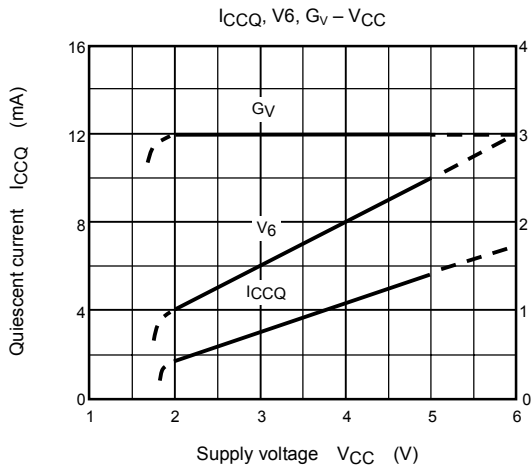
TA7331F

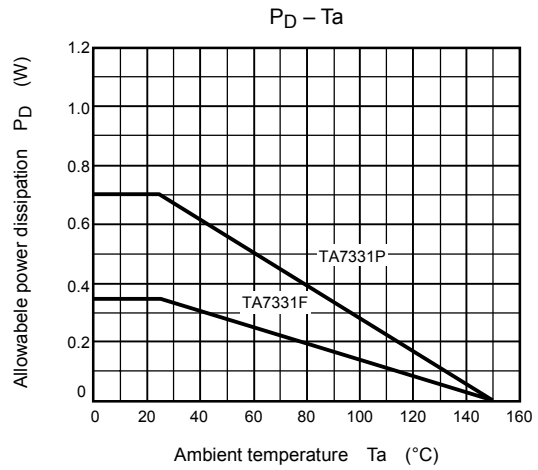
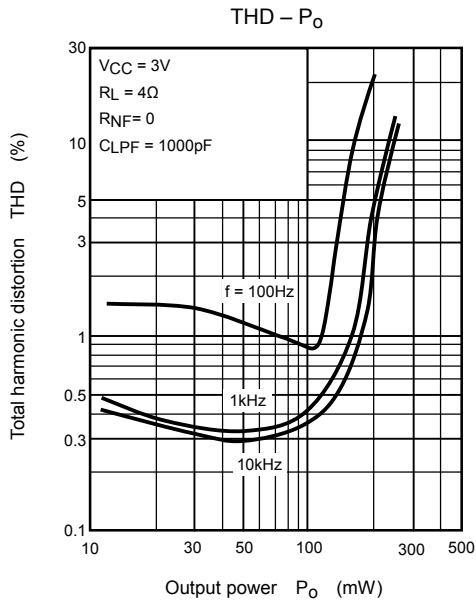
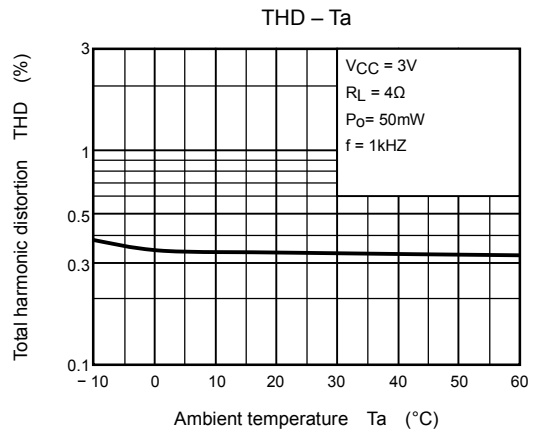
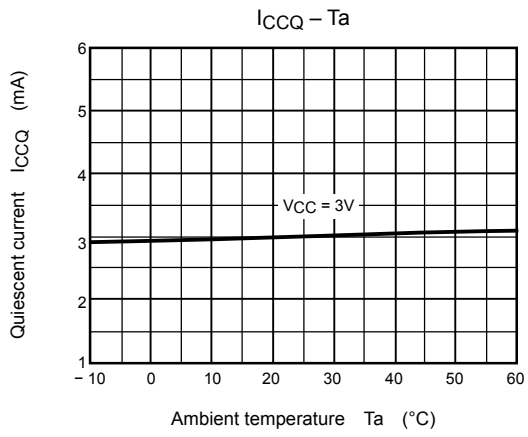
Unless Otherwise Specified, V_{CC} = 3V, f = 1kHz, R_L = 4Ω, Ta = 25°C

Characteristic	Symbol	Test Circuit	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

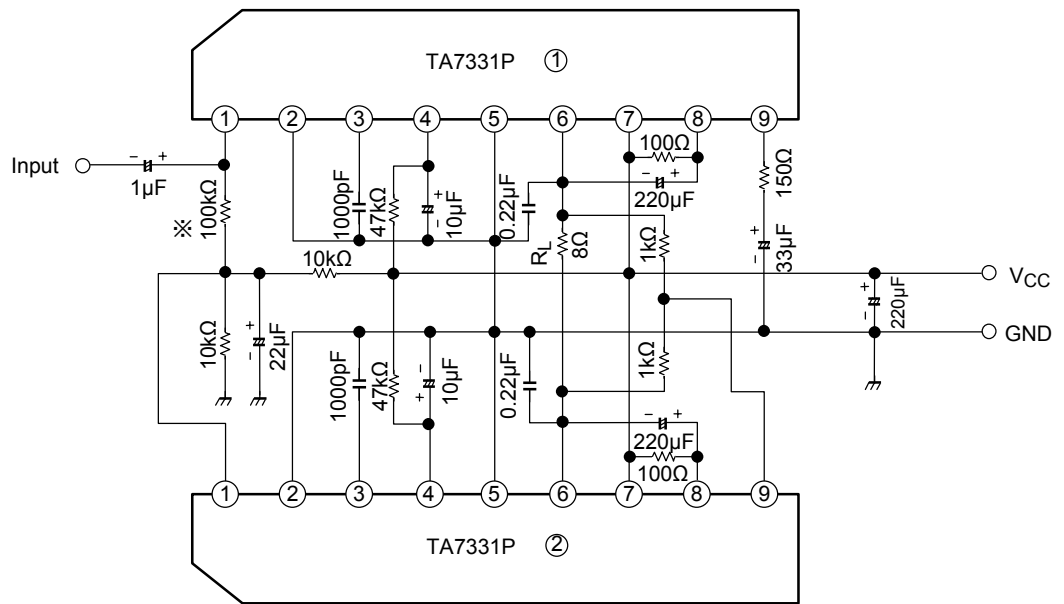
(Note) Data above $V_{CC} = 4V$ is only TA7331P.





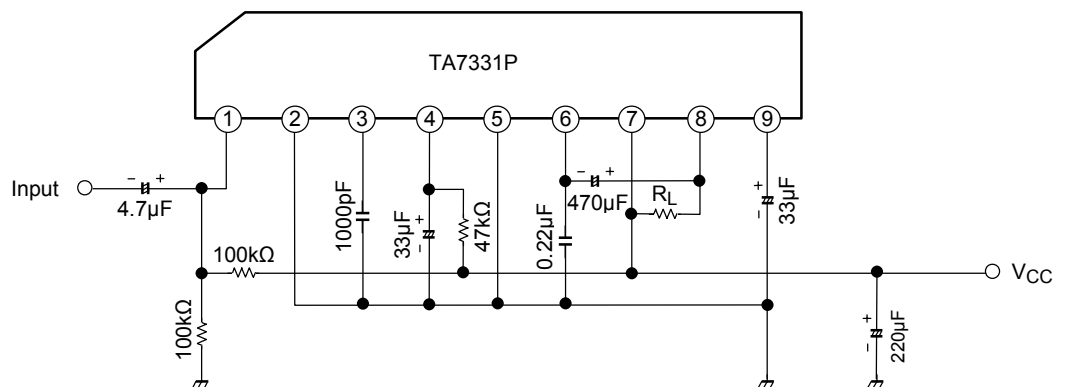
TA7331P

Application 1 (BTL connection)

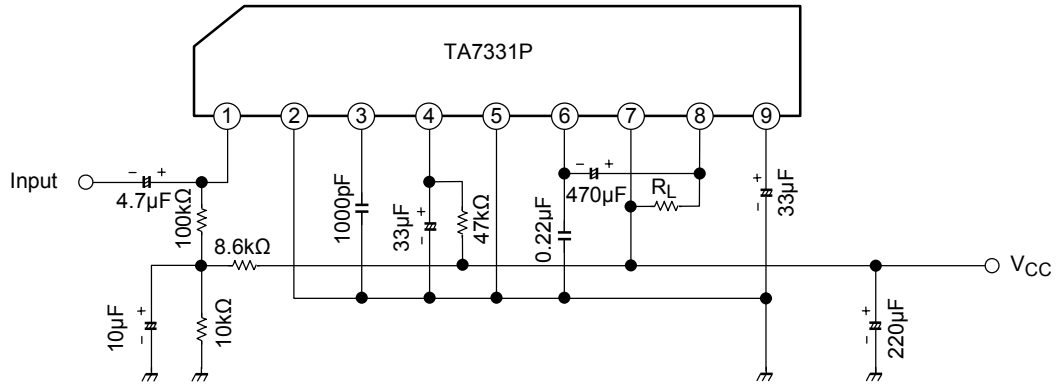


※ It is necessary to adjust to I_{CCQ} .

Application 2 (few external parts)

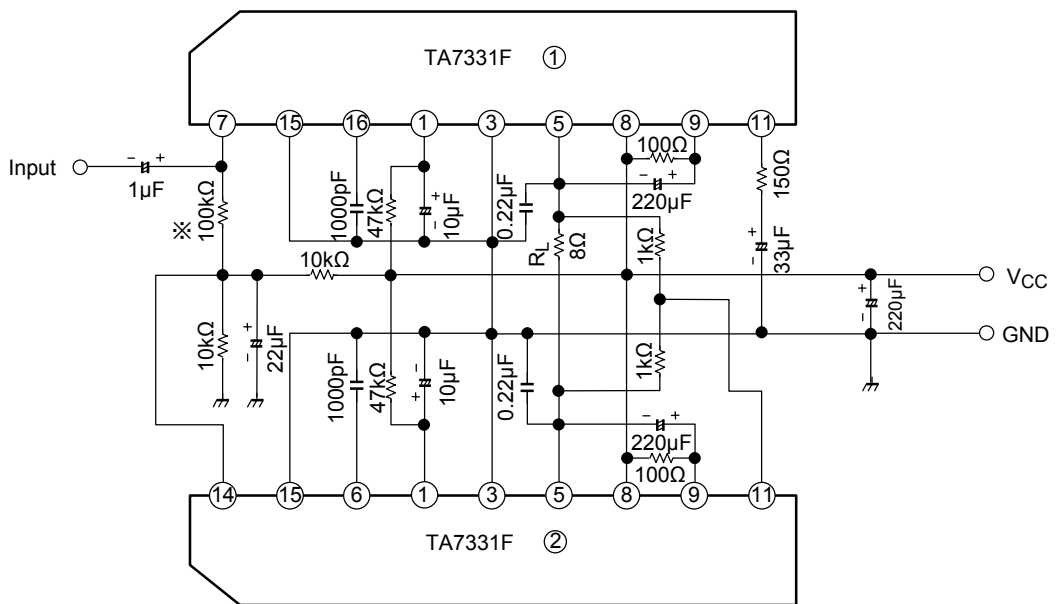


Application 3



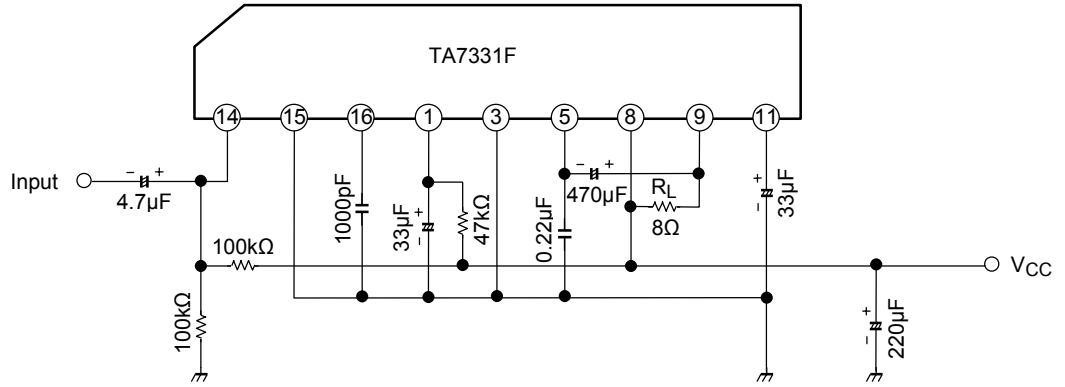
TA7331F

Application 1 (BTL connection)

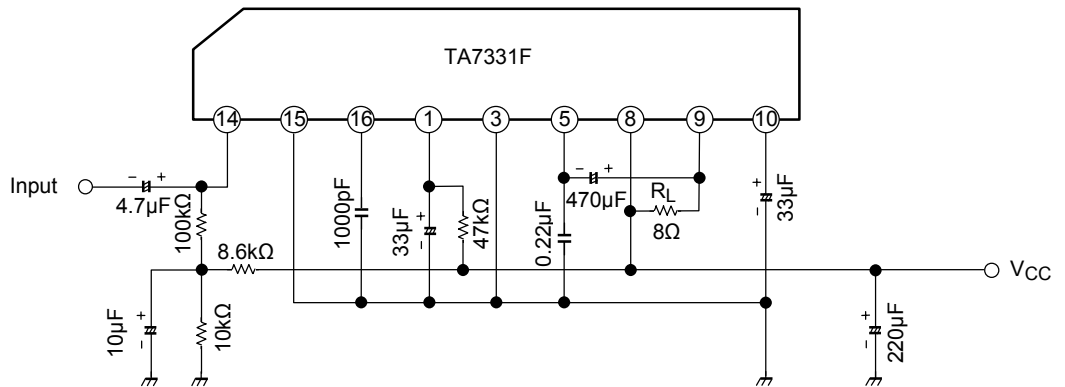


※ It is necessary to adjust to I_{CCQ} .

Application 2 (few external parts)



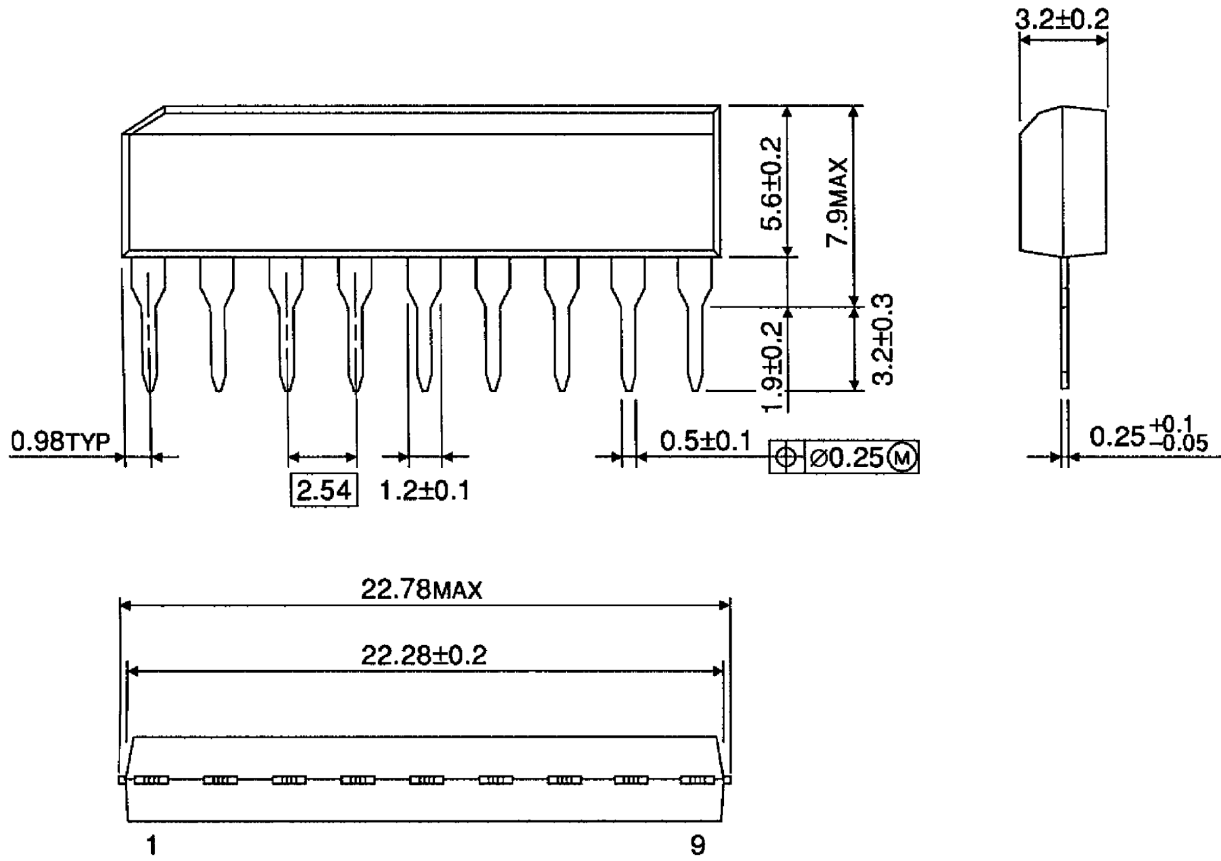
Application 3



Package Dimensions

SIP9-P-2.54A

Unit : mm

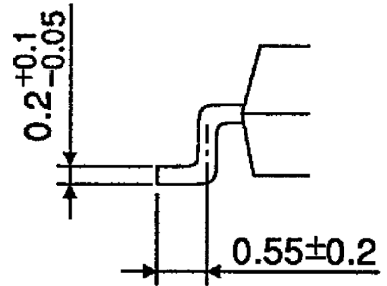
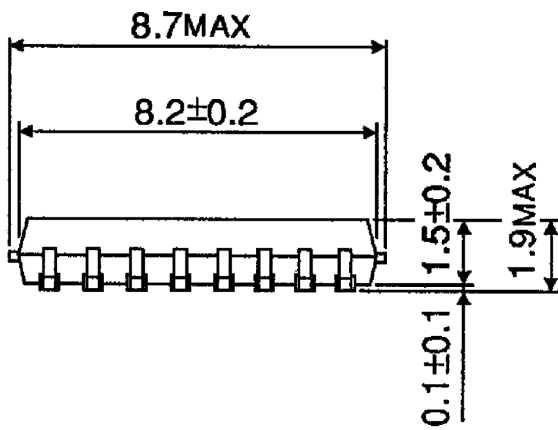
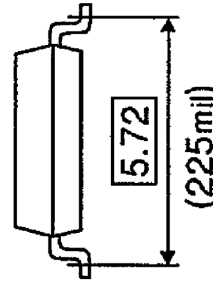
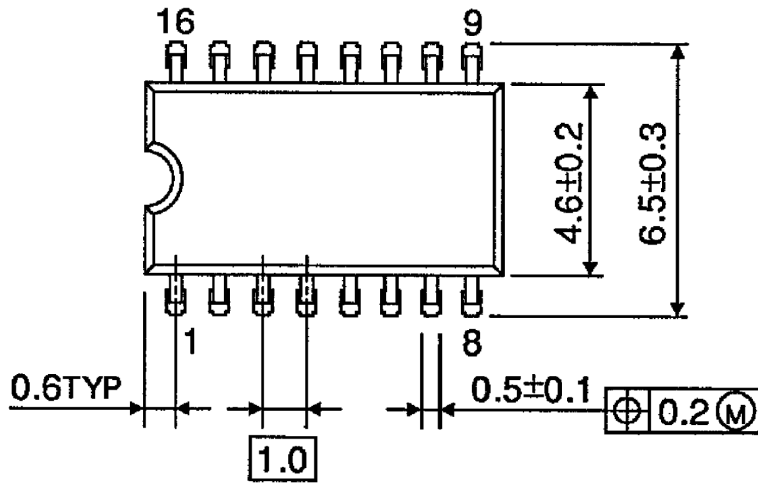


Weight: 0.92g (typ.)

Package Dimensions

SSOP16-P-225-1.00

Unit : mm



Weight: 0.14g (typ.)

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