

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA2025P, TA2025F

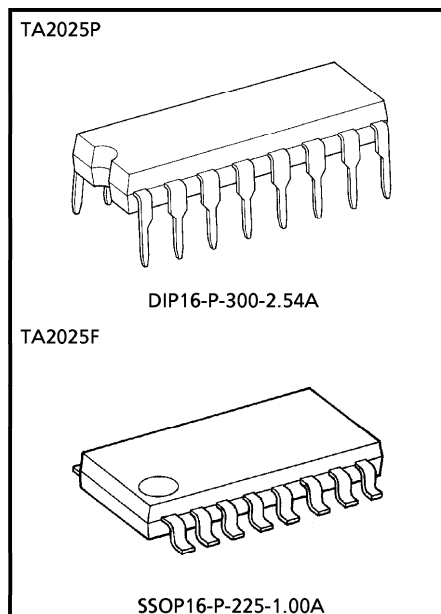
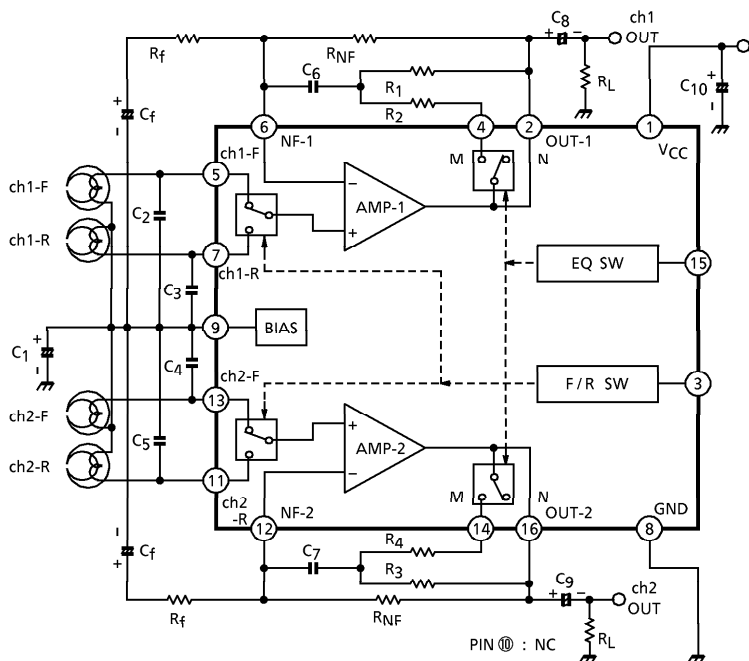
LOW NOISE PREAMPLIFIER FOR AUTOREVERSE CAR STEREO

The TA2025P, TA2025F contains dual amplifier, forward, reverse control switches and metal, normal tape equalizer control switches.

FEATURE

- High Voltage Gain
: $G_{VO} = 100 \text{ dB (Typ.)}$ ($V_{CC} = 9V, f = 1\text{kHz}$)
- No Input Coupling Capacitor
- Low Noise (Equivalent Noise Voltage)
: $V_{NI} = 0.6 \mu\text{Vrms (Typ.)}$ ($V_{CC} = 9V, R_g = 620\Omega, BW = 20\text{Hz} \sim 20\text{kHz}, \text{NAB EQ}$)
- Low Distortion : THD = 0.01% (Typ.)
- Operating Supply Voltage Range : $V_{CC} (\text{opr.}) = 6 \sim 16V$

BLOCK DIAGRAM



Weight
 DIP16-P-300-2.54A : 1.00 g (Typ.)
 SSOP16-P-225-1.00A : 0.14 g (Typ.)

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APPLICATION INFORMATION

1. FORWARD, REVERSE SELECT SWITCH

(1) Threshold Voltage

Pin ③ is coupled to the base of Q₁ (PNP-Tr) as shown in Fig.1.
Threshold voltage (pin ③) = 0.7 V

Reverse	0~0.5V
Forward	1.0~V _{CC}

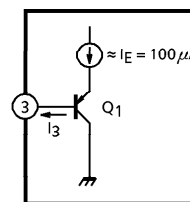


Fig.1

(2) The recommended Forward, Reverse

Select circuit is shown in Fig. 2.

(3) I₃ (In Fig.1)

I₃ = 12 μA (Max., T_a = 25° C)

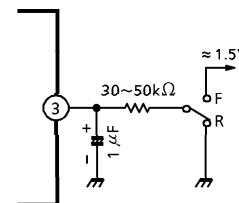


Fig.2

2. EQUALIZER CONTROL SWITCH

Pin ⑮ is coupled to the base of Q₂ (PNP-Tr) as shown in Fig.3.
The emitter potential of Q₂ is 3.9V(DC).
Threshold voltage (pin ⑮) = 2.8V

Metal	3.2~16V
Normal	0~2.4V

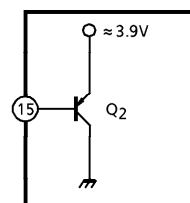


Fig.3

3. C₂/C₃/C₄/C₅

Capacitor C₂ ~ C₅ may be required for preventing a instability caused by the pattern layout or interference of external high frequency signal.

MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{CC}	16	V
Power Dissipation (Note)	P _D	350	mW
Operating Temperature	T _{opr}	- 30~85	°C
Storage Temperature	T _{stg}	- 55~150	°C

(Note) Derated above T_a = 25°C in the proportion of 6mW/°C for TA2025P and of 2.8mW/°C for TA2025F.

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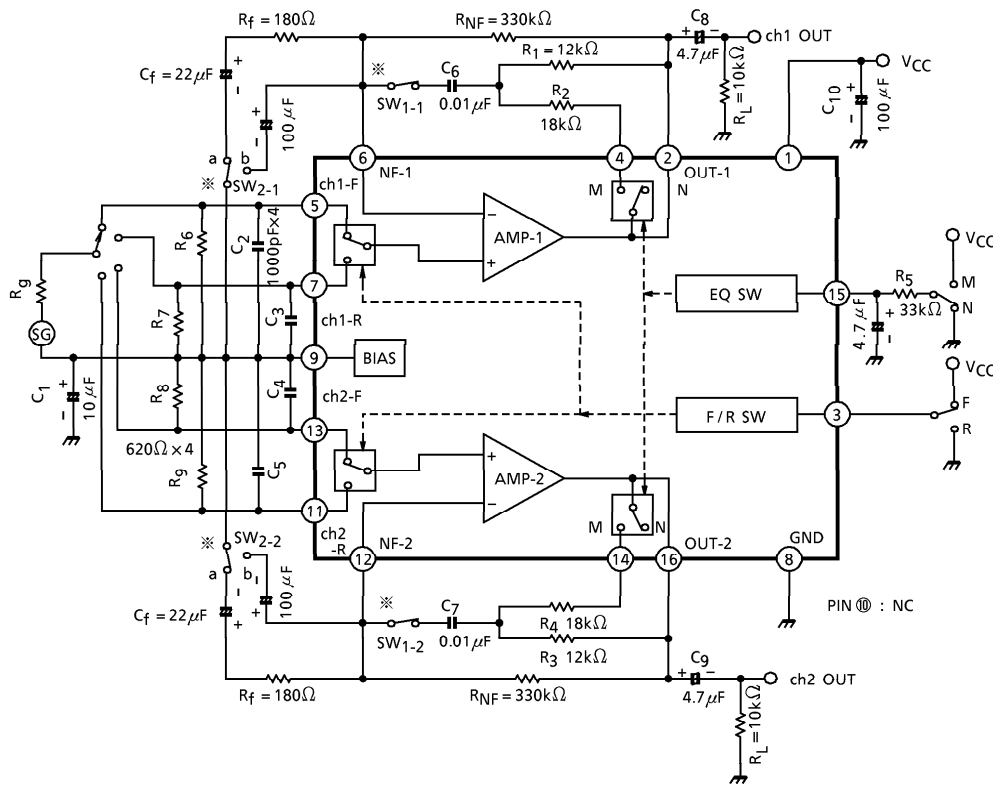
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ELECTRICAL CHARACTERISTICS

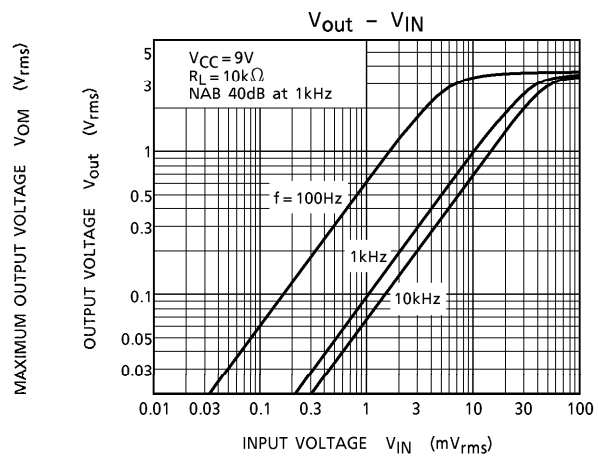
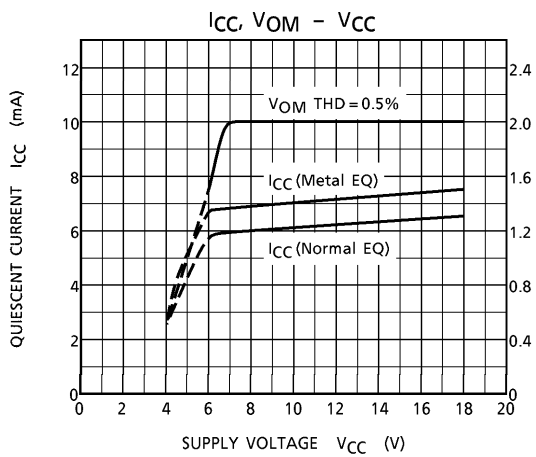
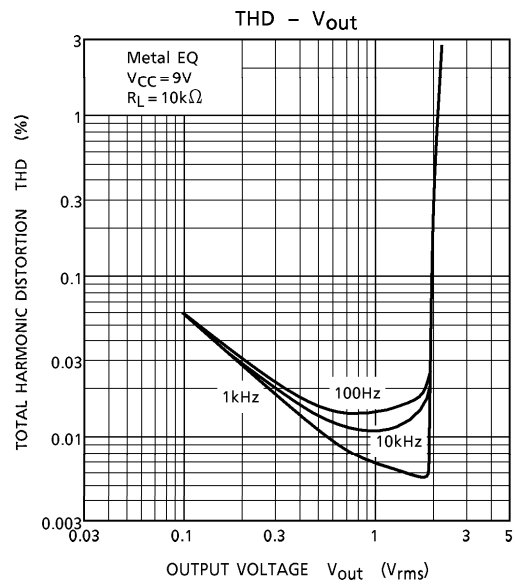
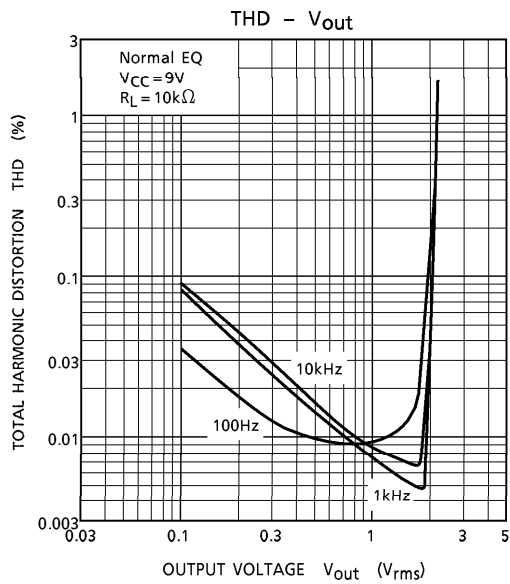
(Unless otherwise specified, $V_{CC} = 9V$, $f = 1kHz$, $R_L = 10k\Omega$, $R_g = 600\Omega$, $T_a = 25^\circ C$, Normal EQ)

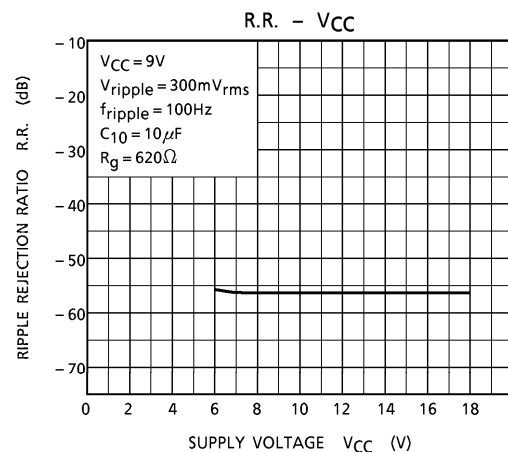
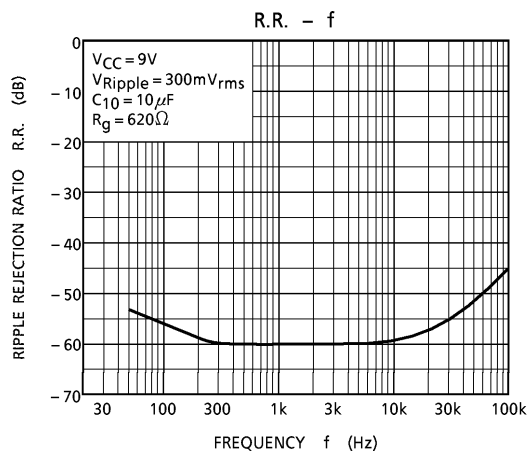
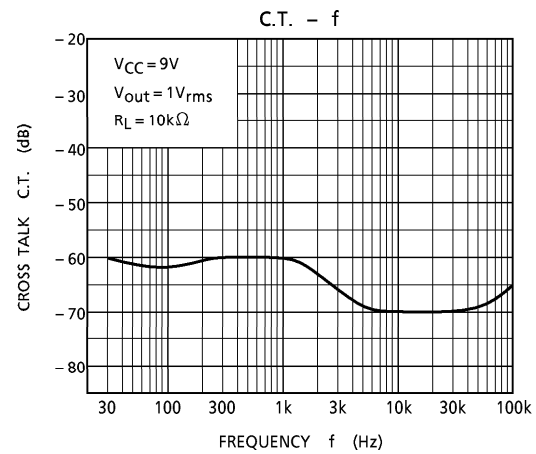
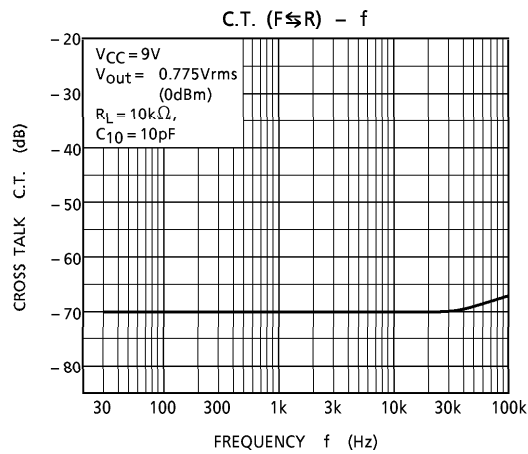
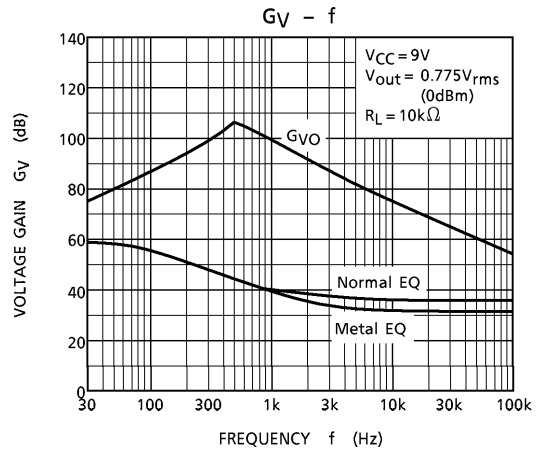
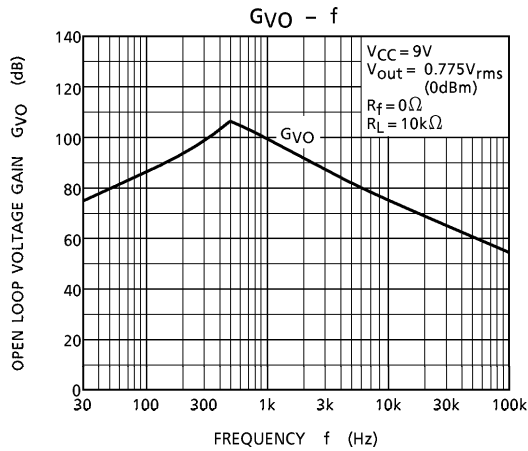
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	$I_{CCQ} (1)$	—	$V_{IN} = 0$, Normal EQ	—	6.0	—	mA
	$I_{CCQ} (2)$	—	$V_{IN} = 0$, Metal EQ	—	7.0	10.0	
Open Loop Voltage Gain	G_{VO}	—	$C_f = 100\mu F$, $R_f = 0$	—	100	—	dB
Maximum Output Voltage	V_{OM}	—	THD = 0.5%	1.5	2.1	—	V_{rms}
Total Harmonic Distortion	THD	—	$V_{OUT} = 0.5V_{rms}$	—	0.01	0.06	%
Equivalent Input Noise Voltage	V_{NI}	—	$R_g = 620\Omega$, NAB BW = 20Hz~20kHz	—	0.6	1.2	μV_{rms}
Input Resistance	R_{IN}	—	—	—	330	—	k Ω
Ripple Rejection	R.R.	—	$f = 100Hz$, $V_{IN} = 1V_{rms}$	—	56	—	dB
Cross Talk	C.T.	—	$V_{OUT} = 0.775V_{rms} (0dBm)$	50	60	—	dB
Forward / Reverse Cross Talk	C.T. (F / R)	—	$V_{OUT} = 0.775V_{rms} (0dBm)$	60	70	—	dB

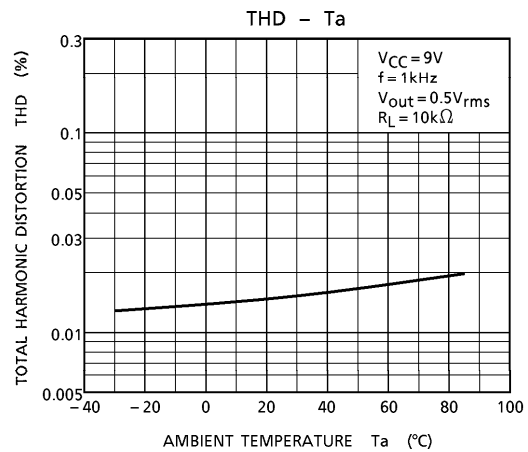
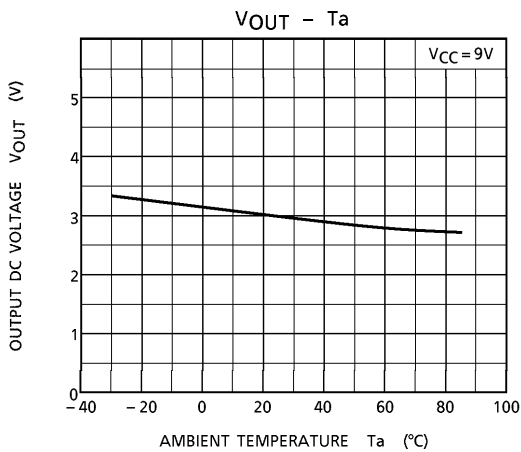
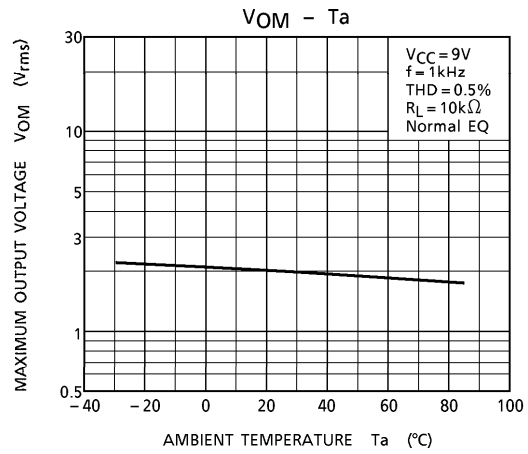
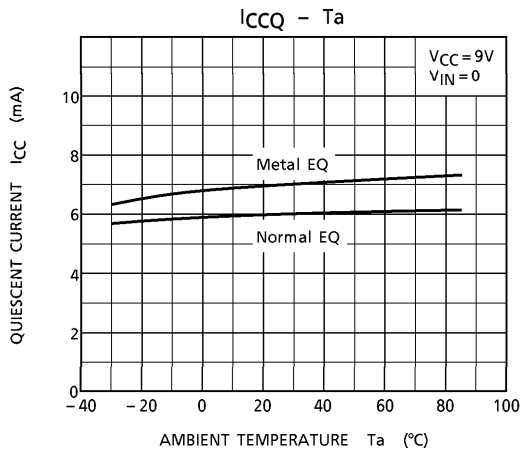
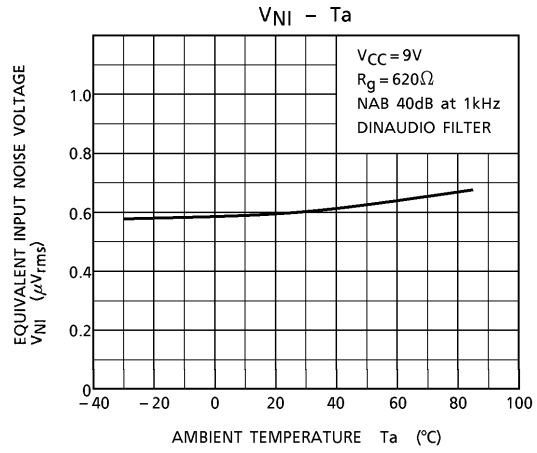
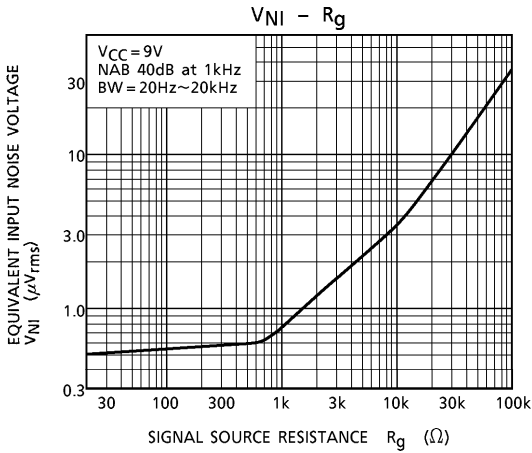
TEST CIRCUIT



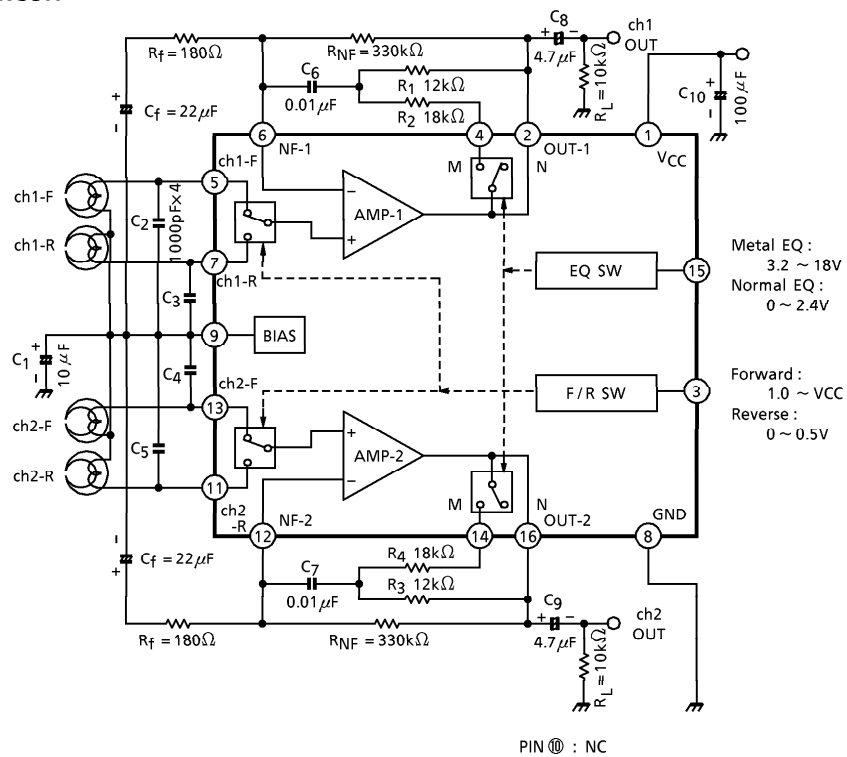
※ G_{VO} Test : SW1-1,2 = OFF, SW2-1,2 = b





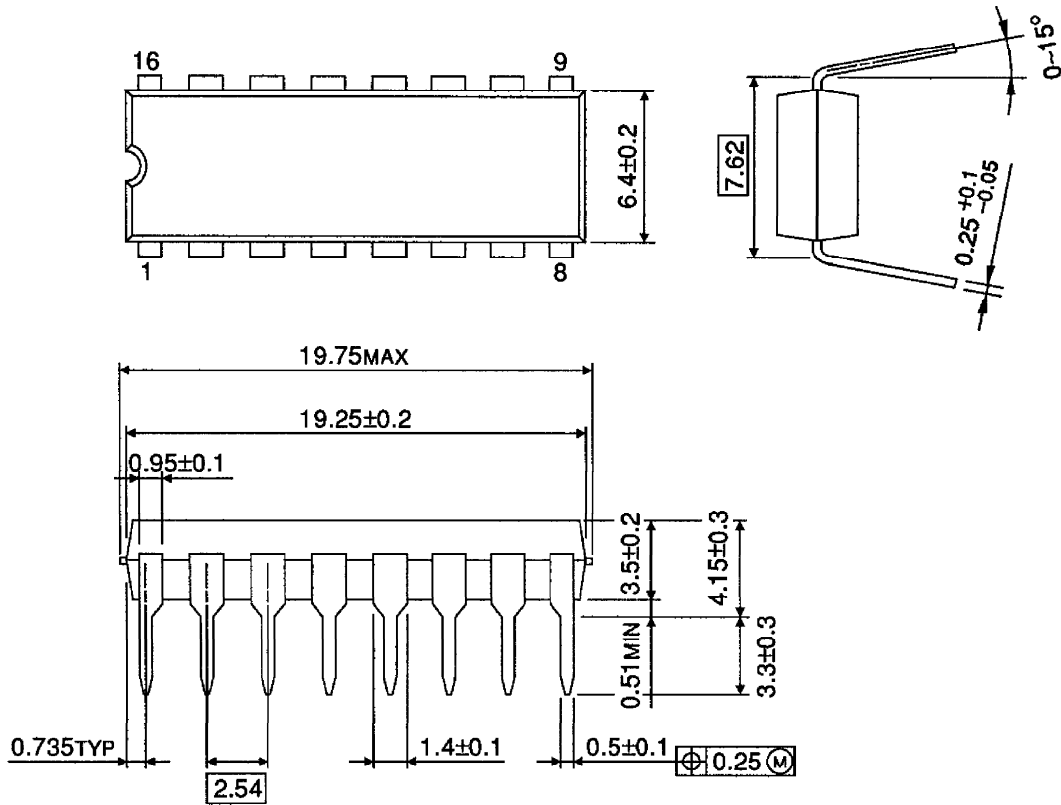


APPLICATION CIRCUIT



OUTLINE DRAWING
DIP16-P-300-2.54A

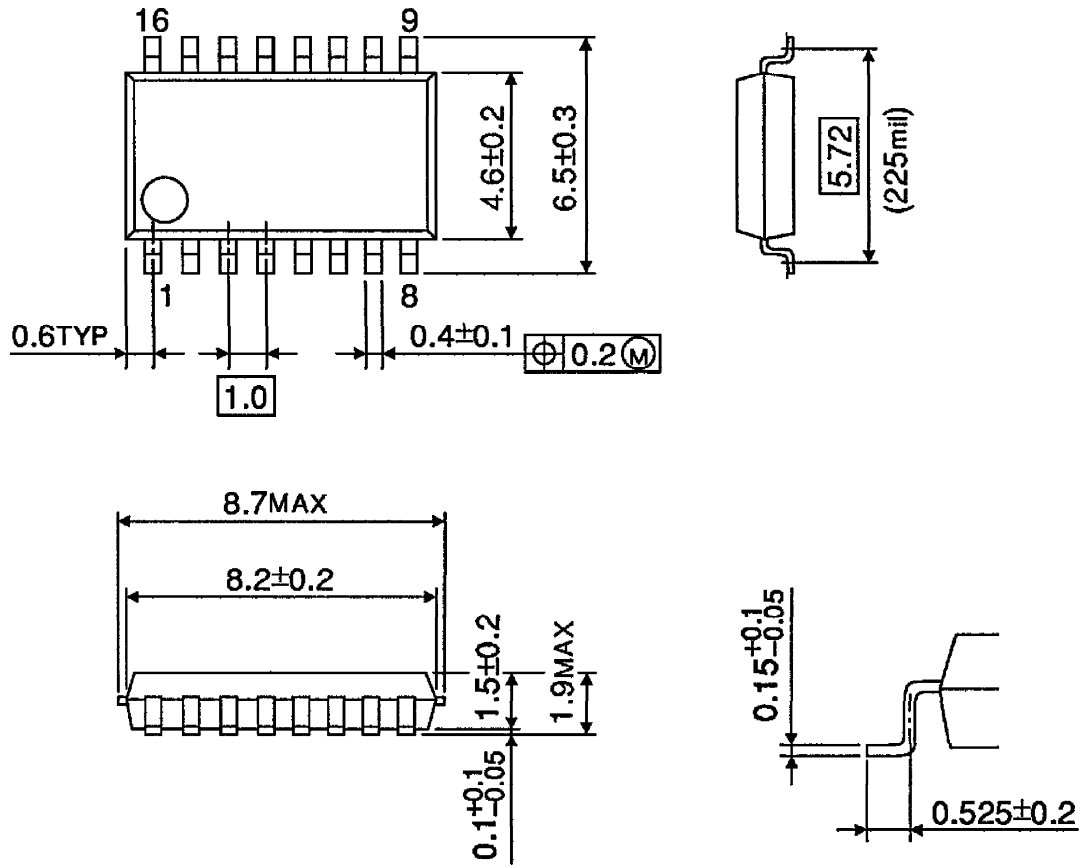
Unit : mm



Weight : 1.00g (Typ.)

OUTLINE DRAWING
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)