

# AN6550

## Dual Operational Amplifier

### Overview

The AN6550 is a dual operational amplifier with a phase compensation circuit built-in, allowing low voltage operation.

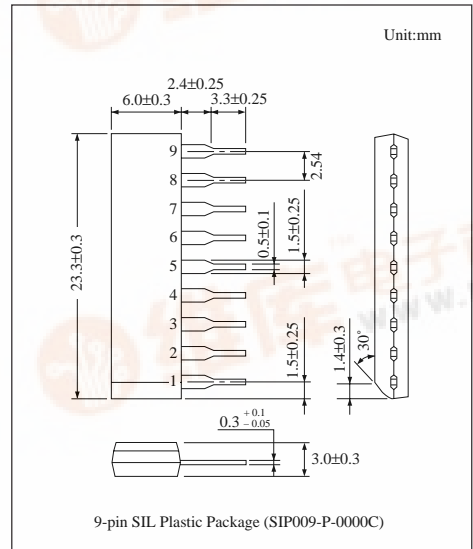
It is suitable for application to various electronic circuits such as active filters and audio preamplifiers.

### Features

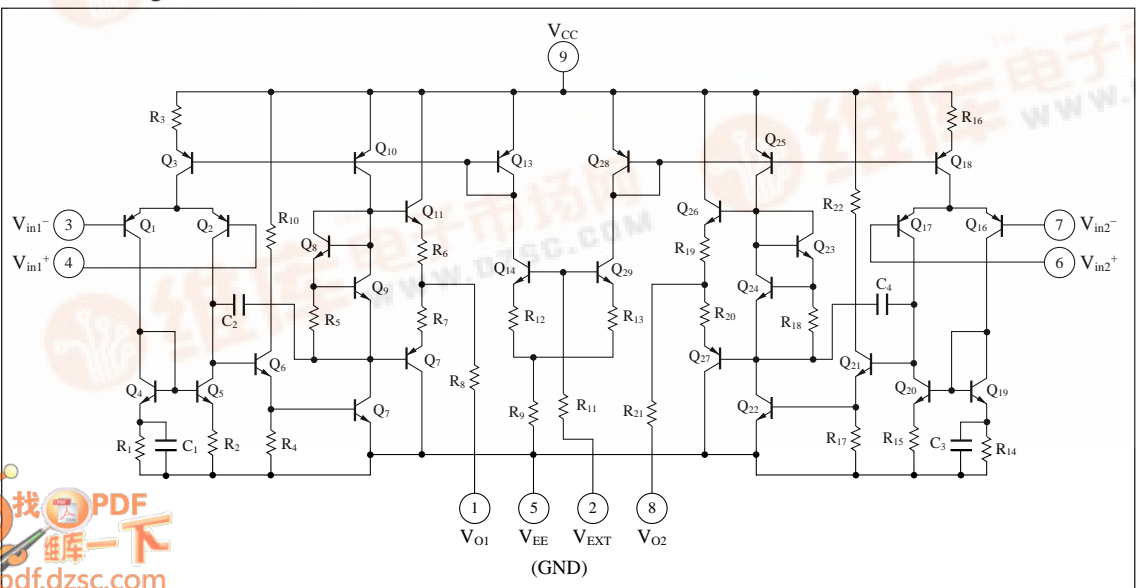
- Phase compensation circuit
- High voltage gain, low noise
- Output short protection circuit
- Low voltage operation( $\pm 2.5V$  to  $\pm 10V$ )

### Pin Descriptions

Pin No.	Pin name
1	Ch.1 output
2	External bias
3	Ch.1 inverting input
4	Ch.1 non inverting input
5	$V_{EE}$ (GND)
6	Ch.2 non inverting input
7	Ch.2 inverting input
8	Ch.2 output
9	$V_{CC}$



### Block Diagram



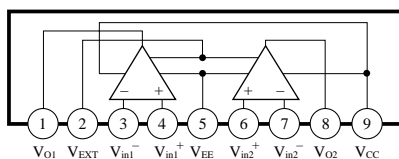
## ■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Voltage	Supply voltage	V <sub>CC</sub> , V <sub>EE</sub>	±12	V
	External bias supply voltage	V <sub>EXT</sub>	V <sub>EE</sub> to V <sub>CC</sub>	V
	Differential input voltage	V <sub>ID</sub>	±24	V
	Common-mode input voltage	V <sub>ICM</sub>	±12	V
Power dissipation		P <sub>D</sub>	500	mW
Temperature	Operating ambient temperature	T <sub>opr</sub>	-20 to +75	°C
	Storage temperature	T <sub>stg</sub>	-55 to +150	°C

## ■ Electrical Characteristics (V<sub>CC</sub>=2.5V, V<sub>EE</sub>=-2.5V, V<sub>EXT</sub>=2.0V, Ta=25°C)

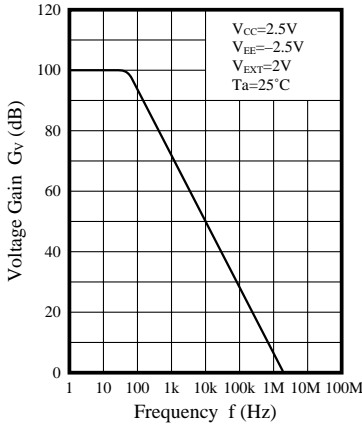
Parameter	Symbol	Condition	min	typ	max	Unit
Input offset voltage	V <sub>I(offset)</sub>	R <sub>S</sub> ≤ 10kΩ	—	1.5	6	mV
Input offset current	I <sub>IO</sub>		—	5	200	nA
Input bias current	I <sub>Bias</sub>		—	150	500	nA
Voltage gain	G <sub>V</sub>	R <sub>L</sub> ≥ 2kΩ	65	100	—	dB
Maximum output voltage	V <sub>O(max.)</sub>	R <sub>L</sub> ≥ 10kΩ	±1.2	±1.7	—	V
		R <sub>L</sub> ≥ 2kΩ	±1	±1.5	—	V
Common-mode input voltage width	V <sub>CM</sub>		±1	±1.5	—	V
Common-mode rejection ratio	CMR		70	80	—	dB
Supply voltage rejection ratio	SVR		—	100	300	μV/V
Power consumption	P <sub>C</sub>	R <sub>L</sub> = ∞	—	8	15	mW
Slew rate	SR	R <sub>L</sub> ≥ 2kΩ	—	0.8	—	V/μs
Equivalent input noise voltage	V <sub>ni</sub>	R <sub>S</sub> = 1kΩ, B = 10Hz to 30kHz	—	2.5	—	μVrms

## ■ Pin Assignments

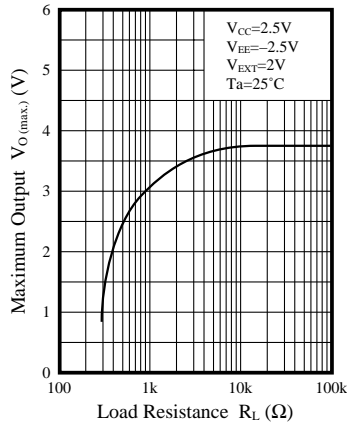


## Characteristics Curve

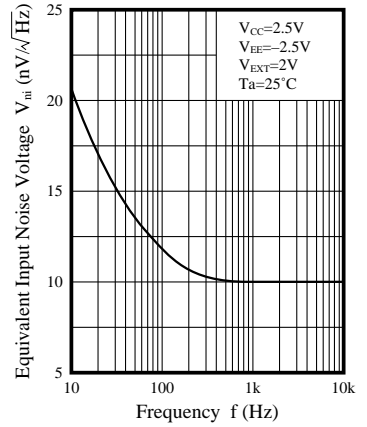
$G_V$ - $f$



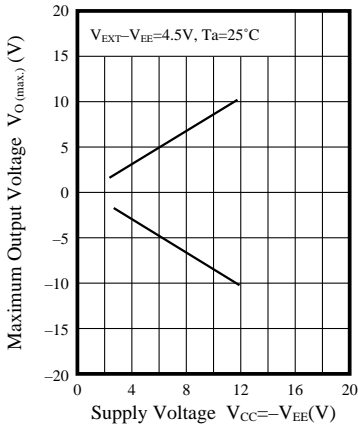
$V_{O(max.)}$ - $R_L$



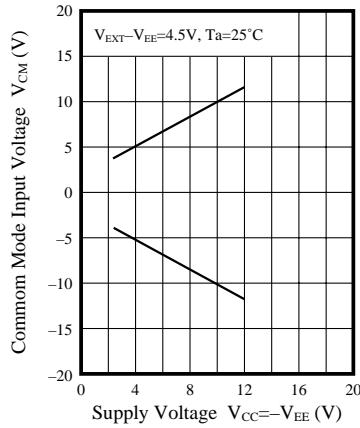
$V_{ni}$ - $f$



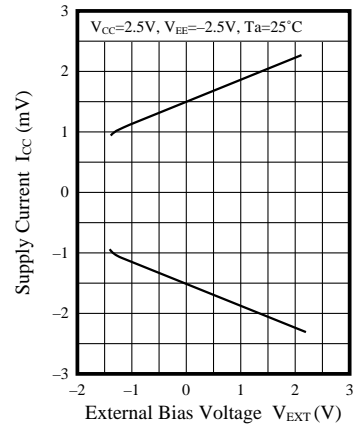
$V_{O(max.)}$ - $V_{CC}, V_{EE}$



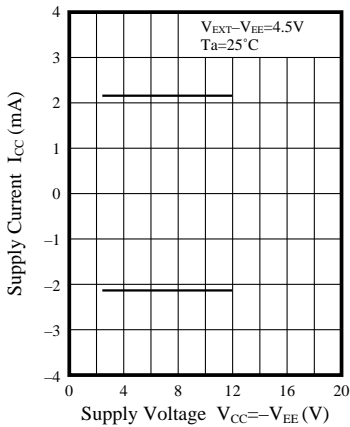
$V_{CM}$ - $V_{CC}, V_{EE}$



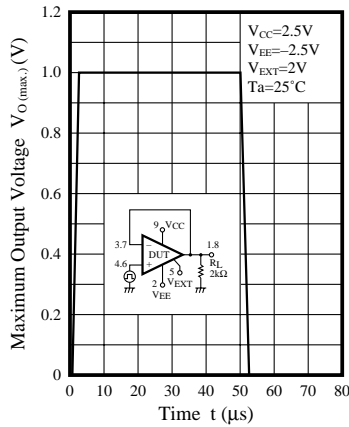
$I_{CC}$ - $V_{EXT}$



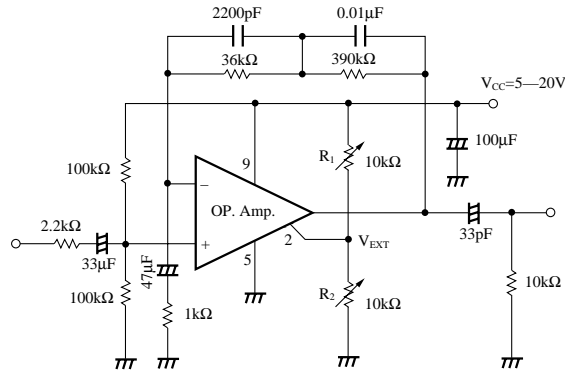
$I_{CC}$ - $V_{CC}, V_{EE}$



$V_O$ - $t$



## ■ Application Circuit



RIAA Preamplifier (single power supply operation)

Note)  $R_1$  and  $R_2$  are resistances for setting operational amplifier bias.

Set  $R_1$  and  $R_2$  so that  $V_{EXT}=2.0V$  to  $6.0V$ .

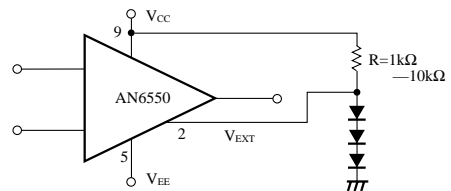
(Recommended Voltage  $V_{EXT}=4.5V$ )

## ■ How to Apply External to the AN6550

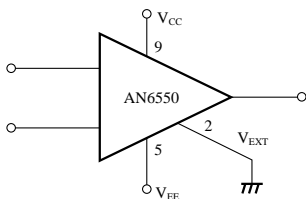
1. The AN6550 is an operational amplifier with a phase compensation circuit built-in, allowing low voltage operation, and its current consumption and bandwidth can be changed by applying external bias to it.
2. As shown below, applies bias voltage to 2  $V_{EXT}$  pin of the AN6550 allows the AN6550 to be handled in the very same way as the AN6551, except for pin connection.

Set  $V_{EXT} \geq V_{EE} + 1V$ .

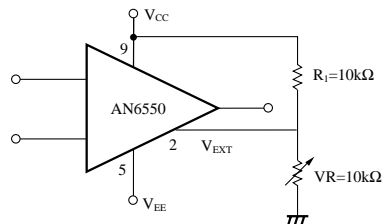
### 1 ) By diode



### 2 ) By connecting $V_{EXT}$ pin to GND



### 3 ) By dividing with resistors



### 4 ) By Zener diode

( $V_{CC} - V_{EE} \geq 6V$ )

