

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

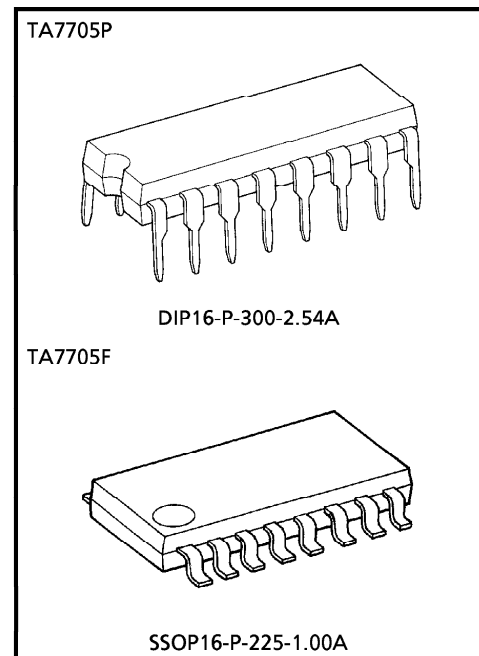
# TA7705P, TA7705F

## 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)  
:  $V_{NI} = 0.9\mu\text{V}_{rms}$  (Typ.)  
( $R_g = 620\Omega$ ,  $BW = 20\text{Hz} \sim 20\text{kHz}$ , NAB EQ)
- Operating Supply Voltage Range  
:  $V_{CC}(\text{opr.}) = 6 \sim 16\text{V}$



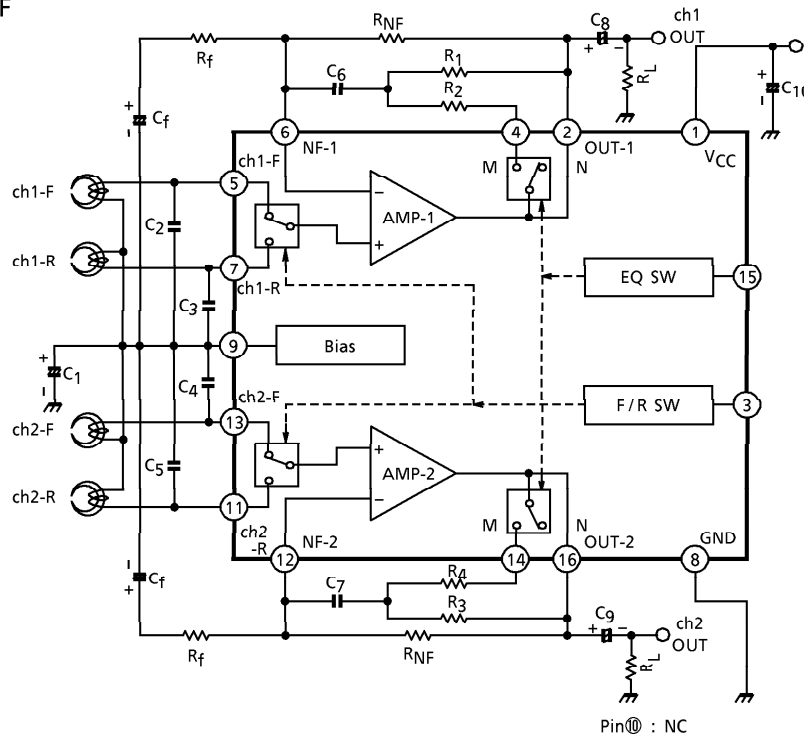
Weight  
DIP16-P-300-2.54A : 1.0g (Typ.)  
SSOP16-P-225-1.00A : 0.14g (Typ.)

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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 Q<sub>1</sub> (PNP-Tr) as shown Fig.1.

Threshold voltage (③pin) = 0.7V

Reverse	0~0.5V
Forward	1.0~V <sub>CC</sub>

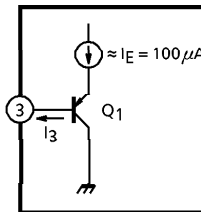


Fig.1

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

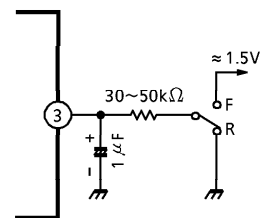


Fig.2

(3)  $I_3$  (In Fig.1)

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

2. Equalizer control switch

Pin 15 is coupled to the base of  $Q_2$  (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

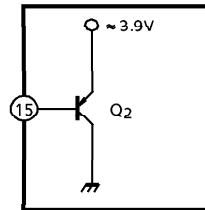


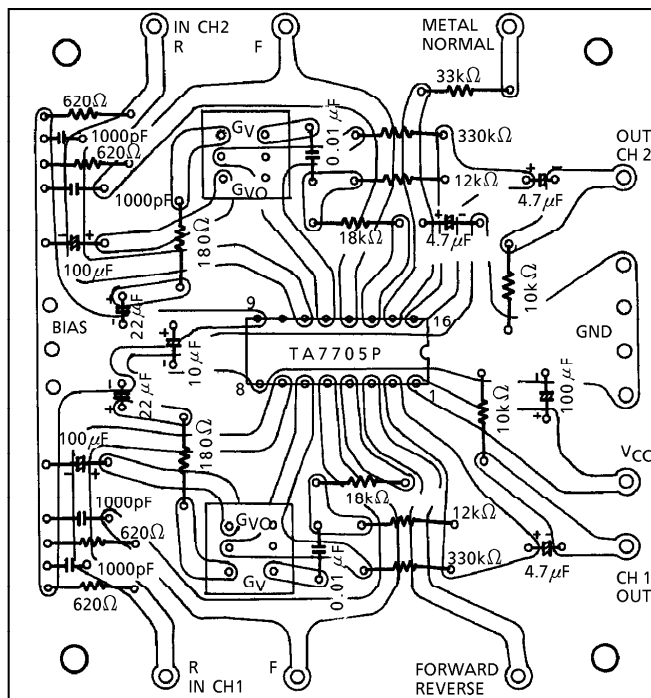
Fig.3

3.  $C_2 \sim 5$

Capacitor  $C_2 \sim C_5$  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 <sub>CC</sub>	16	V
Power Dissipation	TA7705P	750	mW
	TA7705F	350	
Operating Temperature	T <sub>opr</sub>	- 30~75	°C
Storage Temperature	T <sub>stg</sub>	- 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<sub>CC</sub> = 9V, f = 1kHz, R<sub>L</sub> = 10kΩ, R<sub>g</sub> = 600Ω, Ta = 25°C, Normal EQ)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I <sub>CCQ</sub> (1)	—	V <sub>IN</sub> = 0, Normal EQ	—	5.0	—	mA
	I <sub>CCQ</sub> (2)	—	V <sub>IN</sub> = 0, Metal EQ	—	6.0	9.0	
Open Loop Voltage Gain	G <sub>VO</sub>	—	C <sub>f</sub> = 100μF, R <sub>f</sub> = 0	—	98	—	dB
Maximum Output Voltage	V <sub>OM</sub>	—	THD = 0.5%	1.5	2.0	—	V <sub>rms</sub>
Total Harmonic Distortion	THD	—	V <sub>OUT</sub> = 0.5V <sub>rms</sub>	—	0.035	0.12	%
Equivalent Input Noise Voltage	V <sub>IN</sub>	—	R <sub>g</sub> = 620Ω, NAB BW = 20Hz~20kHz	—	0.9	1.7	μV <sub>rms</sub>
Input Resistance	R <sub>IN</sub>	—	—	—	500	—	kΩ
Ripple Rejection	R.R.	—	f <sub>ripple</sub> = 100Hz, V <sub>IN</sub> = 1V <sub>rms</sub>	—	55	—	dB
Cross Talk	C.T.	—	V <sub>OUT</sub> = 0.775V <sub>rms</sub> (0dBm)	50	60	—	dB
Forward / Reverse Cross Talk	C.T. (F / R)	—	V <sub>OUT</sub> = 0.775V <sub>rms</sub> (0dBm)	60	70	—	dB

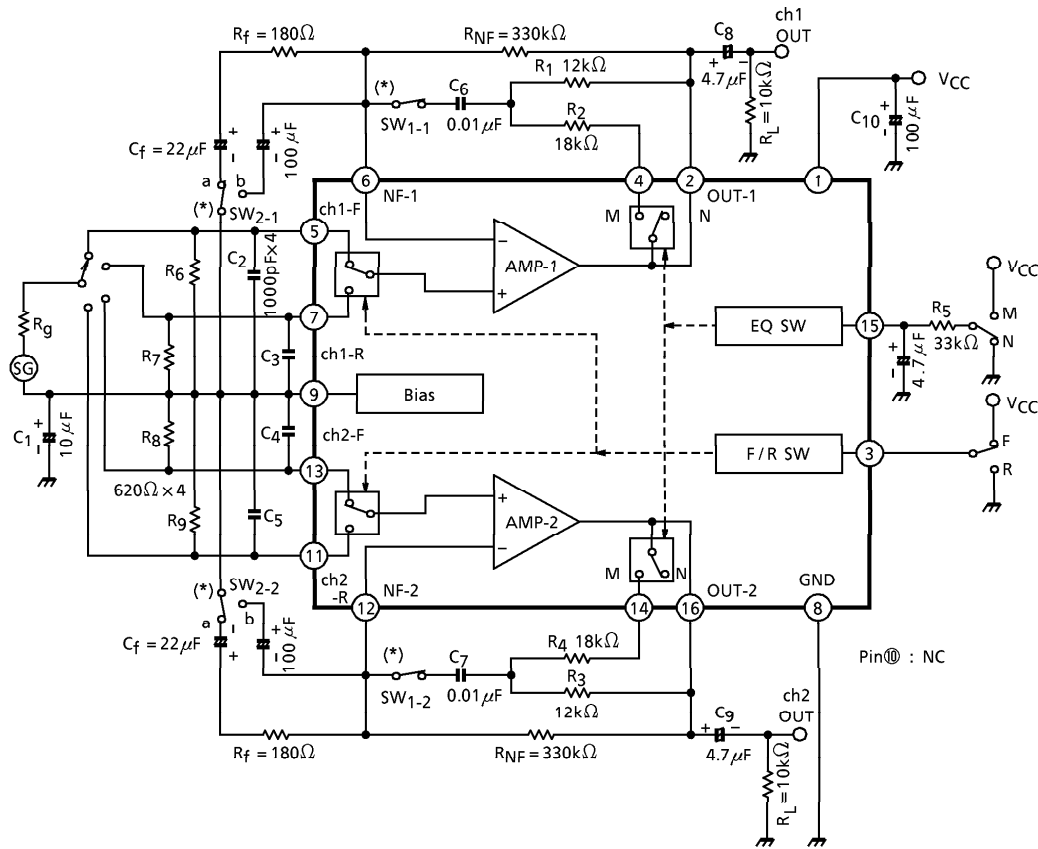
**TYP. DC VOLTAGE OF EACH TERMINAL**

(V<sub>CC</sub> = 9V, Ta = 25°C, Dual mode test circuit)

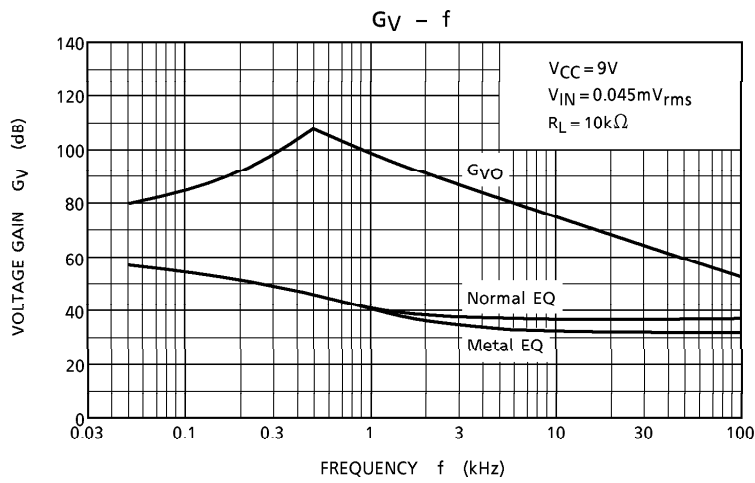
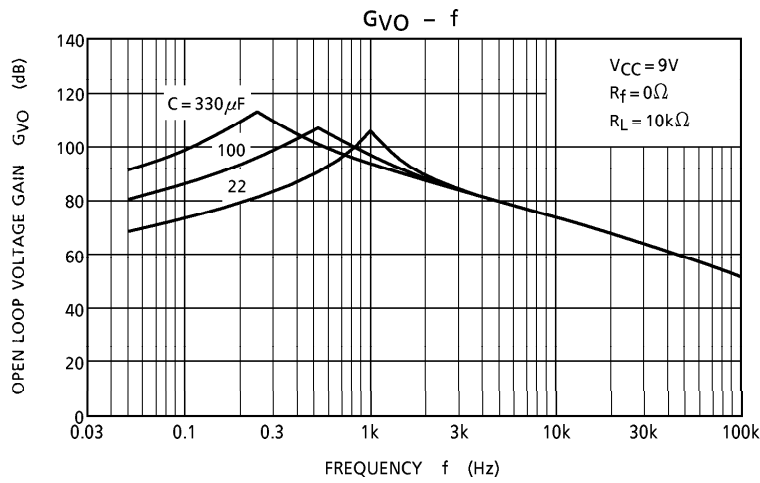
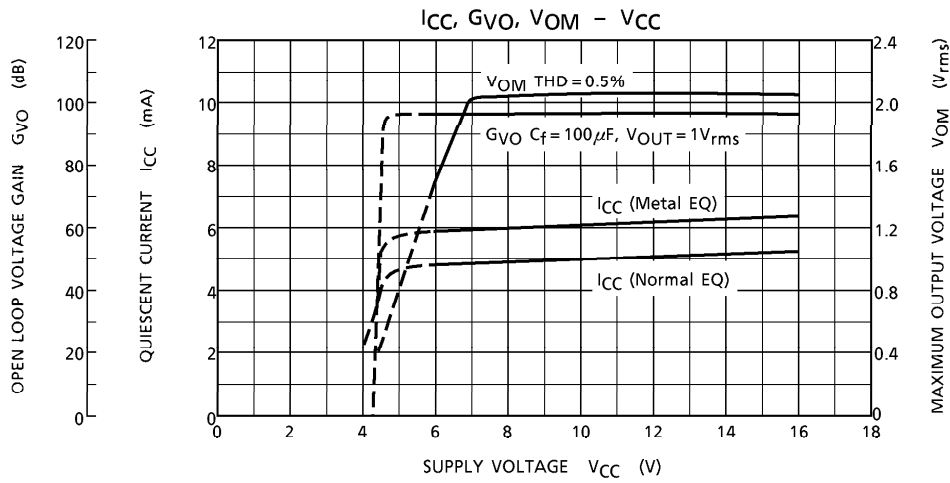
TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DC-Voltage (V)	V <sub>CC</sub>	3.0	0.7	2.9	2.9	2.9	2.9	GND	2.9	NC	2.9	2.9	2.9	2.9	3.5	2.9

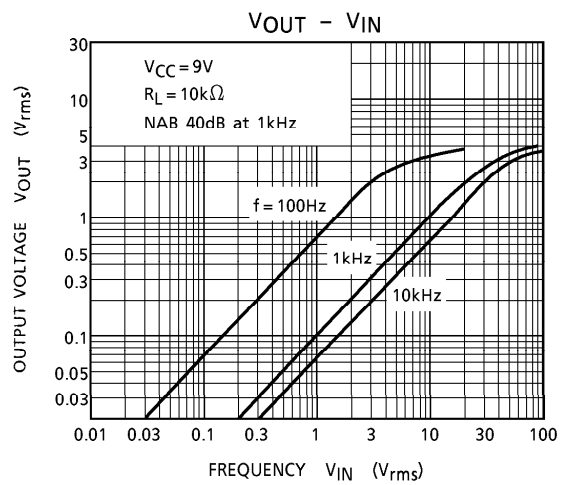
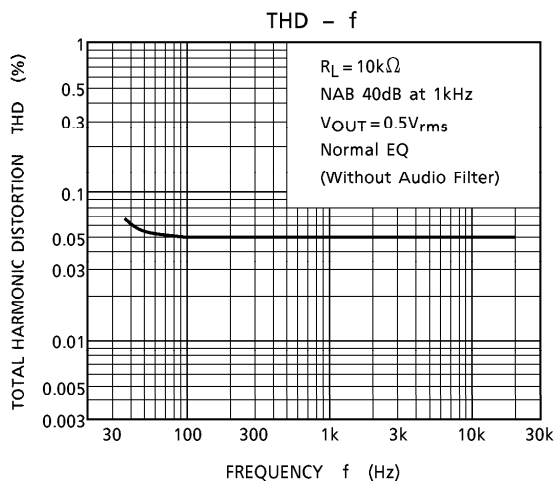
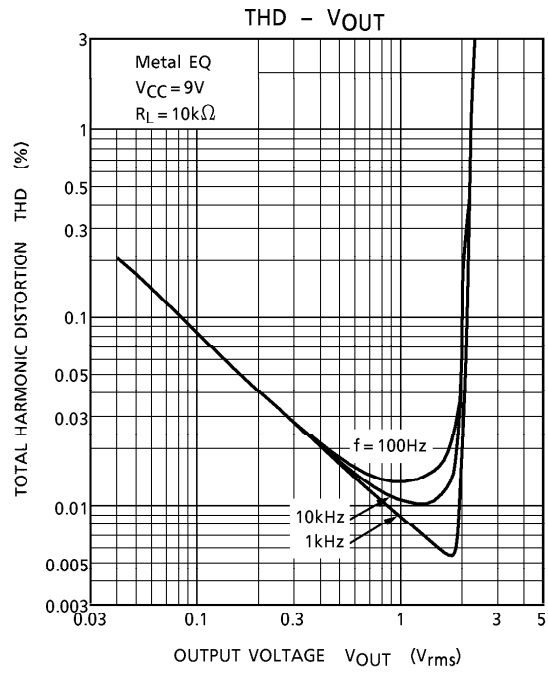
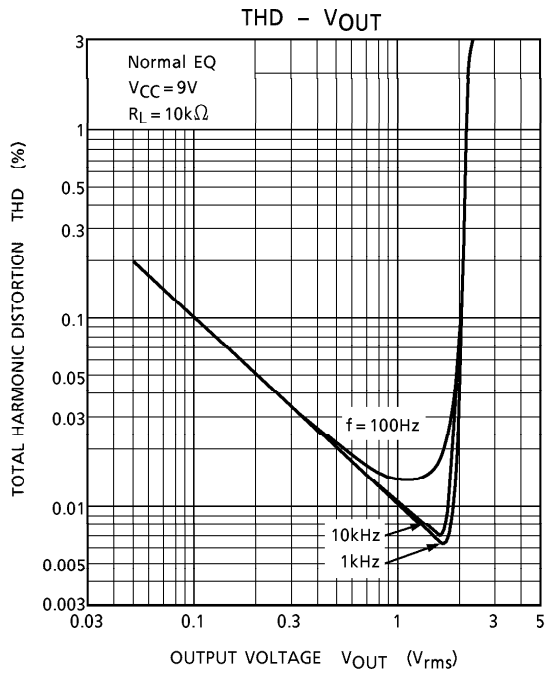
TEST CIRCUIT

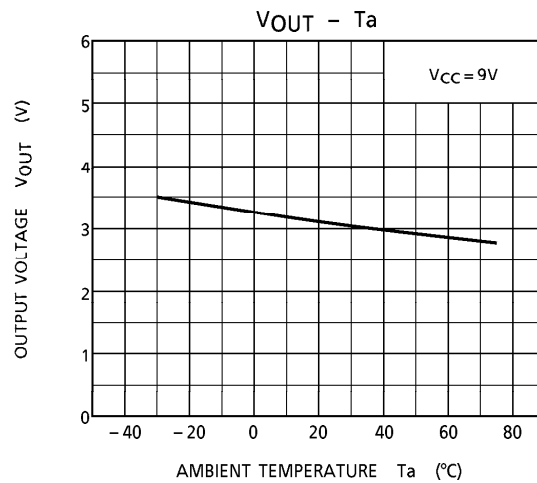
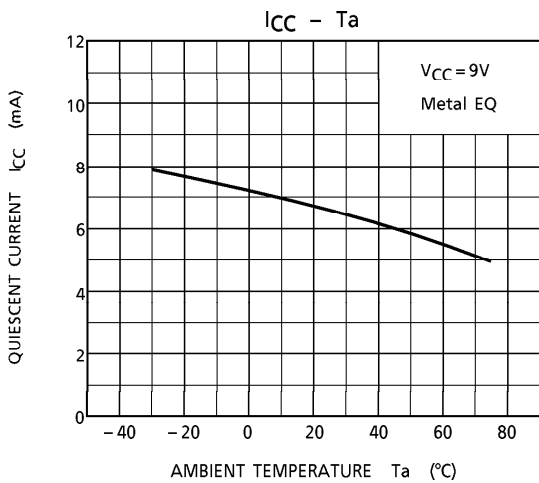
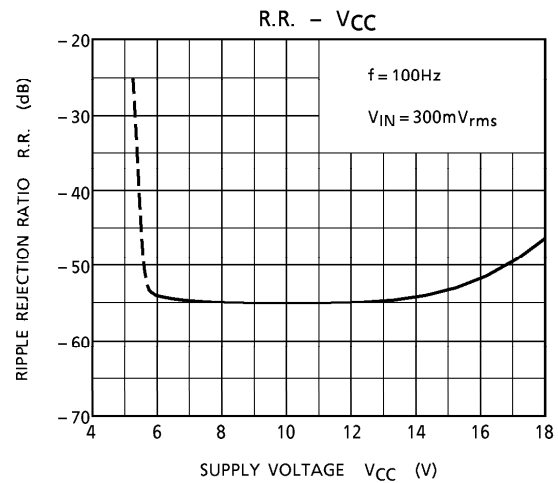
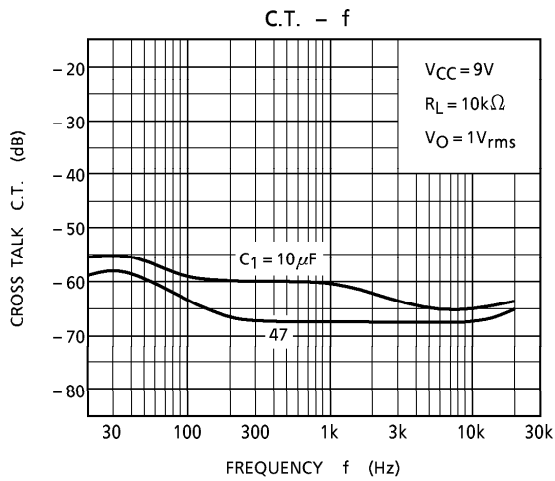
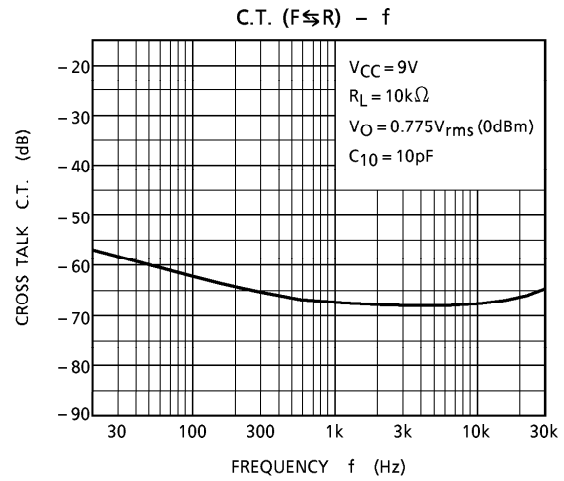
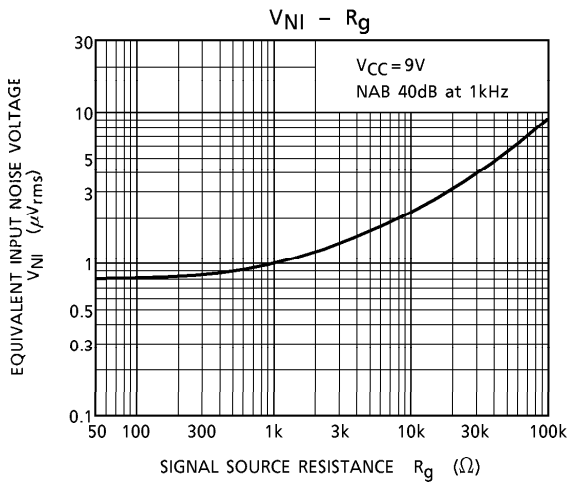
TA7705P, TA7705F



(\*) G<sub>VO</sub> Test : SW<sub>1-1</sub>, 2 = OFF, SW<sub>2-1</sub>, 2 = b



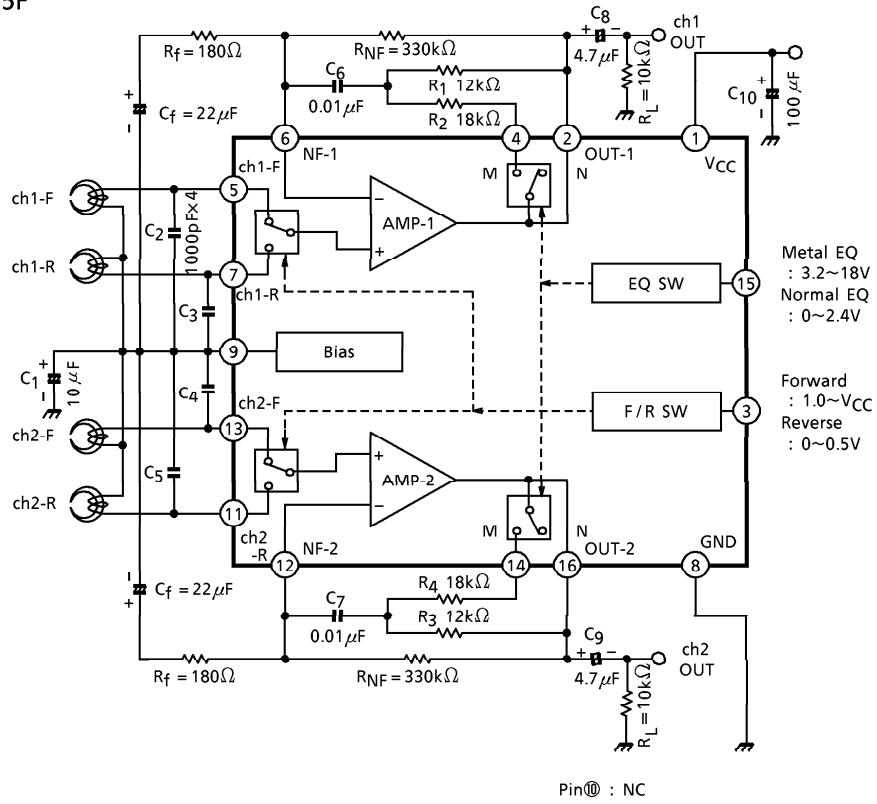






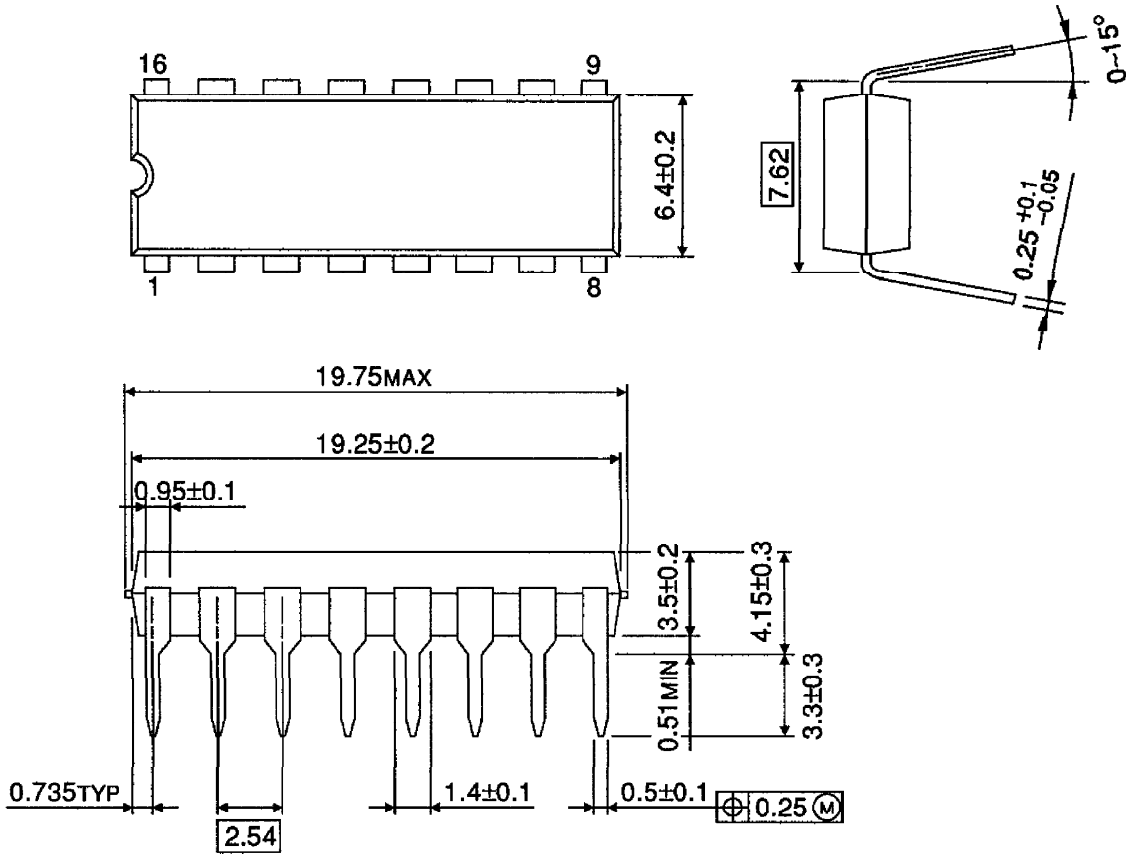
APPLICATION CIRCUIT

TA7705P, TA7705F



OUTLINE DRAWING  
DIP16-P-300-2.54A

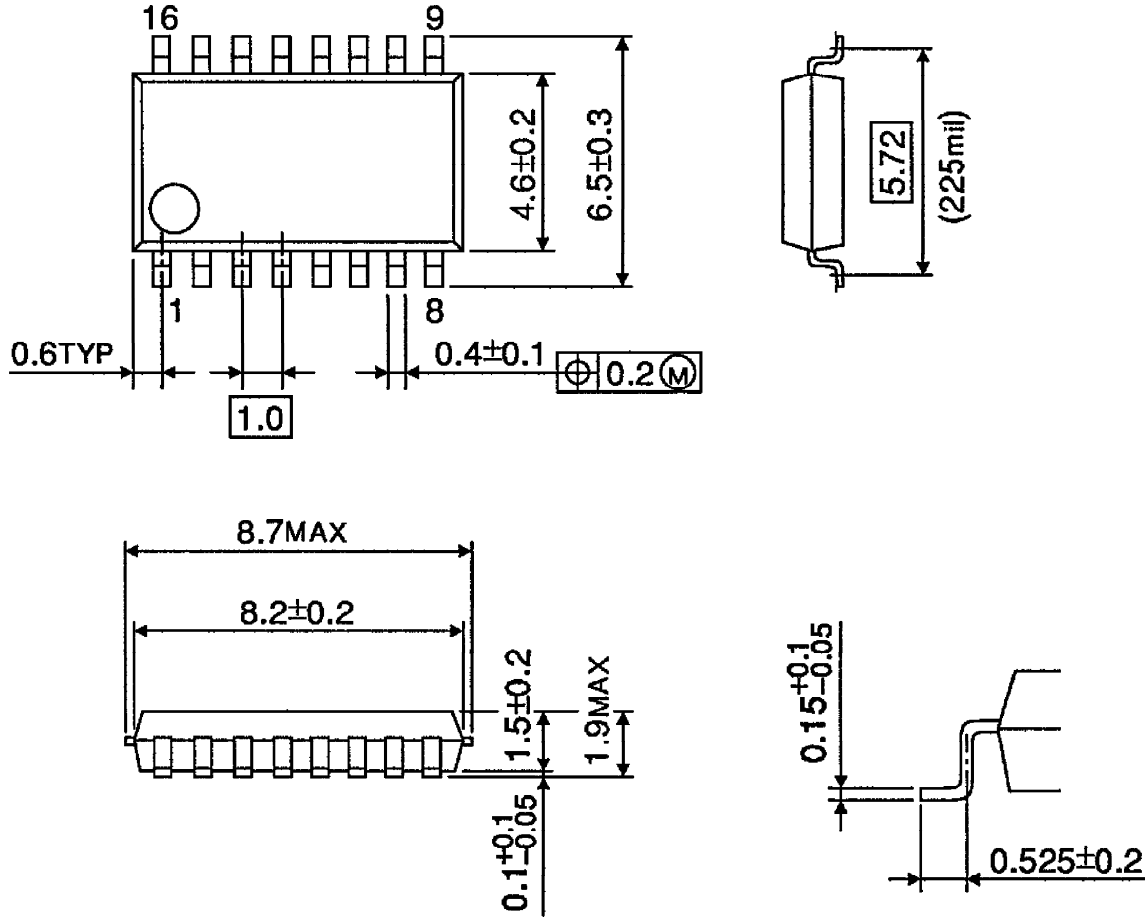
Unit : mm



Weight : 1.0g (Typ.)

OUTLINE DRAWING  
SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)