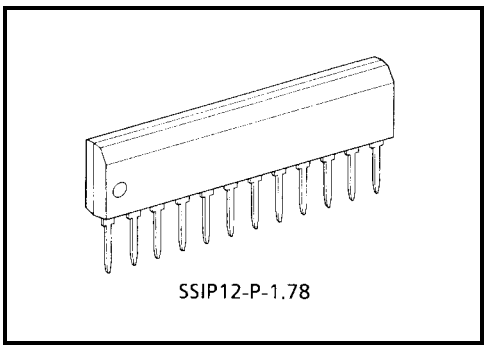
TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

TA8162SN

Dual Preamplifier

The TA8162SN is dual preamplifier designed for car stereo tape deck.
This IC contains dual preamplifier and metal/normal tape equalizer control switches.

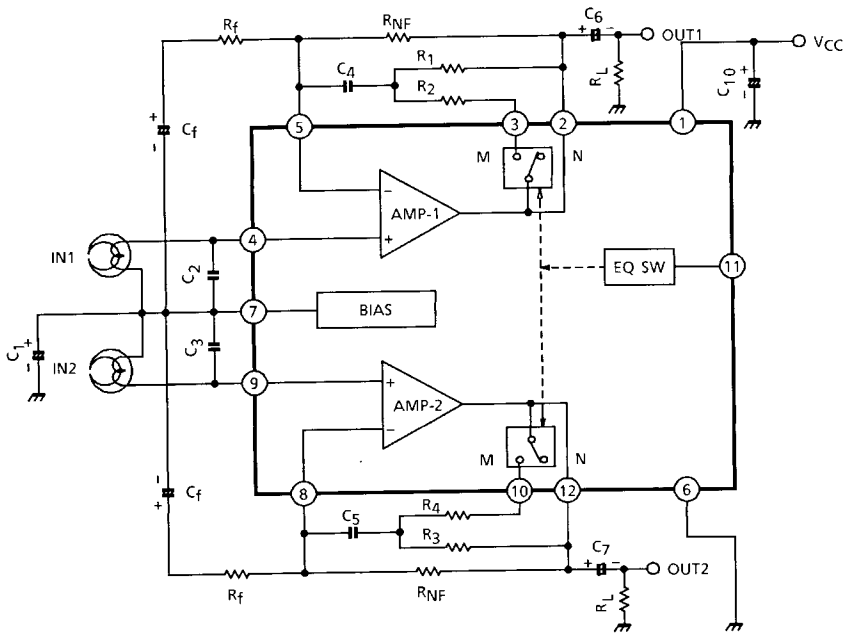


Weight: 0.65 g (typ.)

Features

- High open loop voltage gain
  : G_{VO} = 98dB (typ.) (V_{CC} = 9 V, f = 1 kHz)
- Low distortion
  : THD = 0.035% (typ.)
  (G_V = 40dB, f = 1 kHz, V_{OUT} = 0.5 Vrms)
- Low noise (equivalent input noise voltage)
  : V_{NI} = 0.9 μVrms (typ.) (R_g = 620 Ω, BW = 20 Hz~20 kHz, NAB EQ)
- No input coupling capacitor
- Small package: Shrink pitch (1.78 mm) single in-line 12 pin
- Operating supply voltage range: $V_{CC\ (opr.)}$ = 6~16 V

Block Diagram



Application Information

1. Equalizer control switch

Pin11 is coupled to the base of Q_1 (PNP-Tr) as shown in Figure 1.
The emitter potential of Q_1 is 3.9 Vdc.
Threshold voltage (pin11)

Metal	3.2~V_{CC}
Normal	0~2.4 V

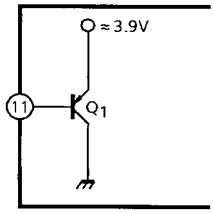


Figure 1

2. $C_{2\sim3}$

Capacitor C2/C3 may be required for preventing a instability caused by the pattern layout or interference of external high frequency signal.

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	V_{CC}	16	V
Power dissipation	P_D (Note)	750	mW
Operating temperature	T_{opr}	−30~75	°C
Storage temperature	T_{stg}	−55~150	°C

Note: Derated above Ta = 25°C in the proportion of 6 mW/°C.

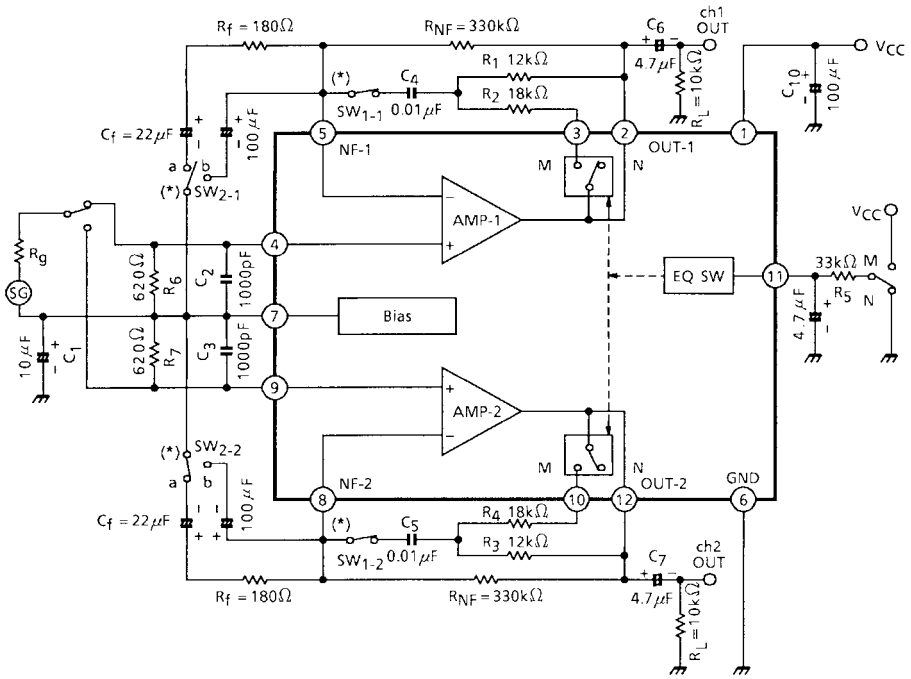
Typ. DC Voltage of Each Terminal (V_{CC} = 9 V, Ta = 25°C, Dual mode test circuit)

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12
DC-voltage (V)	V_{CC}	3.0	3.0	3.0	3.0	GND	3.0	3.0	3.0	3.0	3.5	3.0

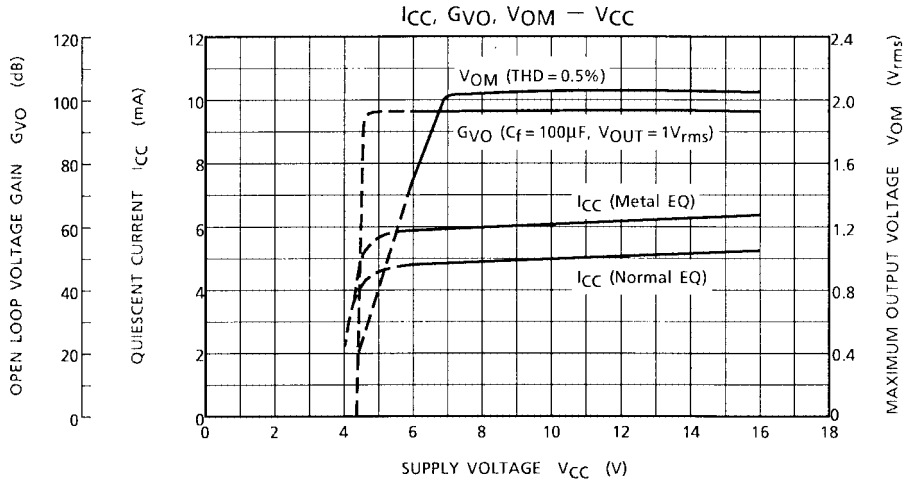
Electrical Characteristics (unless otherwise specified, V_{CC} = 9 V, f = 1 kHz, R_L = 10 kΩ, R_g = 600 Ω, Ta = 25°C, normal EQ)

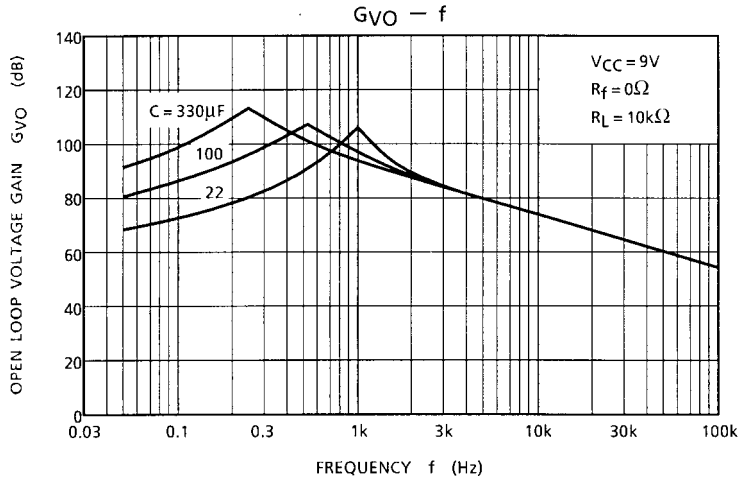
Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Quiescent current	$I_{CCQ\ (1)}$	—	V_{IN} = 0, Normal EQ	—	5.0	—	mA
	$I_{CCQ\ (2)}$	—	V_{IN} = 0, Metal EQ	—	6.0	9.0	
Open loop voltage gain	G_{VO}	—	C_f = 100 μF, R_f = 0	—	98	—	dB
Maximum output voltage	V_{OM}	—	THD = 0.5%	1.5	2.0	—	Vrms
Total harmonic distortion	THD	—	V_{OUT} = 0.5 Vrms	—	0.035	0.12	%
Equivalent input noise voltage	V_{NI}	—	R_g = 620 Ω, NAB BW = 20 Hz~20 kHz	—	0.9	1.7	μVrms
Input resistance	R_{IN}	—	—	—	500	—	kΩ
Ripple rejection ratio	R.R.	—	f_{ripple} = 100 Hz, V_{IN} = 1 Vrms	—	55	—	dB

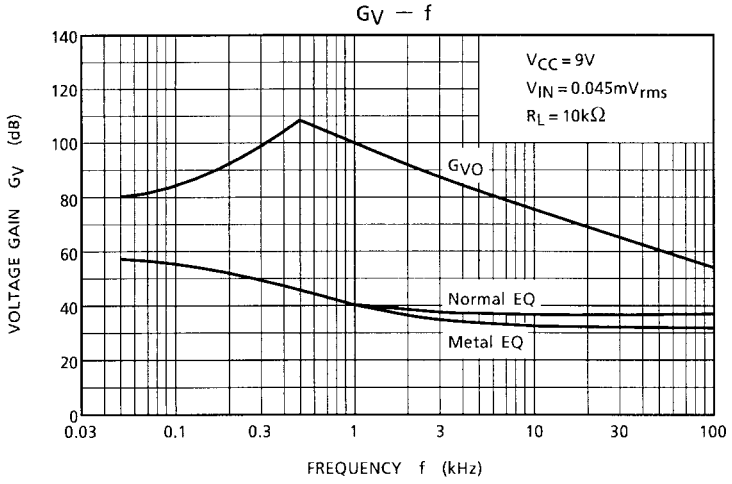
Test Circuit



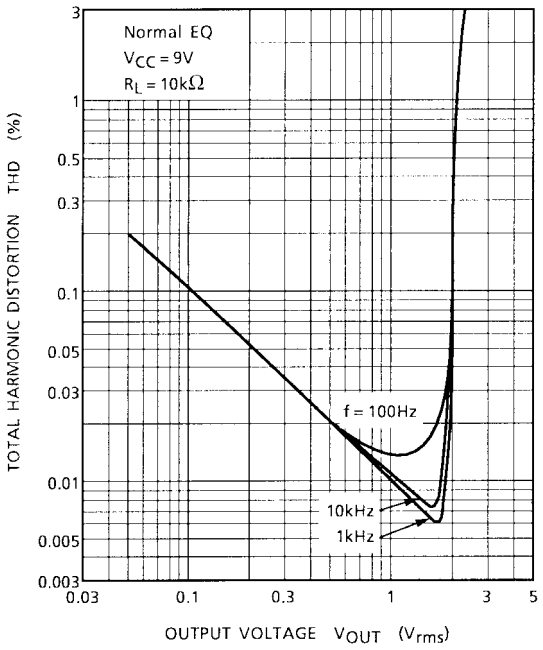
*: G_{VO} Test: $SW_{1\text{-}1,\ 2}$ = OFF, $SW_{2\text{-}1,\ 2}$ = b


I_{CC}, G_{VO}, V_{OM} – V_{CC}
OPEN LOOP VOLTAGE GAIN G_{VO} (dB)
QUIESCENT CURRENT I_{CC} (mA)
MAXIMUM OUTPUT VOLTAGE V_{OM} (V_{rms})
V_{OM} (THD = 0.5%)
G_{VO} (C_f = 100μF, V_{OUT} = 1V_{rms})
I_{CC} (Metal EQ)
I_{CC} (Normal EQ)
SUPPLY VOLTAGE V_{CC} (V)

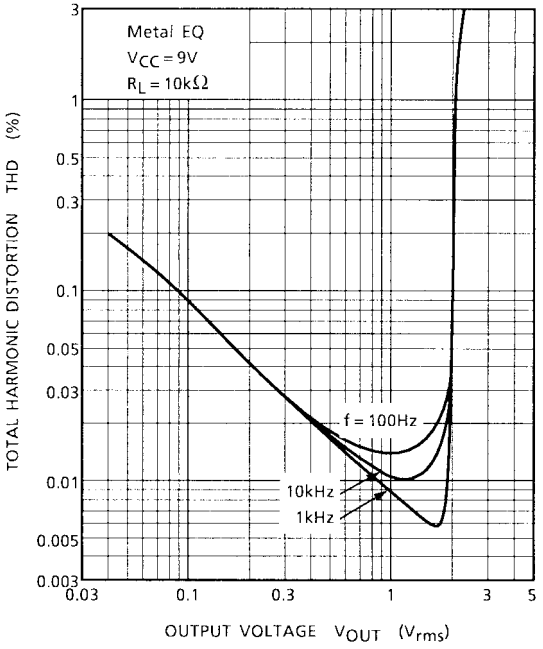

G_{VO} – f
OPEN LOOP VOLTAGE GAIN G_{VO} (dB)
V_{CC} = 9V
R_f = 0Ω
R_L = 10kΩ
C = 330μF
100
22
FREQUENCY f (Hz)


G_V – f
VOLTAGE GAIN G_V (dB)
V_{CC} = 9V
V_{IN} = 0.045mV_{rms}
R_L = 10kΩ
G_{VO}
Normal EQ
Metal EQ
FREQUENCY f (kHz)

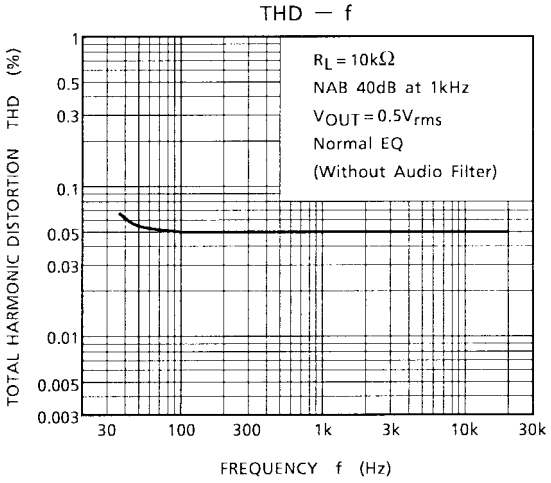
THD — V_{OUT}



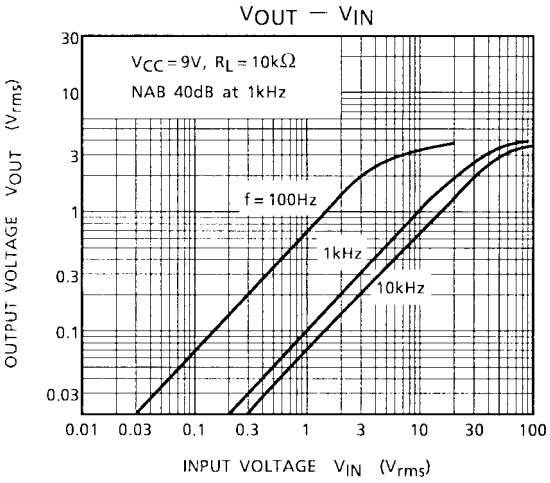
THD — V_{OUT}



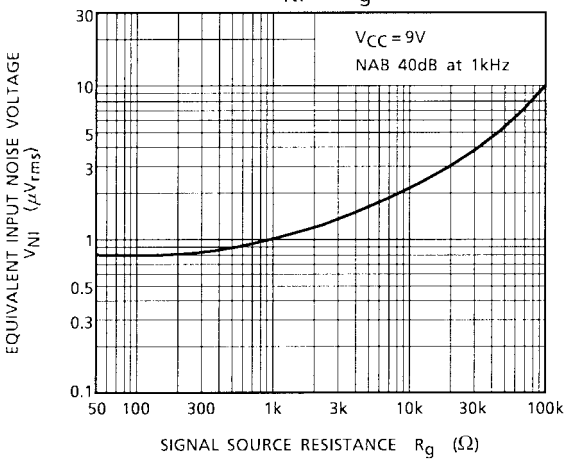
THD — f



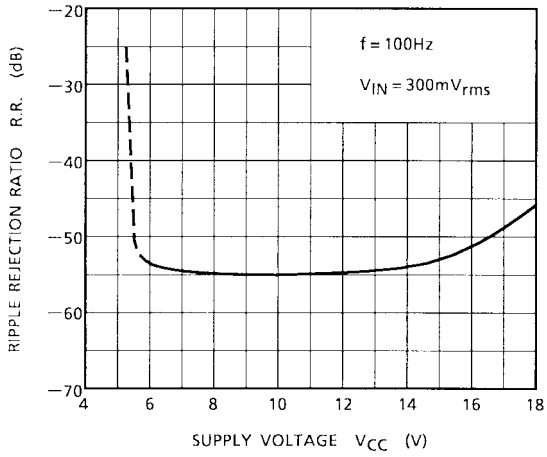
V_{OUT} — V_{IN}



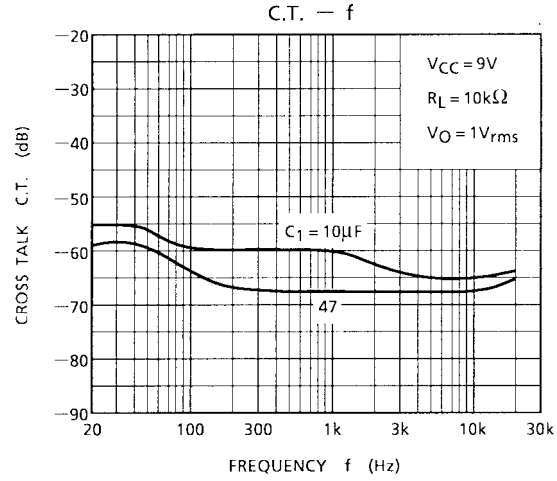
V_{NI} — R_g



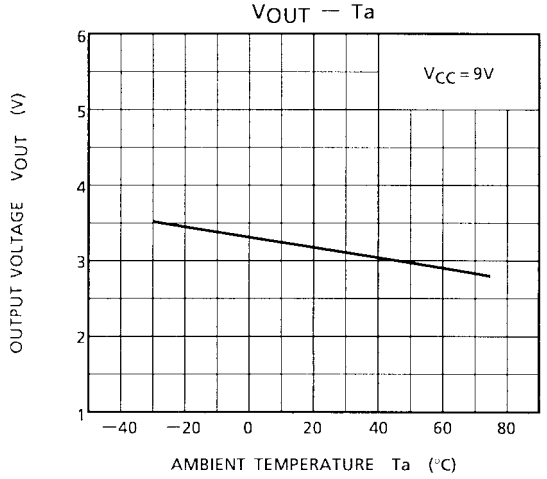
R.R. — V_{CC}



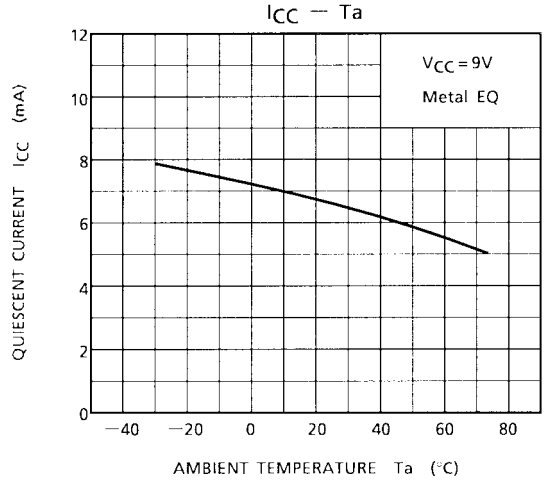
C.T. — f



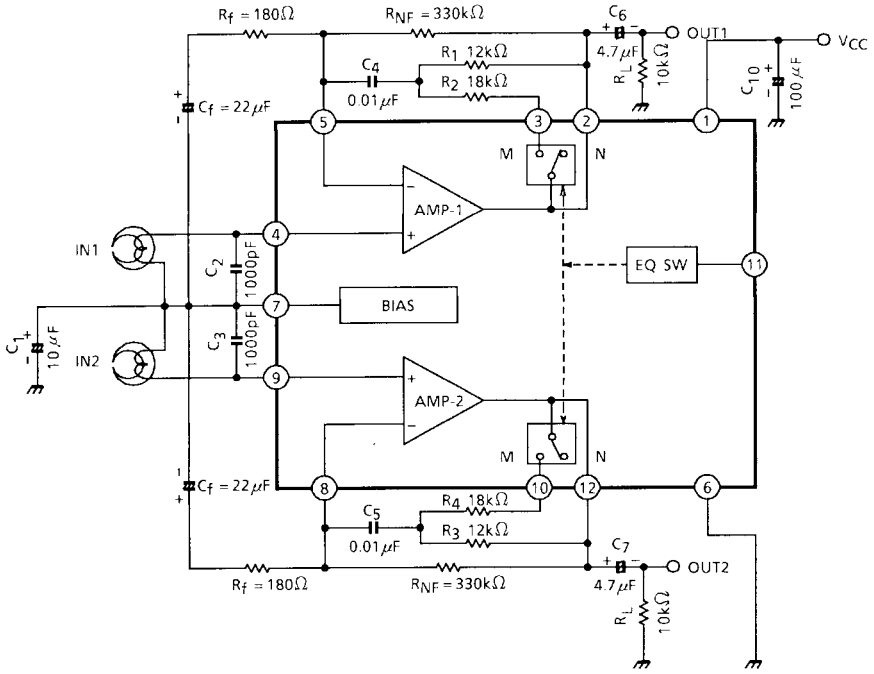
V_{OUT} — Ta



I_{CC} — Ta

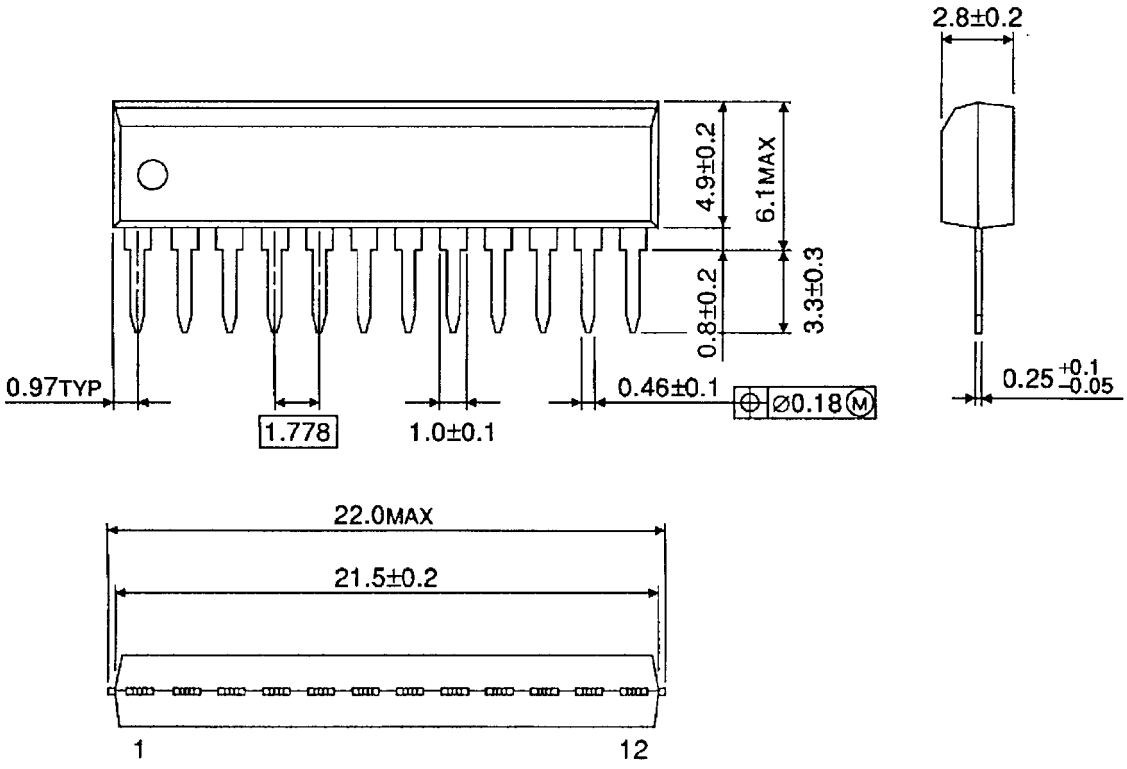


Application Circuit



Package Dimensions

SSIP12-P-1.78 Unit : mm



Weight: 0.65 g (typ.)

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