# monolithic dual n-channel JFETs *designed for . . .*

Siliconix

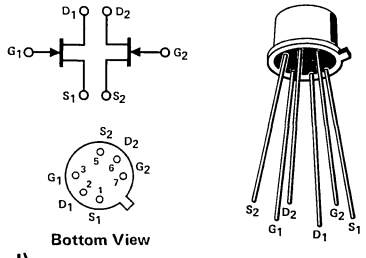
**Performance Curves NQP**
**See Section 4**

## ■ High Gain Differential Amplifiers

BENEFITS

- Minimum System Error and Calibration
  5 mV Offset Maximum (2N5045)
- Low Drift
  5 mV Drift Maximum (2N5045)

TO-71
See Section 6




### *ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage . . . . . -50 V
Forward Gate Current . . . . . 30 mA
Total Dissipation (25°C Free Air Temp.) . . . . . 400 mW
Power Derating (to 175°C) . . . . . 2.67 mW/°C
Storage Temperature Range . . . . . -65 to +200°C
Lead Temperature
(1/16" from case for 10 seconds) . . . . . 300°C

### *ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

| | | Characteristic (Note 1) | | 2N5045 | | 2N5046 | | 2N5047 | | Unit | Test Conditions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Min | Max | Min | Max | Min | Max | | | |
| 1 | STATIC | $I_{GSS}$ | Gate Reverse Current | | -1 | | -1 | | -1 | μA | $V_{GS}$ = -50 V, $V_{DS}$ = 0 V | |
| 2 | | | | | -0.25 | | -0 25 | | -0.25 | nA | $V_{GS}$ = -30 V, $V_{DS}$ = 0 V | |
| 3 | | | | | -250 | | -250 | | -250 | | | T = 150°C |
| 4 | | $V_{GS(off)}$ | Gate-Source Cutoff Voltage | -0.5 | -4.5 | -0.5 | -4.5 | -0 5 | -4.5 | V | $V_{DS}$ = 15 V, $I_D$ = 0.5 nA | |
| 5 | | $I_{DSS}$ | Drain Saturation Current | 0.5 | 8.0 | 0.5 | 8 0 | 0.5 | 8.0 | mA | $V_{DS}$ = 15V, VGS = 0 | |
| 6 | DYNAMIC | $g_{fs}$ | Common-Source Forward Transconductance | 1.5 | 6 0 | 1.5 | 6.0 | 1.5 | 6 0 | mmho | $V_{DS}$ = 15 V, $V_{GS}$ = 0 V | f = 1 kHz |
| 7 | | $\lvert y_{fs} \rvert$ | Common-Source Forward Admittance | 1 5 | | 1 5 | | 1.5 | | | | f = 100 MHz |
| 8 | | $g_{os}$ | Common-Source Output Conductance | | 25 | | 25 | | 25 | μmho | | f = 1 kHz |
| 9 | | $C_{iss}$ | Common-Source Input Capacitance | | 8 0 | | 8 0 | | 8.0 | pF | | f = 1 MHz |
| 10 | | $C_{rss}$ | Common-Source Reverse Transfer Capacitance | | 4 0 | | 4.0 | | 4 0 | | | |
| 11 | | NF | Spot Noise Figure | | 5 0 | | 5.0 | | | dB | | f = 10 Hz, $R_G$ = 1 MΩ |
| 12 | | $\bar{e}_n$ | Equivalent Short-Circuit Input Noise Voltage | | 200 | | 200 | | | $\frac{nV}{\sqrt{Hz}}$ | | f = 10 Hz |
| 13 | MATCHING | $\lvert I_{GSS1} - I_{GSS2} \rvert$ | Differential Gate Current | | 10 | | 10 | | 10 | nA | $V_{GS}$ = -15 V, $V_{DS}$ = 0 V | $T_A$ = 100°C |
| 14 | | $I_{DSS1}/I_{DSS2}$ | Drain Current Ratio (Note 2) | 0.95 | 1 0 | 0 9 | 1.0 | 0 8 | 1 0 | — | $V_{GS}$ = 0 V, $V_{DS}$ = 15 V | |
| 15 | | $\lvert V_{GS1} - V_{GS2} \rvert$ | Differential Gate-Source Voltage | | 5 | | 10 | | 15 | mV | $V_{DS}$ = 15 V | $I_D$ = 50 μA |
| 16 | | | | | 5 | | 10 | | 15 | | | $I_D$ = 200 μA |
| 17 | | $\Delta\lvert V_{GS1} - V_{GS2} \rvert$ | Gate-Source Voltage Differential Drift (Note 3) | | 5 | | 10 | | 15 | | $V_{DS}$ = 15 V, $I_D$ = 200 μA, $T_A$ = 25°C | $T_B$ = -25°C |
| 18 | | | | | 5 | | 10 | | 15 | | | $T_B$ = 100°C |
| 19 | | $g_{fs1}/g_{fs2}$ | Transconductance Ratio (Note 2) | 0.95 | 1.0 | 0.9 | 1.0 | 0.8 | 1.0 | — | $V_{DS}$ = 15 V, $I_D$ = 200 μA | f = 1 kHz |
| 20 | | $\lvert g_{os1} - g_{os2} \rvert$ | Diff. Output Conductance | | 1.0 | | 2 0 | | 3.0 | μmho | | |

*JEDEC registered data

**NOTES:**
1. Individual FET characteristics. The terminals of the FET not under test are open-circuited for these measurements..
2. Assumes smaller value in numerator.
3. Measured at end points, $T_A$ and $T_B$

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