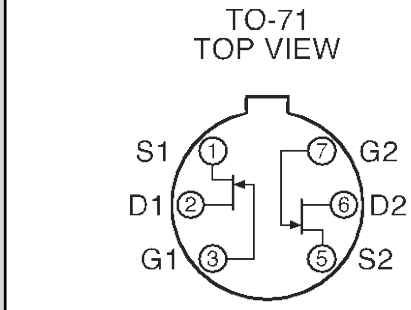
LINEAR SYSTEMS

*Improved Standard Products®*

# LS5564 SERIES

## MONOLITHIC DUAL N-CHANNEL JFET AMPLIFIER

| FEATURES | |
|---|---|
| Replacement for SILICONIX & NATIONAL: 2N5564 Series | |
| **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 | -40V |
| Gate to Source | -40V |




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

| SYMBOL | CHARACTERISTIC | TYP | LS5564 | | LS5565 | | LS5566 | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $\lvert V_{GS1} - V_{GS2} \rvert$ | Differential Gate to Source Cutoff Voltage | | | 5 | | 10 | | 20 | mV | $V_{DG}$ = 15V, $I_D$ = 2mA |
| $\frac{\Delta \lvert V_{GS1} - V_{GS2} \rvert}{\Delta T}$ | Differential Gate to Source Voltage Change with Temperature | | | 10 | | 25 | | 50 | µV/°C | $V_{DG}$ = 15V, $I_D$ = 2mA<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 | | $V_{DS}$ = 15V, $V_{GS}$ = 0V |
| $\frac{g_{fs1}}{g_{fs2}}$ | Forward Transconductance Ratio | | 0.95 | 1 | 0.90 | 1 | 0.90 | 1 | | $V_{DS}$ = 15V, $I_D$ = 2mA<br>$f$ = 1kHz[3] |
| CMRR | Common Mode Rejection Ratio | 76 | | | | | | | dB | $V_{DG}$ = 10V to 20V<br>$I_D$ = 2mA |

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

| SYM. | CHARACTERISTIC | TYP | LS5564 | | LS5565 | | LS5566 | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $BV_{GSS}$ | Gate to Source Breakdown Voltage | | -40 | | -40 | | -40 | | V | $I_G$ = -1µA, $V_{DS}$ = 0V |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage | | -0.5 | -3.0 | -0.5 | -3.0 | -0.5 | -3.0 | | $V_{DS}$ = 15V, $I_D$ = 1nA |
| $V_{GS(F)}$ | Gate to Source Forward Voltage | 0.7 | | 1 | | 1 | | 1 | | $I_G$ = 2mA, $V_{DS}$ = 0V |
| $V_{GS}$ | Gate to Source Voltage | -1.2 | | | | | | | | $V_{DG}$ = 15V, $I_G$ = -2mA |
| $I_{DSS}$ | Drain to Source Saturation Current[2] | | 7 | 40 | 7 | 40 | 7 | 40 | mA | $V_{DS}$ = 10V, $V_{GS}$ = 0V |
| $I_{GSS}$ | Gate Leakage Current | | | -100 | | -100 | | -100 | pA | $V_{GS}$ = -20V, $V_{DS}$ = 0V |
| $I_G$ | Gate Operating Current | -3 | | | | | | | | $V_{DG}$ = 10V, $I_D$ = 5mA |
| $R_{DS(on)}$ | Drain-Source on Resistance | 50 | | 100 | | 100 | | 100 | Ω | VGS = 0 V, ID = 1mA |
| $I_{G1}$/ $I_{G2}$ | Gate to Gate Isolation Current | | | ±1 | | ±1 | | ±1 | µA | $V_{G1}$-$V_{G2}$ = ± 80V, $I_D$ = $I_S$ = 0 |

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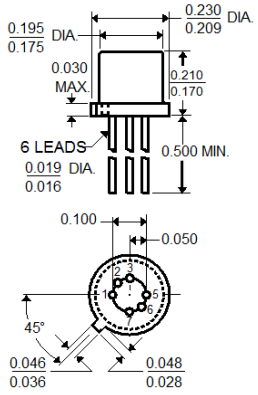
Doc 201187 07/25/2019 Rev#A4 ECN# LS5564 Series

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

| SYM. | CHARACTERISTIC | | TYP | LS5564 | | LS5565 | | LS5566 | | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| $g_{fs}$ | Forward Transconductance | $f$ = 1kHz | 9 | 7.5 | 20 | 7.5 | 20 | 7.5 | 20 | mS | $V_{DS}$ = 15V, $I_D$ = 2mA |
| | | $f$ = 100MHz | | | | | | | | | |
| $g_{os}$ | Output Conductance | $f$ = 1kHz | 55 | | 100 | | 100 | | 100 | µS | |
| | | $f$ = 100MHz | 120 | | | | | | | | |
| $C_{iss}$ | Input Capacitance | | 25 | | | | | | | pF | $V_{DS}$ = 15V, $I_D$ = 2mA<br>$f$ = 1MHz |
| $C_{rss}$ | Reverse Transfer Capacitance | | 5.5 | | | | | | | | |
| NF | Noise Figure | | 1 | | | | | | | dB | $V_{DS}$ = 15V, $I_D$ = 2mA<br>$f$ = 10Hz, $R_G$ = 10MΩ |
| $e_n$ | Equivalent Input Noise Voltage | $f$ = 10Hz | 12 | | 50 | | 50 | | 50 | nV/√Hz | $V_{DS}$ = 15V, $I_D$ = 2mA<br>$f$ = 10Hz |

**PACKAGE OPTIONS:**

**TO-71**
Six Lead




DIMENSIONS IN INCHES

## 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 develops and produces the highest performance semiconductors of their kind in the industry. Linear Systems, founded in 1987, uses patented and proprietary processes and designs to create its high performance discrete semiconductors. Expertise brought to the company is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company founder John H. Hall.