

June 1995

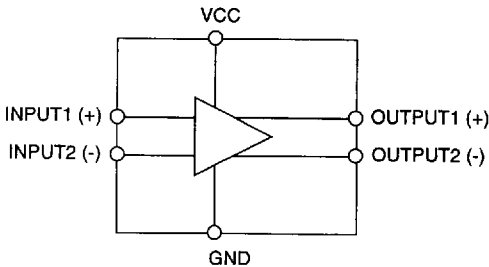
**DESCRIPTION**

The SSI 32H6115 is a high performance, differential amplifier used as a preamplifier for the magnetic servo thin-film head in Winchester disk drives. The SSI 32H6115 is offered in an 8-pin SON package.

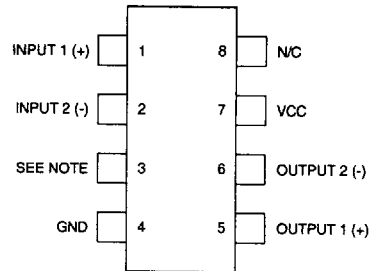
**FEATURES**

- **High gain ( $A_v = 300$ )**
- **Low noise,  $0.8 \text{ nV}/\sqrt{\text{Hz}}$  maximum**
- **Low input capacitance, 18 pF max**
- **Operates with a +5V power supply**

**BLOCK DIAGRAM**



**PIN DIAGRAM**



**8-Pin SON**

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CAUTION: Use handling procedures necessary for a static sensitive component.

# SSI 32H6115

## Differential Amplifier

### ELECTRICAL SPECIFICATIONS

#### ABSOLUTE MAXIMUM RATINGS

Operating above maximum ratings may damage the device

PARAMETER		RATING
Power Supply Voltage (VCC)		7V
Differential Input Voltage		±1V
Storage Temperature Range		-65 to 150°C
Operating Ambient Temperature	T <sub>a</sub>	10 to 70°C
Operating Junction Temperature	T <sub>j</sub>	10 to 125°C

#### RECOMMENDED OPERATING CONDITIONS

PARAMETER	CONDITIONS	MIN	NOM	MAX	UNIT
Supply Voltage (VCC)		4.50	5.0	5.50	V
Input Signal (V <sub>in</sub> )			1.0		mVp-p
Ambient Temperature		0		+70	°C
Operating Junction Temperature		0		+125	°C

#### ELECTRICAL CHARACTERISTICS

Unless otherwise specified, recommended operating conditions apply.

PARAMETER	CONDITIONS	MIN	NOM	MAX	UNIT
Gain (Differential)	R <sub>L</sub> = 120Ω V <sub>in</sub> = 1mVp-p, R <sub>L</sub> = 120Ω T <sub>a</sub> = 25°C, f = 1 MHz	225	300	375	mV/mV
	R <sub>L</sub> = 100Ω V <sub>in</sub> = 1mVp-p, R <sub>L</sub> = 100Ω T <sub>a</sub> = 25°C, f = 1 MHz	200	250	300	mV/mV
Bandwidth (3 dB)	V <sub>in</sub> = 1mVp-p, C <sub>L</sub> = 15 pF R <sub>L</sub> = 120Ω	10	30		MHz
Gain Sensitivity (Supply)	T <sub>a</sub> = 25°C			4.0	%/V
Gain Sensitivity (Temp.)	15°C < T <sub>a</sub> < 55°C			-0.16	%/°C
Input Noise Voltage	Input Referred, R <sub>s</sub> = 0		0.53	0.8	nV/√Hz
Input Capacitance (Differential)	V <sub>in</sub> = 1 mVp-p, f = 5 MHz		9	18	pF
Input Resistance (Differential)			200		Ω
Common Mode Rejection Ratio (Input Referred)	V <sub>in</sub> = 100 mVp-p, f = 1 MHz	60			dB
Power Supply Rejection Ratio (Input Referred)	V <sub>in</sub> = 100 mVp-p, f = 1 MHz	54			dB

# SSI 32H6115 Differential Amplifier

## ELECTRICAL CHARACTERISTICS (continued)

Unless otherwise specified, recommended operating conditions apply.

PARAMETER	CONDITIONS	MIN	NOM	MAX	UNIT
Power Supply Current	VCC = 5V		25	34	mA
Power Dissipation			125	190	mW
Input Dynamic Range (Differential)	AC input voltage where gain falls to 90% of its small signal value, $f = 5\text{MHz}$ , $R_L = 120\Omega$	5.0	10		mVpp
Output Offset Voltage (Differential)	Inputs shorted	-350		+350	mV
Output Voltage (Common Mode)	Inputs shorted together and Outputs shorted, $R_L = 120\Omega$	VCC-0.56	VCC-0.88	VCC-1.2	V
Single Ended Output Capacitance			4	10	pF
Input DC Voltage	Common Mode		2.0		V

## APPLICATION INFORMATION

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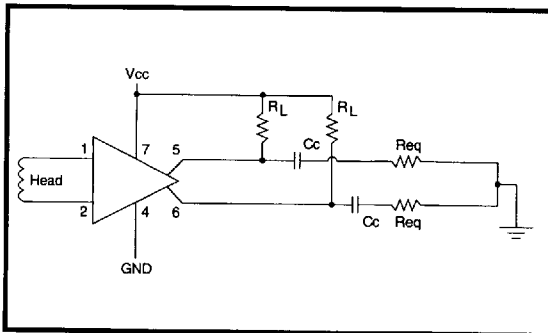


FIGURE 1: Connection Diagram

## RECOMMENDED LOAD CONDITIONS

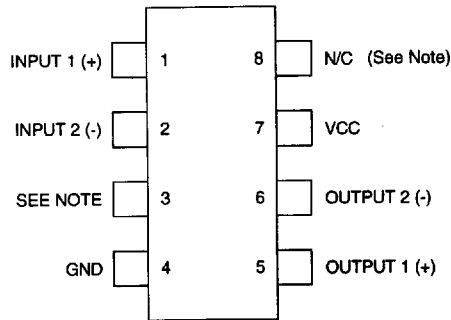
1. Input is directly coupled to the head.
2. Cc's are AC coupling capacitors.
3. RL's are DC bias and termination resistors, 120Ω recommended.
4. REQ. represents equivalent load resistance.
5. Ceramic capacitors (0.1 mF) are recommended for good power supply noise filtering.

# SSI 32H6115

## Differential Amplifier

### PACKAGE PIN DESIGNATIONS

(Top View)



**8-Pin SON**

NOTE : N/C pin must be left open and not connected to any circuit etc.

CAUTION: Use handling procedures necessary for a static sensitive component.

**Advance Information:** Indicates a product still in the design cycle, and any specifications are based on design goals only. Do not use for final design.

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