TOSHIBA Bipolar Linear Integrated Circuit Silicon Monolithic

# TA8162SN

#### **Dual Preamplifier**

The TA8162SN is dual preamplifier designed for car stereo tape deck.

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

#### Features

- High open loop voltage gain
  - :  $G_{VO} = 98 dB$  (typ.) ( $V_{CC} = 9 V$ , f = 1 kHz)
- Low distortion
  - : THD = 0.035% (typ.)
- (Gv = 40dB, f = 1 kHz, VOUT = 0.5 Vrms)
  Low noise (equivalent input noise voltage)



#### Weight: 0.65 g (typ.)

- :  $V_{\text{NI}} = 0.9 \ \mu\text{Vrms}$  (typ.) ( $R_{\text{g}} = 620 \ \Omega$ , BW = 20 Hz~20 kHz, NAB EQ)
- No input coupling capacitor
- Small package: Shrink pitch (1.78 mm) single in-line 12 pin
- Operating supply voltage range:  $V_{CC}$  (opr.) = 6~16 V

### **Block Diagram**



### **Application Information**

#### 1. Equalizer control switch

Pin11 is coupled to the base of  $Q_1$  (PNP-Tr) as shown in Figure 1. The emitter potential of  $Q_1$  is 3.9 Vdc. Threshold voltage (pin11)

Metal	3.2~V <sub>CC</sub>	Q≈3.9V
Normal	0~2.4 V	
		ĺ) <b>—</b> K₀₁
		<i>h</i>

Figure 1

#### 2. C<sub>2~3</sub>

Capacitor C2/C3 may be required for preventing a instability caused by the pattern layout or interference of external high frequency signal.

### Maximum Ratings (Ta = 25°C)

Characteristics	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  $Ta = 25^{\circ}C$  in the proportion of 6 mW/°C.

#### Typ. DC Voltage of Each Terminal (V<sub>CC</sub> = 9 V, Ta = 25°C, Dual mode test circuit)

Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12
DC-voltage (V)	V <sub>CC</sub>	3.0	3.0	3.0	3.0	GND	3.0	3.0	3.0	3.0	3.5	3.0

## Electrical Characteristics (unless otherwise specified, V<sub>CC</sub> = 9 V, f = 1 kHz, R<sub>L</sub> = 10 k $\Omega$ , R<sub>g</sub> = 600 $\Omega$ , Ta = 25°C, normal EQ)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Тур.	Max	Unit
Quiescent current	I <sub>CCQ (1)</sub>	_	V <sub>IN</sub> = 0, Normal EQ		5.0		mΑ
	I <sub>CCQ (2)</sub>	_	V <sub>IN</sub> = 0, Metal EQ		6.0	9.0	
Open loop voltage gain	G <sub>VO</sub>	-	C <sub>f</sub> = 100 μF, R <sub>f</sub> = 0	_	98	_	dB
Maximum output voltage	V <sub>OM</sub>	-	THD = 0.5%	1.5	2.0	_	Vrms
Total harmonic distortion	THD	-	V <sub>OUT</sub> = 0.5 Vrms	_	0.035	0.12	%
Equivalent input noise voltage	V <sub>NI</sub>	_	R <sub>g</sub> = 620 Ω, NAB BW = 20 Hz~20 kHz	_	0.9	1.7	μVrms
Input resistance	R <sub>IN</sub>	—	—	_	500	_	kΩ
Ripple rejection ratio	R.R.	_	f <sub>ripple</sub> = 100 Hz, V <sub>IN</sub> = 1 Vrms	_	55	_	dB

### **Test Circuit**



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









18

80





### **Application Circuit**



### Package Dimensions

SSIP12-P-1.78

Unit : mm



Weight: 0.65 g (typ.)

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