

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

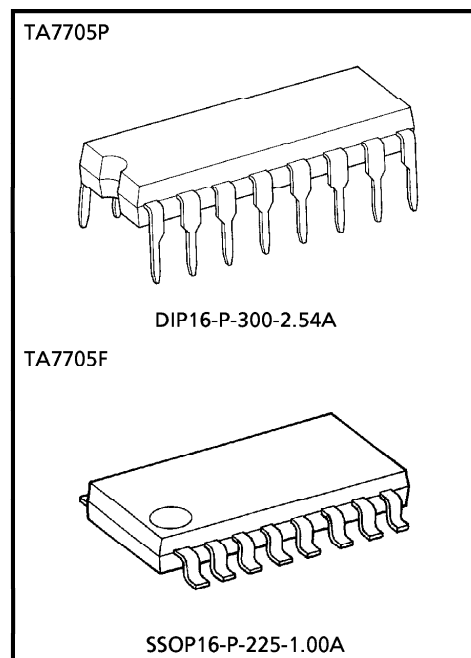
TA7705P, TA7705F

LOW NOISE DUAL AMPLIFIER FOR AUTOREVERSE CAR STEREO

TA7705P (DIP), TA7705F (SSOP) are dual preamplifier.
These ICs contain dual amplifier, forward / reverse control switches and metal / normal tape equalizer control switches.

FEATURES

- High Open Loop Voltage Gain
: $G_{VO} = 98\text{dB}$ (Typ.) ($V_{CC} = 9\text{V}$, $f = 1\text{kHz}$)
- No Input Coupling Capacitor
- Low Distortion
: $\text{THD} = 0.035\%$ (Typ.) ($G_V = 40\text{dB}$, $V_{OUT} = 0.5V_{rms}$)
- Low Noise (Equivalent Input Noise Voltage)
: $V_{NI} = 0.9\mu V_{rms}$ (Typ.)
($R_g = 620\Omega$, $BW = 20\text{Hz} \sim 20\text{kHz}$, NAB EQ)
- Operating Supply Voltage Range
: $V_{CC}(\text{opr.}) = 6 \sim 16\text{V}$



Weight

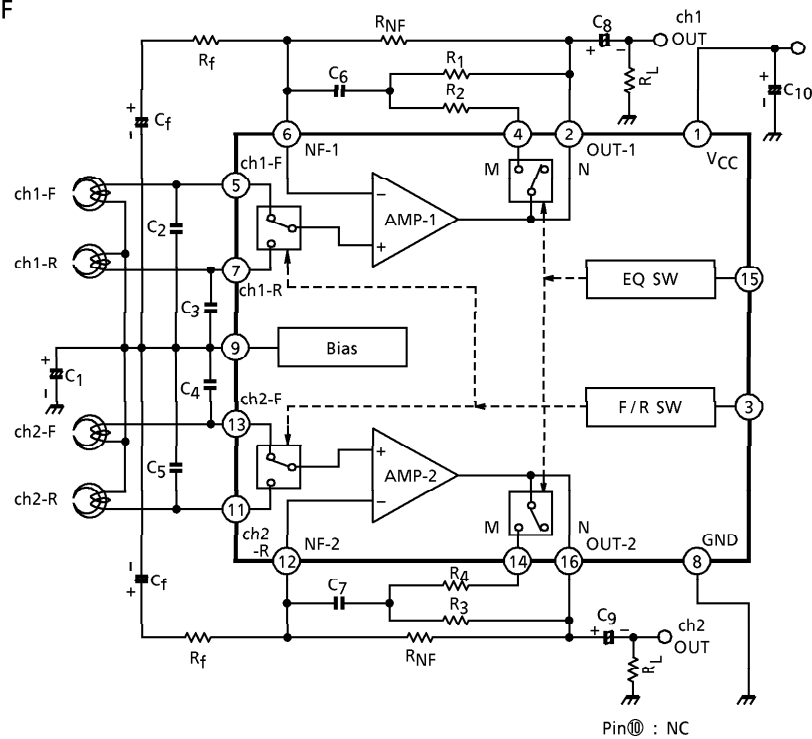
DIP16-P-300-2.54A : 1.0g (Typ.)
SSOP16-P-225-1.00A : 0.14g (Typ.)

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BLOCK DIAGRAM

TA7705P, TA7705F



APPLICATION INFORMATION

1. Forward / Reverse select switch

(1) Threshold voltage

Pin③ is coupled to the base of Q₁ (PNP-Tr) as shown Fig.1.

Threshold voltage (③pin) = 0.7V

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

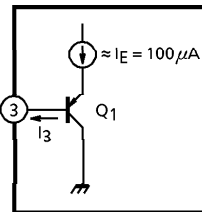


Fig.1

(2) The recommended Forward / Reverse select circuit is shown in Fig.2.

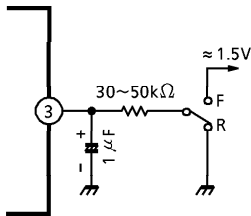


Fig.2

(3) I_3 (In Fig.1)

$$I_3 = 12\mu\text{A} \text{ (Max., } T_a = 25^\circ\text{C)}$$

2. Equalizer control switch

Pin¹⁵ is coupled to the base of Q₂ (PNP-Tr) as shown in Fig.3.

The emitter potential of Q_2 is 3.9V. (DC)

Threshold voltage (15 pin) = 2.8V

Metal	3.2~16V
Normal	0~2.4V

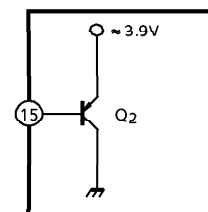


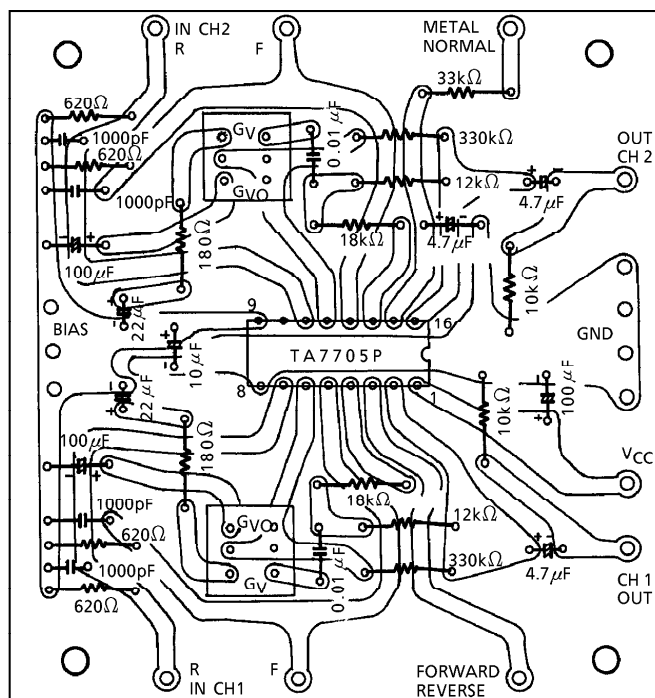
Fig.3

3. C_{2~5}

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

STANDARD PRINT PATTERN

TA7705P



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V _{CC}	16	V
Power Dissipation	TA7705P	P _D (Note)	750	mW
	TA7705F		350	
Operating Temperature		T _{opr}	– 30~75	°C
Storage Temperature		T _{stg}	– 55~150	°C

(Note) Derated above Ta = 25°C in the proportion of 6mW/°C for TA7705P, and of 2.8mW/°C for TA7705F.

ELECTRICAL CHARACTERISTICS

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

CHARACTERISTIC	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 = 100μF, R _f = 0	—	98	—	dB
Maximum Output Voltage	V _{OM}	—	THD = 0.5%	1.5	2.0	—	V _{rms}
Total Harmonic Distortion	THD	—	V _{OUT} = 0.5V _{rms}	—	0.035	0.12	%
Equivalent Input Noise Voltage	V _{IN}	—	R _g = 620Ω, NAB BW = 20Hz~20kHz	—	0.9	1.7	μV _{rms}
Input Resistance	R _{IN}	—	—	—	500	—	kΩ
Ripple Rejection	R.R.	—	f _{ripple} = 100Hz, V _{IN} = 1V _{rms}	—	55	—	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

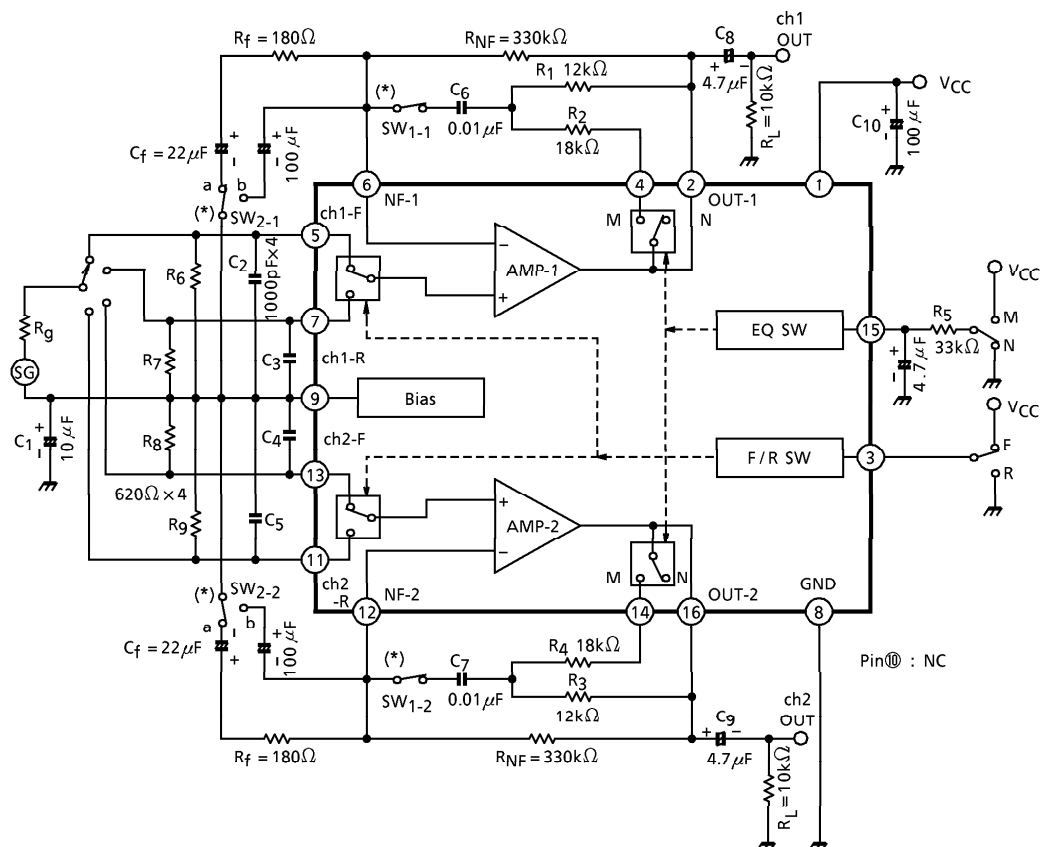
TYP. DC VOLTAGE OF EACH TERMINAL

(V_{CC} = 9V, Ta = 25°C, Dual mode test circuit)

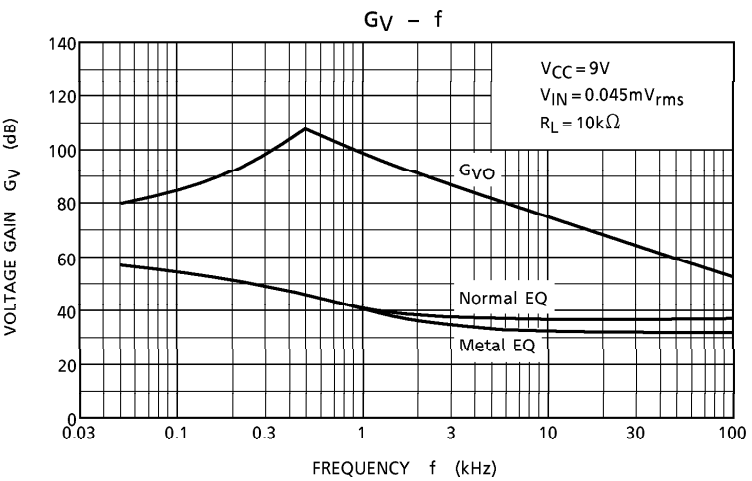
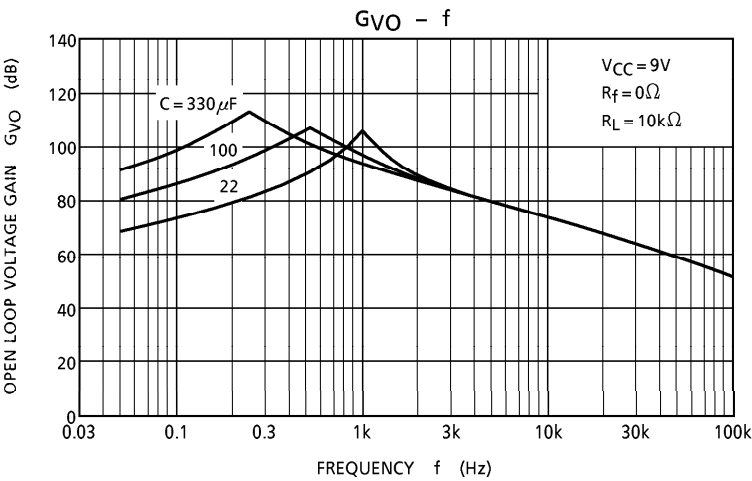
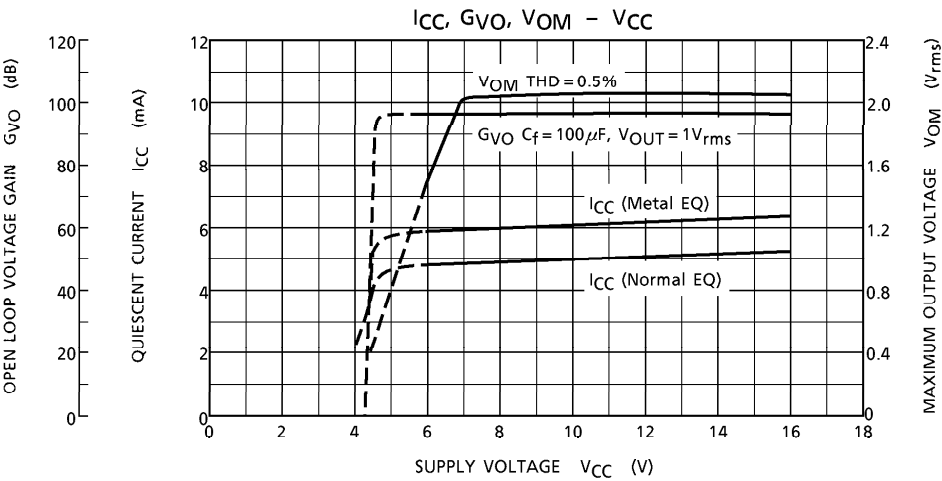
TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DC-Voltage (V)	V _{CC}	3.0	0.7	2.9	2.9	2.9	2.9	GND	2.9	NC	2.9	2.9	2.9	2.9	3.5	2.9

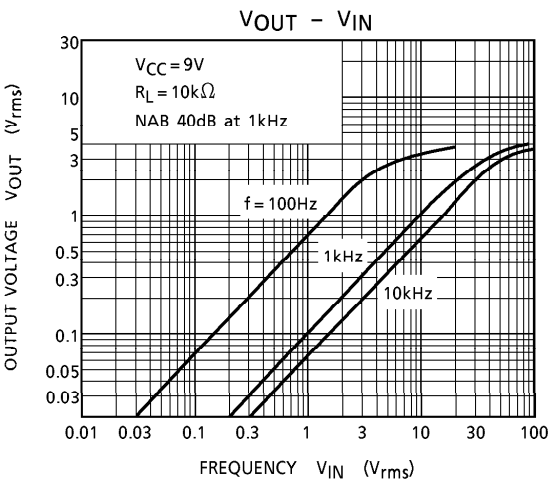
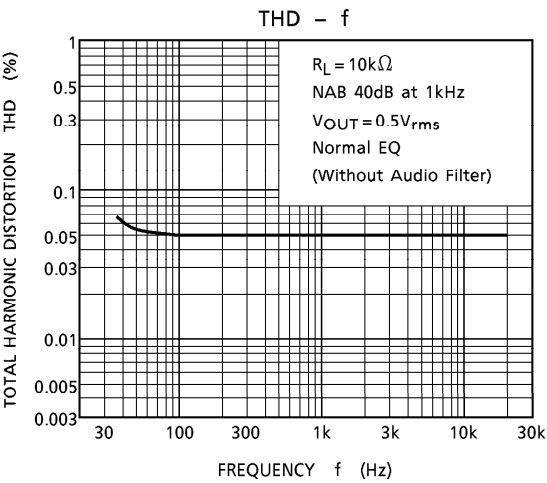
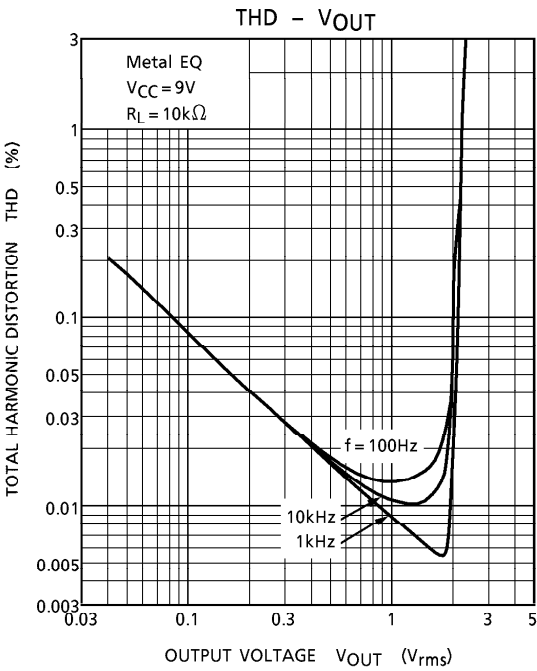
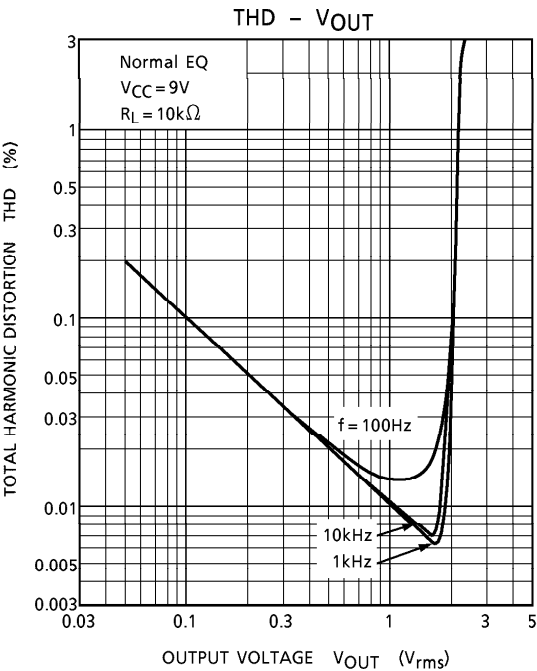
TEST CIRCUIT

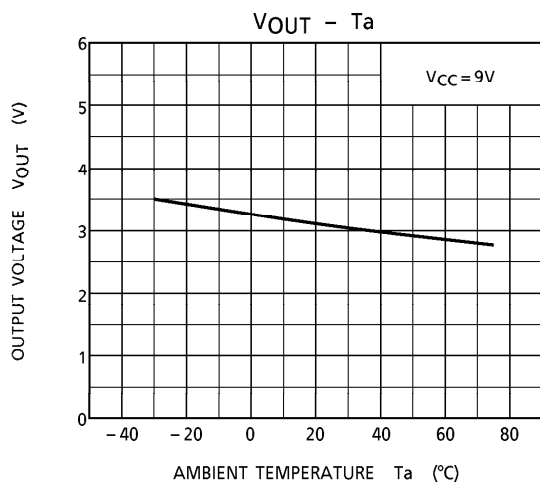
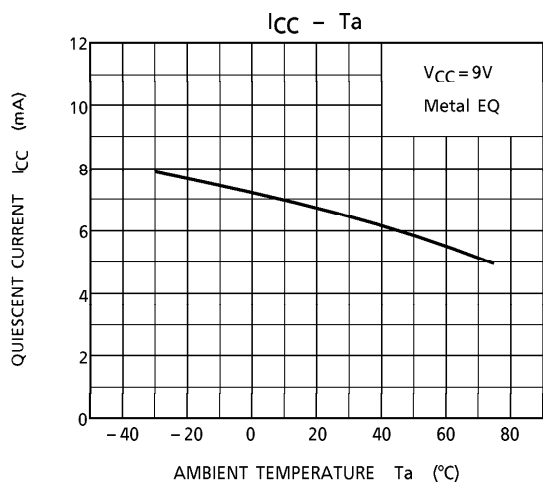
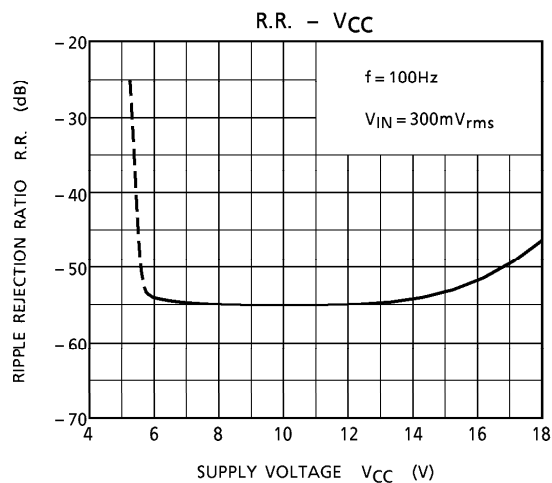
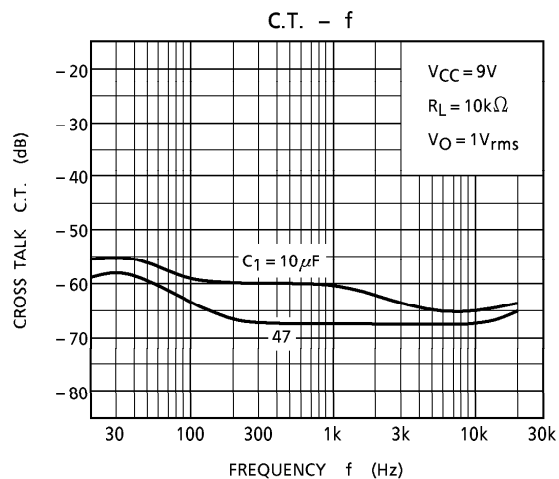
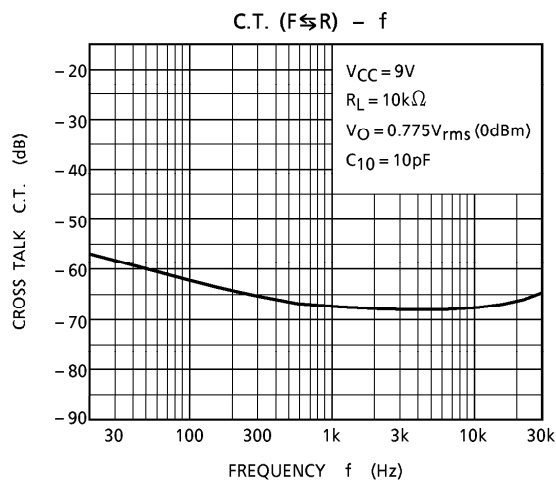
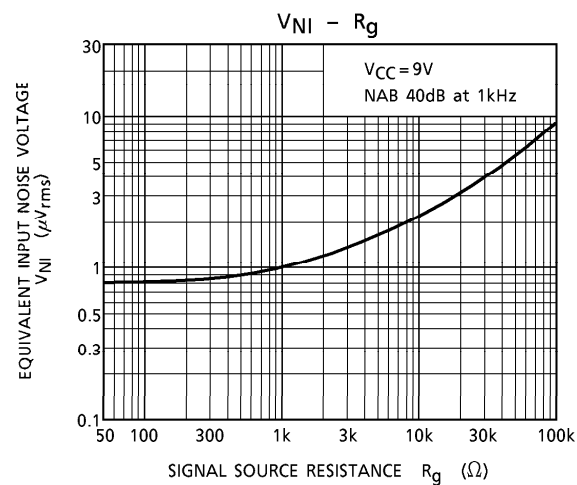
TA7705P, TA7705F



(*) G_{VO} Test : SW₁₋₁, 2 = OFF, SW₂₋₁, 2 = b

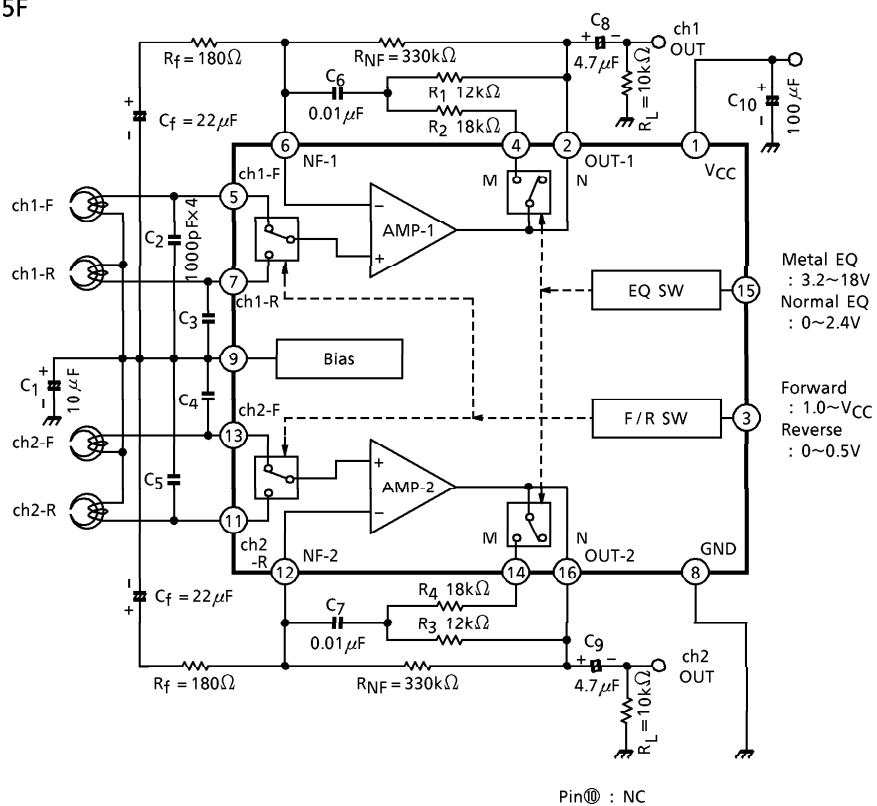






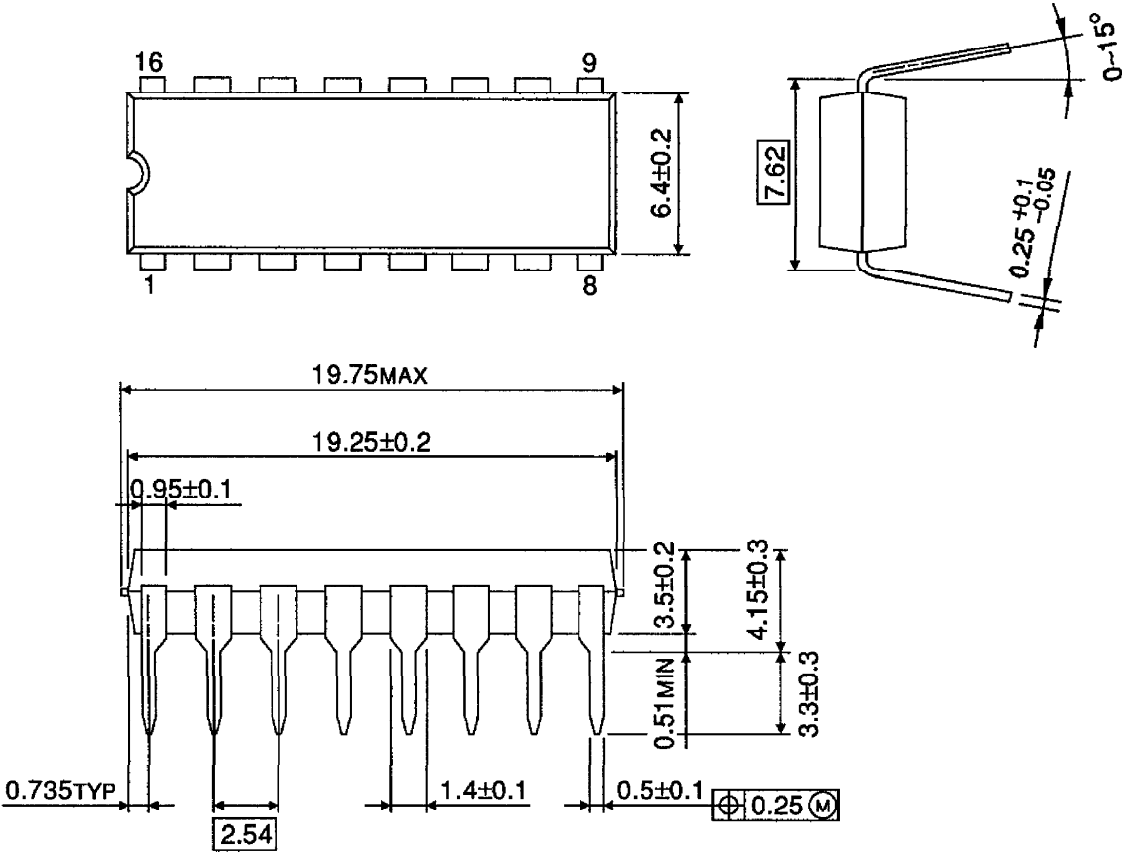
APPLICATION CIRCUIT

TA7705P, TA7705F



OUTLINE DRAWING
DIP16-P-300-2.54A

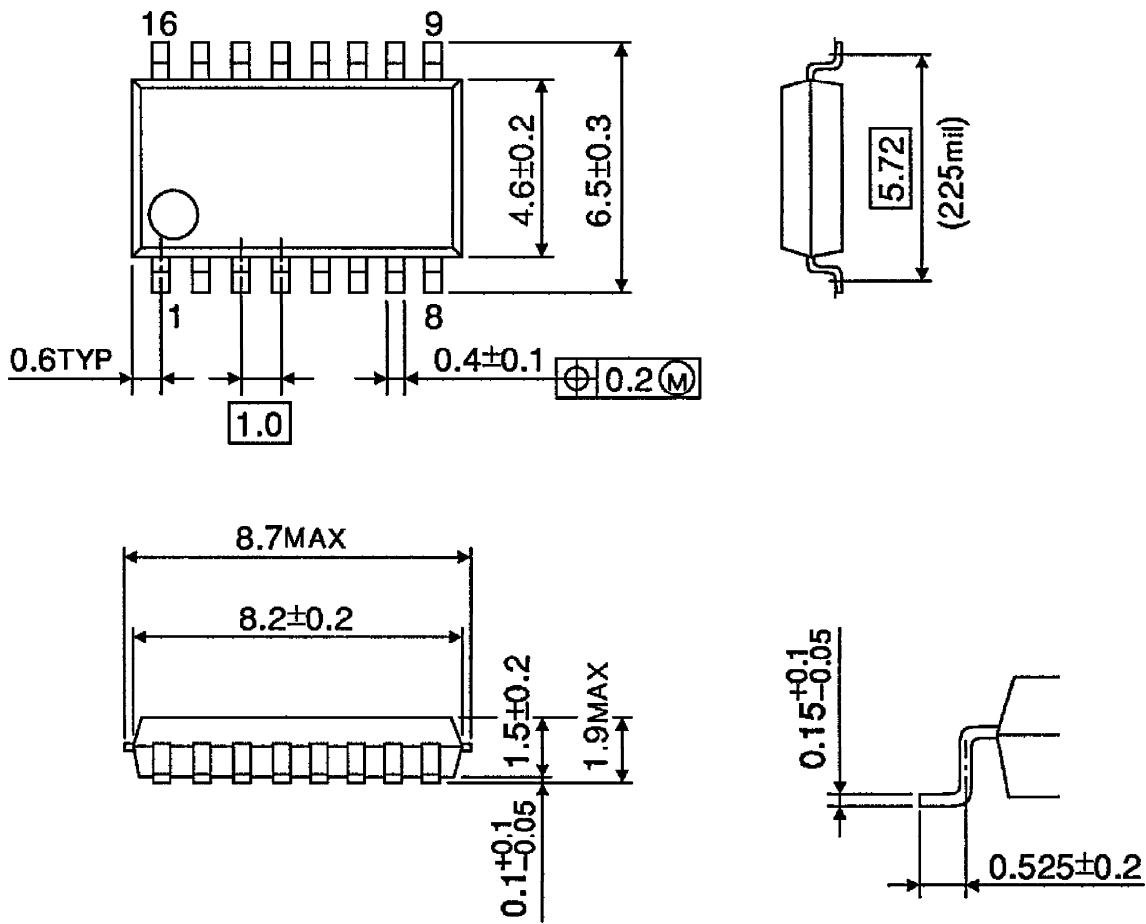
Unit : mm



Weight : 1.0g (Typ.)

OUTLINE DRAWING
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)