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AK2922H

Zero Drift operational amplifiers

Feature

AK2922H is the dual channel CMOS operational amplifiers which is available to output with very low input offset voltage ($\pm 1.0\mu\text{V}$) and near zero input offset drift.

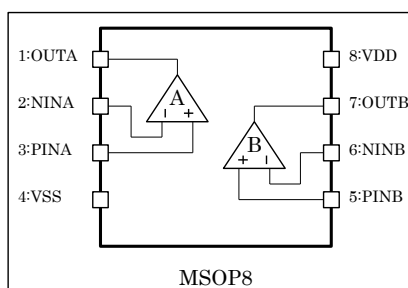
It's operated with very small current consumptions, 1.05mA typ./ch (VDD:5.0V), which is available to operate full swing signals in output.

AK2922H is appropriated to Sensor Pre Amp. applications.

- Low Voltage, Single Supply Operation : 2.7V to 5.5V
- Very Low Input Offset Voltage : $\pm 1.0\mu\text{V}$ typ.
- Near Zero Drift over time and temperature : $\pm 2.0\text{nV}/^\circ\text{C}$ typ.
- Full Swing Outputs to 10k Ω Load
- Power Supply Current : 1.05mA typ./ch (VDD: 5.0V, No Load)
- Gain Bandwidth : 4MHz typ.
- Operating Temperature Range : -40 to 125 $^\circ\text{C}$
- Package : MSOP8

| Part Name | Channel Number | Package |
|-----------|----------------|---------|
| AK2922H | 2 | MSOP8 |

Pin Location



(AK2922H)

| |
|----------------------------------|
| Pin Function Descriptions |
|----------------------------------|

| Pin number | Name | I/O (Note 1) | Function |
|------------|------|--------------|-------------------------------|
| 1 | OUTA | AO | Amplifier A Output |
| 2 | NINA | AI | Amplifier A Inverted Input |
| 3 | PINA | AI | Amplifier A No Inverted Input |
| 4 | VSS | PWR | Power Supply Ground |
| 5 | PINB | AI | Amplifier B No Inverted Input |
| 6 | NINB | AI | Amplifier B Inverted Input |
| 7 | OUTB | AO | Amplifier B Output |
| 8 | VDD | PWR | Positive Power Supply |

Note 1)

PWR : Power Supply
 AI : Analog Input
 AO : Analog Output

| |
|---------------------------------|
| Absolute Maximum Ratings |
|---------------------------------|

VSS=0V (Note 2)

| Parameter | Symbol | Min | Max | Units |
|---------------------------|------------------|------|-----------|-------|
| Supply Voltage | VDD | -0.3 | 6.5 | V |
| Input Voltage | V _{TD} | -0.3 | VDD + 0.3 | V |
| Input Current | I _{IN} | -10 | +10 | mA |
| Storage Temperature Range | T _{stg} | -55 | 150 | °C |

Note 2) All voltage with respect to ground

WARNING :

Operational at or beyond these limits may result in permanent damage to the device. Normal operation is not guaranteed at these extremes.

| |
|---|
| Recommended Operating Conditions |
|---|

| Parameter | Symbol | Min. | Typ. | Max. | Units | Conditions |
|-----------------------------|----------------|------|------|------|-------|------------|
| Operating Temperature Range | T _a | -40 | | 125 | °C | |
| Supply Voltage | VDD | 2.7 | | 5.5 | V | |

*We assume no responsibility for the usage beyond the conditions in this datasheet.

| |
|-----------------------------------|
| Electrical Characteristics |
|-----------------------------------|

□ DC Characteristics

VDD:5V, Ta:-40 to 125°C, unless otherwise noted

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|------------------------------|------|------|----------|-------|------------------------------|
| Input Voltage Offset | | ± 1 | ± 10 | μV | @Gain > 60dB |
| Input Voltage Offset Drift | | ± 2 | ± 20 | nV/°C | @Gain > 60dB |
| Input Bias Current | | ± 50 | | pA | Ta=25°C |
| Input Common Mode Range | 00 | | VDD-0.2 | V | |
| Output Voltage Swing | 0.05 | | VDD-0.05 | V | RL ≥ 10kΩ connected to VDD/2 |
| Common Mode Rejection Ratio | 100 | 130 | | dB | |
| Power Supply Rejection Ratio | 100 | 130 | | dB | |
| Large Signal Voltage Gain | 100 | 130 | | dB | RL ≥ 10kΩ connected to VDD/2 |
| Short Circuit Current | | ± 50 | | mA | |
| Output Current | | ± 25 | | mA | |
| Power Supply Current | | 1.05 | 2.1 | mA/ch | VDD=5.0V, No Load (Note 3) |

Note 3) It does not contain output drive current.

□ AC Characteristics

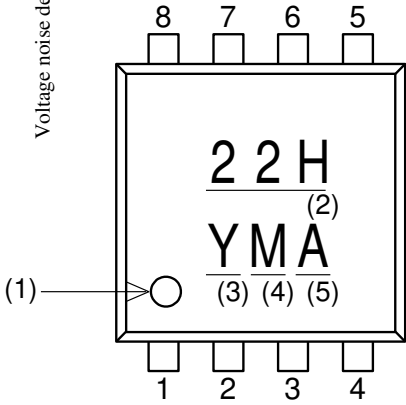
VDD:5V, Ta:-40 to 125°C, unless otherwise noted

| Parameter | Min. | Typ. | Max. | Units | Conditions |
|---------------------------|--------------|------|------|----------------|---|
| Gain Bandwidth | | 4 | | MHz | |
| Slew Rate | | 5 | | V/μs | |
| Input Voltage Noise | | 25 | | nVrms /√ Hz | @f: 1kHz |
| | 0.1 – 10Hz | 0.9 | | μVpp | |
| | 0.1 – 1Hz | 0.3 | | μVpp | |
| Overload Recovery Time | | 0.02 | | msec | Av: -50V/V |
| Input Capacitance | Differential | 1.5 | | pF | |
| | Common Mode | 12 | | PF | |
| Maximum Capacitance Loads | | | 150 | pF | Inverter : 0dB and more Non-inverter : 6dB and more (Do not use Voltage-Follower circuit) |

Package

1. Marking

1.1 MSOP8

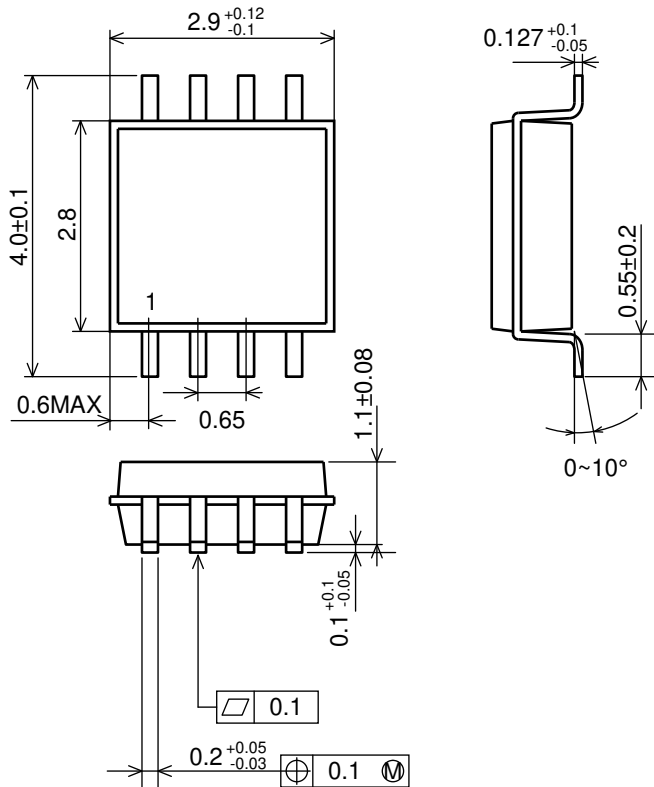


- (1) Pin Number 1 indication mark
- (2) Part Number
- (3) Date Code (Year)
- (4) Date Code (Month)
- (5) In-house Control Code

2. Outline Dimensions

2.1 MSOP8 Package Outline

(UNIT:mm)



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