# SSI 32H101
## Differential Amplifier

July, 1990

## DESCRIPTION

The SSI 32H101 is a two stage differential amplifier applicable for use as a preamplifier for the magnetic servo head circuit of Winchester technology disk drives.

## FEATURES

- **Very narrow gain range**
- **30 MHz bandwidth**
- **Electrically characterized at two power supply voltages: IBM Model 3340 compatible (8.3V) and standard OEM industry compatible (10V)**
- **Mechanically compatible with Model 3348 type head arm assembly**
- **SSI 32H1012 available to operate with a 12V power supply**
- **Packages include 8-pin DIP or SON**

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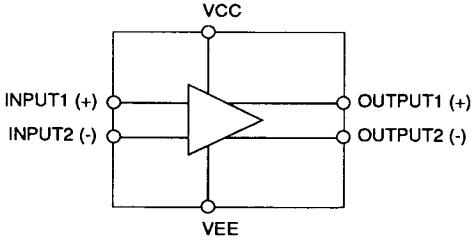
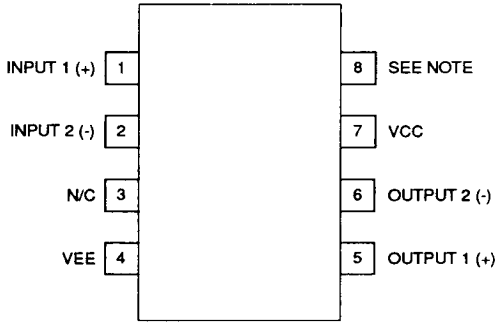
## BLOCK DIAGRAM




## PIN DIAGRAM




**8-Pin PDIP, SON**

Note : Pin must be left open and not connected to any circuit etch.

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

## ELECTRICAL CHARACTERISTICS

$T_A$ = 25 °C, ($V_{CC}$-$V_{EE}$) = 8.3 to 10V ±10% (12V ±10% for 101-2)

### ABSOLUTE MAXIMUM RATINGS

Operation above absolute maximum ratings may permanently damage the device.

| PARAMETER | RATING | UNIT |
|---|---|---|
| Power Supply Voltage ($V_{CC}$ - $V_{EE}$) | 12 | V |
| SSI 32H1012 | 14 | V |
| Differential Input Voltage | ±1 | V |
| Storage Temperature Range | -65 to 150 | °C |
| Operating Temperature Range | 0 to 70 | °C |

### DC ELECTRICAL CHARACTERISTICS

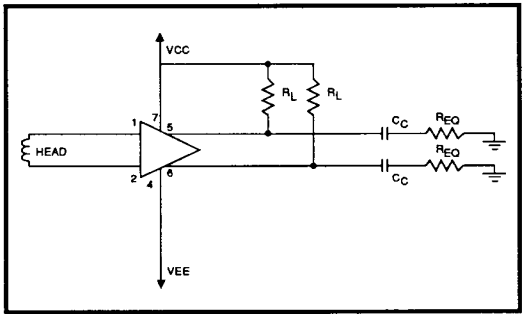
| PARAMETER | CONDITIONS | MIN | NOM | MAX | UNITS |
|---|---|---|---|---|---|
| Gain (differential) | $R_P$ = 130Ω | 77 | 93 | 110 | |
| Bandwidth (3dB) | $V_{IN}$ = 2 mVpp | 10 | 20 | | MHz |
| Input Resistance | | 750 | | 1200 | Ω |
| Input Capacitance | | | 3 | | pF |
| Input Dynamic Range (Differential) | $R_L$ = 130Ω | 3 | | | mVpp |
| Power Supply Current | ($V_{CC}$ - $V_{EE}$) = 9.15V | | 26 | 35 | mA |
| | ($V_{CC}$ - $V_{EE}$) = 11V | | 30 | 40 | mA |
| | ($V_{CC}$ - $V_{EE}$) = 13.2V (32H101A-2) | | 35 | 45 | mA |
| Output Offset ( Differential ) | $R_S$ = 0, $R_L$ = 130Ω | | | 600 | mV |
| Equivalent Input Noise | $R_S$ = 0, $R_L$ = 130Ω, BW = 4 MHz | | 8 | 14 | µV |
| PSRR, Input Referred | $R_S$ = 0, f ≤ 5 MHz | 50 | 65 | | dB |
| Gain Sensitivity (Supply) | Δ ($V_{CC}$ - $V_{EE}$) = ±10%, $R_L$ = 130Ω | | ±1.3 | | % |
| Gain Sensitivity (Temp.) | $T_A$ = 25 °C to 70 °C, $R_L$ = 130Ω | | -0.2 | | %/°C |
| CMRR, Input Referred | f ≤ 5 MHz | 55 | 70 | | dB |

### RECOMMENDED OPERATING CONDITIONS

| PARAMETER | CONDITIONS | MIN | NOM | MAX | UNITS |
|---|---|---|---|---|---|
| Supply Voltage ($V_{CC}$ - $V_{EE}$) | | 7.45 | 8.3 | 9.15 | V |
| | | 9.0 | 10.0 | 11.0 | V |
| | 32H1012 only | 10.8 | 12.0 | 13.2 | V |
| Input Signal $V_{IN}$ | | | 2 | | mVpp |
| Ambient Temp. $T_A$ | | 0 | | 70 | C |

## APPLICATIONS INFORMATION

### CONNECTION DIAGRAM




### RECOMMENDED LOAD CONDITIONS

1. Input must be AC coupled
2. Cc's are AC coupling capacitors
3. RL's are DC bias and termination resistors (recommended 130Ω)
4. REQ represents equivalent load resistance
5. For gain calculations $R_P = \frac{R_L \cdot R_{EQ}}{R_L + R_{EQ}}$
6. Differential gain = 0.72 RP (± 18%) (RP in Ω)
7. Ceramic capacitors (0.1 µF) are recommended for good power supply noise filtering

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## ORDERING INFORMATION

| PART DESCRIPTION | ORDERING NUMBER | PACKAGE MARK |
|---|---|---|
| SSI 32H101 Differential Amplifier | | |
| 8-Pin PDIP | SSI 32H101-CP | 32H101-CP |
| 8-Pin SON | SSI 32H101-N | H101 |
| SSI 32H1012 Differential Amplifier | | |
| 8-Pin PDIP | SSI 32H1012-P | 32H1012-P |
| 8-Pin SON | SSI 32H1012-N | H1012 |



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