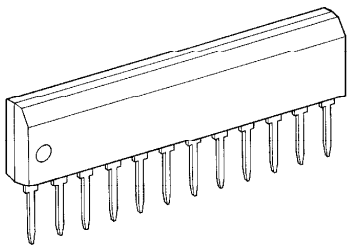
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA2026SN, TA2026F

UNBALANCED TO BALANCES SIGNAL CONVERTER

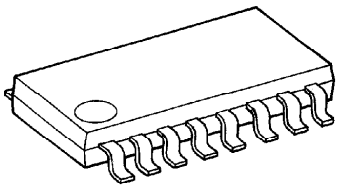
The TA2026SN, TA2026F are unbalanced to balanced signal converter I_C for component type car audio equipments. Noise level of audio signal increases by ground noise and induction noise while transfered between head unit and other equipments.
To reduce these effect, balanced signal transfer system is effective.
TA2026SN, TA2026F have built-in dual balanced signal output amplifier and audio muting circuit.
In application with ground isolator I_C ; TA8181SN, TA8181F for line input stage, high performance balanced signal transfer system can be composed.

TA2026SN



SSIP12-P-1.78

TA2026F



SSOP16-P-225-1.00A

Weight
SSIP12-P-1.78 : 0.65g (Typ.)
SSOP16-P-225-1.00A : 0.14g (Typ.)

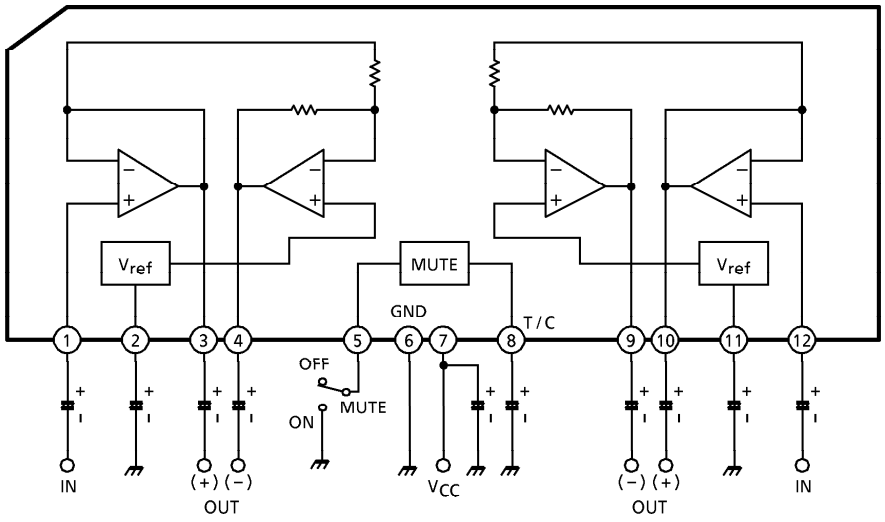
FEATURES

- Dual Channel
- Voltage Gain : $G_V = 6dB$ (Typ.)
- Maximum Output Voltage
  : $V_{OM} = 3V_{rms}$ (Typ.)
  ($V_{CC} = 8V$, $f = 1kHz$, $THD = 0.1\%$)
- Total Harmonic Distortion
  : $THD = 0.004\%$ (Typ.)
  ($V_{CC} = 8V$, $f = 1kHz$, $V_{out} = 1V_{rms}$)
- Output Noise Voltage
  : $V_{NO} = 1.8\mu V_{rms}$ (Typ.)
  ($V_{CC} = 8V$, $R_g = 620\Omega$, BW = 20Hz~20kHz)
- Audio Muting Circuit
  : ATT = −90dB (Typ.)
- Small Package
  : 1.778mm pitch Shrink Single In-line 12pin : TA2026SN
  1.0mm pitch mini flat 16pin : TA2026F
- Operating Supply Voltage Range
  : $V_{CC\,(opr.)} = 5 \sim 12V$ (Ta = 25°C)

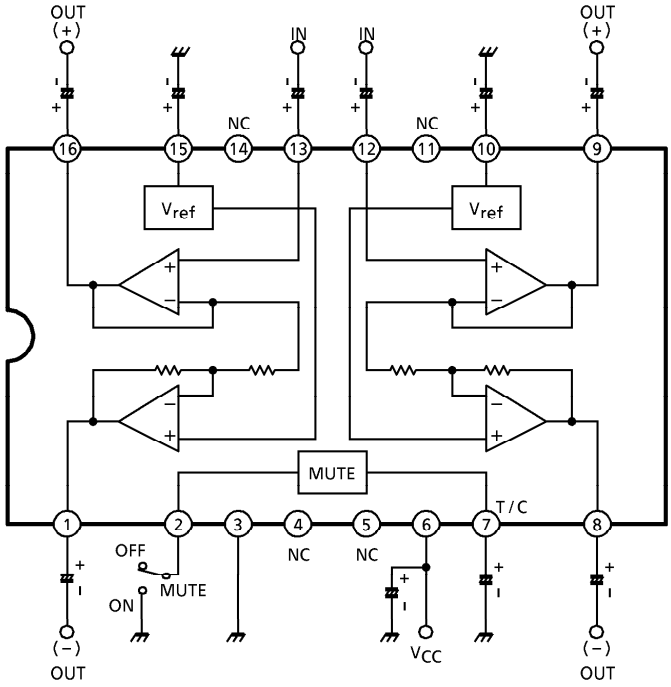
961001EBA1

BLOCK DIAGRAM

TA2026SN



TA2026F



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	15	V
Power Dissipation	TA2026SN	P_D (Note)	750	mW
	TA2026F		350	
Operating Temperature		T_{opr}	−30~85	°C
Storage Temperature		T_{stg}	−55~150	°C

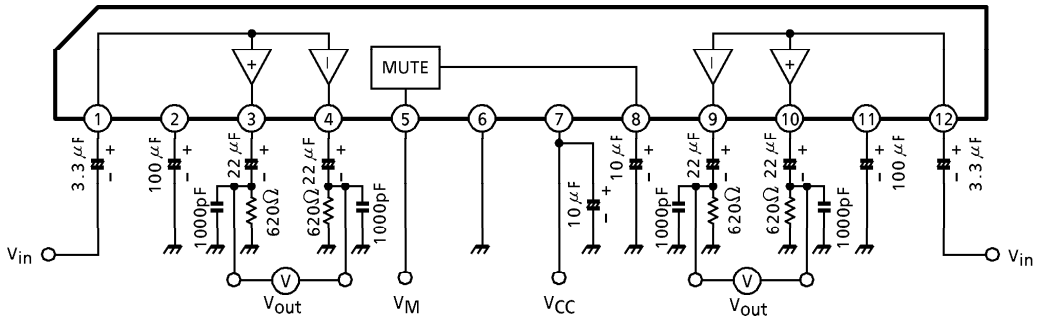
(Note) Derated above Ta = 25°C in the proportion of 6mW/°C for TA2026SN, 2.8mW/°C for TA2026F.

ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC} = 8V, f = 1kHz, R_L = 620Ω, Ta = 25°C)

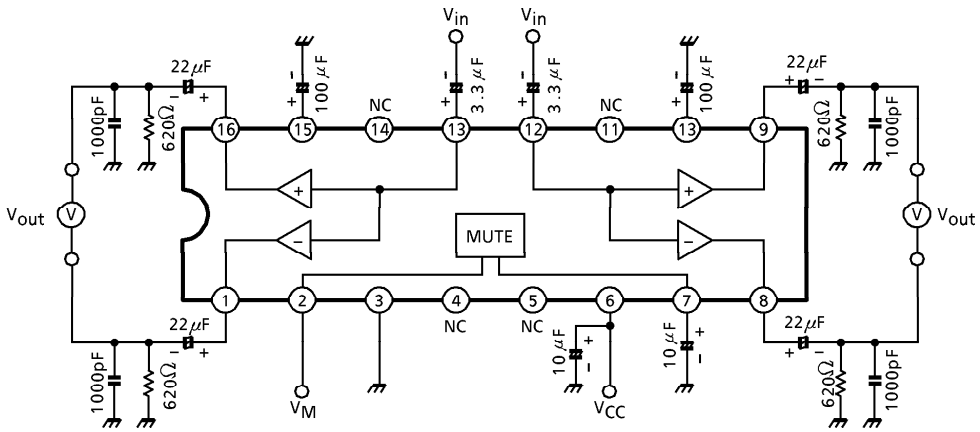
CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_{CCQ}	—	V_{in} = 0	6	11	17	mA
Voltage Gain	G_V	—	Balanced output gain	4.0	5.7	8.0	dB
	G_V (+)	—	Non-inverting gain	−1.5	−0.5	+0.5	
	G_V (−)	—	Inverting gain	−1.5	−0.5	+0.5	
Gain Tracking	ΔG_V	—	G_V (+) − G_V (−)	−1.0	0	+1.0	dB
Maximum Output Voltage	V_{om}	—	THD = 0.1%	2.5	3.1	—	V_{rms}
Total Harmonic Distortion	THD	—	V_{out} = 1V_{rms}	—	0.004	0.01	%
Output Noise Voltage	V_{no}	—	R_g = 620Ω, Filter BW = 20Hz~20kHz	—	1.8	3.0	μV_{rms}
Cross Talk	C.T.	—	V_{out} = 2V_{rms}	—	−70	−60	dB
Ripple Rejection Ratio	R.R.	—	V_{rip} = 1V_{rms}, f_{rip} = 100Hz, R_g = 620Ω	—	−60	−50	dB
Mute Attenuation	ATT	—	Ref : V_{out} = 2V_{rms}	—	−90	−80	dB
Mute ON Control Voltage	$V_{M\ ON}$	—	MUTE = ON	0	—	1.0	V
	$V_{M\ OFF}$	—	MUTE = OFF	3.0	—	V_{CC}	
Input Resistance	R_{IN}	—	—	—	100	—	kΩ

TEST CIRCUIT

TA2026SN

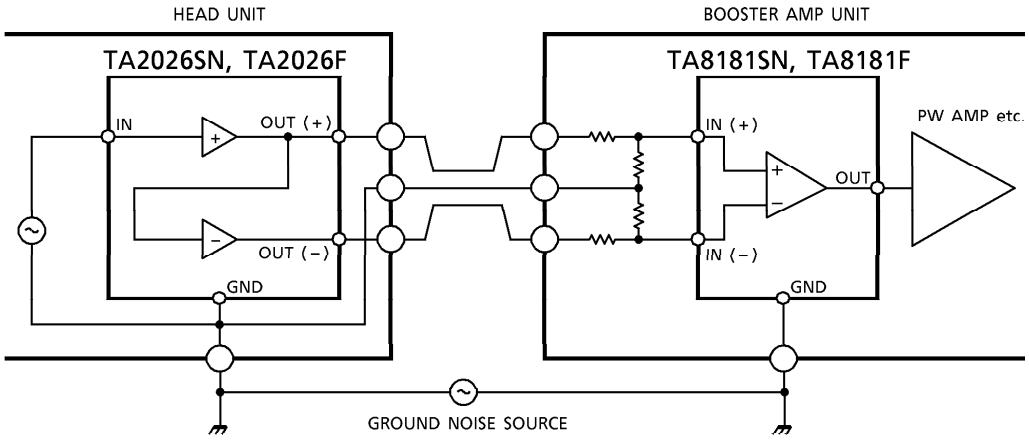


TA2026F



APPLICATION CIRCUIT

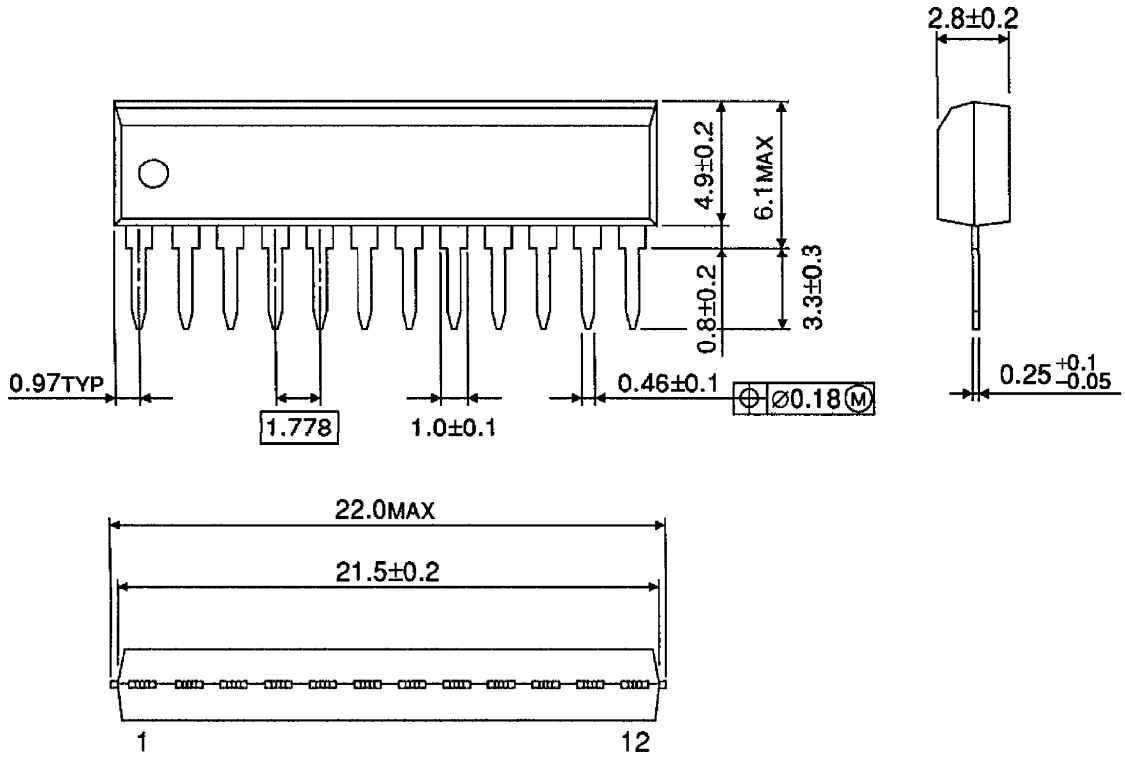
TA2026SN, TA2026F + TA8181SN, TA8181F BALANCED SIGNAL TRANSFER SYSTEM



OUTLINE DRAWING

SSIP12-P-1.78

Unit : mm

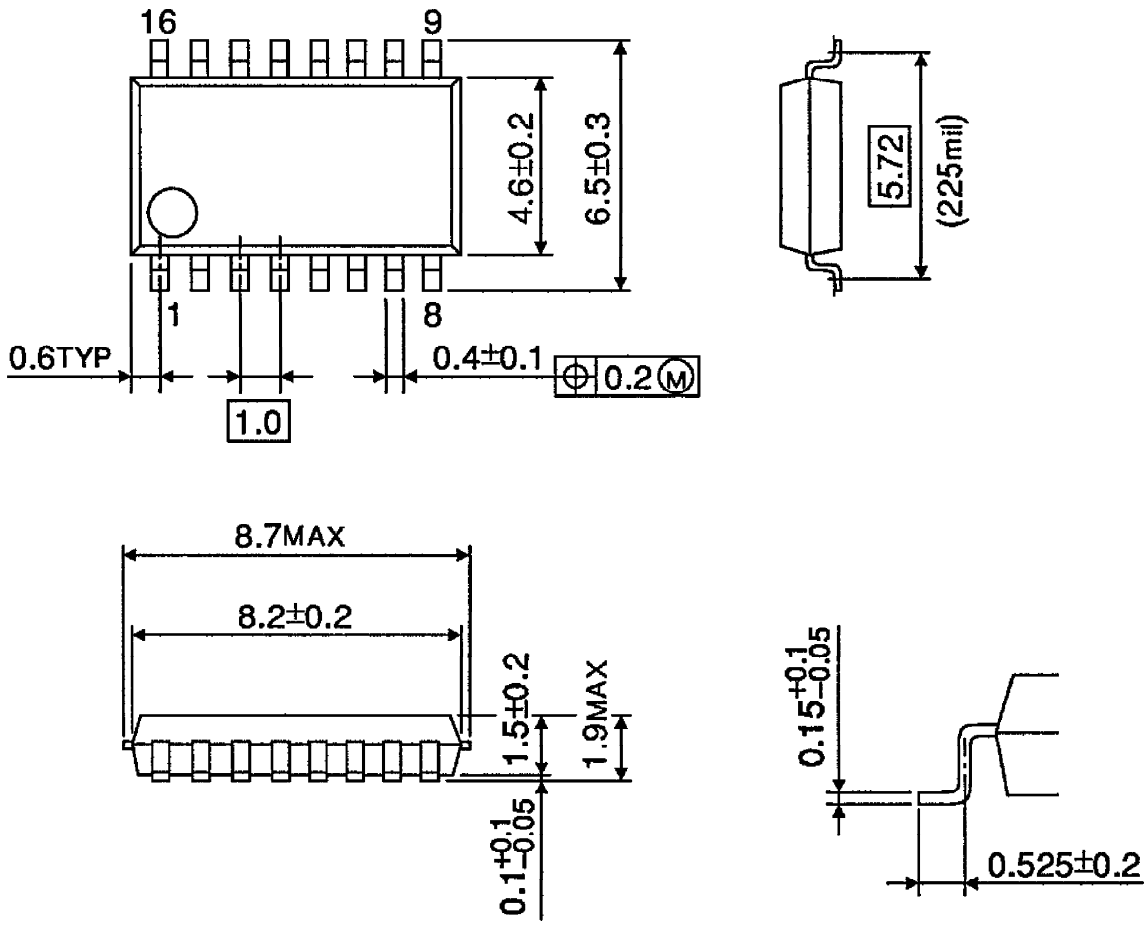


Weight : 0.65g (Typ.)

OUTLINE DRAWING

SSOP16-P-225-1.00A

Unit : mm



Weight : 0.14g (Typ.)