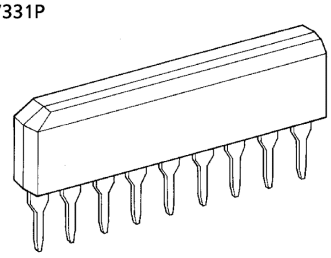
TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA7331P,TA7331F

Low Quiescent Current Audio Power Amplifier
For Mini / Micro Cassette Tape Recorder

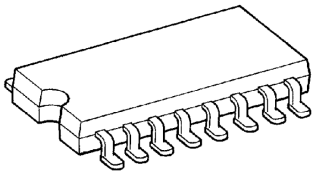
The TA7331P and TA7331F are an audio power amplifier designed for use in low voltage consumer applications. Especially it is suitable for mini / micro cassette tape recorder and pocket radio appliocations.
As the quiescent current is only 3mA at 3V, it is best for battery operation.

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.)

Features

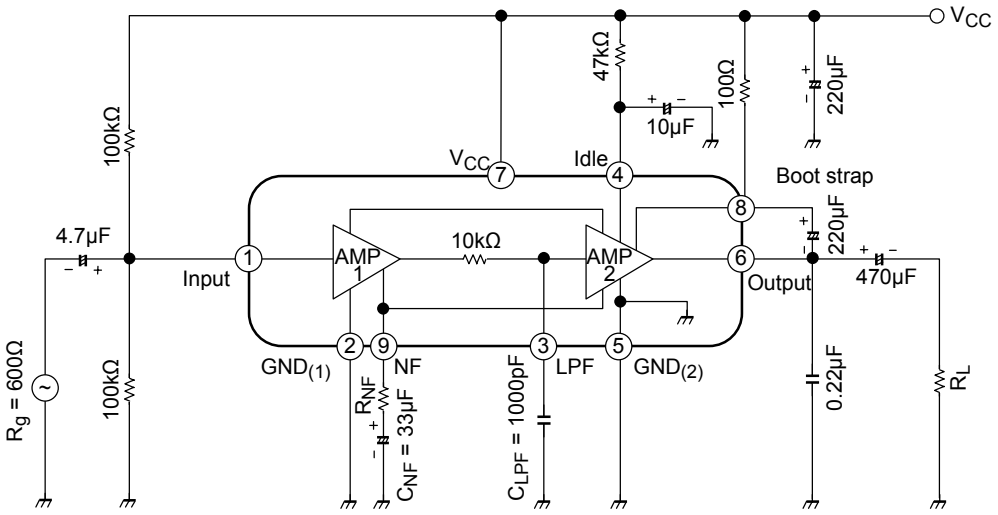
- Operating supply voltage range
  : $V_{CC\ (opr)}$ = 2~5V... TA7331P (Ta = 25°C)
  $V_{CC\ (opr)}$ = 2~4V... TA7331F (Ta = 25°C)
- Low quiescent current: I_{CCQ} = 3mA (typ.)
  (V_{CC} = 3V, Ta = 25°C)
- TA7331F (SO) is standard model of flat package

Output Power Table (f = 1kHz, THD = 10%, Ta = 25°C)

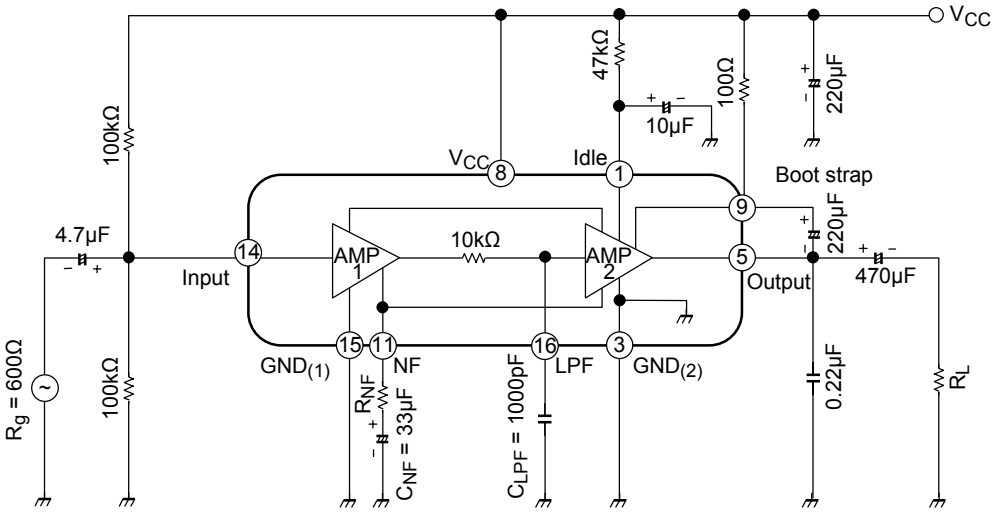
Condition \ Package		TA7331P	TA7331F
V_{CC} = 3V	R_L = 8Ω	120mW	120mW
	R_L = 4Ω	200mW	200mW
	R_L = 8Ω BTL	400mW	400mW
V_{CC} = 4.5V	R_L = 8Ω	300mW	Cannot use
	R_L = 4Ω	500mW	

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 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

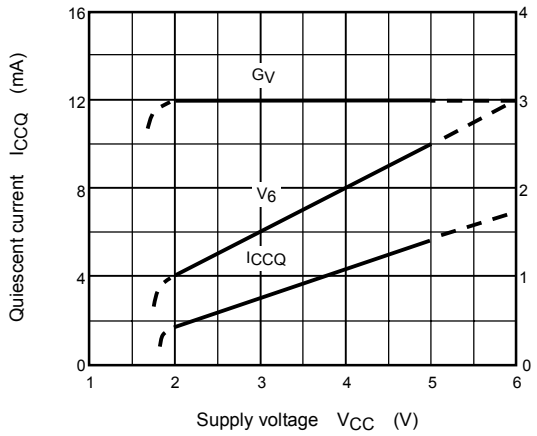
Unless Otherwise Specified, V_{CC} = 3V, f = 1kHz, R_L = 4Ω, Ta = 25°C

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}

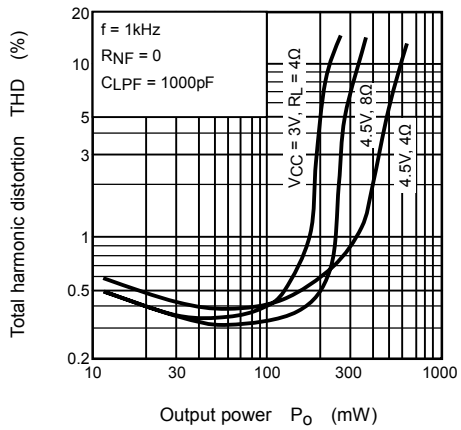
Characteristic Curves

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

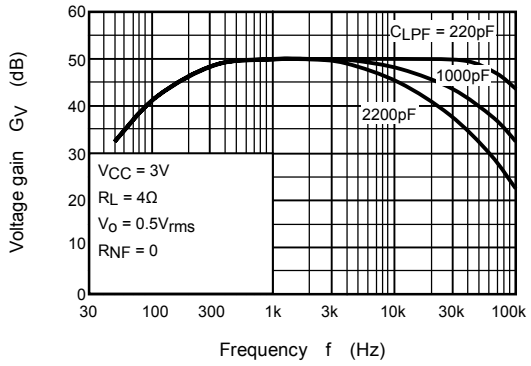
I_{CCQ}, V6, G_V – V_{CC}



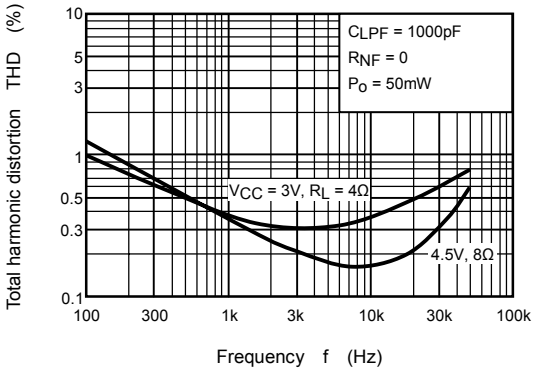
THD – P_o



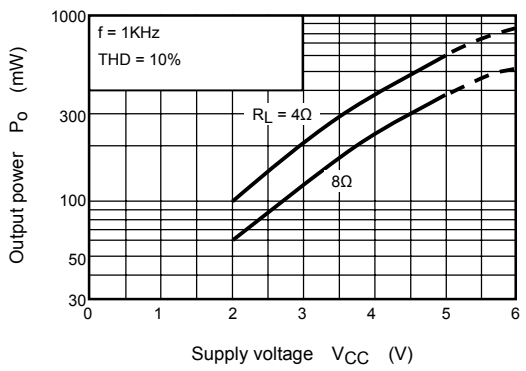
G_V – f



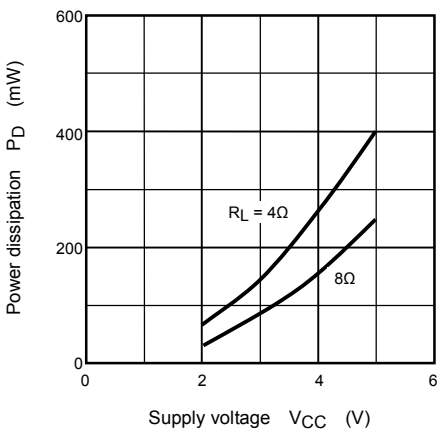
THD – f



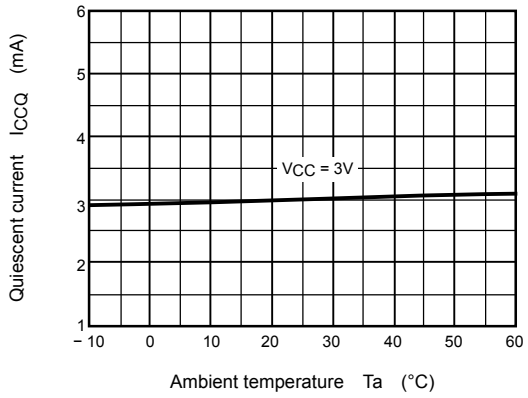
P_o – V_{CC}



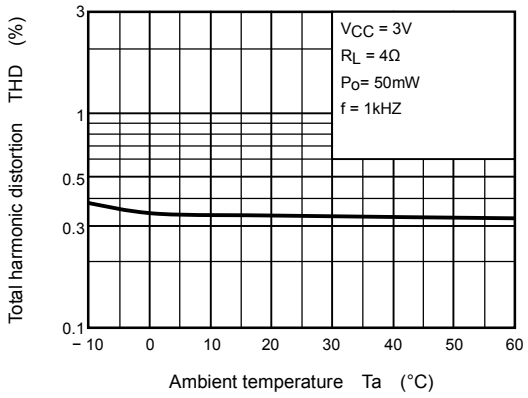
P_D – V_{CC}



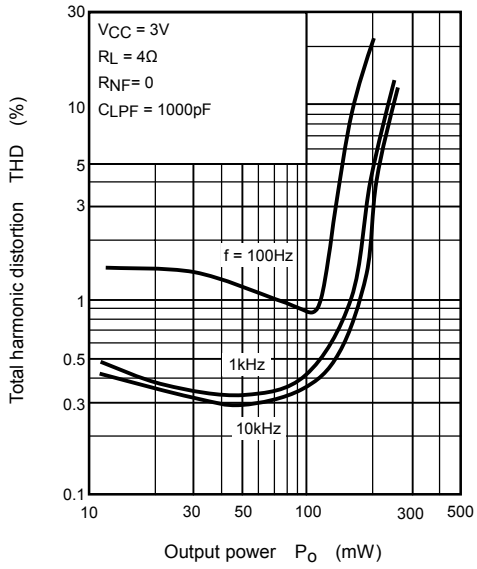
I_{CCQ} – Ta



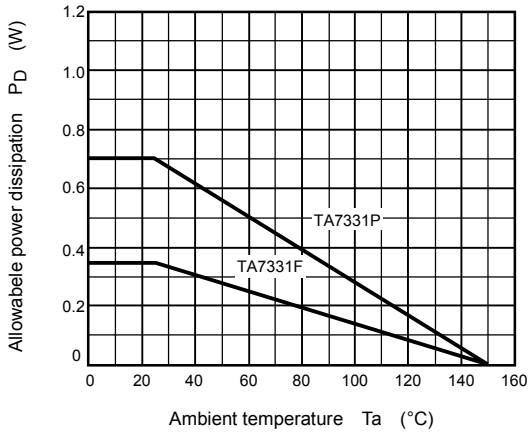
THD – Ta



THD – P_o

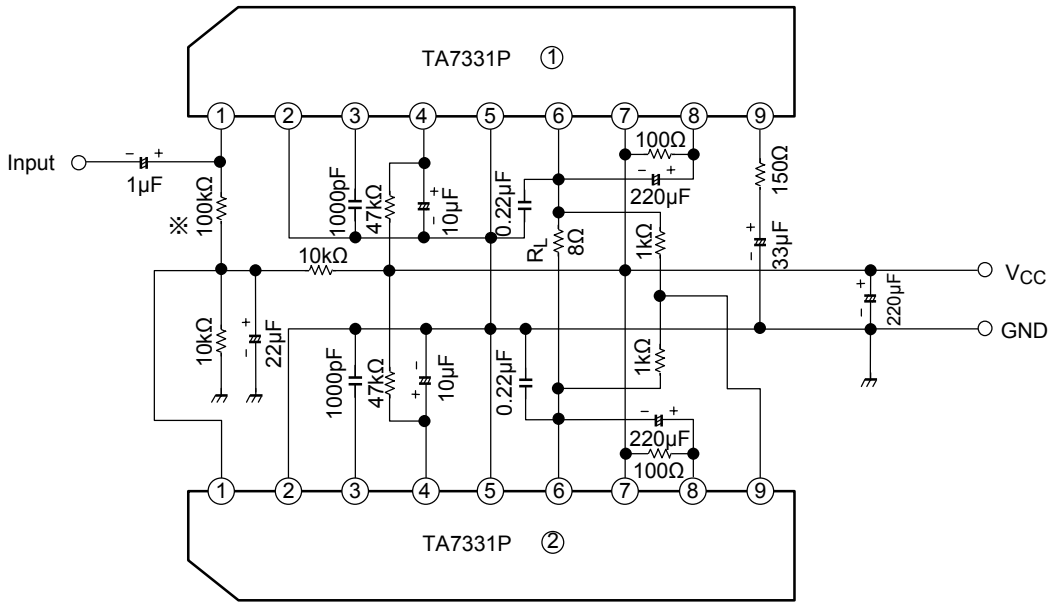


P_D – Ta



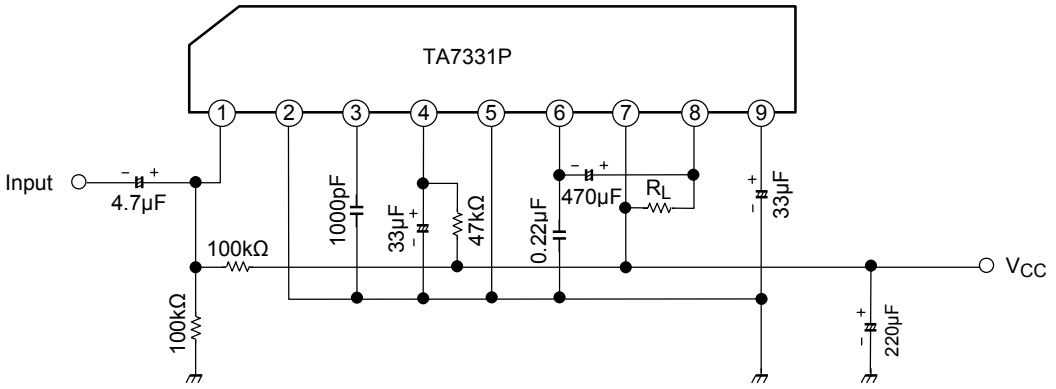
TA7331P

Application 1 (BTL connection)

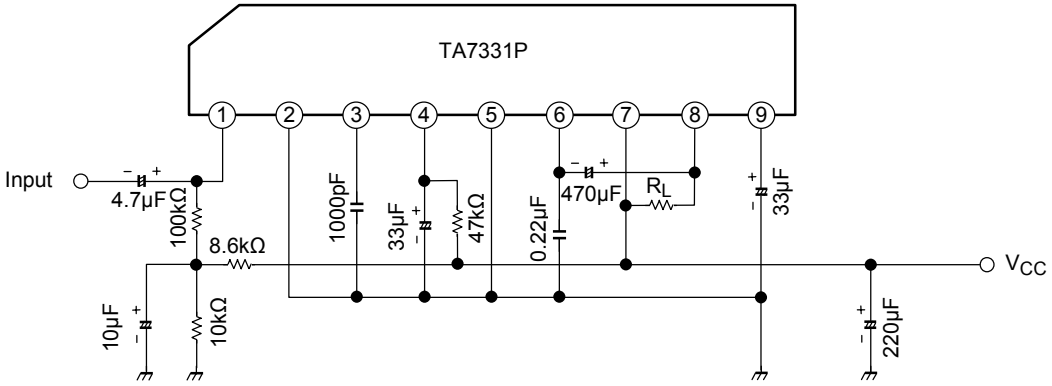


※ It is necessary to adjust to I_{CCQ}.

Application 2 (few external parts)

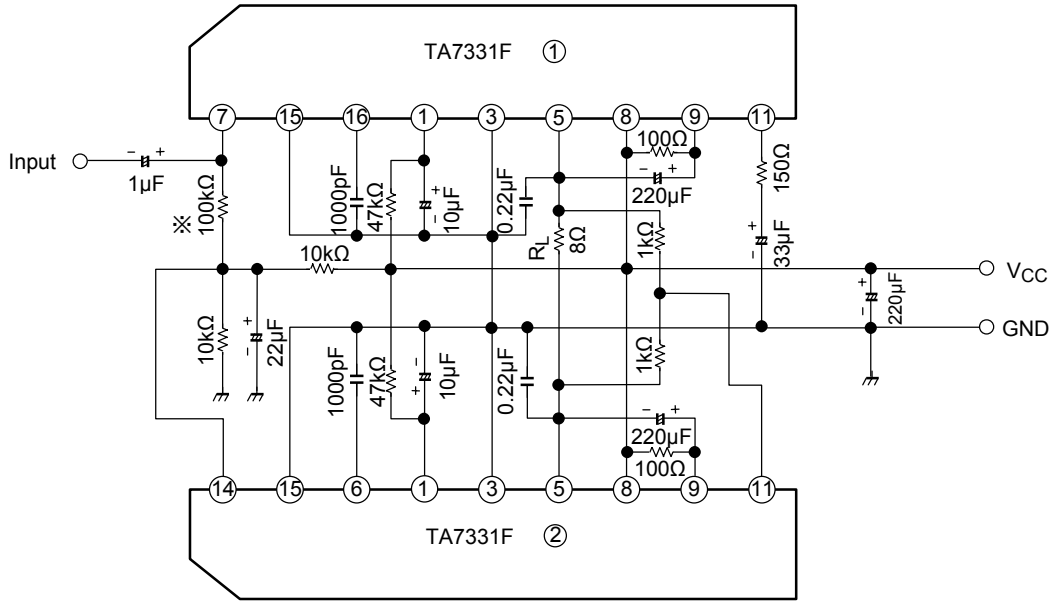


Application 3



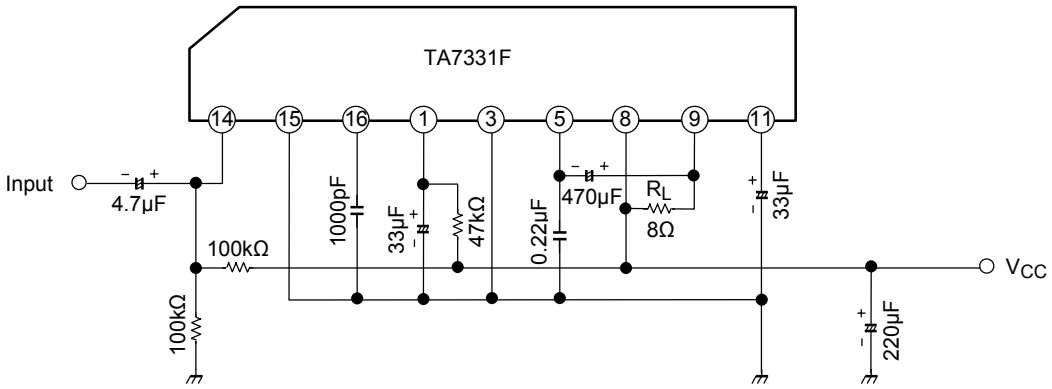
TA7331F

Application 1 (BTL connection)

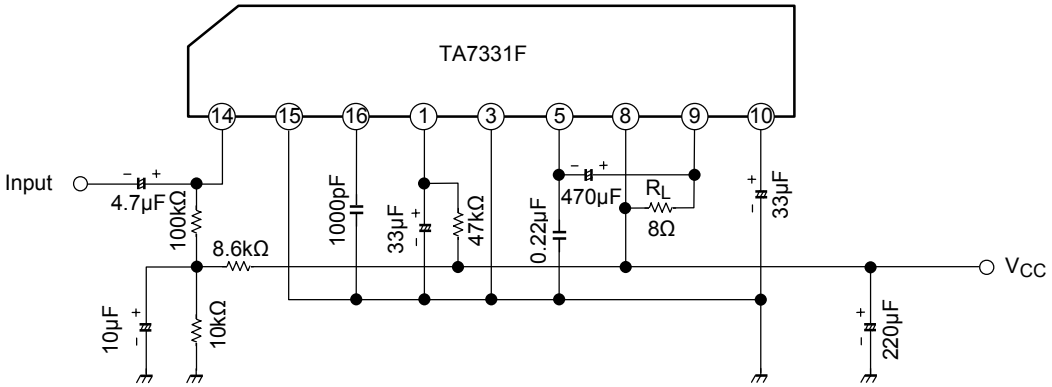


※ It is necessary to adjust to I_{CCQ}.

Application 2 (few external parts)

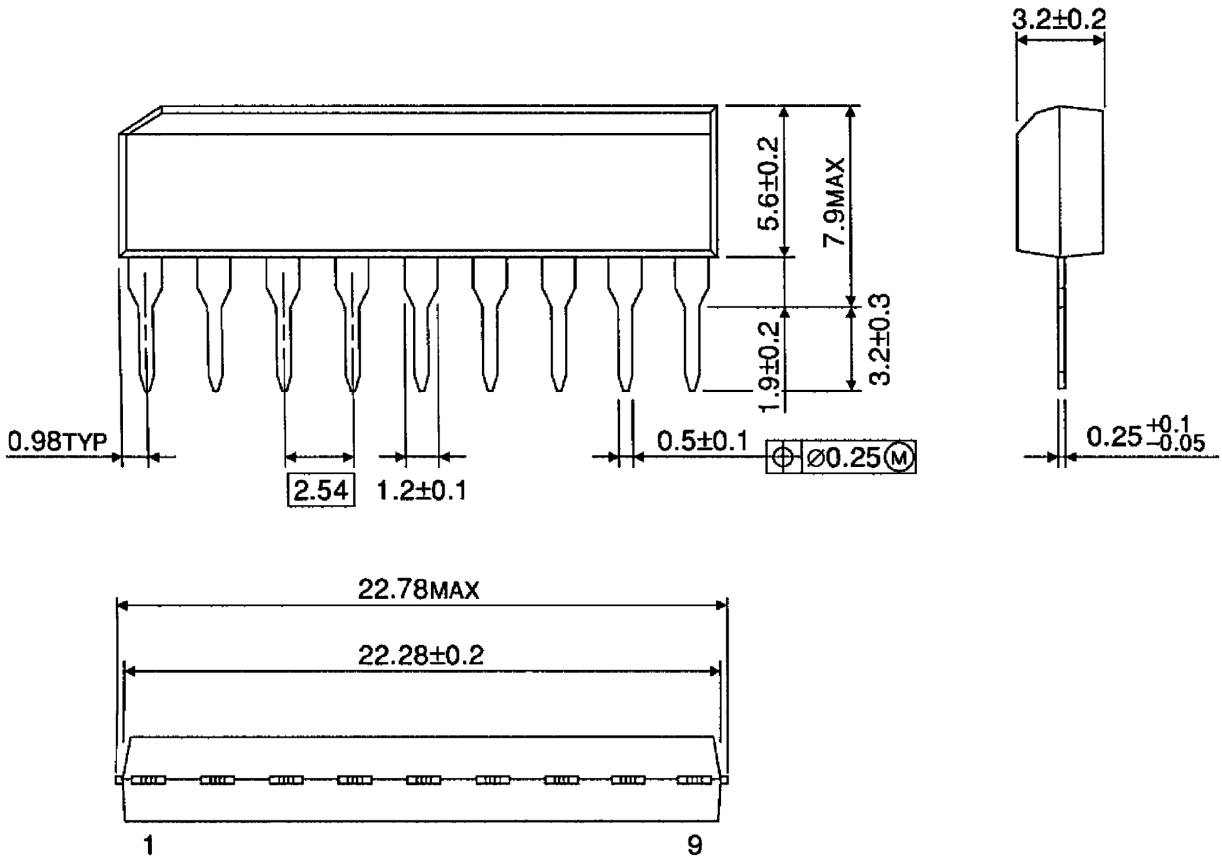


Application 3



Package Dimensions

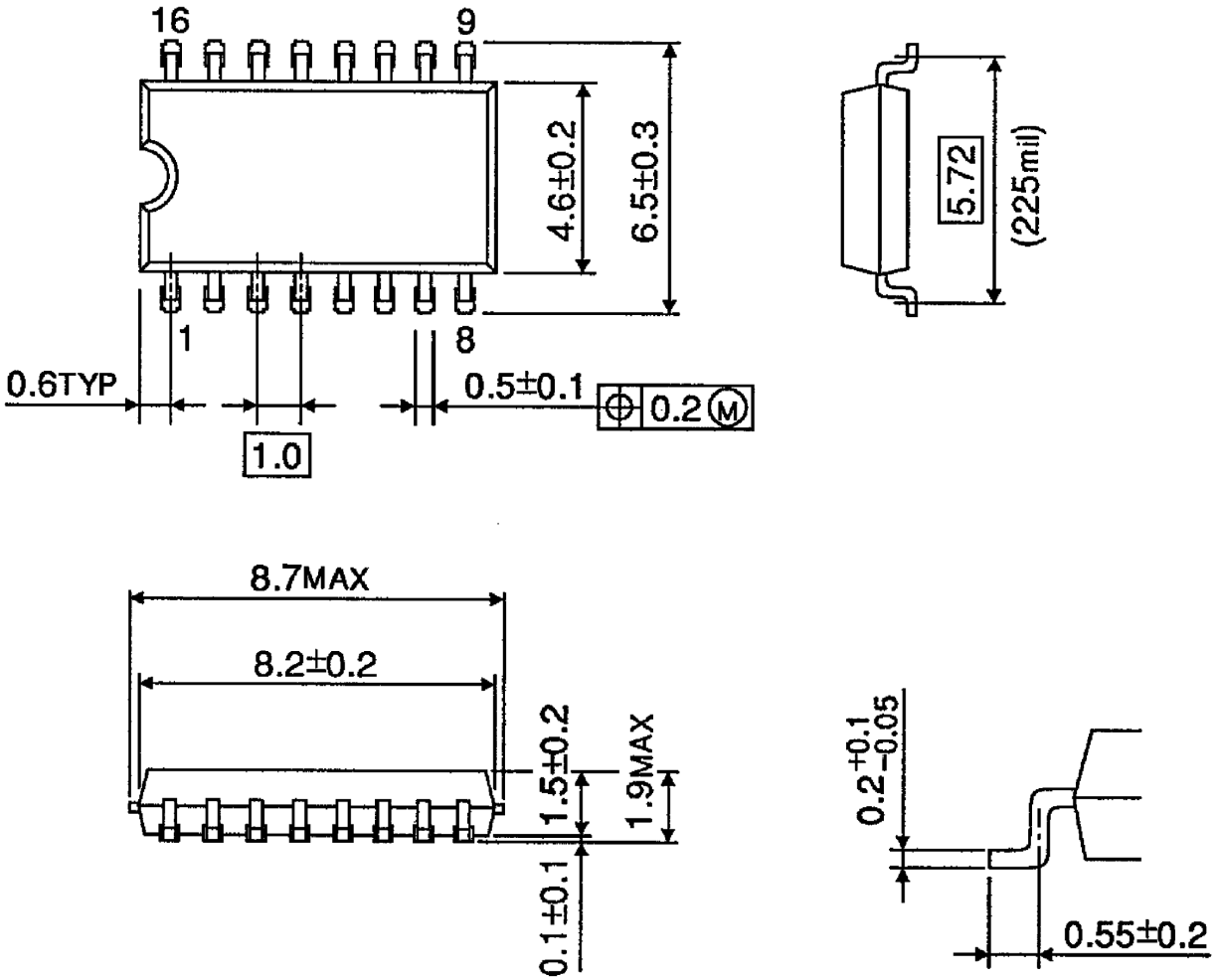
SIP9-P-2.54A Unit : mm



Weight: 0.92g (typ.)

Package Dimensions

SSOP16-P-225-1.00 Unit : mm



Weight: 0.14g (typ.)

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000707EBA

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