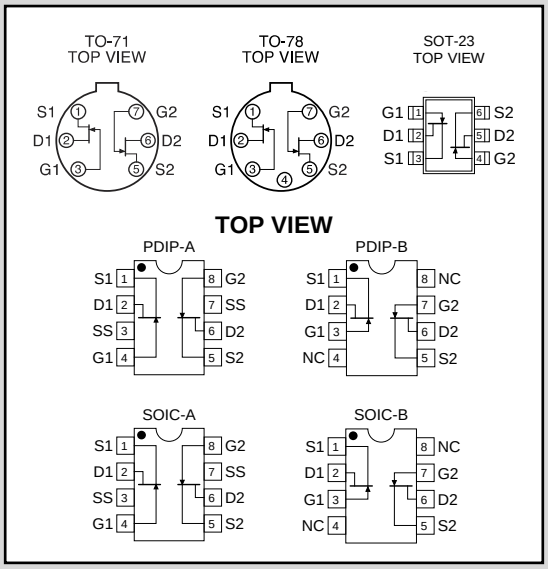
LINEAR SYSTEMS

*Twenty-Five Years Of Quality Through Innovation*

# LS5911 LS5912 LS5912C

## IMPROVED LOW NOISE WIDEBAND MONOLITHIC DUAL N-CHANNEL JFET AMPLIFIER

| **FEATURES** | |
|---|---|
| Improved Replacement for SILICONIX, FAIRCHILD, & NATIONAL: 2N5911 & 2N5912 | |
| LOW NOISE (10kHz) | $e_n$ ~ 4nV/√Hz |
| HIGH TRANSCONDUCTANCE (100MHz) | $g_{fs}$ ≥ 4000µS |
| **ABSOLUTE MAXIMUM RATINGS[1]** @ 25 °C (unless otherwise stated) | |
| **Maximum Temperatures** | |
| Storage Temperature | -55 to +150 °C |
| Operating Junction Temperature | -55 to +150 °C |
| **Maximum Power Dissipation** | |
| Continuous Power Dissipation (Total)[4] | 500mW |
| **Maximum Currents** | |
| Gate Current | 50mA |
| **Maximum Voltages** | |
| Gate to Drain | -25V |
| Gate to Source | -25V |




**MATCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)**

| SYMBOL | CHARACTERISTIC | TYP | LS5911 | | LS5912 | | LS5912C | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $\lvert V_{GS1} - V_{GS2} \rvert$ | Differential Gate to Source Cutoff Voltage | | | 10 | | 15 | | 40 | mV | $V_{DG}$ = 10V, $I_D$ = 5mA |
| $\frac{\Delta \lvert V_{GS1} - V_{GS2} \rvert}{\Delta T}$ | Differential Gate to Source Voltage Change with Temperature | | | 20 | | 40 | | 40 | µV/°C | $V_{DG}$ = 10V, $I_D$ = 5mA<br>$T_A$ = -55 to +125°C |
| $\frac{I_{DSS1}}{I_{DSS2}}$ | Saturation Drain Current Ratio | | 0.95 | 1 | 0.95 | 1 | 0.95 | 1 | | $V_{DS}$ = 10V, $V_{GS}$ = 0V<br>Notes 2, 3 |
| $\lvert I_{G1} - I_{G2} \rvert$ | Differential Gate Current | | | 20 | | 20 | | 20 | nA | $V_{DG}$ = 10V, $I_D$ = 5mA<br>$T_A$ = +125°C |
| $\frac{g_{fs1}}{g_{fs2}}$ | Forward Transconductance Ratio | | 0.95 | 1 | 0.95 | 1 | 0.95 | 1 | | $V_{DS}$ = 10V, $I_D$ = 5mA<br>$f$ = 1kHz[3] |
| CMRR | Common Mode Rejection Ratio | 85 | | | | | | | dB | $V_{DG}$ = 5V to 10V<br>$I_D$ = 5mA |

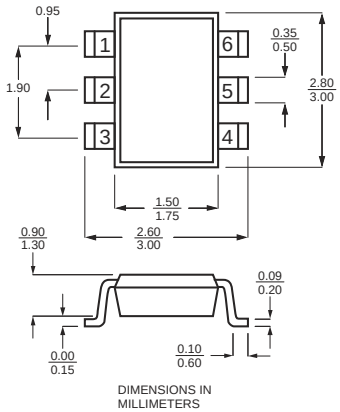
**STATIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)**

| SYM. | CHARACTERISTIC | TYP | LS5911 | | LS5912 | | LS5912C | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $BV_{GSS}$ | Gate to Source Breakdown | | -25 | | -25 | | -25 | | V | $I_G$ = -1µA, $V_{DS}$ = 0V |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage | | -1 | -5 | -1 | -5 | -1 | -5 | | $V_{DS}$ = 10V, $I_D$ = 1nA |
| $V_{GS(F)}$ | Gate to Source Forward Voltage | 0.7 | | | | | | | | $I_G$ = 1mA, $V_{DS}$ = 0V |
| $V_{GS}$ | Gate to Source Voltage | | -0.3 | -4 | -0.3 | -4 | -0.3 | -4 | | $V_{DG}$ = 10V, $I_G$ = 5mA |
| $I_{DSS}$ | Drain to Source Saturation | | 7 | 40 | 7 | 40 | 7 | 40 | mA | $V_{DS}$ = 10V, $V_{GS}$ = 0V |
| $I_{GSS}$ | Gate Leakage Current | -1 | | -50 | | -50 | | -50 | pA | $V_{GS}$ = -15V, $V_{DS}$ = 0V |
| $I_G$ | Gate Operating Current | -1 | | -50 | | -50 | | -50 | | $V_{DG}$ = 10V, $I_D$ = 5mA |
| IG1G2 | Gate to Gate Isolation Current | | | ±1 | | ±1 | | ±1 | uA | $V_{G1}$-$V_{G2}$=±25V$I_D$ = $I_S$ = 0 |

**DYNAMIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)**

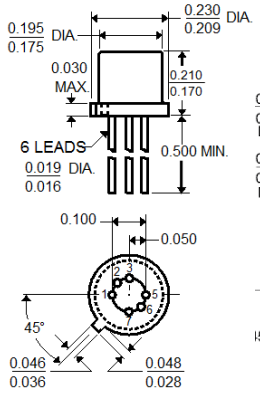
| SYM. | CHARACTERISTIC | | TYP | LS5911 | | LS5912 | | LS5912C | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $g_{fs}$ | Forward Transconductance | $f$ = 1kHz | | 4000 | 10000 | 4000 | 10000 | 4000 | 10000 | µS | $V_{DG}$ = 10V, $I_D$ = 5mA |
| | | $f$ = 100MHz | 7000 | | | | | | | | |
| $g_{os}$ | Output Conductance | $f$ = 1kHz | | | 100 | | 100 | | 100 | | |
| | | $f$ = 100MHz | 120 | | | | | | | | |
| $C_{iss}$ | Input Capacitance | | | | 5 | | 5 | | 5 | pF | $V_{DG}$ = 10V, $I_D$ = 5mA $f$ = 1MHz |
| $C_{rss}$ | Reverse Transfer Capacitance | | | | 1.2 | | 1.2 | | 1.2 | | |
| NF | Noise Figure | | | | 1 | | 1 | | 1 | dB | $V_{DG}$ = 10V, $I_D$ = 5mA $f$ = 10kHz, $R_G$ = 100KΩ |
| $e_n$ | Equivalent Input Noise Voltage | $f$ = 100Hz | 7 | | 20 | | 20 | | 20 | nV/√Hz | $V_{DG}$ = 10V, $I_D$ = 5mA $f$ = 100Hz |
| | | $f$ = 10kHz | 4 | | 10 | | 10 | | 10 | nV/√Hz | $V_{DG}$ = 10V, $I_D$ = 5mA $f$ = 10kHz |

## SOT-23

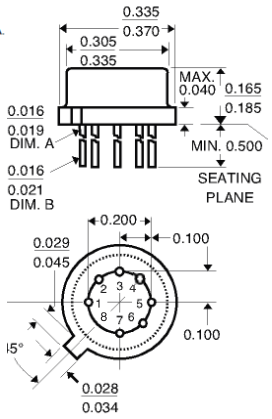



DIMENSIONS IN MILLIMETERS

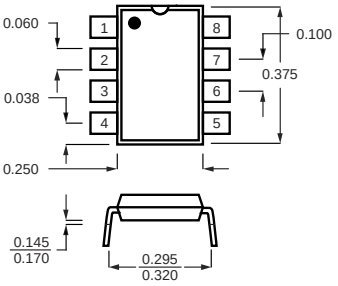
## TO-71
Six Lead




## TO-78

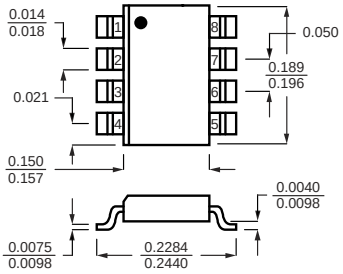



## PDIP



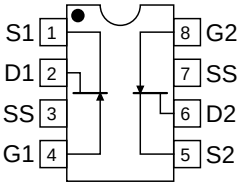

DIMENSIONS IN INCHES

## SOIC

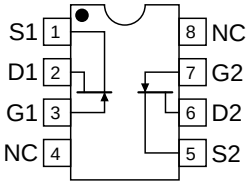



DIMENSIONS IN INCHES

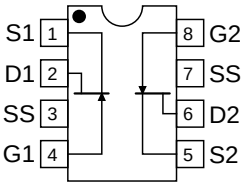
## PDIP-A



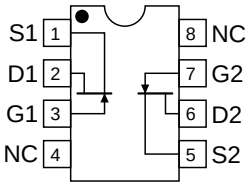

## PDIP-B




## SOIC-A




## SOIC-B




Please contact the factory regarding the availability of optional packages.

## NOTES

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse Test: PW ≤ 300μs Duty Cycle ≤ 3%
3. Assumes smaller value in numerator.
4. Derate 4mW/°C above 25°C.



Linear Integrated Systems (LIS) is a 25-year-old, third-generation precision semiconductor company providing high-quality discrete components. Expertise brought to LIS is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company President John H. Hall. Hall, a protégé of Silicon Valley legend Dr. Jean Hoerni, was the director of IC Development at Union Carbide, Co-Founder and Vice President of R&D at Intersil, and Founder/President of Micro Power Systems.