

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 hermetically sealed TO-71 & TO-78 packages are well suited for military applications. The 8 Pin P-DIP and 8 Pin SOIC provide ease of manufacturing, and the symmetrical pinout prevents improper orientation.

(See Packaging Information).

U423 Applications:

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

FEATURES

HIGH INPUT IMPEDANCE	$I_G = 0.25\text{pA MAX}$
HIGH GAIN	$g_{fs} = 120\mu\text{mho MIN}$
LOW POWER OPERATION	$V_{GS(OFF)} = 2\text{V MAX}$

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 \text{ max.}$	DRIFT VS. TEMPERATURE	40	$\mu\text{V}/^\circ\text{C}$	$V_{DG}=10\text{V}, I_D=30\mu\text{A}$ $T_A=-55^\circ\text{C to }+125^\circ\text{C}$
$ V_{GS1-2} \text{ max.}$	OFFSET VOLTAGE	25	mV	$V_{DG}=10\text{V}, I_D=30\mu\text{A}$

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

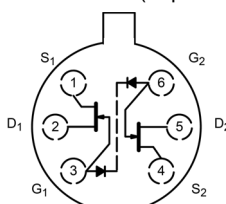
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)						
SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV _{GSS}	Breakdown Voltage	40	60	--	V	V _{DS} = 0 I _G = 1nA
BV _{GGO}	Gate-To-Gate Breakdown	40	--	--	V	I _G = 1μA I _D = 0 I _S = 0
<u>TRANSCONDUCTANCE</u>						
Y _{fss}	Full Conduction	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
<u>DRAIN CURRENT</u>						
I _{DSS}	Full Conduction	60	--	1000	μA	V _{DS} = 10V V _{GS} = 0V
<u>GATE VOLTAGE</u>						
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
<u>GATE CURRENT</u>						
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
<u>OUTPUT CONDUCTANCE</u>						
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
CMR	<u>COMMON MODE REJECTION</u>					
	-20 log ΔV _{GS1-2} / ΔV _{DS}	--	90	--	dB	ΔV _{DS} = 10 to 20V I _D = 30μA
	-20 log ΔV _{GS1-2} / ΔV _{DS}	--	90	--	dB	ΔV _{DS} = 5 to 10V I _D = 30μA
<u>NOISE</u>						
NF	Figure	--	--	1	dB	V _{DG} = 10V I _D = 30μA R _G = 10MΩ 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
<u>CAPACITANCE</u>						
C _{ISS}	Input	--	--	3.0	pF	V _{DS} = 10V V _{GS} = 0 f = 1MHz
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:

U423 in TO-71 & TO-78
U423 in PDIP & SOIC
U423 available as bare die
Please contact [Micross](mailto:chipcomponents@micross.com) for full package and die dimensions
Email: chipcomponents@micross.com

TO-71 / TO-78 (Top View)



P-DIP / SOIC (Top View)

