

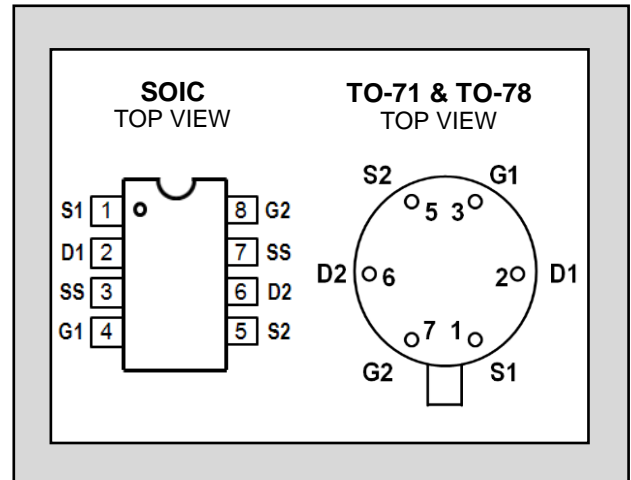
# LINEAR SYSTEMS

Over Three Decades of Quality Through Innovation

## LS840 LS841 LS842

LOW NOISE LOW DRIFT  
LOW CAPACITANCE  
MONOLITHIC DUAL  
N-CHANNEL JFET AMPLIFIER

FEATURES	
LOW NOISE	$e_n=8nV/Hz$ TYP.
LOW LEAKAGE	$I_G=10pA$ TYP.
LOW DRIFT	$I V_{GS1-2}/TI=5\mu V/^\circ C$ max.
LOW OFFSET VOLTAGE	$I V_{GS1-2}=2mV$ TYP.
ABSOLUTE MAXIMUM RATINGS <sup>1</sup> @ 25°C (unless otherwise noted)	
Maximum Temperatures	
Storage Temperature	-55°C to +150°C
Operating Junction Temperature	-55°C to +150°C
Maximum Voltage and Current for Each Transistor <sup>1</sup>	
-V <sub>GSS</sub>	Gate Voltage to Drain or Source 60V
I <sub>G(f)</sub>	Gate Forward Current 10mA
Maximum Power Dissipation	
Device Dissipation <sup>2</sup> @ Free Air - Total	400mW T <sub>A</sub> =+25°C

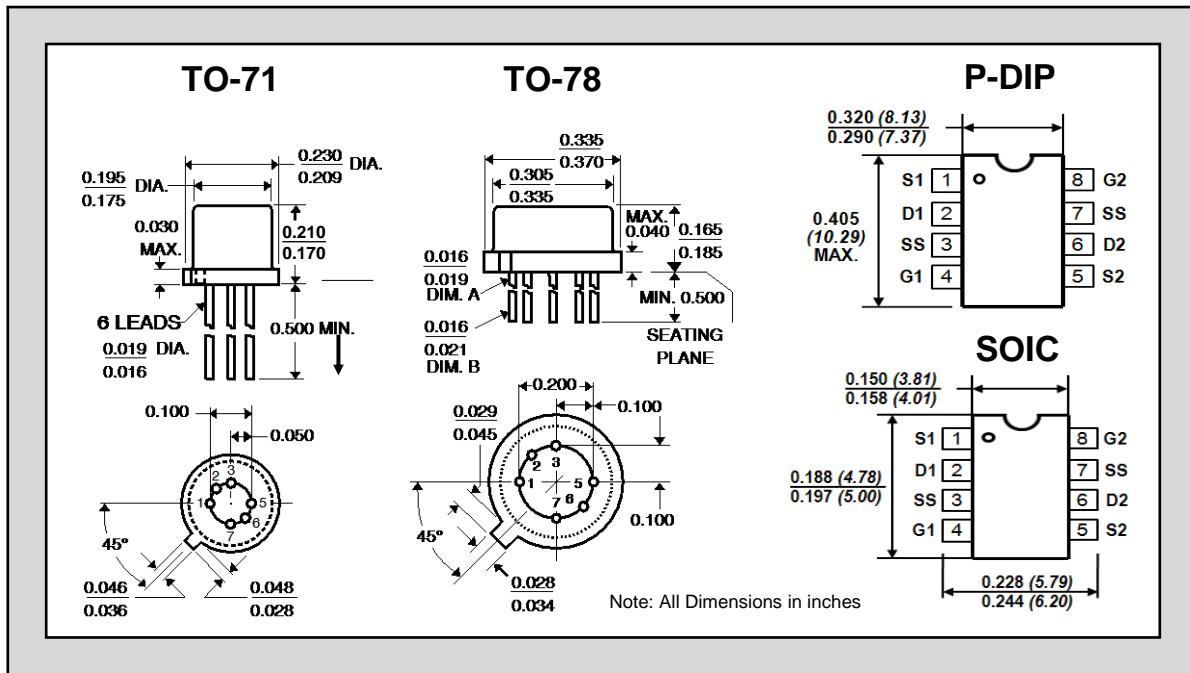


### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	LS840	LS841	LS842	UNITS	CONDITIONS
$I V_{GS1-2}/TI$ max.	Drift vs. Temperature	5	10	40	$\mu V/^\circ C$	$V_{DG} = 20V$ $I_D = 200\mu A$ $T_A = -55^\circ C$ to $+125^\circ C$
$I V_{GS1-2}$ max.	Offset Voltage	5	10	25	mA	$V_{DG} = 20V$ $I_D = 200\mu A$

SYMBOL	CHARACTERISTIC <sup>3</sup>	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV <sub>GSS</sub>	Breakdown Voltage	-60	--	--	V	$V_{DS} = 0$ $I_D = -1nA$
BV <sub>GGO</sub>	Gate-to-Gate Breakdown	$\pm 60$	--	--	V	$I_{GGO} = \pm 1\mu A$ $I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>						
G <sub>fss</sub>	Full Conduction	1000		4000	$\mu S$	$V_{DG} = 20V$ $V_{GS} = 0$ $f = 1kHz$
G <sub>fs</sub>	Typical Conduction	500		1000	$\mu S$	$V_{DG} = 20V$ $I_D = 200\mu A$
$\frac{G_{fs1}}{G_{fs2}}$	Transconductance Ratio	0.97		1.0		$V_{DG} = 20V$ $I_D = 200\mu A$ ; Note 4
<b>DRAIN CURRENT</b>						
I <sub>DSS</sub>	Full Conduction	0.5	2	5	mA	$V_{DG} = 20V$ $V_{GS} = 0$
$\frac{I_{DSS1}}{I_{DSS2}}$	Drain Current Ratio	0.95		1.0		
<b>GATE-SOURCE</b>						
V <sub>GS(off)</sub>	Pinchoff Voltage	-1	-2	-4.5	V	$V_{DS} = 20V$ $I_D = 1nA$
V <sub>GS</sub>	Operating Range	-0.5	--	-4	V	$V_{DS} = 20V$ $I_D = 200\mu A$
<b>GATE CURRENT</b>						
-I <sub>G</sub>	Operating	--	10	50	pA	$V_{DG} = 20V$ $I_D = 200\mu A$
-I <sub>G</sub>	High Temperature	--	--	50	nA	$V_{DG} = 20V$ $I_D = 200\mu A$ $T_A = +125^\circ C$
-I <sub>G</sub>	Reduced VDG	--	5	--	pA	$V_{DG} = 10V$ $I_D = 200\mu A$
-I <sub>GSS</sub>	At Full Conduction	--	--	100	pA	$V_{DG} = 20V$ $V_{DS} = 0$

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
	<b>OUTPUT CONDUCTANCE</b>					
$G_{oss}$	Full Conduction	--	--	10	$\mu S$	$V_{DS}=20V$ $V_{GS}=0$
$G_{os}$	Operating	--	0.1	1	$\mu S$	$V_{DS}=20V$ $I_D=200\mu A$
$ G_{os1-2} $	Differential	--	0.01	0.1	$\mu S$	
	<b>COMMON MODE REJECTION</b>					
CMRR	$-20 \log  V_{GS1-2}/V_{DS} $	--	100	--	dB	$V_{DS}=10$ to $20V$ $I_D=200\mu A$
CMRR		--	75	--	dB	$V_{DS}=5$ to $10V$ $I_D=200\mu A$
	<b>NOISE</b>					
NF	Figure	--	--	0.5	dB	$V_{DS}=20V$ $V_{GS}=0$ $R_G=10M$ $f=100Hz$ $NBW=6Hz$
$e_n$	Voltage	--	--	10	nV/Hz	$V_{DS}=20V$ $I_D=200\mu A$ $f=1KHz$ $NBW=1Hz$
$e_n$	Voltage	--	--	15	nV/Hz	$V_{DS}=20V$ $I_D=200\mu A$ $f=10Hz$ $NBW=1Hz$
	<b>CAPACITANCE</b>					
$C_{ISS}$	Input	--	4	10	pF	$V_{DS}=20V$ $I_D=200\mu A$
$C_{RSS}$	Reverse Transfer	--	1.2	5	pF	
$C_{DD}$	Drain-to-Drain	--	0.1	--	pF	$V_{DG}=20V$ $I_D=200\mu A$



### 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.
4. Assumes smaller number in the numerator.

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