National Semiconductor

# MILITARY DATA SHEET

## MNLF155A-X REV 0BL

Original Creation Date: 06/20/95
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# MONOLITHIC JFET INPUT OPERATIONAL AMPLIFIERS

### Industry Part Number

LF155A

### NS Part Numbers

LF155AH/883

### Prime Die

LF155C

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### Processing

MIL-STD-883, Method 5004

### Quality Conformance Inspection

MIL-STD-883, Method 5005

| Subgrp | Description | Temp (°C) |
|---|---|---|
| | Static tests at | +25 |
| 2 | Static tests at | +125 |
| 3 | Static tests at | -55 |
| 4 | Dynamic tests at | +25 |
| 5 | Dynamic tests at | +125 |
| 6 | Dynamic tests at | -55 |
| 7 | Functional tests at | +25 |
| 8A | Functional tests at | +125 |
| 8B | Functional tests at | -55 |
| 9 | Switching tests at | +25 |
| 10 | Switching tests at | +125 |
| 11 | Switching tests at | -55 |

# Electrical Characteristics

## DC PARAMETERS:

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Rs = 50 Ohms, Vcc = ±15V, Vcm = 0V

| SYMBOL | PARAMETER | CONDITIONS | NOTES | PIN-NAME | MIN | MAX | UNIT | SUB-GROUPS |
|---|---|---|---|---|---|---|---|---|
| Vio | Input Offset Voltage | | | | -2 | 2 | mV | 1 |
| | | | | | -2.5 | 2.5 | mV | 2, 3 |
| | | Vcc = ±20V | | | -2 | 2 | mV | 1 |
| | | Vcc = ±20V | | | -2.5 | 2.5 | mV | 2, 3 |
| Iio | Input Offset Current | Vcc = ±20V | | | -0.02 | 0.02 | nA | 1 |
| | | Vcc = ±20V | | | -10 | 10 | nA | 2, 3 |
| +Iib | Input Bias Current | Vcc = ±20V | | | -0.1 | 0.08 | nA | 1 |
| | | Vcc = ±20V | | | -10 | 25 | nA | 2, 3 |
| | | Vcc = ±20V, Vcm = -16V | | | -0.1 | 0.1 | nA | 1 |
| | | Vcc = ±20V, Vcm = -16V | | | -10 | 50 | nA | 2, 3 |
| | | Vcc = ±20V, Vcm = 16V | | | -0.1 | 3.5 | nA | 1 |
| | | Vcc = ±20V, Vcm = 16V | | | -10 | 60 | nA | 2, 3 |
| -Iib | Input Bias Current | Vcc = ±20V | | | -0.1 | 0.08 | nA | 1 |
| | | Vcc = ±20V | | | -10 | 25 | nA | 2, 3 |
| | | Vcc = ±20V, Vcm = -16V | | | -0.1 | 0.1 | nA | 1 |
| | | Vcc = ±20V, Vcm = -16V | | | -10 | 50 | nA | 2, 3 |
| | | Vcc = ±20V, Vcm = 16V | | | -0.1 | 3.5 | nA | 1 |
| | | Vcc = ±20V, Vcm = 16V | | | -10 | 60 | nA | 2, 3 |
| +PSRR | Power Supply Rejection Ratio | +Vcc = 20V to 10V, -Vcc = -20V | | | 85 | | dB | 1, 2, 3 |
| -PSRR | Power Supply Rejection Ratio | -Vcc = -20V to -10V, +Vcc = 20V | | | 85 | | dB | 1, 2, 3 |
| CMRR | Common Mode Rejection Ratio | Vcm = ±11V | | | 85 | | dB | 1, 2, 3 |
| Icc | Power Supply Current | | | | | 4 | mA | 1 |
| | | | | | | 14 | mA | 2, 3 |
| +Ios | Short Circuit Current | Vout = 0V | | | -45 | -15 | mA | 1 |
| | | | | | -35 | -10 | mA | 2 |
| | | | | | -65 | -15 | mA | 3 |
| -Ios | Short Circuit Current | Vout = 0V | | | 15 | 45 | mA | 1 |
| | | | | | 10 | 35 | mA | 2 |
| | | | | | 15 | 65 | mA | 3 |

# Electrical Characteristics

## DC PARAMETERS:(Continued)

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Rs = 50 Ohms, Vcc = ±15V, Vcm = 0V

| SYMBOL | PARAMETER | CONDITIONS | NOTES | PIN-NAME | MIN | MAX | UNIT | SUB-GROUPS |
|---|---|---|---|---|---|---|---|---|
| Vcm | Common Mode Voltage Range | | 1 | | -11 | 11 | V | 1, 2, 3 |
| Delta Vio/Delta T | Average TC of Input Offset Voltage | | 2 | | | 5 | uV/C | 2, 3 |
| +Vop | Output Voltage Swing | Rl = 10K Ohms | | | 12 | | V | 4, 5, 6 |
| | | Rl = 2K Ohms | 3 | | 10 | | V | 4, 5, 6 |
| -Vop | Output Voltage Swing | Rl = 10K Ohms | | | | -12 | V | 4, 5, 6 |
| | | Rl = 2K Ohms | 3 | | | -10 | V | 4, 5, 6 |
| Avs | Large Signal Voltage Gain | Rl=2K Ohms, Vout = 0 to 10V | | | 50 | | V/mV | 4 |
| | | | | | 25 | | V/mV | 5, 6 |
| | | Rl=2K Ohms, Vout = 0 to -10V | | | 50 | | V/mV | 4 |
| | | | | | 25 | | V/mV | 5, 6 |
| Sr+ | Slew Rate | Av = 1 | | | 3 | | V/uS | 7 |
| Sr- | Slew Rate | Av = 1 | | | 3 | | V/uS | 7 |

## DC PARAMETERS: DRIFT VALUES

(The following conditions apply to all the following parameters, unless otherwise specified.)
DC: Rs = 50 Ohms, Vcc = ±15V, Vcm = 0V. "Deltas not required on B-Level product. Deltas required for S-Level product ONLY as specified on Internal Processing Instructions (IPI)."

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Vio | Input Offset Voltage | | | | -1 | 1 | mV | 1 |
| Icc | Power Supply Current | | | | -0.8 | 0.8 | mA | 1 |

Note 1: Parameter Guaranteed by CMRR test
Note 2: Bench tested.
Note 3: Parameter Guaranteed by ±Avs test.

## Graphics and Diagrams

| GRAPHICS# | DESCRIPTION |
|---|---|
| H08CRE | (blank) |

**See attached graphics following this page.**