

## Linear Systems replaces discontinued Siliconix U401

The LSU401 is a Low Noise, Low Drift, Monolithic Dual N-Channel JFET

The LSU401 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 LSU401 features a 5-mV offset and 10- $\mu\text{V}/^\circ\text{C}$  drift. The LSU401 is a direct replacement for discontinued Siliconix LSU401.

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

(See Packaging Information).

### LSU401 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<sub>GSS</sub> Gate Voltage to Drain or Source 50V

-V<sub>D50</sub> Drain to Source Voltage 50V

-I<sub>G(f)</sub> 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	10	$\mu\text{V}/^\circ\text{C}$	$V_{DG}=10\text{V}$ , $I_D=200\mu\text{A}$ $T_A=-55^\circ\text{C}$ to $+125^\circ\text{C}$
$ V_{GS1-2} $ max.	OFFSET VOLTAGE	5	mV	$V_{DG}=10\text{V}$ , $I_D=200\mu\text{A}$

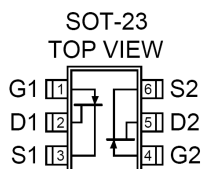
### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV <sub>GSS</sub>	Breakdown Voltage	50	60	--	V	$V_{DS} = 0$ $I_D = 1\text{nA}$
BV <sub>GGO</sub>	Gate-To-Gate Breakdown	$\pm 50$	--	--	V	$I_G = 1\text{nA}$ $I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>						
Y <sub>FSS</sub>	Full Conduction	2000	--	7000	$\mu\text{mho}$	$V_{DG} = 10\text{V}$ $V_{GS} = 0\text{V}$ $f = 1\text{kHz}$
Y <sub>FS</sub>	Typical Operation	1000	--	2000	$\mu\text{mho}$	$V_{DG} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 1\text{kHz}$
$ Y_{FS1-2}/Y_{FS} $	Mismatch	--	0.6	3	%	
<b>DRAIN CURRENT</b>						
I <sub>DSS</sub>	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	%	
<b>GATE VOLTAGE</b>						
V <sub>GS(off)</sub> or V <sub>p</sub>	Pinchoff voltage	-0.5	--	-2.5	V	$V_{DS} = 15\text{V}$ $I_D = 1\text{nA}$
V <sub>GS(on)</sub>	Operating Range	--	--	-2.3	V	$V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$
<b>GATE CURRENT</b>						
-I <sub>G</sub> max.	Operating	--	-4	-15	pA	$V_{DG} = 15\text{V}$ $I_D = 200\mu\text{A}$
-I <sub>G</sub> max.	High Temperature	--	--	-10	nA	$T_A = +125^\circ\text{C}$
-I <sub>GSS</sub> max.	At Full Conduction	--	--	100	pA	$V_{DS} = 0$
-I <sub>GSS</sub> max.	High Temperature	5	5	5	pA	$V_{DG} = 15\text{V}$ $T_A = +125^\circ\text{C}$
<b>OUTPUT CONDUCTANCE</b>						
Y <sub>OSS</sub>	Full Conduction	--	--	20	$\mu\text{mho}$	$V_{DG} = 10\text{V}$ $V_{GS} = 0\text{V}$
Y <sub>OS</sub>	Operating	--	0.2	2	$\mu\text{mho}$	$V_{DG} = 15\text{V}$ $I_D = 500\mu\text{A}$
<b>COMMON MODE REJECTION</b>						
CMR	$-20 \log  V_{GS1-2}/V_{DS} $	95	--	--	dB	$V_{DS} = 10$ to $20\text{V}$ $I_D = 30\mu\text{A}$
<b>NOISE</b>						
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 <sub>n</sub>	Voltage	--	20	--	nV/ $\sqrt{\text{Hz}}$	$V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 10\text{Hz}$ $\text{NBW} = 1\text{Hz}$
<b>CAPACITANCE</b>						
C <sub>ISS</sub>	Input	--	--	8	pF	$V_{DS} = 15\text{V}$ $I_D = 200\mu\text{A}$ $f = 1\text{MHz}$
C <sub>RSS</sub>	Reverse Transfer	--	--	1.5	pF	

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

### Available Packages:

LSU401 in SOT-23  
LSU401 available as bare die  
Please contact [Microcross](http://www.microcross.com) for full package and die dimensions



Microcross Components Europe



Tel: +44 1603 788967

Email: [chipcomponents@microcross.com](mailto:chipcomponents@microcross.com)

Web: <http://www.microcross.com/distribution>