

LINEAR SYSTEMS

Improved Standard Products®

FEATURES

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

ABSOLUTE MAXIMUM RATINGS NOTE 1

@ 25 °C (unless otherwise noted)

Maximum Temperatures

Storage Temperature	-55 to +150°C
Operating Junction Temperature	-55 to +150°C

Maximum Voltage and Current for Each Transistor NOTE 1

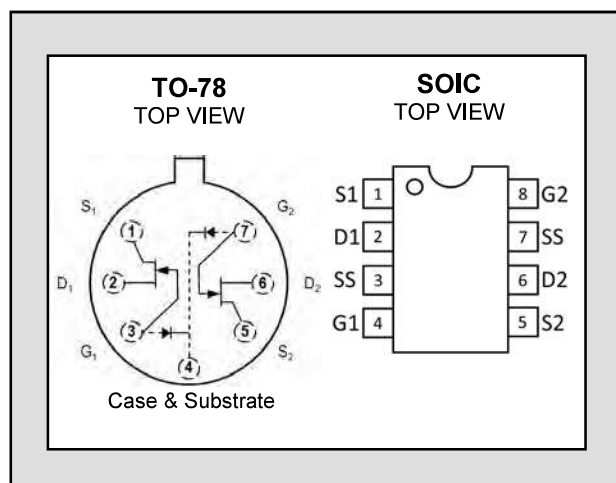
$-V_{GSS}$	Gate Voltage to Drain or Source	40V
$-V_{DSO}$	Drain to Source Voltage	40V
$I_{G(f)}$	Gate Forward Current	10mA

Maximum Power Dissipation

Total Device Dissipation $T_A = 25^\circ\text{C}$	500 ² mW
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U421, U422, U423, U424, U425, U426

LOW LEAKAGE LOW DRIFT
MONOLITHIC DUAL N-CHANNEL
JFET AMPLIFIER

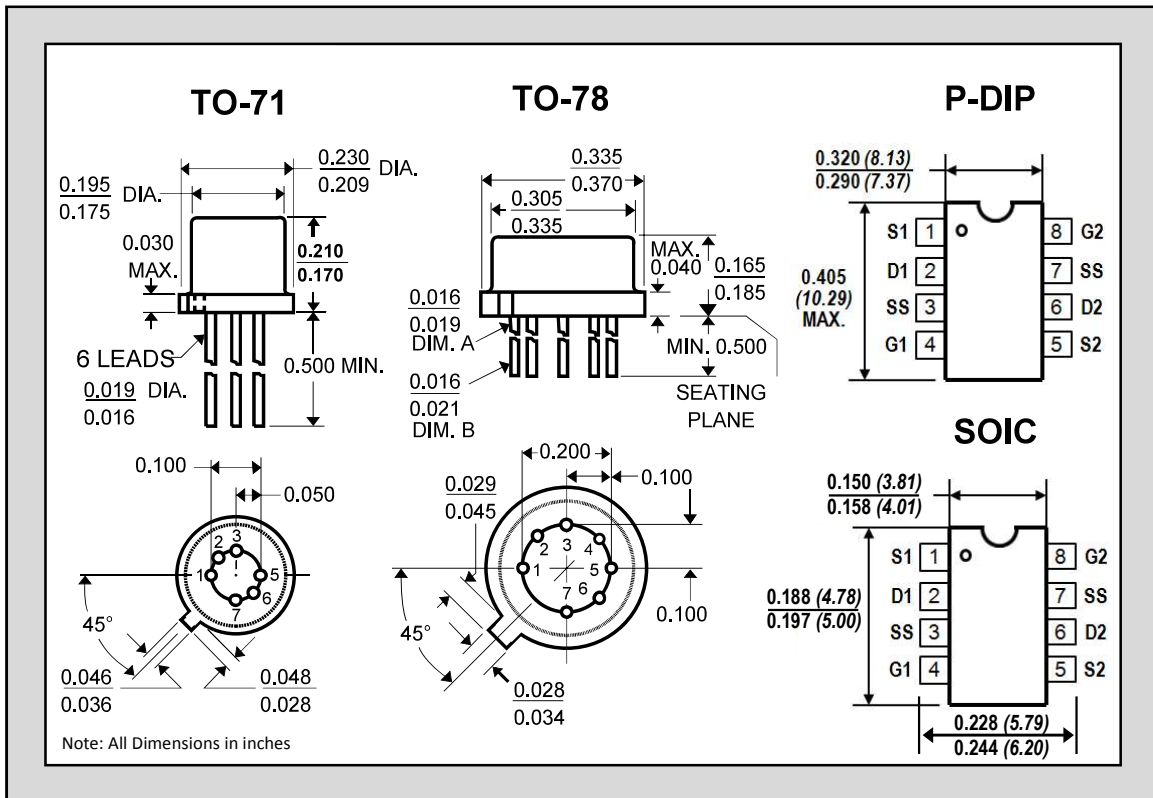


ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC ³	U421	U422	U423	U424	U425	U426	UNITS	CONDITIONS
$ \Delta V_{GS1-2}/\Delta T \text{ max.}$	Drift vs. Temperature	10	25	40	10	25	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	10	15	25	10	15	25	mV	$V_{DG} = 10\text{V}$ $I_D = 30\mu\text{A}$
$V_{GS(off)}$	GATE VOLTAGE								
	Pinchoff Voltage Max	-2.0	-2.0	-2.0	-3.0	-3.0	-3.0	V	$V_{DS}=10\text{V}$ $I_D=1\text{nA}$
	Min	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4		
V_{GS}	Operating Range Max	-1.8	-1.8	-1.8	-2.9	-2.9	-2.9	V	$V_{DS}=10\text{V}$ $I_D=30\mu\text{A}$
$I_{GTYP.}$	Operating	-25	-25	-25	-500	-500	-500	pA	$V_{DS}=10\text{V}$ $I_D=30\mu\text{A}$
$I_{GTYP.}$	High Temperature	-250	-250	-250	-500	-500	-500	pA	$T_A=+125^\circ\text{C}$
$I_{GSSTYP.}$	Gate Reverse Current	-1.0	-1.0	-1.0	-3.0	-3.0	-3.0	pA	$V_{DS}=0\text{V}$ $V_{GS}=-20\text{V}$
$I_{GSSTYP.}$	Gate Reverse Current	1.0	1.0	1.0	3.0	3.0	3.0	nA	$T_A=+125^\circ\text{C}$

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV_{GSS}	Breakdown Voltage	-40	-60	--	V	$V_{DS}=0\text{V}$ $I_G = -1\text{nA}$
BV_{GGO}	Gate-to-Gate Breakdown	± 40	--	--	V	$I_{G1G2} = \pm 1\mu\text{A}$ $I_D = 0\text{A}$ $I_S = 0\text{A}$
g_{fs}	TRANSCONDUCTANCE					
	Full Conduction	300	--	1500	μS	$V_{DS} = 10\text{V}$ $V_{GS} = 0$ $f = 1\text{kHz}$
g_{fs}	Typical Operation	120	200	350	μS	$V_{DG} = 10\text{V}$ $I_D = 30\mu\text{A}$ $f = 1\text{kHz}$
I_{DSS}	DRAIN CURRENT	60	--	1000	μA	U421-3 $V_{DS} = 10\text{V}$ $V_{GS} = 0$
	Full Conduction	60	--	1800	μA	U424-6

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
<u>OUTPUT CONDUCTANCE</u>						
g _{os}	Full Conduction	--	--	10	μS	V _{DS} = 10V V _{GS} = 0
g _{os}	Operating	--	0.1	3.0	μS	V _{DG} = 10V I _D = 30μA
<u>COMMON MODE REJECTION</u>						
CMRR	-20 log V _{GS1-2} /ΔV _{DS}	--	90	--	dB	ΔV _{DS} = 10 to 20V I _D =30μA
CMRR	-20 log V _{GS1-2} /ΔV _{DS}	--	90	--	dB	ΔV _{DS} = 5 to 10V I _D =30μA
<u>NOISE</u>						
NF	Figure	--	--	1.0	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	V _{DS} = 10V V _{GS} = 0 f= 1MHz



NOTES:

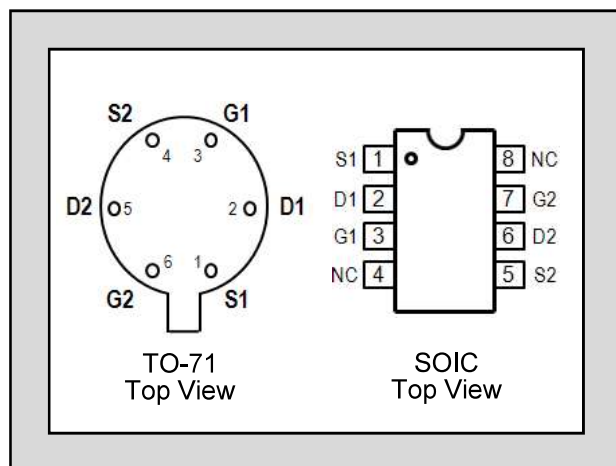
1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired
2. Derate 4mW/°C above 25°C
3. All MIN/TYP/MAX limits are absolute numbers. Negative signs indicate electrical polarity only.

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SST/U401 – SST/U406

LOW NOISE LOW DRIFT
MONOLITHIC DUAL N-CHANNEL
JFET AMPLIFIER

FEATURES		
LOW DRIFT	$ V_{GS1-2}/T = 10\mu V/^{\circ}C$ TYP.	
LOW NOISE	$e_n=6nV/Hz@10Hz$ TYP.	
LOW PINCHOFF	$V_P=2.5V$ MAX.	
ABSOLUTE MAXIMUM RATINGS <u>NOTE 1</u>		
@ 25 °C (unless otherwise noted)		
Maximum Temperatures		
Storage Temperature		-55 to +150°C
Operating Junction Temperature		-55 to +150°C
Maximum Voltage and Current for Each Transistor <u>NOTE 1</u>		
-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 per side <u>NOTE 2</u>		
Device Dissipation TA = 25°C		300mW



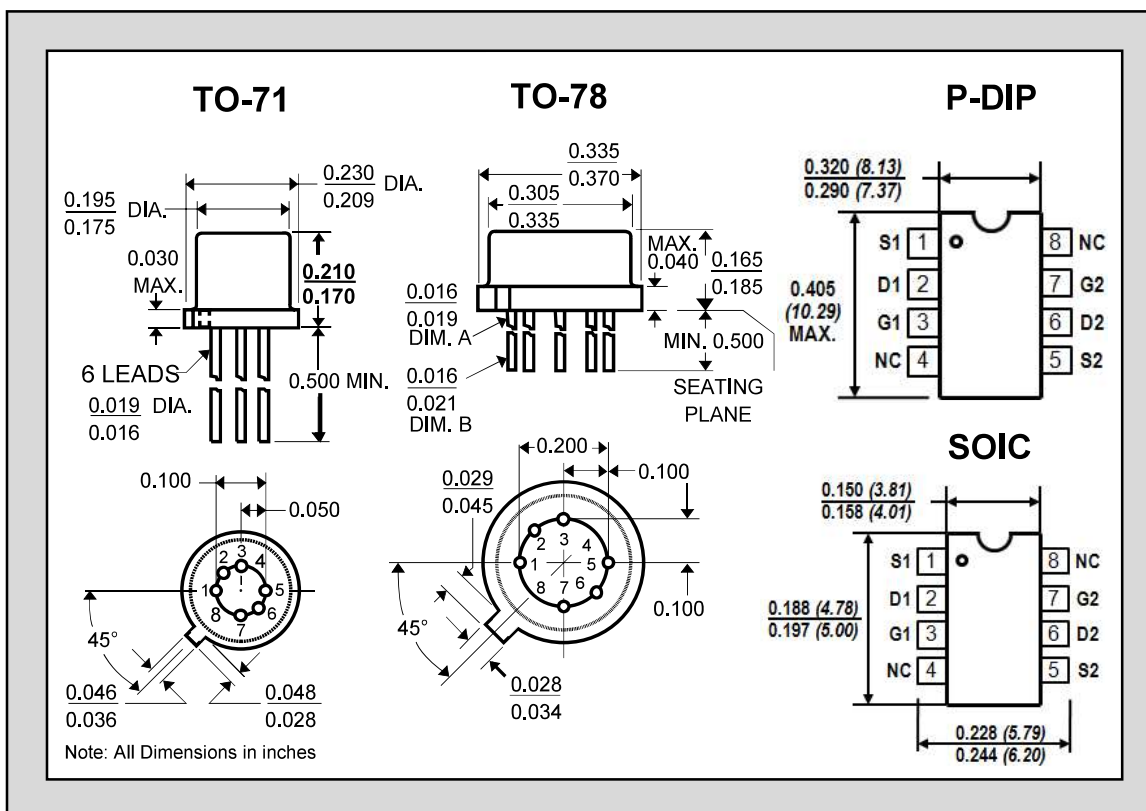
MATCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	U401	U402	U403	U404	U405	U406	UNITS	CONDITIONS
$ V_{GS1-2}/T $ max.	Drift vs. Temperature	10	10	25	25	40	80	$\mu V/^{\circ}C$	$V_{DG} = 10V, I_D = 200\mu A$ $T_A = -55^{\circ}C$ to $+125^{\circ}C$
$ V_{GS1-2} $ max.	Offset Voltage	5	10	10	15	20	40	mV	$V_{DG} = 10V, I_D = 200\mu A$

ELECTRICAL CHARACTERISTICS TA = 25°C (unless otherwise noted) NOTE 3

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV _{GSS}	Breakdown Voltage	-50	-60	--	V	$V_{DS} = 0, I_D = 1nA$
BV _{G1G2}	Gate-to-Gate Breakdown	± 50	--	--	V	$I_G = \pm 1\mu A, I_D = 0, I_S = 0$
G _{fs}	TRANSCONDUCTANCE					
	Full Conduction	2000	--	7000	μS	$V_{DG} = 10V, V_{GS} = 0, f = 1kHz$
G _{fs}	Typical Operation	1000	--	2000	μS	$V_{DG} = 15V, I_D = 200\mu A, f = 1kHz$
$ G_{fs1}/G_{fs2} $	Mismatch	0.97	--	1.0		
IDSS	Saturation Drain Current	0.5	--	10	mA	$V_{DG} = 10V, V_{GS} = 0$
IDSS1 IDSS2	Saturation Current Ratio	0.9	0.98	1.0		
V _{GS(off)} or V _P	GATE VOLTAGE					
	Pinchoff Voltage	-0.5	--	-2.5	V	$V_{DS} = 15V, I_D = 1nA$
V _{GS}	Operating Range	--	--	-2.3	V	$V_{DS} = 15V, I_D = 200\mu A$
I _G	GATE CURRENT					
	Operating	--	-4	-15	pA	$V_{DG} = 15V, I_D = 200\mu A$
I _G	High Temperature	--	--	-10	nA	$T_A = +125^{\circ}C$
I _{GSS}	Gate Reverse Current	--	--	-100	pA	$V_{GS} = -30V, V_{DS} = 0V$
I _{G1G2}	Gate to Gate Isolation Current	--	--	± 1.0	μA	$V_{G1}-V_{G2} = \pm 50V, I_D = I_S = 0$

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
OUTPUT CONDUCTANCE						
G _{oss}	Full Conduction	--	--	40	μS	V _{DS} = 10V, V _{GS} = 0V, f = 1kHz
G _{os}	Operating	--	2	2.7	μS	V _{DS} = 15V, I _D = 200μA, f = 1kHz
COMMON MODE REJECTION						
CMRR	$-20 \log [(V_{GS1}-V_{GS2})/\Delta V_{DG1-2}]$	95	--	--	dB	V _{DG1} = 10V V _{DG2} = 20V I _{D1} = I _{D2} =200μA
NOISE						
NF	Figure	--	--	0.5	dB	V _{DS} = 15V V _{GS} = 0 R _G =10M f= 100Hz NBW= 6Hz
e _n	Voltage	--	6	20	nV/Hz	V _{DS} = 15V I _D = 200μA f= 10Hz NBW= 1Hz
CAPACITANCE						
C _{iss}	Input	--	4	8	pF	V _{DS} = 15V I _D = 200μA f= 1MHz
C _{rss}	Reverse Transfer	--	1.5	3	pF	



NOTES:

- These ratings are limiting values above which the serviceability of any semiconductor may be impaired.
- Derate 2.4mW/°C when T_A is greater than 25°C
- All MIN/TYP/MAX limits are absolute numbers. Negative signs indicate electrical polarity only.

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