

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

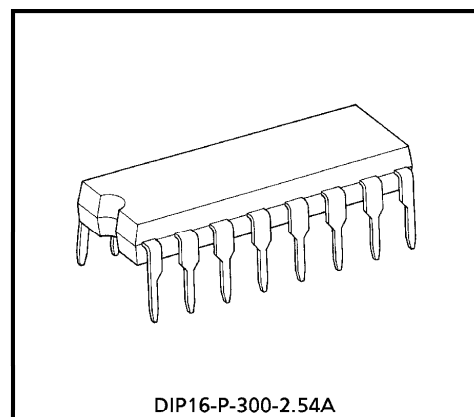
**TA7784P****DUAL PREAMPLIFIER FOR AUTOREVERSE**

The TA7784P is dual preamplifier for autoreverse type and W-cassette type tape player.

This IC contains dual preamplifier, forward / reverse control switches and metal / normal tape equalizer control switches.

**FEATURES**

- Built-in Forward / Reverse (TAPE1 / TAPE2) Control Switches.
- Built-in Metal / Normal Tape Equalizer Control Switches.
- High Voltage Gain  
:  $G_{VO} = 95\text{dB}$  (Typ.) ( $V_{CC} = 6\text{V}$ ,  $f = 1\text{kHz}$ )
- Operating Supply Voltage Range  
:  $V_{CC}(\text{opr}) = 3.5 \sim 15\text{V}$  ( $T_a = 25^\circ\text{C}$ )
- Input Coupling Capacitor Less
- Low Noise (Equivalent Input Noise Voltage)  
:  $V_{ni} = 1.0\mu\text{V}_{\text{rms}}$  (Typ.)  
( $R_g = 600\Omega$ ,  $BW = 20 \sim 20\text{kHz}$ , NAB EQ)

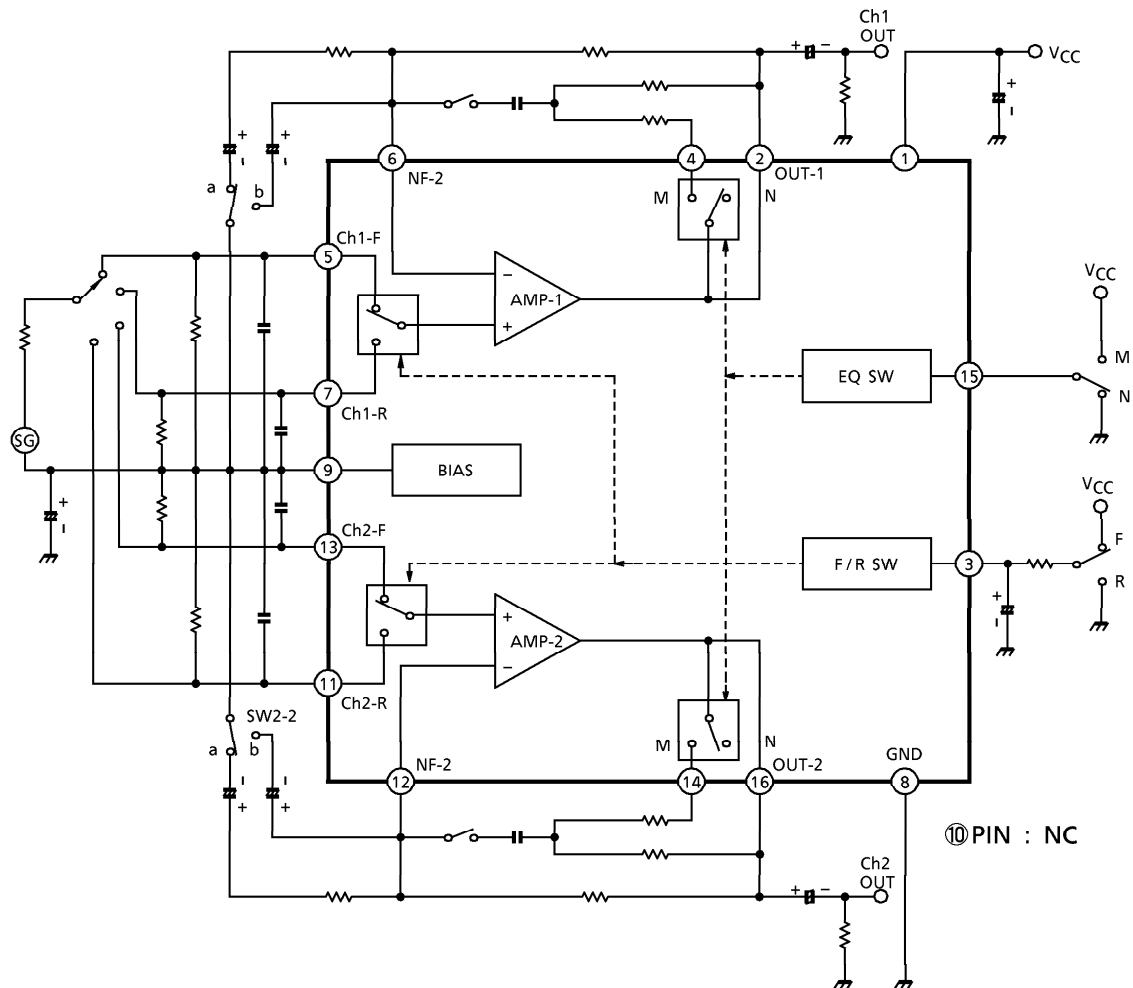


DIP16-P-300-2.54A  
Weight : 1.00g (Typ.)

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**BLOCK DIAGRAM**



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

REVERSE	0~0.3V
FORWARD	1.1~V <sub>CC</sub>

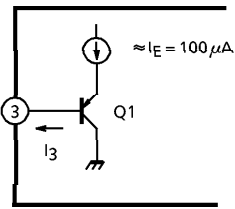


Fig.1

② The recommended forward /reverse select circuit is shown in Fig.2.

③ I<sub>3</sub> (In Fig.1)

I<sub>3</sub> = 12 μA (Max.) (T<sub>a</sub> = 25°C)

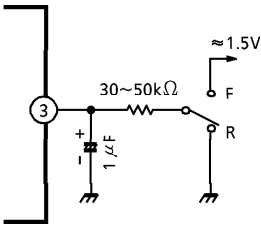


Fig.2

(2) Equalizer control switch

Pin⑮ is coupled to the base of Q2 (PNP-Tr) as shown Fig.3.  
The emitter potential of Q2 is 2.6Vdc.  
Threshold voltage

METAL	2.1~V <sub>CC</sub>
NORMAL	0~1.2V

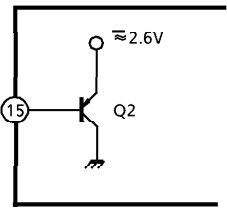


Fig.3

(3) C2~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** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	16	V
Power Dissipation	P <sub>D</sub> (Note)	750	mW
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.

**ELECTRICAL CHARACTERISTICS**

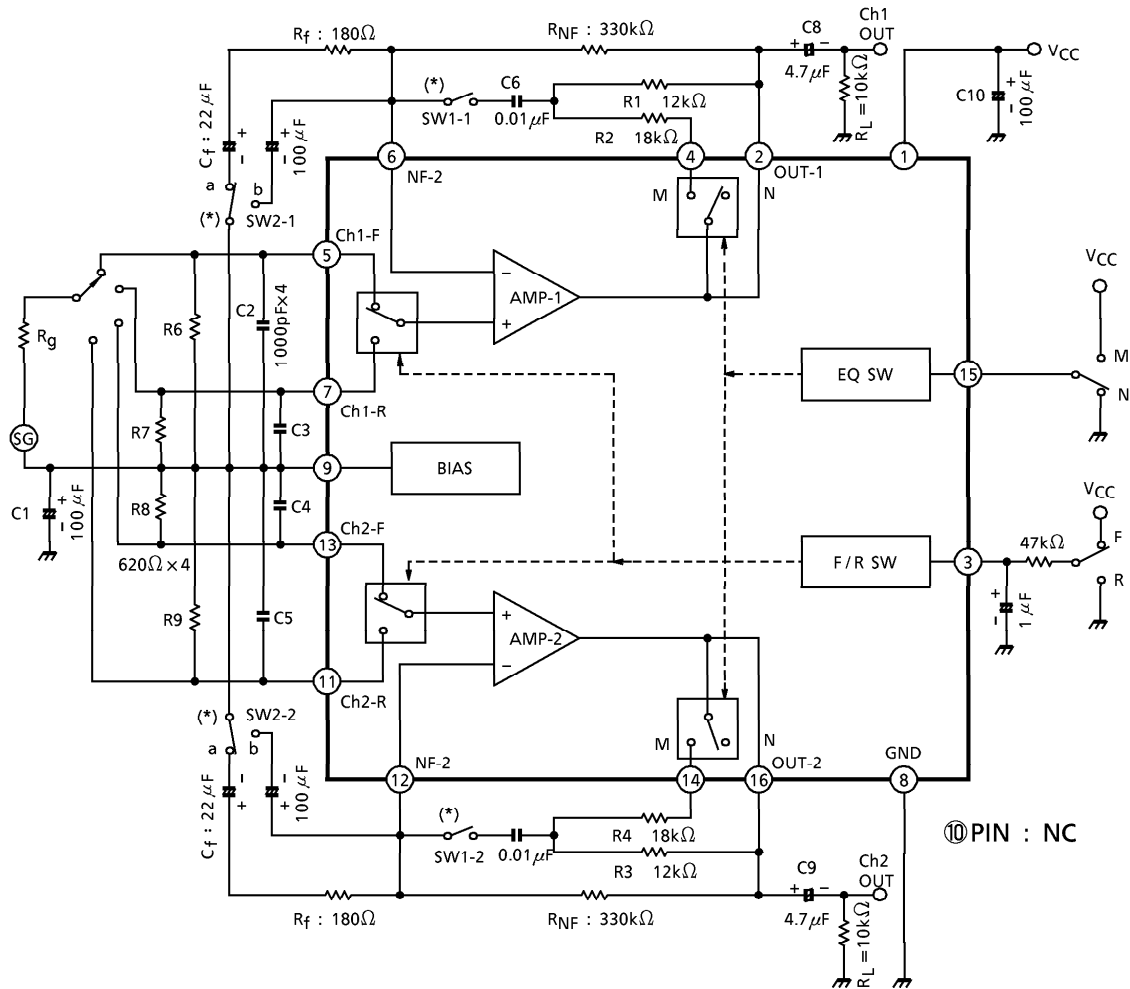
(Unless otherwise specified, V<sub>CC</sub> = 6V, f = 1kHz, R<sub>L</sub> = 10kΩ, R<sub>g</sub> = 600Ω, Ta = 25°C, metal EQ)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I <sub>CCQ</sub> (1)	—	V <sub>in</sub> = 0, NORMAL EQ	—	5.5	—	mA
	I <sub>CCQ</sub> (2)	—	V <sub>in</sub> = 0, METAL EQ	—	7.0	11	
Open Loop Voltage Gain	G <sub>vo</sub>	—	C <sub>f</sub> = 100μF, R <sub>f</sub> = 0	—	95	—	dB
Maximum Output Voltage	V <sub>om</sub>	—	THD = 0.5%	1.1	1.5	—	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, Nor. EQ	—	1.0	1.7	μV <sub>rms</sub>
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

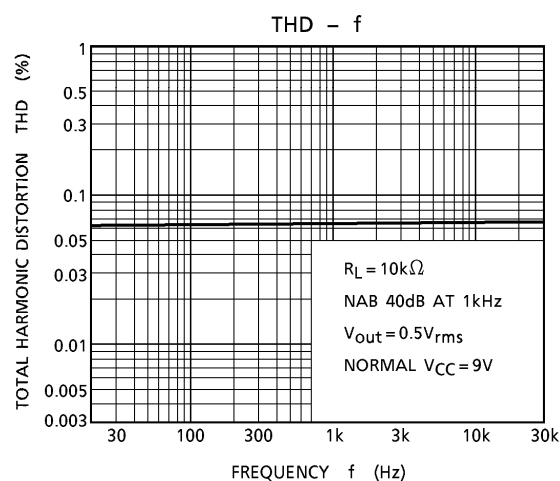
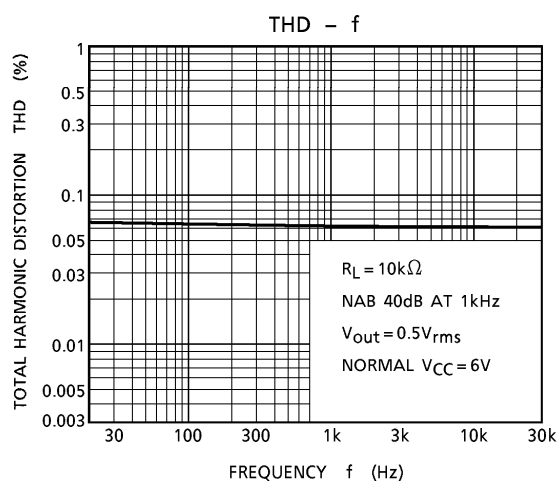
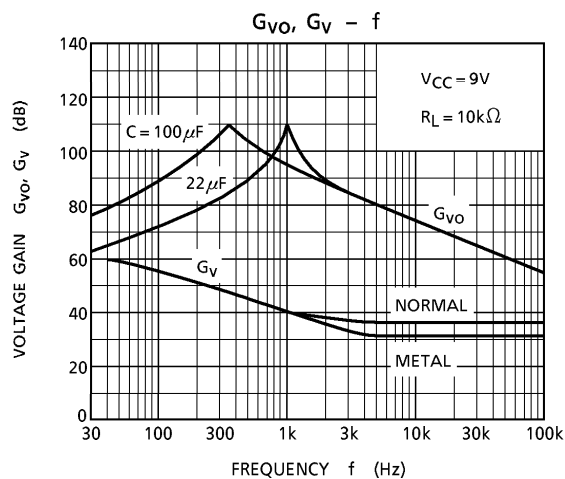
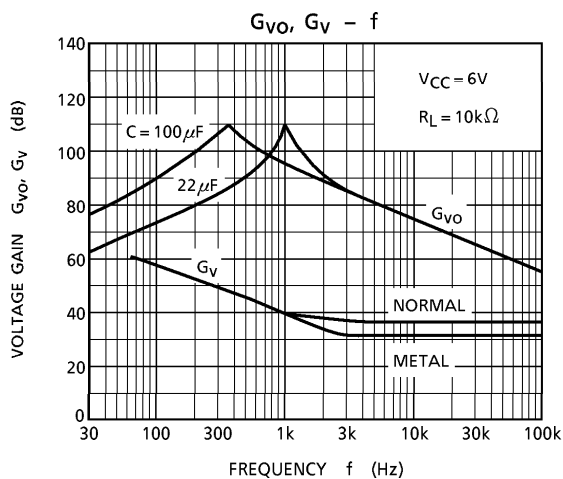
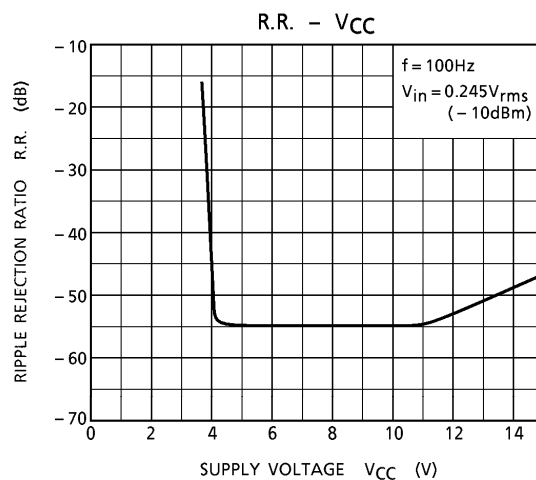
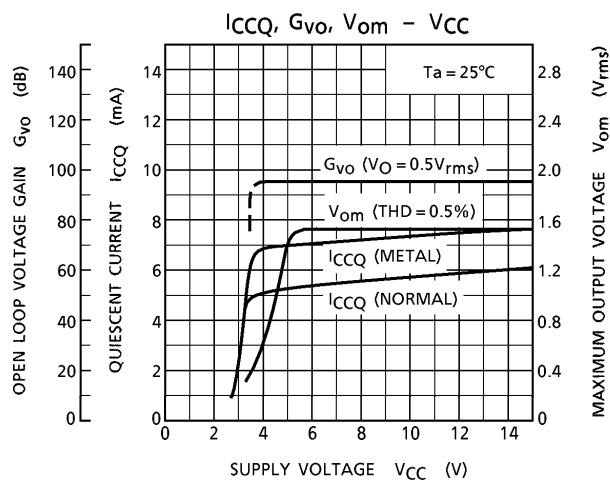
**TYPICAL DC VOLTAGE OF EACH TERMINAL** (V<sub>CC</sub> = 6V, Ta = 25°C, dual mode test circuit)

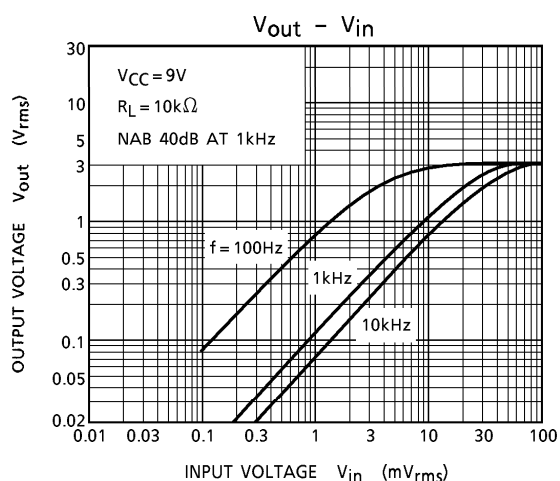
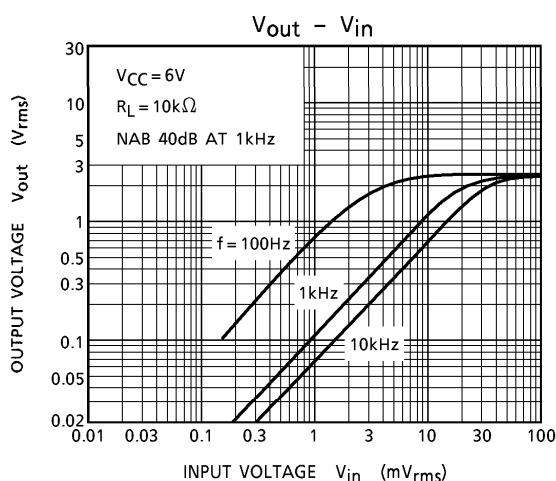
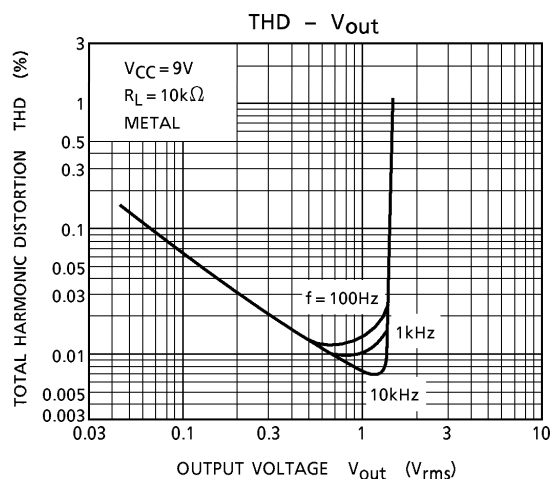
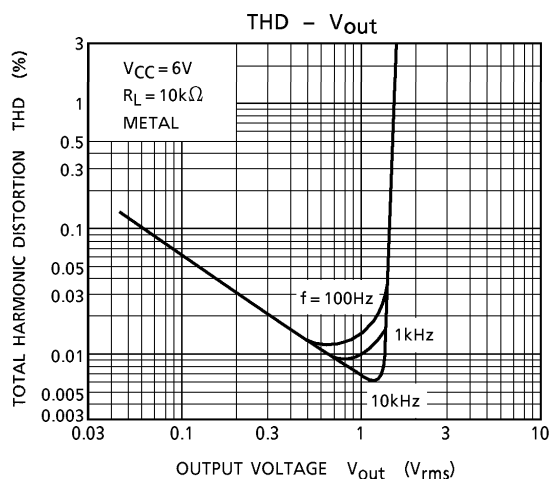
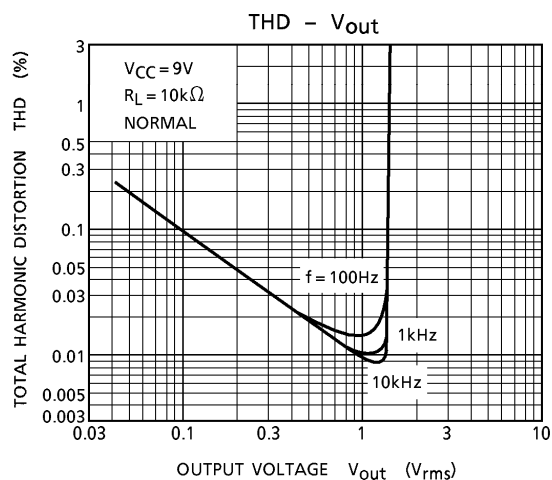
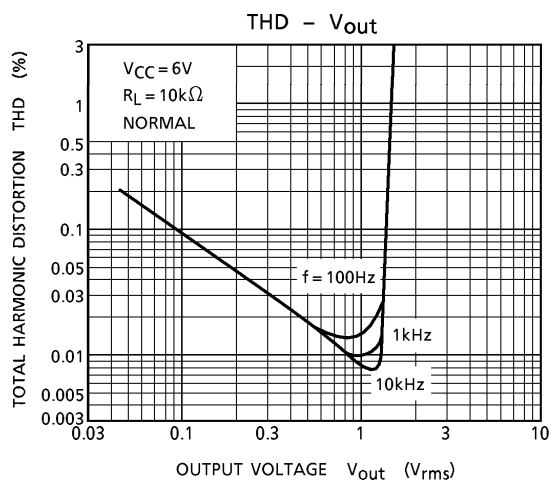
TERMINAL No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DC-VOLTAGE (V)	V <sub>CC</sub>	2.3	V <sub>CC</sub> / GND	2.2	2.2	2.2	2.2	GND	2.2	NC	2.2	2.2	2.2	2.2	V <sub>CC</sub> / GND	2.2

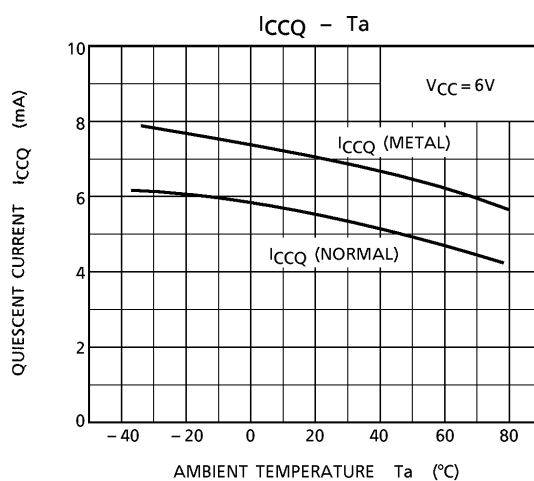
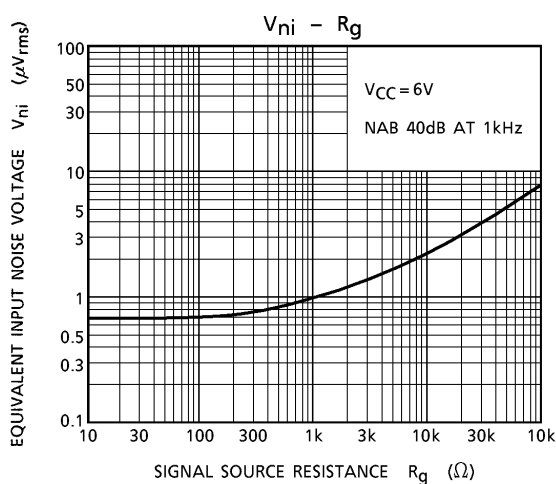
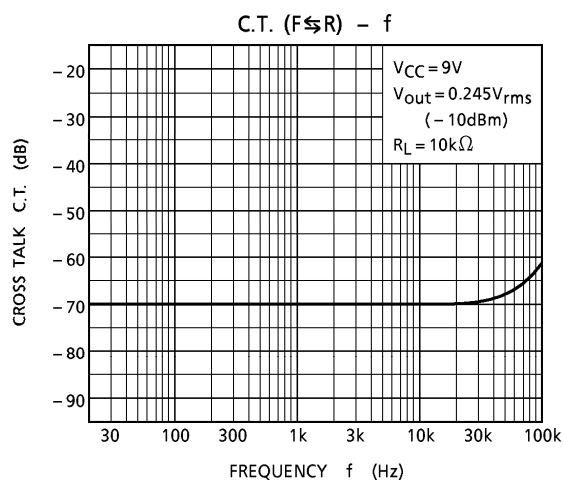
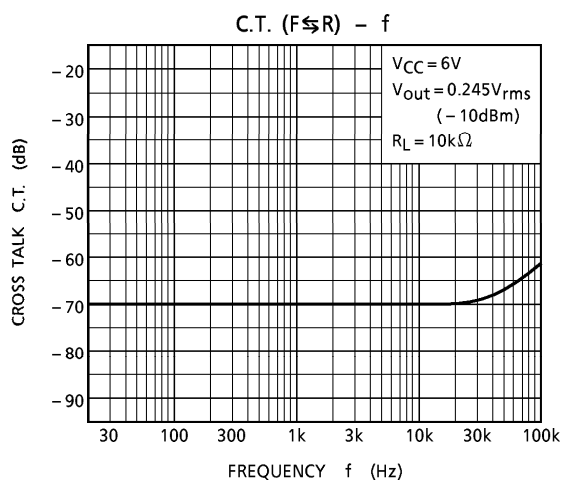
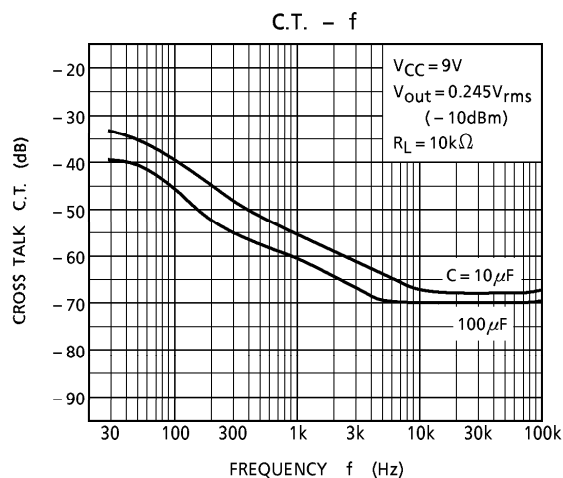
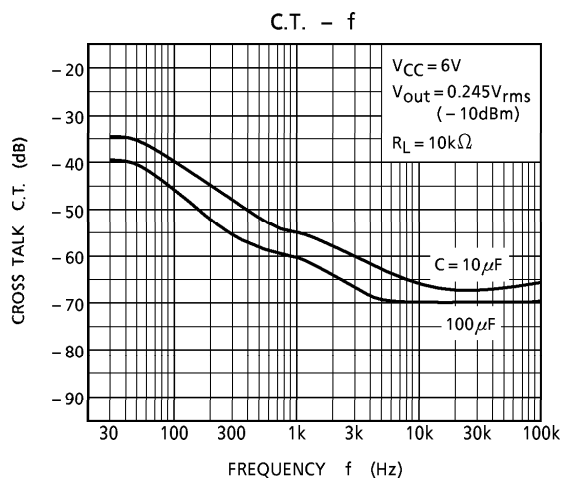
**TEST CIRCUIT**



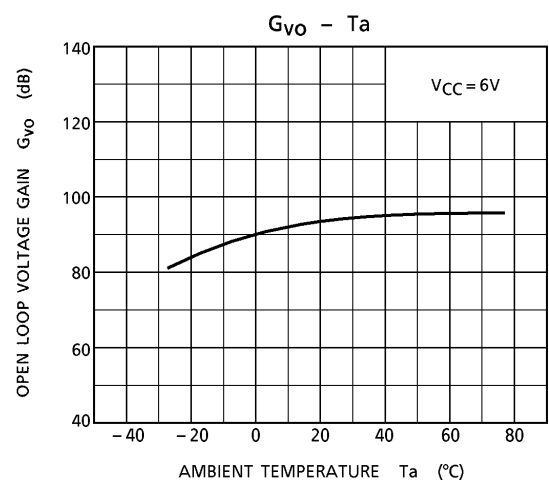
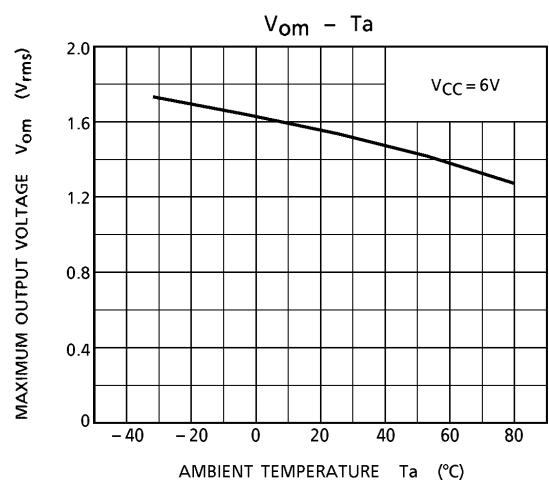
(\*) G<sub>VO</sub> TEST : SW1-1, 2-OFF, SW2-1, 2-b



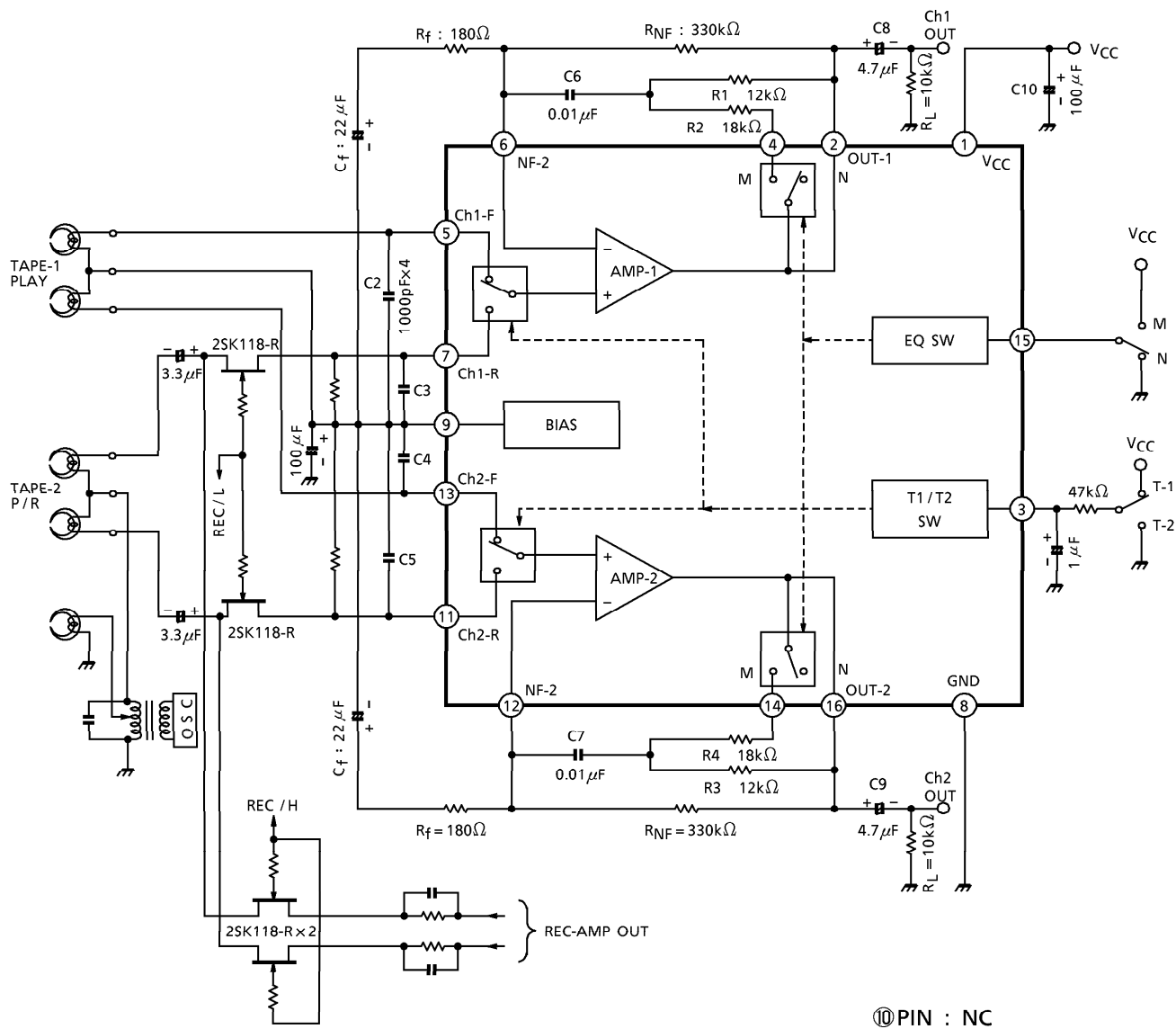




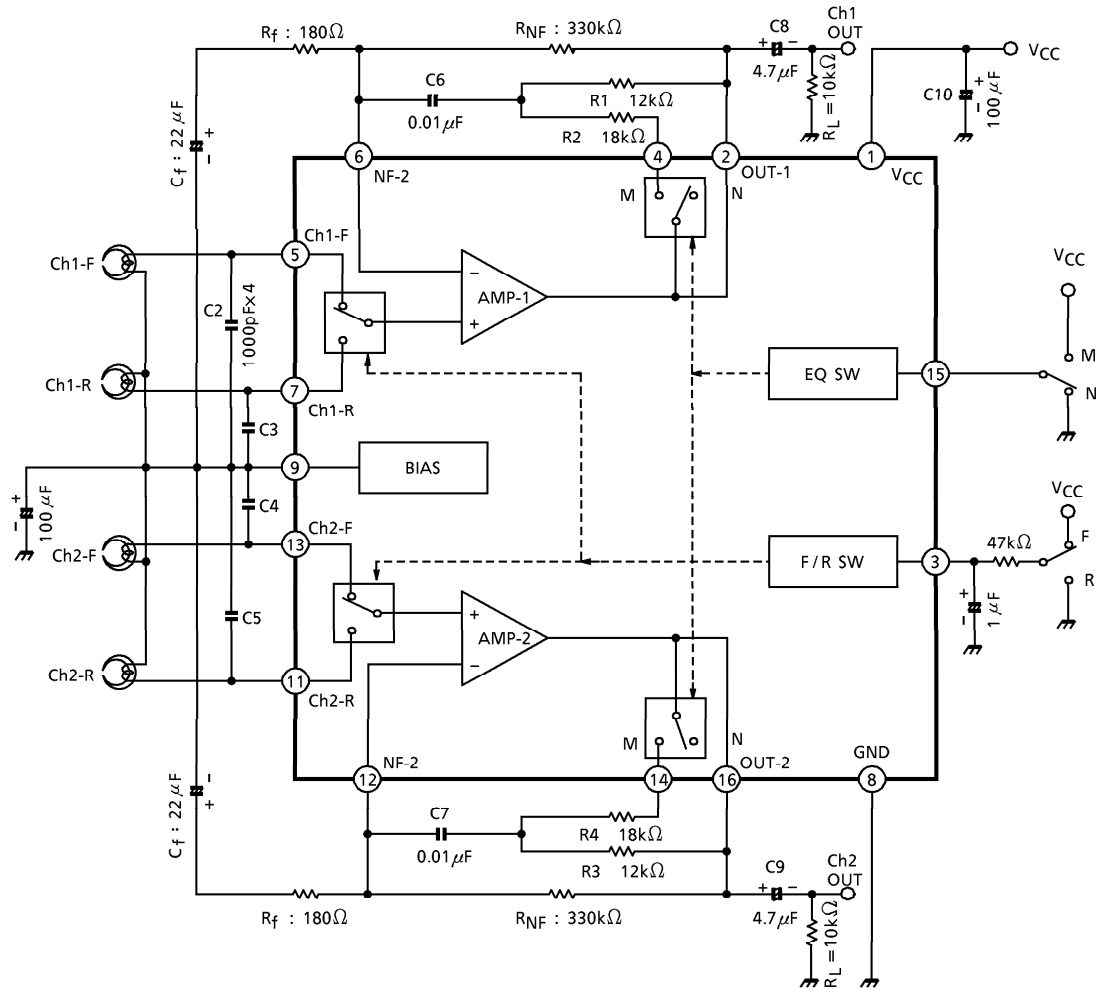




**APPLICATION 1 (Double cassette player)**



**APPLICATION 2 (Autoreverse)**

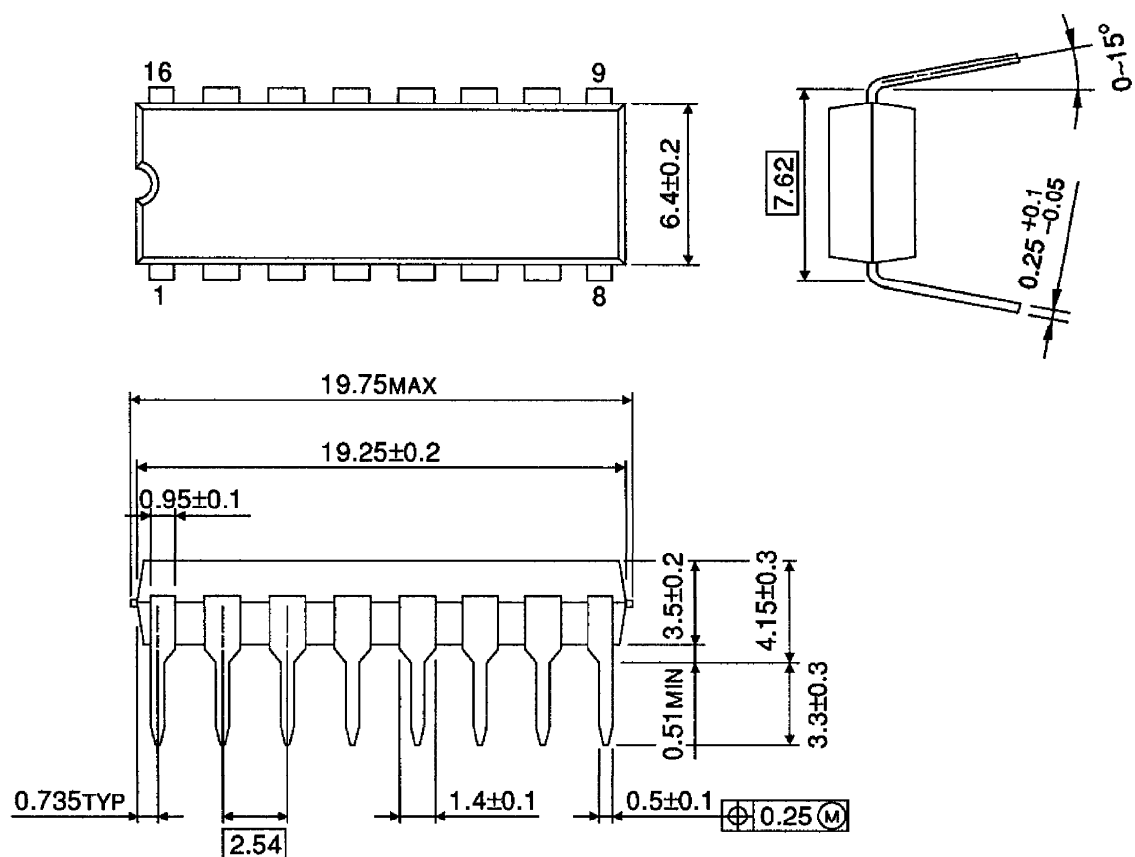


⑩ PIN : NC

## OUTLINE DRAWING

DIP16-P-300-2.54A

Unit : mm



Weight : 1.00g (Typ.)