



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.

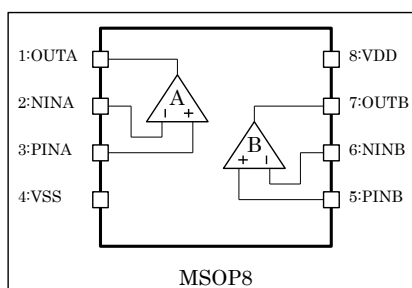
It's operated with very small current consumptions, 1.05mA typ./ch (VDD:5.0V), which is available to operate full swing signals in output.

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



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

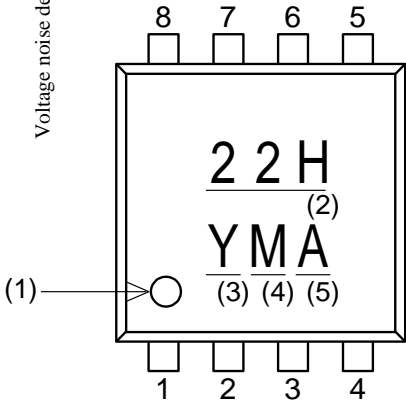
VDD:5V, Ta:-40 to 125°C, unless otherwise noted

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

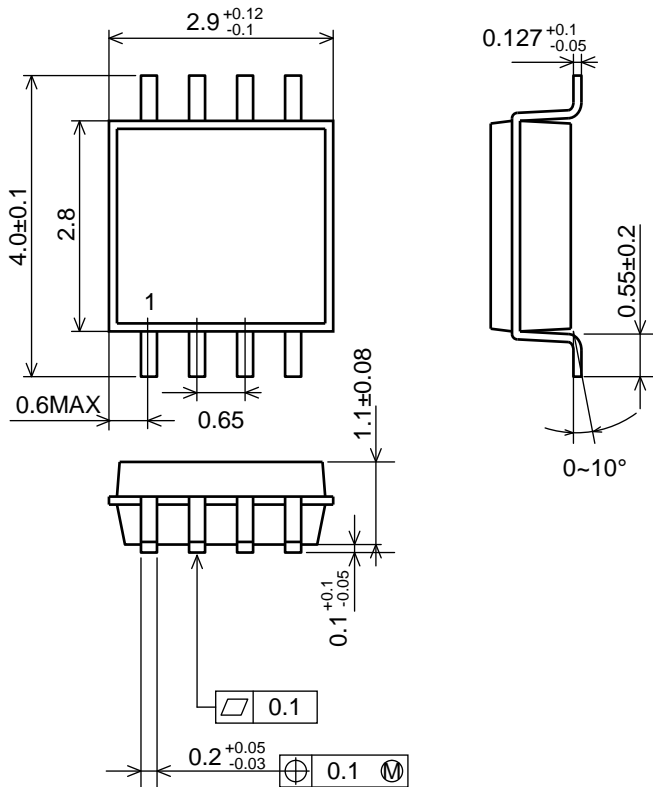


- (1) Pin Number 1 indication mark
- (2) Part Number
- (3) Date Code (Year)
- (4) Date Code (Month)
- (5) In-house Control Code

2. Outline Dimensions

2.1 MSOP8 Package Outline

(UNIT:mm)



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