

TOSHIBA

TA7630P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

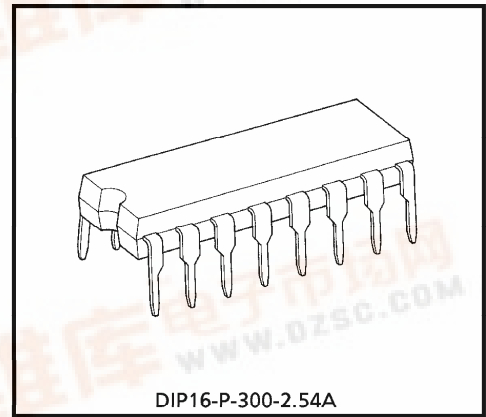
TA7630P

DUAL. VOLUME / BALANCE / TONE (BASS / TREBLE) DC CONTROL IC

The TA7630P is DC controlled dual volume, balance, tone (Bass, treble) IC. As these dual channels are constructed on one chip, this IC is excellent in pair characteristic. It is suitable for automobile stereo, radio cassette, music center, TV multiplex sound receiver and remote controlled applications.

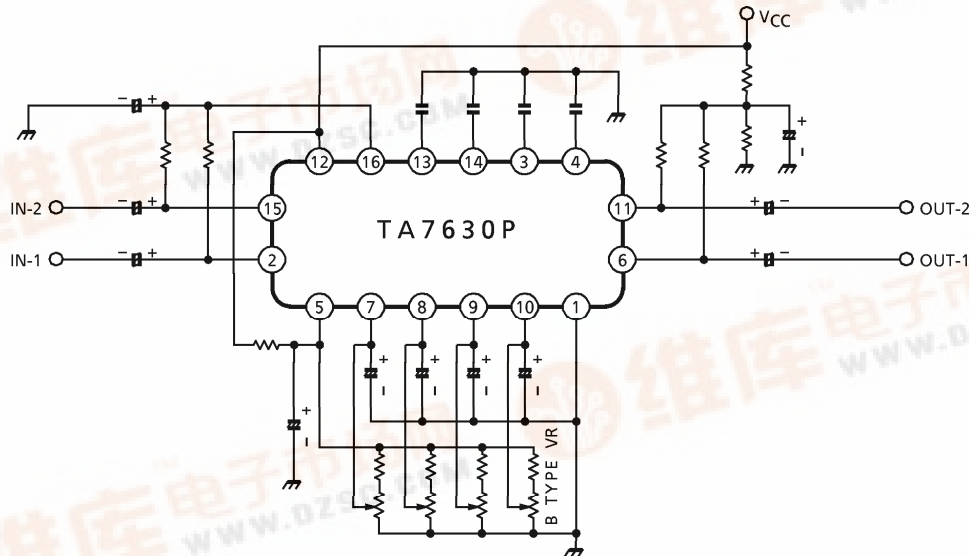
FEATURES

- Wide Power Supply Voltage Range
; Single Supply $V_{CC} (opr) = 8 \sim 14V$ ($T_a = 25^\circ C$)
Dual Supply $V_{CC} - V_{EE} (opr) = \pm 4 \sim \pm 7V$ ($T_a = 25^\circ C$)
- Wide Volume Control Range ; $V_R = 80dB$ (Typ.)
- Excellent Cross Talk ; C.T. = 70dB (Typ.)
- Stable for Temperature Drift.
- Wide Tone Control Range
Control Range ; $V_B = 10dB$ (Typ.) at $f = 1kHz \rightarrow 100Hz$
 $V_T = 12dB$ (Typ.) at $f = 1kHz \rightarrow 20kHz$



Weight : 1.00g (Typ.)

BLOCK DIAGRAM



961001EBA2

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PIN CONNECTION

PIN No.	SYMBOL	EXPLANATION	PIN No.	SYMBOL	EXPLANATION
1	V_{EE}	Negative Power Supply	9	BASS	Bass Control
2	INPUT-1	Input channel-1	10	TRBL	Treble control
3	$T_H(1)$	Treble turning frequency setting.	11	OUTPUT-2	Output channel-2
4	$T_L(1)$	Bass turning frequency setting.	12	V_{CC}	Power supply
5	REF CONT	Reference control	13	$T_L(2)$	Bass turning frequency setting
6	OUTPUT-1	Output channel-1	14	$T_H(2)$	Treble turning frequency setting
7	BAL	Balance Control	15	INPUT-2	Input channel-2
8	VOL	Volume Control	16	REF SIG	Reference signal

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	14	V
Power Dissipation	P_D (Note)	750	mW
Operating Temperature	T_{opr}	-25~75	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55~150	$^\circ\text{C}$

(Note) Derated above $T_a = 25^\circ\text{C}$ in the proportion of $6\text{mW}/^\circ\text{C}$.

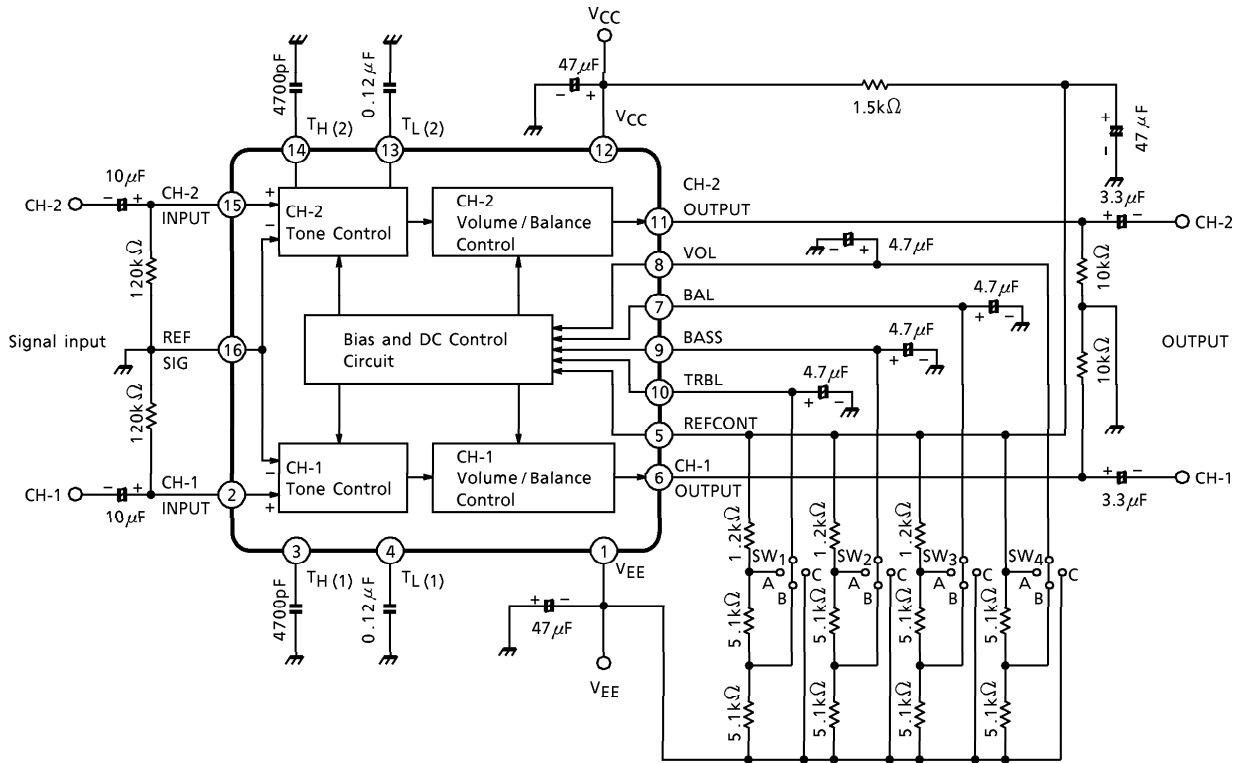
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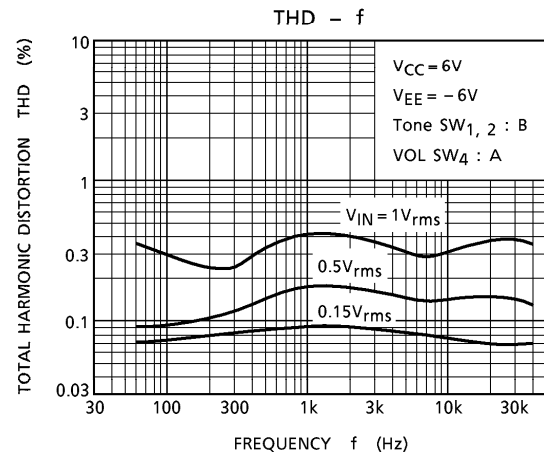
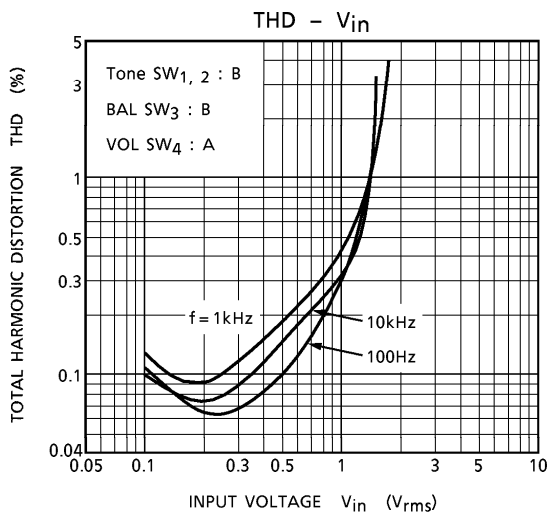
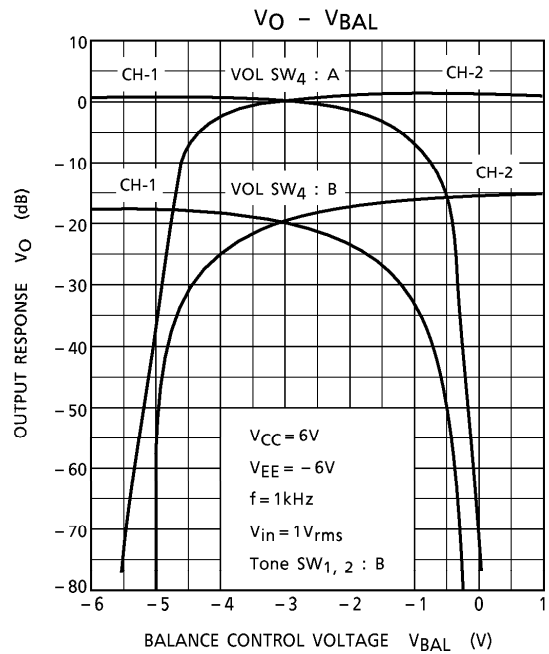
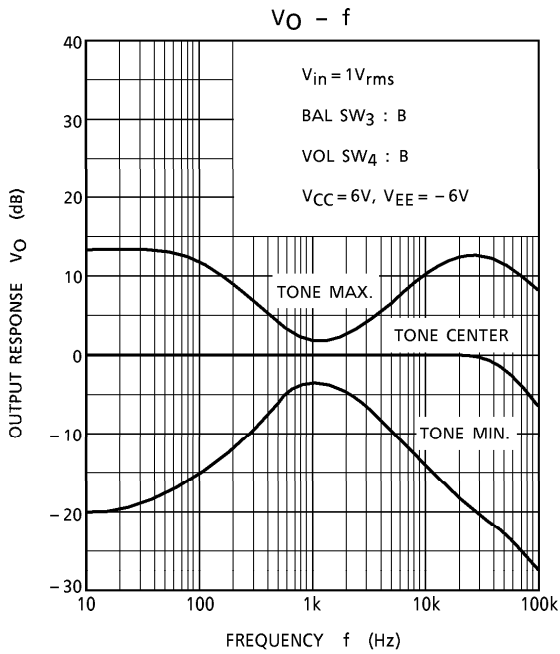
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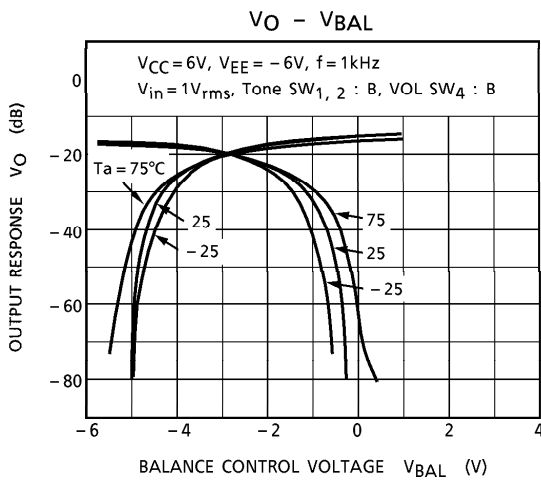
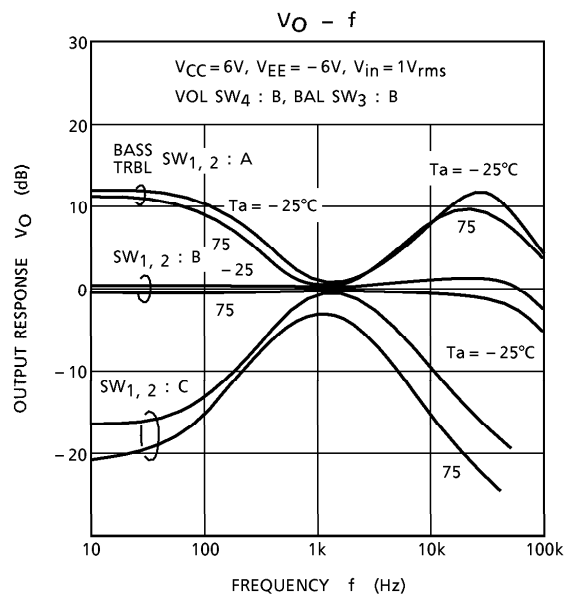
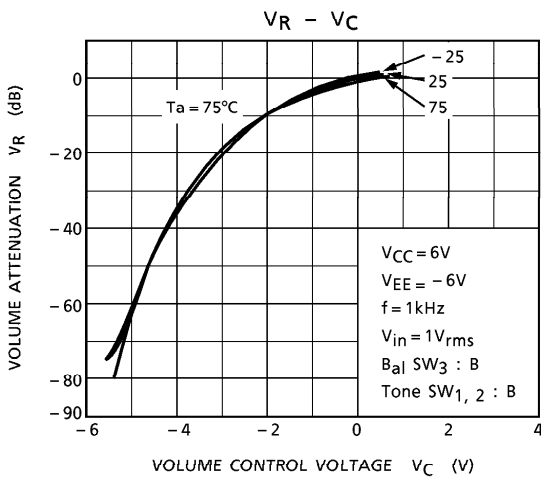
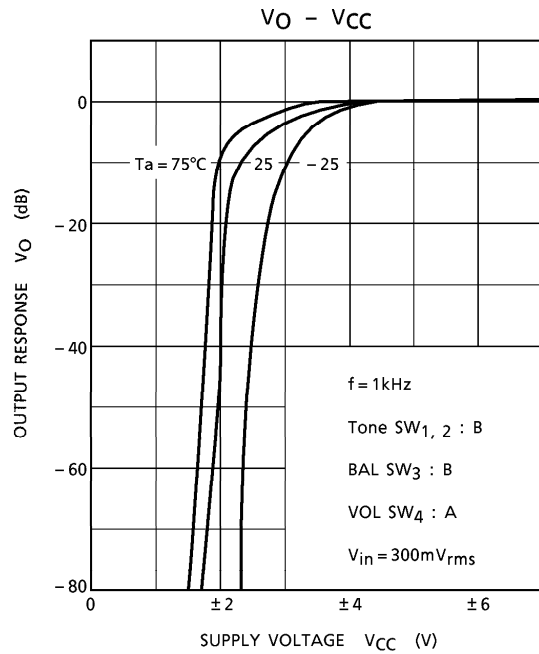
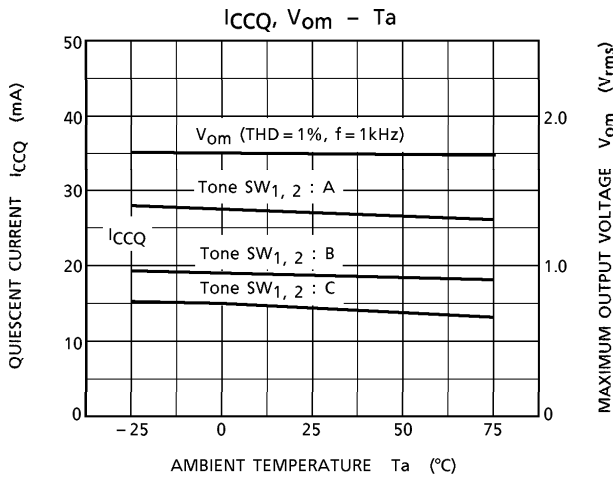
ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $V_{CC} = 6V$, $V_{EE} = -6V$, $f = 1kHz$, $T_a = 25^\circ C$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	$I_{CCQ(1)}$	—	$V_{CC}, V_{EE} = \pm 4V$	—	11	17	mA
	$I_{CCQ(2)}$	—	VOL/BAL/BASS/TRBL SW _{1~4} : B	10	18	25	
Maximum Input Voltage	V_{in}	—	BASS/TRBL/BAL SW _{1~4} : B VOL SW ₄ : A, THD = 1%	—	—	1	V_{rms}
Maximum Output Voltage	V_{out}	—	BASS/TRBL/BAL SW _{1, 2, 3} : B VOL SW ₄ : A, THD = 1%	1	—	—	V_{rms}
Voltage Gain	G_V	—	$V_{in} = 1V_{rms}$ BASS/TRBL/BAL SW _{1~3} : B VOL SW ₄ : A	-0.5	2.0	4.5	dB
Channel Balance	C.B. -1	—	BASS/TRBL/BAL SW _{1~3} : B VOL SW ₄ : A, $V_{in} = 1V_{rms}$	-3	0	3	dB
	C.B. -2	—	VOL/BASS/TRBL/BAL SW _{1~4} : B $f = 100Hz \sim 20kHz$, $V_{in} = 0.1V_{rms}$	-3.5	0	3.5	
Volume Control Range	V_R	—	BASS/TRBL/BAL SW _{1~3} : B, $V_{in} = 1V_{rms}$ VOL SW ₄ : A→C	70	80	—	dB
Bass Control Range	V_B MAX	—	VOL/BAL SW _{3, 4} : B BASS/TRBL SW _{1, 2} : A, $V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 100Hz$	7	11	14	dB
	V_B MIN	—	VOL/BAL SW _{3, 4} : B BASS/TRBL SW _{1, 2} : C, $V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 100Hz$	-15	-11.5	-7	
Treble Control Range	V_T MAX	—	VOL/BAL SW _{3, 4} : B BASS/TRBL SW _{1, 2} : A, $V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 20kHz$	7	11	14	dB
	V_T MIN	—	VOL/BAL SW _{3, 4} : B BASS/TRBL SW _{1, 2} : C, $V_{in} = 1V_{rms}$ $f = 1kHz \rightarrow 20kHz$	-20	-14	-10	
Tone Error	ΔG_V	—	VOL/BAL SW _{3, 4} : B BASS/TRBL SW _{1, 2} : C→A $V_{in} = 1V_{rms}$	—	6	10	dB
Total Harmonic Distortion	THD	—	BASS/TRBL/BAL SW _{1~3} : B VOL SW ₄ : A, $V_{out} = 150mV_{rms}$	—	0.1	0.35	%
Output Noise Voltage	V_{no}	—	BASS/TRBL/BAL SW _{1~3} : B VOL SW ₄ : A BPF = 50Hz~20kHz, input open	—	130	300	μV_{rms}
Cross Talk	SEP	—	BASS/TRBL/BAL SW _{1~3} : B VOL SW ₄ : A, $V_{out} = 1V_{rms}$	—	-70	—	dB
Control Terminal Input Resistance	R_{IN}	—	pin⑧, ⑨, ⑩	—	500	—	k Ω
		—	pin⑦	—	200	—	

TEST CIRCUIT

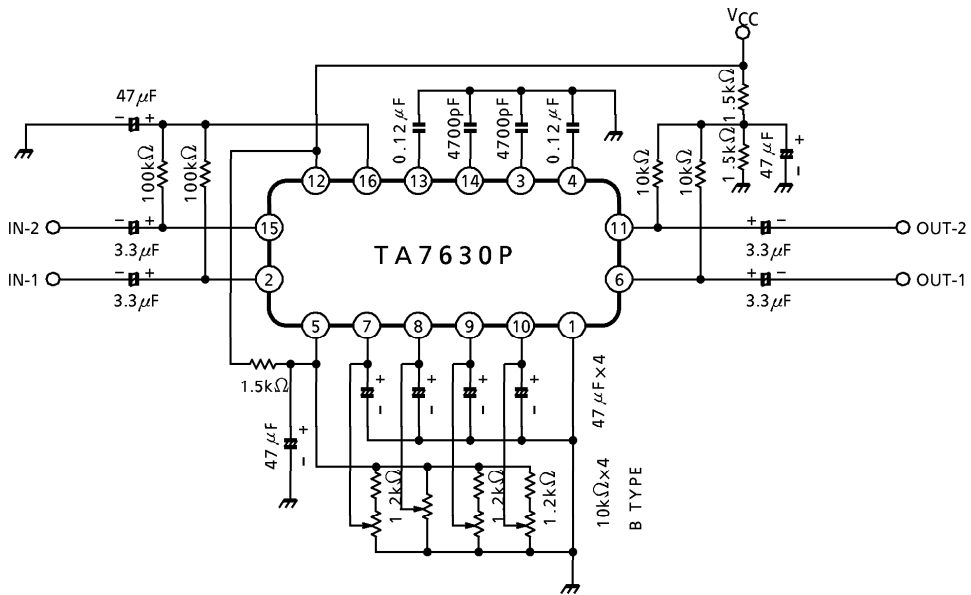




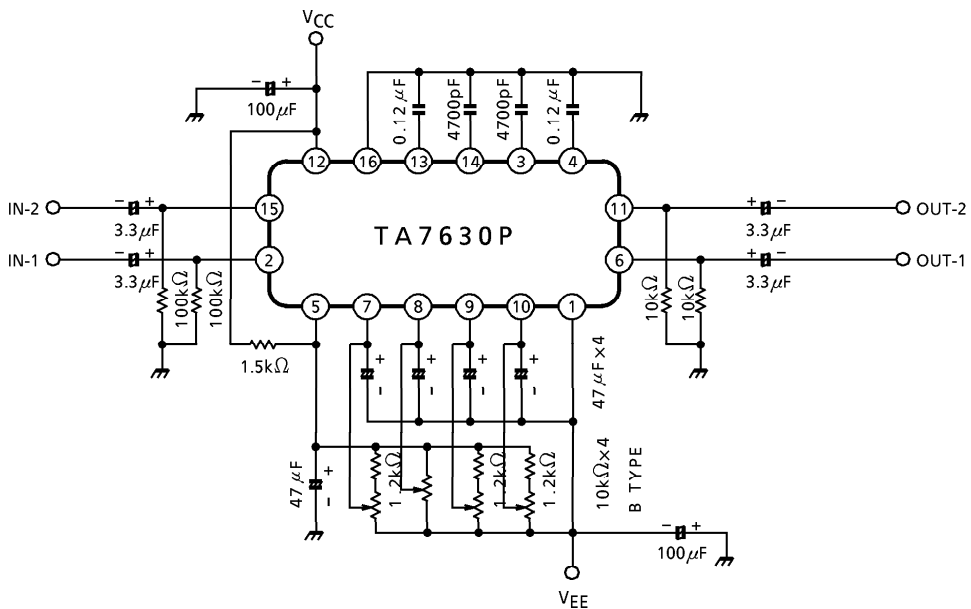


APPLICATION CIRCUITS

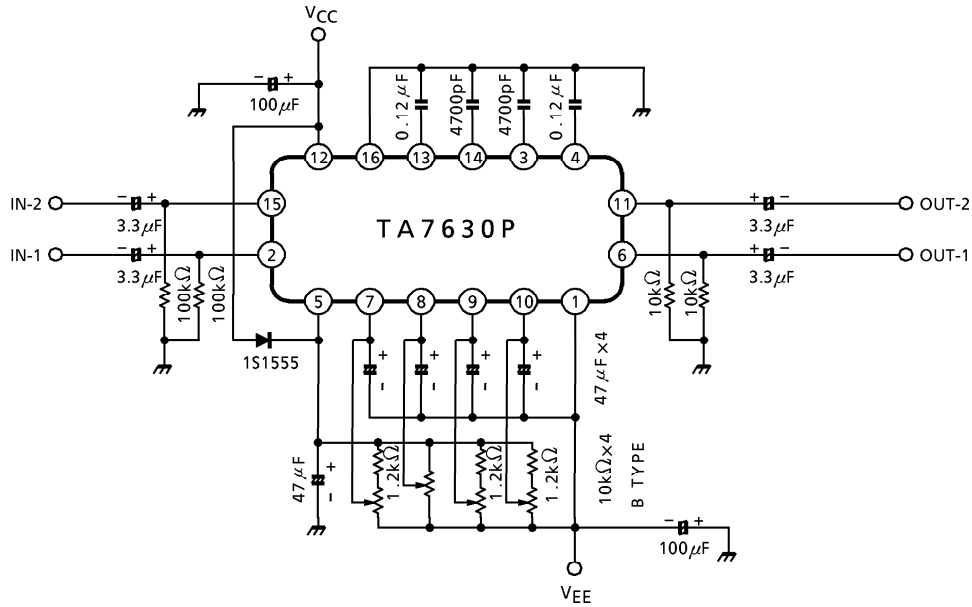
1. Single power supply



2. Dual power supply



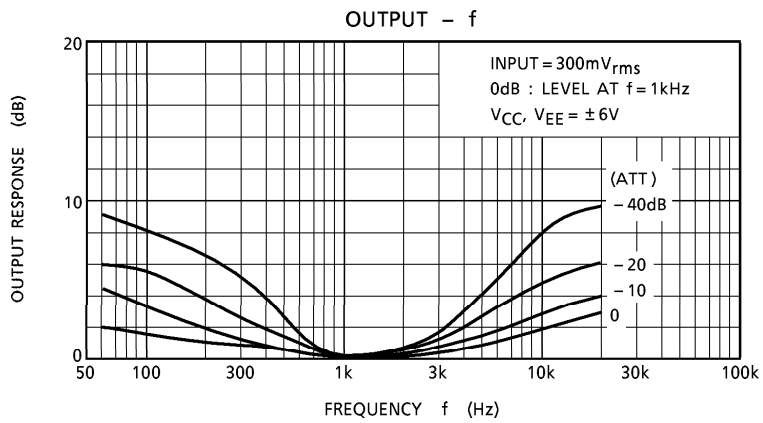
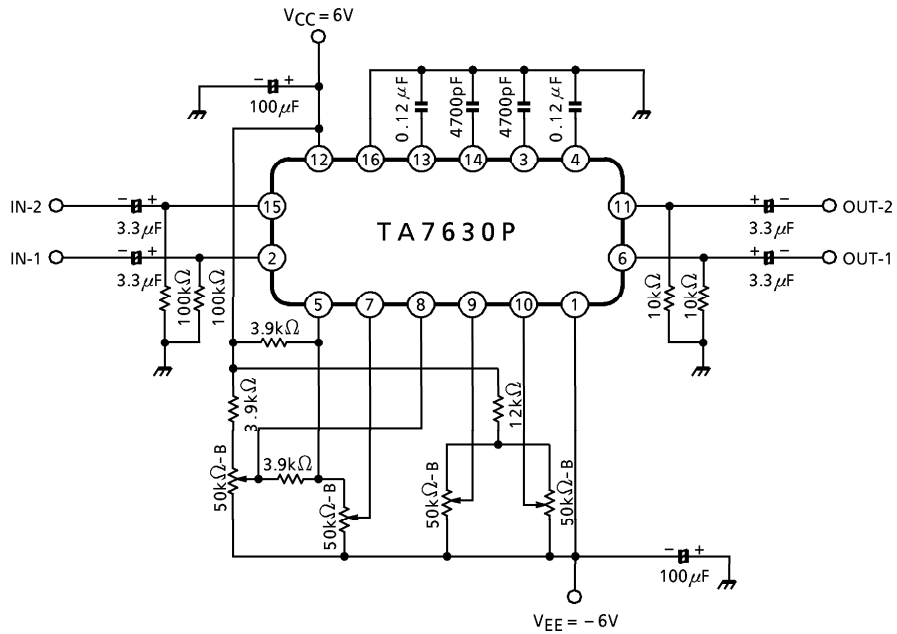
3. Application circuit using diode at reference terminal



The application circuit using diode between Pin⑤ and Pin⑫ has the following merits.

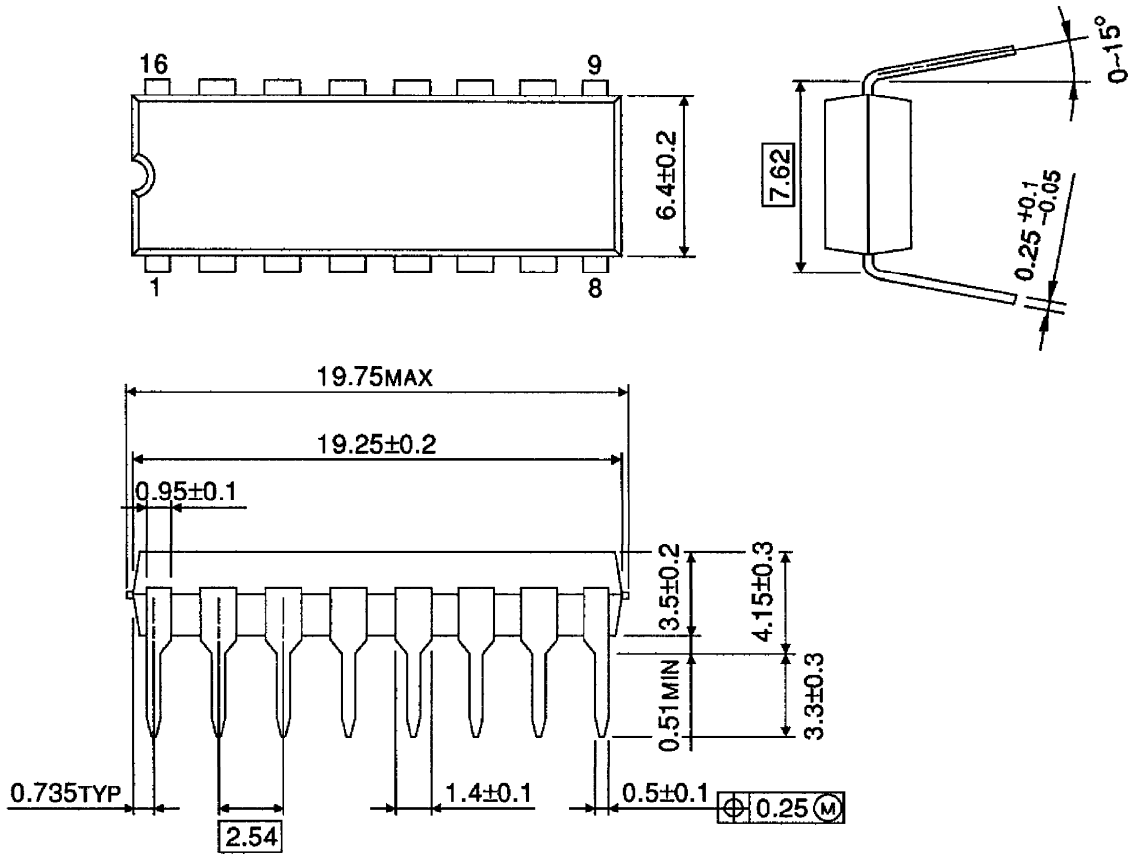
1. When each control terminal is driven by high impedance, the electrolytic capacitor between terminal ⑤ and GND operates as the back up capacitor, so that the rise time is short at the ON-OFF repetition of supply voltage.
2. When the current drain into the each control terminal varies by control voltage, the voltage of terminal ⑤ scarcely varies.
It means a stable reference voltage.

4. Quasi-loudness circuit



OUTLINE DRAWING
DIP16-P-300-2.54A

Unit : mm



Weight : 1.00g (Typ.)