# LINEAR SYSTEMS

## U423
## HIGH INPUT IMPEDANCE
## MONOLITHIC DUAL
## N-CHANNEL JFET

## micross

## Linear Systems replaces discontinued Siliconix U423

### The U423 is a high input impedance Monolithic Dual N-Channel JFET

The U423 monolithic dual n-channel JFET is designed to provide very high input impedance for differential amplification and impedance matching. Among its many unique features, this series offers operating gate current specified at -250 fA. The U423 is a direct replacement for discontinued Siliconix U423.

The 6 Pin SOT-23 package provides ease of manufacturing, and a lower cost assembly option.

(See Packaging Information).

### U423 Applications:

- Ultra Low Input Current Differential Amps
- High-Speed Comparators
- Impedance Converters

| FEATURES | |
|---|---|
| HIGH INPUT IMPEDANCE | $I_G$ = 0.25pA MAX |
| HIGH GAIN | gfs = 120µmho MIN |
| LOW POWER OPERATION | $V_{GS(OFF)}$ = 2V MAX |

**ABSOLUTE MAXIMUM RATINGS**
@ 25°C (unless otherwise noted)

| Maximum Temperatures | |
|---|---|
| Storage Temperature | -65°C to +150°C |
| Operating Junction Temperature | +150°C |

| Maximum Voltage and Current for Each Transistor – Note 1 | | |
|---|---|---|
| $-V_{GSS}$ | Gate Voltage to Drain or Source | 40V |
| $-V_{DSO}$ | Drain to Source Voltage | 40V |
| $-I_{G(f)}$ | Gate Forward Current | 10mA |

| Maximum Power Dissipation | |
|---|---|
| Device Dissipation @ Free Air – Total | 400mW @ +125°C |

**MATCHING CHARACTERISTICS** @ 25°C UNLESS OTHERWISE NOTED

| SYMBOL | CHARACTERISTICS | VALUE | UNITS | CONDITIONS |
|---|---|---|---|---|
| $|\Delta V_{GS1-2}/\Delta T|$ max. | DRIFT VS. TEMPERATURE | 40 | µV/°C | $V_{DG}$=10V, $I_D$=30µA $T_A$=-55°C to +125°C |
| $|V_{GS1-2}|$ max. | OFFSET VOLTAGE | 25 | mV | $V_{DG}$=10V, $I_D$=30µA |

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

| SYMBOL | CHARACTERISTICS | MIN. | TYP. | MAX. | UNITS | CONDITIONS | |
|---|---|---|---|---|---|---|---|
| $BV_{GSS}$ | Breakdown Voltage | 40 | 60 | -- | V | $V_{DS}$ = 0 | $I_G$ =1nA |
| $BV_{GGO}$ | Gate-To-Gate Breakdown | 40 | -- | -- | V | $I_G$ = 1µA $I_D$ = 0 | $I_S$= 0 |
| | **TRANSCONDUCTANCE** | | | | | | |
| $Y_{fSS}$ | Full Conduction | 300 | -- | 1500 | µmho | $V_{DS}$ = 10V $V_{GS}$ = 0V | f = 1kHz |
| $Y_{fs}$ | Typical Operation | 120 | 200 | 350 | µmho | $V_{DG}$ = 10V $I_D$ = 30µA | f = 1kHz |
| | **DRAIN CURRENT** | | | | | | |
| $I_{DSS}$ | Full Conduction | 60 | -- | 1000 | µA | $V_{DS}$ = 10V $V_{GS}$ = 0V | |
| | **GATE VOLTAGE** | | | | | | |
| $V_{GS(off)}$ | Pinchoff voltage | -- | -- | 2.0 | V | $V_{DS}$ = 10V $I_D$ = 1nA | |
| $V_{GS}$ | Operating Range | -- | -- | 1.8 | V | $V_{DG}$ = 10V $I_D$ = 30µA | |
| | **GATE CURRENT** | | | | | | |
| $I_G$ max. | Operating | -- | -- | .25 | pA | $V_{DG}$ = 10V $I_D$ = 30µA | |
| $-I_G$ max. | High Temperature | -- | -- | 250 | pA | $T_A$ = +125°C | |
| $I_{GSS}$ max. | At Full Conduction | -- | -- | 1.0 | pA | $V_{DS}$ = 0V $V_{GS}$ = 20V | |
| $-I_{GSS}$ max. | High Temperature | -- | -- | 1.0 | nA | $T_A$ = +125°C | |
| | **OUTPUT CONDUCTANCE** | | | | | | |
| $Y_{OSS}$ | Full Conduction | -- | -- | 10 | µmho | $V_{DS}$ = 10V $V_{GS}$ = 0V | |
| $Y_{OS}$ | Operating | -- | 0.1 | 3.0 | µmho | $V_{DG}$ = 10V $I_D$ = 30µA | |
| | **COMMON MODE REJECTION** | | | | | | |
| CMR | -20 log $|\Delta V_{GS1-2}/\Delta V_{DS}|$ | -- | 90 | -- | dB | $\Delta V_{DS}$ = 10 to 20V $I_D$ = 30µA | |
| | -20 log $|\Delta V_{GS1-2}/\Delta V_{DS}|$ | -- | 90 | -- | dB | $\Delta V_{DS}$ = 5 to 10V $I_D$ = 30µA | |
| | **NOISE** | | | | | $V_{DG}$ = 10V $I_D$ = 30µA $R_G$ = 10MΩ | |
| NF | Figure | -- | -- | 1 | dB | f = 10Hz | |
| $e_n$ | Voltage | -- | 20 | 70 | nV/√Hz | $V_{DG}$ = 10V $I_D$ = 30µA f = 10Hz | |
| | | -- | 10 | -- | | $V_{DG}$ = 10V $I_D$ = 30µA f = 1KHz | |
| | **CAPACITANCE** | | | | | | |
| $C_{ISS}$ | Input | -- | -- | 3.0 | pF | $V_{DS}$= 10V $V_{GS}$ = 0 f = 1MHz | |
| $C_{RSS}$ | Reverse Transfer | -- | -- | 1.5 | pF | | |

Available Packages:

LSU423 in SOT-23
LSU423 available as bare die
Please contact Micross for full package and die dimensions
Email: chipcomponents@micross.com

SOT-23
TOP VIEW

G1 |1 — 6| S2
D1 |2 — 5| D2
S1 |3 — 4| G2
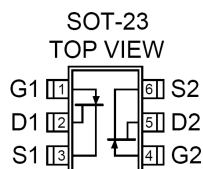
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