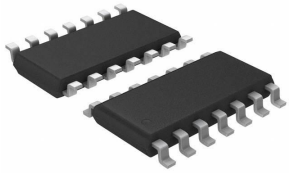
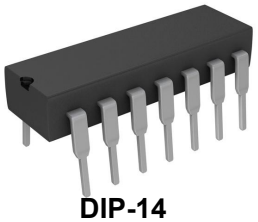
HX064-S/HX064-P/HX064A-S/HX064A-P
Low Power Quad Operational Amplifier

The HX064-S/HX064-P/HX064A-S/HX064A-P features four independent high gain operational amplifiers with internal frequency compensation. These four op-amps operate over a wide voltage range using either a single power supply or a split power supply. The device exhibits low power supply current drain, regardless of the power supply voltage, making it suitable for battery-operated applications. When your project requires a traditional op-amp function, you can simplify your design by utilizing a single +5VDC power supply commonly found in various digital systems or personal computer applications, eliminating the need for an additional 15V power supply solely for interface electronics. The HX064-S/HX064-P/HX064A-S/HX064A-P is a versatile and durable component capable of amplifying signals from various transducers, serving as a dc gain block, or performing any op-amp function. The accompanying pages provide useful instructions that will expedite the progress of your project.



SOP-14

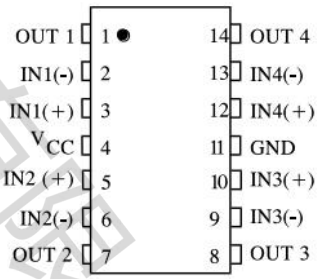


DIP-14

FEATURES

- Internally frequency compensated for unity gain
- Large DC voltage gain: 100dB
- Wide power supply range:
  3V ~ 32V (or ±1.5V ~ ±16V)
- Input common-mode voltage range includes ground
- Large output voltage swing: 0V DC to VCC-1.5V DC
- Power drain suitable for battery operation
- Low input offset voltage and offset current
- Differential input voltage range equal to the power supply voltage

PIN ASSIGNMENT



Product Information

	Package Information	temperature	Orchestration	quantity
HX064-S	SOP-14	0°C~70°C	Taping	2500
HX064-P	DIP-14	0°C~70°C	Taping	1000
HX064A-S	SOP-14	-40°C~85°C	Taping	2500
HX064A-P	DIP-14	-40°C~85°C	Taping	1000

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	±2.5 or 5.0	±15 or 30	V
T_A	Operating Temperature, All Package Types	-40	+105	°C

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Power Supply Voltages Single Supply Split Supplies	32±16	V
V_{IDR}	Input Differential Voltage Range a	±32	V
V_{ICR}	Input Common Mode Voltage Range	-0.3 to 32	V
I_{SC}	Output Short Circuit Duration	Continuous	
T_J	Junction Temperature	150	°C
Tstg	Storage Temperature Plastic Packages	-55 to +125	°C
I_{IN}	Input Current, per pin b	50	mA
T_L	Lead Temperature, 1mm from Case for 10 Seconds	260	°C

Notes

a. Split Power Supplies.
b. VIN<-0.3V. This input current will only exist when voltage at any of the input leads is driven negative.

DC ELECTRICAL CHARACTERISTICS (TA=-40 to +105°C)

Symbol	Parameter	Test Conditions	Guaranteed Limit			Unit
			Min	Typ	Max	
VIO	Maximum Input Offset Voltage	VO=1.4V VCC=5.0-			7.0	mV
ΔVIO/ΔT	Input Offset Voltage	RS=0Ω, VCC=30V		7.0		μV/°C
IIO	Maximum Input Offset Current	VCC=5.0V			150	nA
ΔIIO/ΔT	Input Offset Current Drift	RS=0Ω, VCC=30V		10		pA/°C
IIB	Maximum Input Bias Current	VCC=5.0V			500	nA
VICR	Input Common Mode Voltage Range	VCC=30V	0		28	V
ICC	Maximum Power Supply Current	RL=∞,VCC=30V,V0=0V RL=∞,VCC=5V,V0=0V			3 1.2	mA
AVOL	Minimum Large Signal Open-Loop Voltage Gain	VCC=15V, RL≥2KΩ	15 25a			V/mV
VOH	Minimum Output High- Level Voltage Swing	VCC=30V,RL=2KΩ VCC=30V,RL=10KΩ	26 27			V
VOL	Maximum Output Low- Level Voltage	VCC=5V,RL=10KΩ			20	mV
CMR	Common Mode	VCC=30V, RS=10KΩ	65a			dB
PSR	Power Supply Rejection	VCC=30V	65*			dB
CS	Channel Separation	f=1KHz to 20KHz,VCC=30V	-120a			dB
ISC	Maximum Output Short Circuit to GND	VCC=5.0V			60a	mA
Isource	Minimum Output Source Current	VIN+=1V, VIN-=0V,	20		50	mA
Isink	Minimum Output Sink Current	VIN+=0V, VIN-=1V,	5			mA
VIDR	Differential Input Voltage Range	All VIN≥GND or V-Supply (if used)			VCCa	V

Notes

a. =@25°C

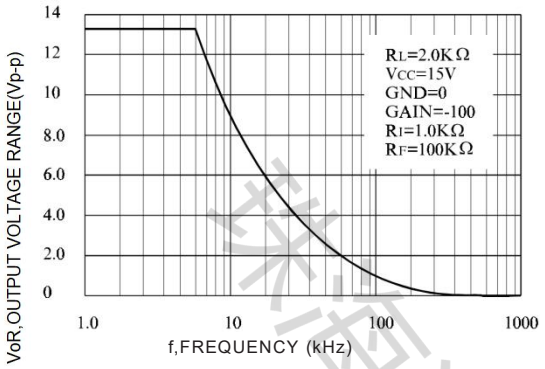


Fig 1. Large-Signal Frequency Response

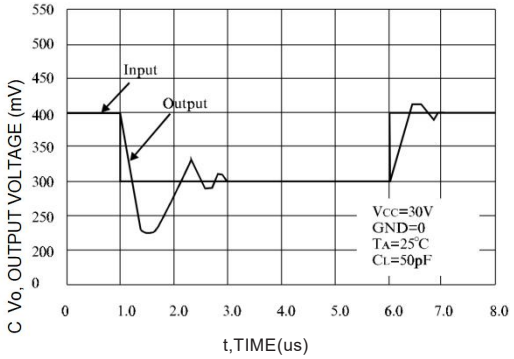


Fig 2. Small-Signal Voltage Follower Pulse Response

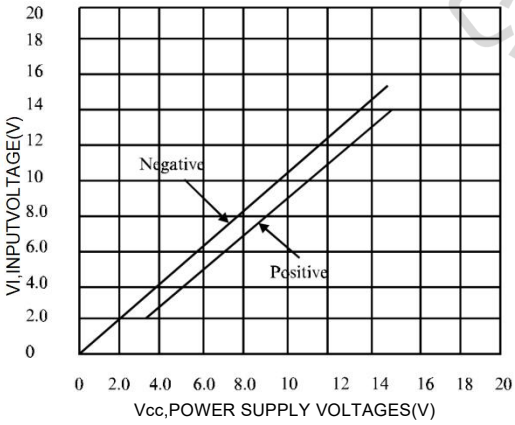


Fig 3. Input Voltage Range

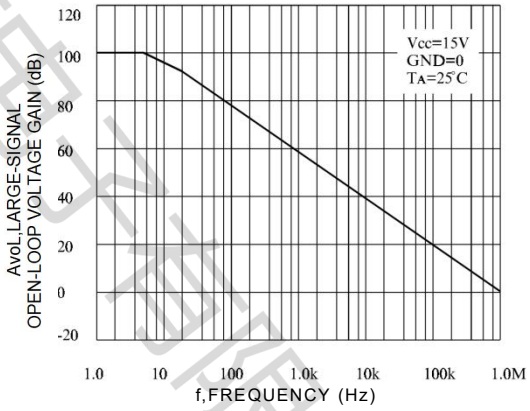


Fig 4. Open-Loop Frequency

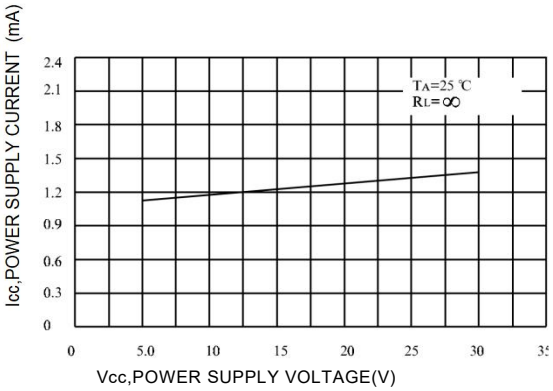


Fig 5. Power Supply Current versus Power Supply Voltage

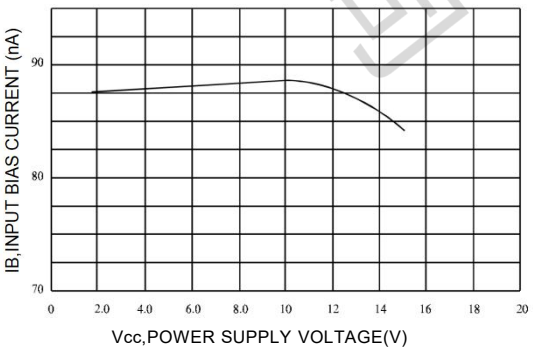
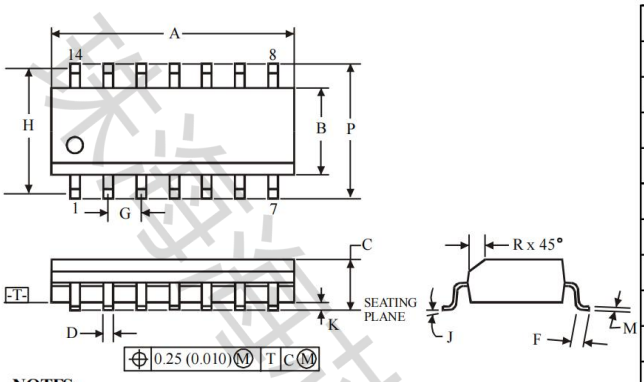


Fig 6.Input Bias Current versus Power Supply Voltage

Package Information

SOP14 (Package Outline Dimensions)

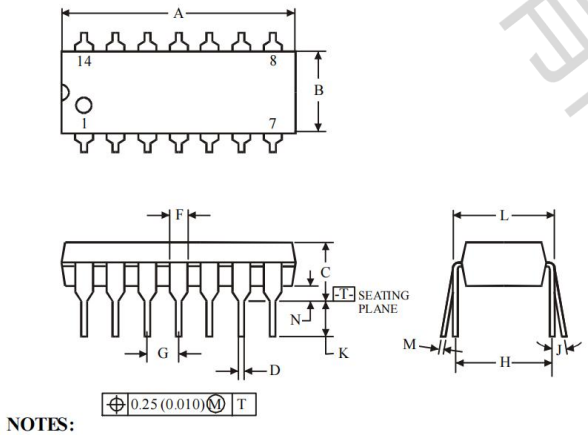


	Dimension, mm	
Symbol	MIN	MAX
A	8.55	8.75
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.27	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B - 0.25 mm (0.010) per side.

DIP14 (Package Outline Dimensions)



	Dimension, mm	
Symbol	MIN	MAX
A	18.67	19.69
B	6.1	7.11
C		5.33
D	0.36	0.56
F	1.14	1.78
G	2.54	
H	7.62	
J	0°	10°
K	2.92	3.81
L	7.62	8.26
M	0.2	0.36
N	0.38	

NOTES:

1. Dimensions "A", "B" do not include mold flash or protrusions.
   Maximum mold flash or protrusions 0.25 mm (0.010) per side.

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