Features

- Low Voltage Operation
- Low Quiescent Current
- Unity Gain Stable
- Rail to Rail input and output operation
- Dual amplifiers per package
- Package type: 8-pin SOP

Applications

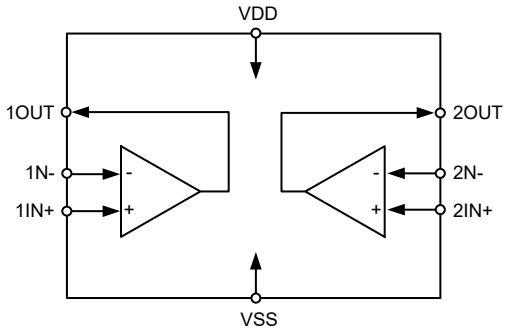
- Household Appliances
- Portable Equipment
- Photodiode Amplifiers
- Analog Active Filters
- Battery Powered Systems

General Description

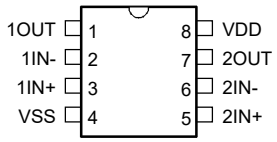
The HT92252A of general purpose operational amplifiers offer the benefits of wide bandwidth along with low quiescent current. The device operates with a supply voltage down to 2.1V, and delivers full rail to rail input and output voltage range operation. The device has a -40°C to 85°C operating temperature range but differ in its bandwidth and quiescent current characteristics. The HT92252A provides 1MHz bandwidth with a 40μA (typ.) per amplifier quiescent current.

With the single supply operation and low power consumption features coupled with its low cost this operational amplifier is suitable for use in a wide range of applications. With regard to packaging, this device is supplied in 8-pin SOP package format.

Block Diagram



Pin Assignment



HT92252A
8 SOP-A

Pin Description

Pin Name	Description
1OUT	Output – OPA1
1IN-	Inverting Input – OPA1
1IN+	Non-inverting Input – OPA1
VSS	Negative Power Supply
2IN+	Non-inverting Input – OPA2
2IN-	Inverting Input – OPA2
2OUT	Output – OPA2
VDD	Positive Power Supply

Absolute Maximum Ratings

Supply Voltage ..... V_{SS}-0.3V to 6.0V
Input Voltage ..... V_{SS}-0.3V to V_{DD}+0.3V
I_{OL} Total 80mA
I_{OH} Total ..... -80mA
Storage Temperature ..... -60°C to 150°C
Operating Temperature ..... -40°C to 85°C
Total Power Dissipation 500mW

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

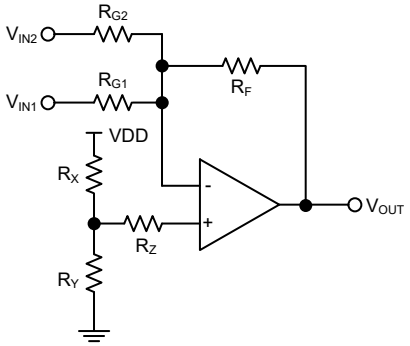
Electrical Characteristics

Unless otherwise indicated, $V_{CM}=V_{DD}/2$, $V_L=V_{DD}/2$, $R_L=100k\Omega$ to V_L

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V_{DD}	Conditions				
V_{DD}	Supply Voltage	—	Ta=25°C	2.1	—	5.5	V
V_{DD}	Supply Voltage	—	Ta= -40°C~85°C	2.5	—	5.5	V
V_{OS}	Input Offset Voltage	—	Ta=25°C	—	—	5	mV
$\Delta V_{OS}/\Delta Ta$	Drift with Temperature	—	Ta=25°C	—	3	6	μV/°C
I_{OS}	Input Offset Current	—	Ta=25°C	—	20	120	pA
I_B	Input Bias Current	—	Ta=25°C	—	10	60	pA
V_{CML}	Input Common Mode Range Low	—	—	—	—	V_{SS}-0.1	V
V_{CMH}	Input Common Mode Range High	—	—	V_{DD}+0.1	—	—	V
V_{OL}	Minimum Output Voltage Swing	—	R_L=10kΩ to V_L, G=+2, 0.5V input overdrive	V_{SS}	—	V_{SS}+40	mV
V_{OH}	Maximum Output Voltage Swing	—	R_L=10kΩ to V_L, G=+2, 0.5V input overdrive	V_{DD}-40	—	V_{DD}	mV
A_{OL}	Large Signal DC Open Loop Gain	2.5~5.5V	V_{OUT}=0.3V~V_{DD}-0.3V	88	—	—	dB
			V_{OUT}=35mV~V_{DD}-35mV	70	—	—	
GBW	Gain Bandwidth Product	—	—	730	1000	—	kHz
PM	Phase Margin	—	—	46	65	—	degrees
CMRR	Common Mode Rejection Ratio	—	V_{CM}= -0.1V~V_{DD}-1.2V Ta=25°C	65	80	—	dB
		—	V_{CM}= -0.1V~V_{DD}-1.2V Ta= -40°C~85°C	60	78	—	

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V_{DD}	Conditions				
PSRR	Power Supply Rejection Ratio	2.5~5.5V	V_{CM}=V_{SS}, Ta=25°C	70	80	—	dB
		2.5~5.5V	V_{CM}=V_{SS}, Ta= -40°C~85°C	60	80	—	
I_Q	Quiescent Current/Amplifier	—	I_{OUT}=0, Ta=25°C	—	40	65	μA
			I_{OUT}=0, Ta= -40°C~85°C	—	40	78	
SR	Slew Rate	—	CL=60pF	0.35	0.5	—	V/μs
I_{SOURCE}	Output Short Circuit Source Current	5V	R_L=10Ω to V_L	15	—	—	mA
I_{SINK}	Output Short Circuit Sink Current	5V	R_L=10Ω to V_L	15	—	—	mA
E_{ni}	Input Noise Voltage	—	Ta=25°C, 0.1Hz to 10Hz	—	6	8	$μV_{P-P}$
e_{ni}	Input Noise Voltage Density	—	Ta=25°C, 1kHz	—	28	37.3	$nV/\sqrt{Hz}$

Application Circuits



$$R_{VIN-} = \frac{1}{\frac{1}{R_{G1}}+\frac{1}{R_{G2}}+\frac{1}{R_F}}$$, R_{VIN-} = total resistance at the inverting input.

$$R_{VIN+} = \frac{1}{\frac{1}{R_X}+\frac{1}{R_Y}} + R_Z$$, R_{VIN} = total resistance at the inverting input, $R_{VIN+} = R_{VIN-}$.

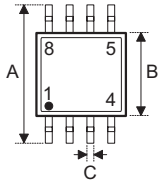
Package Information

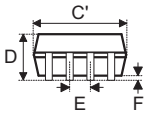
Note that the package information provided here is for consultation purposes only. As this information may be updated at regular intervals users are reminded to consult the Holtek website for the latest version of the package information.

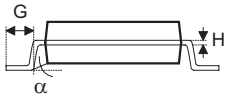
Additional supplementary information with regard to packaging is listed below. Click on the relevant section to be transferred to the relevant website page.

- Further Package Information (include Outline Dimensions, Product Tape and Reel Specifications)
- Packing Meterials Information
- Carton information

8-pin SOP (150mil) Outline Dimensions







Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	—	0.236 BSC	—
B	—	0.154 BSC	—
C	0.012	—	0.020
C′	—	0.193 BSC	—
D	—	—	0.069
E	—	0.050 BSC	—
F	0.004	—	0.010
G	0.016	—	0.050
H	0.004	—	0.010
α	0°	—	8°

Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	—	6.00 BSC	—
B	—	3.90 BSC	—
C	0.31	—	0.51
C′	—	4.90 BSC	—
D	—	—	1.75
E	—	1.27 BSC	—
F	0.10	—	0.25
G	0.40	—	1.27
H	0.10	—	0.25
α	0°	—	8°