

Linear Systems replaces discontinued Siliconix U403 with LSU403

The U403/ LSU403 is a Low Noise, Low Drift, Monolithic Dual N-Channel JFET

The LSU403 is a high-performance monolithic dual JFET featuring extremely low noise, tight offset voltage and low drift over temperature specifications, and is targeted for use in a wide range of precision instrumentation applications. The LSU403 features a 5-mV offset and 10- $\mu\text{V}/^\circ\text{C}$ drift. The LSU403 is a direct replacement for discontinued Siliconix U403.

The hermetically sealed TO-71 & TO-78 packages are well suited for military applications.

(See Packaging Information).

U403 / LSU403 Applications:

- Wideband Differential Amps
- High-Speed, Temp-Compensated Single-Ended Input Amps
- High-Speed Comparators
- Impedance Converters and vibrations detectors.

FEATURES

| | |
|--------------|---|
| LOW DRIFT | $ V_{GS1-2}/T = 10\mu\text{V}/^\circ\text{C}$ TYP. |
| LOW NOISE | $e_n = 6\text{nV}/\text{Hz}$ @ 10Hz TYP. |
| LOW PINCHOFF | $V_p = 2.5\text{V}$ TYP. |

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 | 50V |
| $-V_{DSO}$ | Drain to Source Voltage | 50V |
| $-I_{G(f)}$ | Gate Forward Current | 10mA |

Maximum Power Dissipation

| | |
|---------------------------------------|-------|
| Device Dissipation @ Free Air – Total | 300mW |
|---------------------------------------|-------|

MATCHING CHARACTERISTICS @ 25°C UNLESS OTHERWISE NOTED

| SYMBOL | CHARACTERISTICS | VALUE | UNITS | CONDITIONS |
|----------------------|-----------------------|-------|------------------------------|---|
| $ V_{GS1-2}/T $ max. | DRIFT VS. TEMPERATURE | 25 | $\mu\text{V}/^\circ\text{C}$ | $V_{DG}=10\text{V}$, $I_D=200\mu\text{A}$ $T_A=-55^\circ\text{C}$ to $+125^\circ\text{C}$ |
| $ V_{GS1-2} $ max. | OFFSET VOLTAGE | 10 | mV | $V_{DG}=10\text{V}$, $I_D=200\mu\text{A}$ |

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

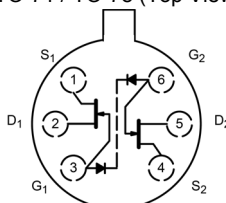
| SYMBOL | CHARACTERISTICS | MIN. | TYP. | MAX. | UNITS | CONDITIONS |
|-------------------------------|-------------------------------|----------|------|------|------------------------|---|
| BV_{GSS} | Breakdown Voltage | 50 | 60 | -- | V | $V_{DS} = 0$ $I_D = 1\text{nA}$ |
| BV_{GGO} | Gate-To-Gate Breakdown | ± 50 | -- | -- | V | $I_G = 1\text{nA}$ $I_D = 0$ $I_S = 0$ |
| TRANSCONDUCTANCE | | | | | | |
| Y_{fSS} | Full Conduction | 2000 | -- | 7000 | μmho | $V_{DG} = 10\text{V}$ $V_{GS} = 0\text{V}$ $f = 1\text{kHz}$ |
| Y_{fS} | Typical Operation | 1000 | -- | 2000 | μmho | $V_{DG} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 1\text{kHz}$ |
| $ Y_{fS1-2}/Y_{fS} $ | Mismatch | -- | 0.6 | 3 | % | |
| DRAIN CURRENT | | | | | | |
| I_{DSS} | Full Conduction | 0.5 | -- | 10 | mA | $V_{DG} = 10\text{V}$ $V_{GS} = 0\text{V}$ |
| $ I_{DSS1-2}/I_{DSS} $ | Mismatch at Full Conduction | -- | 1 | 5 | % | |
| GATE VOLTAGE | | | | | | |
| $V_{GS}(\text{off})$ or V_p | Pinchoff voltage | -0.5 | -- | -2.5 | V | $V_{DS} = 15\text{V}$ $I_D = 1\text{nA}$ |
| $V_{GS}(\text{on})$ | Operating Range | -- | -- | -2.3 | V | $V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$ |
| GATE CURRENT | | | | | | |
| $-I_{G\text{max}}$ | Operating | -- | -4 | -15 | μA | $V_{DG} = 15\text{V}$ $I_D = 200\mu\text{A}$ |
| $-I_{G\text{max}}$ | High Temperature | -- | -- | -10 | nA | $T_A = +125^\circ\text{C}$ |
| $-I_{GSS\text{max}}$ | At Full Conduction | -- | -- | 100 | μA | $V_{DS} = 0$ |
| $-I_{GSS\text{max}}$ | High Temperature | 5 | 5 | 5 | μA | $V_{DG} = 15\text{V}$ $T_A = +125^\circ\text{C}$ |
| OUTPUT CONDUCTANCE | | | | | | |
| Y_{OSS} | Full Conduction | -- | -- | 20 | μmho | $V_{DG} = 10\text{V}$ $V_{GS} = 0\text{V}$ |
| Y_{OS} | Operating | -- | 0.2 | 2 | μmho | $V_{DG} = 15\text{V}$ $I_D = 500\mu\text{A}$ |
| COMMON MODE REJECTION | | | | | | |
| CMR | $-20 \log V_{GS1-2}/V_{DS} $ | 95 | -- | -- | dB | $V_{DS} = 10$ to 20V $I_D = 30\mu\text{A}$ |
| NOISE | | | | | | |
| NF | Figure | -- | -- | 0.5 | dB | $V_{DS} = 15\text{V}$ $V_{GS} = 0\text{V}$ $R_G = 10\text{M}$ $f = 100\text{Hz}$ $\text{NBW} = 6\text{Hz}$ |
| e_n | Voltage | -- | 20 | -- | nV/ $\sqrt{\text{Hz}}$ | $V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 10\text{Hz}$ $\text{NBW} = 1\text{Hz}$ |
| CAPACITANCE | | | | | | |
| C_{ISS} | Input | -- | -- | 8 | pF | $V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 1\text{MHz}$ |
| C_{RSS} | Reverse Transfer | -- | -- | 1.5 | pF | |

Note 1 – These ratings are limiting values above which the serviceability of any semiconductor may be impaired

Available Packages:

U403 / LSU403 in TO-71 & TO-78
U403 / LSU403 available as bare die
Please contact [Micross](http://www.micross.com) for full package and die dimensions

TO-71 / TO-78 (Top View)



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