# SINGLE OPERATIONAL AMPLIFIER

## ■ GENERAL DESCRIPTION

NJM2107 is a single operational amplifier of ultra miniature surface mount package.

NJM2107 has features of low operating supply voltage and low saturation output voltage.The NJM2107 is suitable for small electronic equipments and hybrid circuits.

## ■ PACKAGE OUTLINE

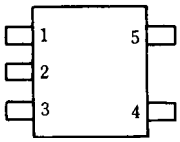
NJM2107F

NJM2107F3

## ■ FEATURES

- Operating Voltage ( $V^+/V^-$ = ±1.0V to ±3.5V )
- Low Output Saturation ( $4V_{P-P}$ at single 5V supply )
- $V^-$ Shield Plate between +Input and -Input
- Suitable Pin Arrangement for Application
- Mounted in Ultra Miniature 2.0 X 1.25mm ( 1/8 of DMP8 package )
- Bipolar Technology

## ■ PIN CONFIGURATION

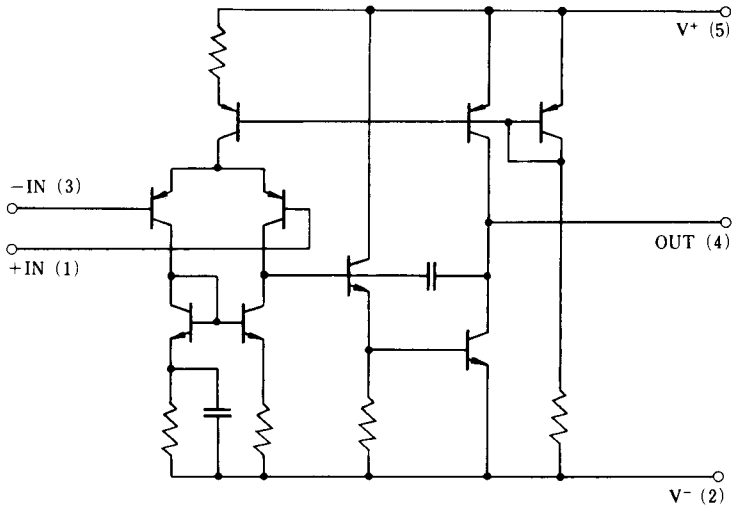



NJM2107F
NJM2107F3

**PIN FUNCTION**

**1.+INPUT**
**2.$V^-$**
**3.-INPUT**
**4.OUTPUT**
**5.$V^+$**

## ■ EQUIVALENT CIRCUIT



## ■ ABSOLUTE MAXIMUM RATINGS

( Ta=25˚C )

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+/V^-$ | ± 3.5 | V |
| Differential Input Voltage | $V_{ID}$ | ± 7 | V |
| Input Voltage | $V_{IC}$ | ± 3.5 | V |
| Power Dissipation | $P_D$ | (SOT−23−5 ) 200<br>( SC88A ) 250 ( note1 ) | mW |
| Operating Temperature Range | $T_{opr}$ | -40~+85 | ˚C |
| Storage Temperature Range | $T_{stg}$ | -40~+125 | ˚C |

( note1 ) On the PCB " EIA/JEDEC (76.2×114.3×1.6mm, two layers, FR-4) "

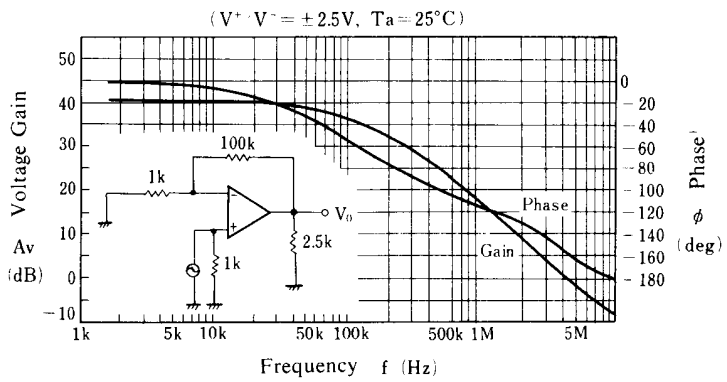
## ■ ELECTRICAL CHARACTERISTICS

( $V^+/V^-$=±2.5V,Ta=25˚C )

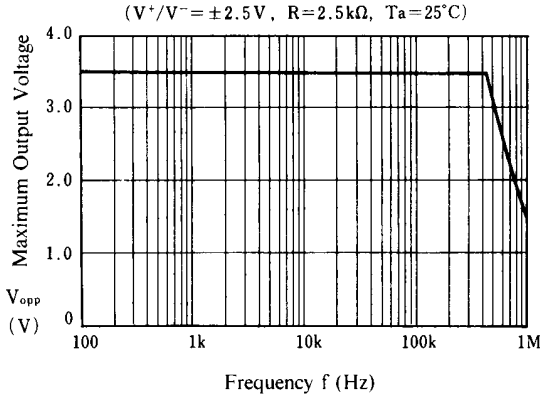
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Input Offset Voltage | $V_{IO}$ | $R_S$=10kΩ | - | 1 | 6 | mV |
| Input Offset Current | $I_{IO}$ | $I^+$-$I^-$ | - | 5 | 200 | nA |
| Input Bias Current | $I_B$ | | - | 100 | 500 | nA |
| Input Common Mode Voltage Range | $V_{ICM}$ | | ± 1.5 | - | - | V |
| Large Signal Voltage Gain | $A_V$ | $R_L$=10kΩ,$V_O$=± 2.0V | 60 | 80 | - | dB |
| Output Voltage Swing | $V_{OM}$ | $R_L$=2.5kΩ | ± 2.0 | ± 2.2 | - | V |
| Common Mode Rejection Ratio | CMR | $R_S$≤10kΩ | 60 | 80 | - | dB |
| Supply Voltage Rejection Ratio | SVR | $R_S$≤10kΩ | 60 | 70 | - | dB |
| Slew Rate | SR | $V_{IN}$=± 1$V_{P-P}$,$A_{CL}$=+1 | - | 3 | - | V/μs |
| Operating Current | $I_{CC}$ | | 1 | 2 | 3 | mA |

## ■ TYPICAL CHARACTERISTICS

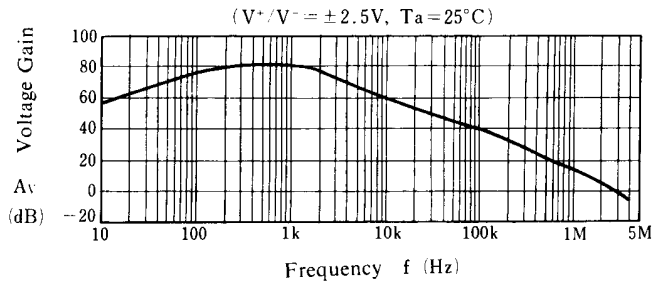
### Voltage Gain, Phase vs. Frequency



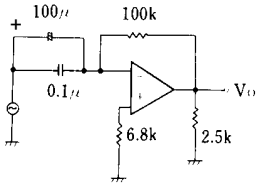

### Maximum Output Voltage vs. Frequency



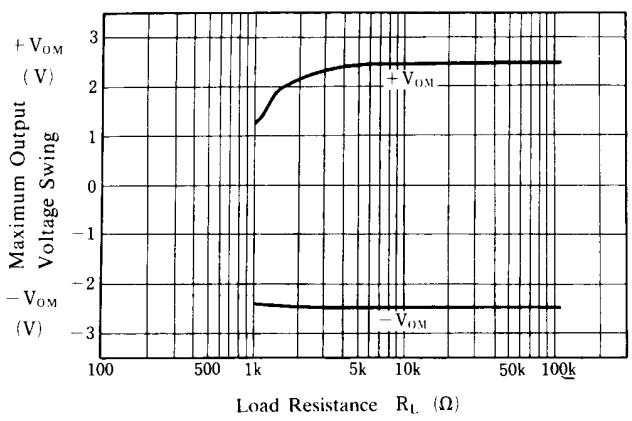

### Voltage Gain, vs. Frequency



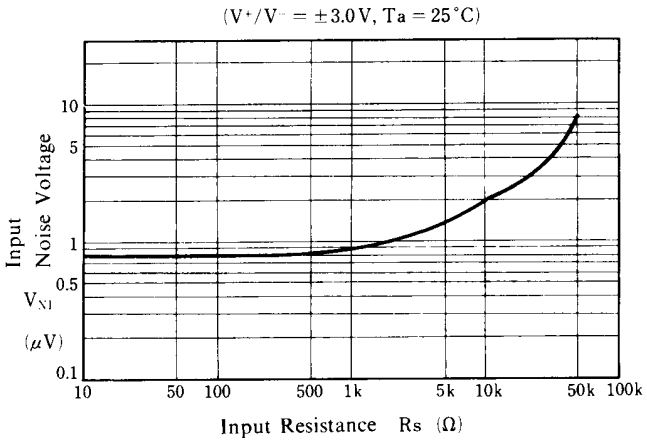

### Test Circuit




### Maximum Output Voltage Swing vs. Load Resistance

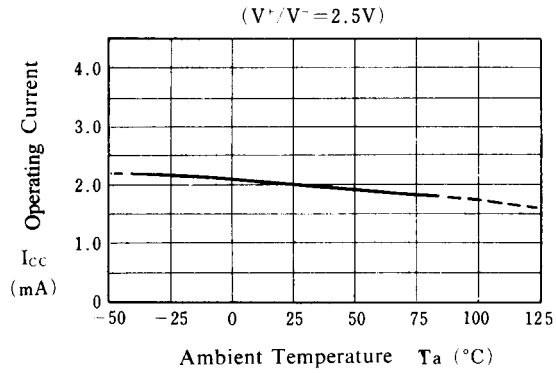



### Input Noise Voltage vs. Input Resistance

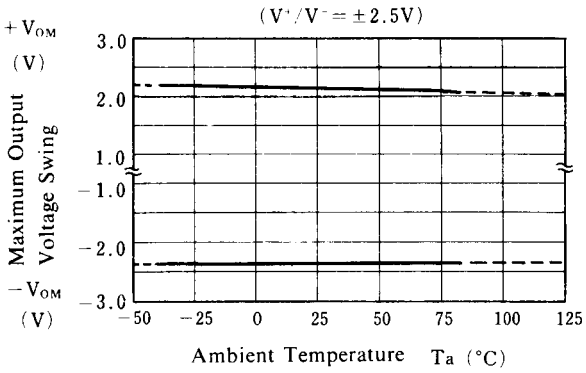


## ■ TYPICAL CHARACTERISTICS

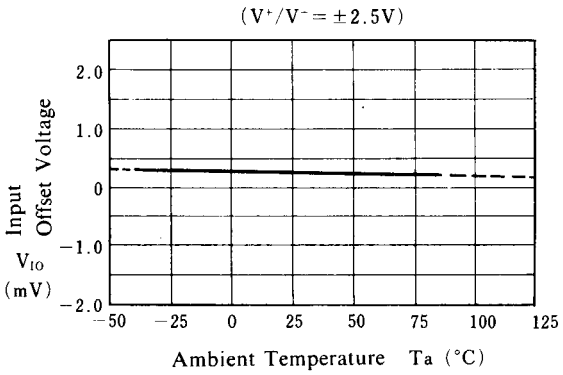
### Operating Current vs. Temperature



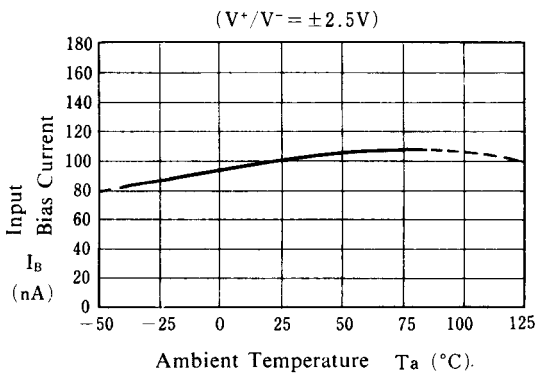

### Maximum Output Voltage Swing vs. Temperature



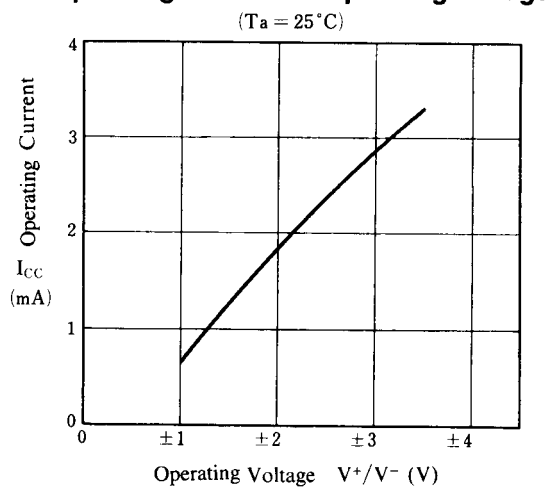

### Input Offset Voltage vs. Temperature



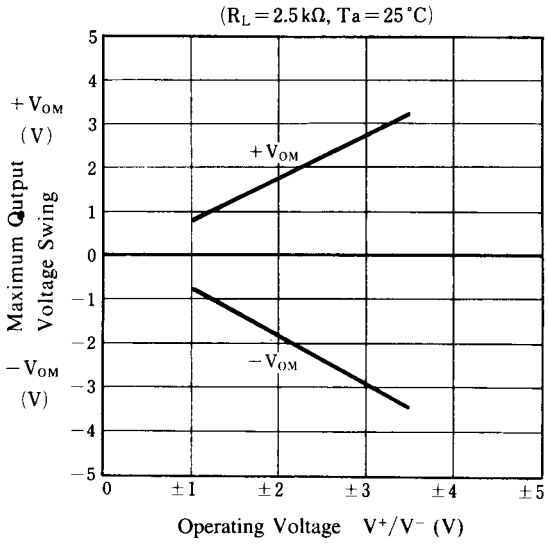

### Input Bias Current vs. Temperature




### Operating Current vs. Operating Voltage

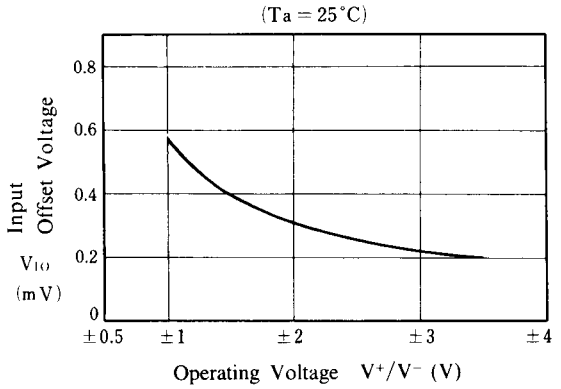



### Maximum Output Voltage Swing vs. Operating Voltage



## ■ TYPICAL CHARACTERISTICS

**Input Offset Voltage vs. Operating Voltage**




**Total Harmonic Distortion vs. Output Voltage**