

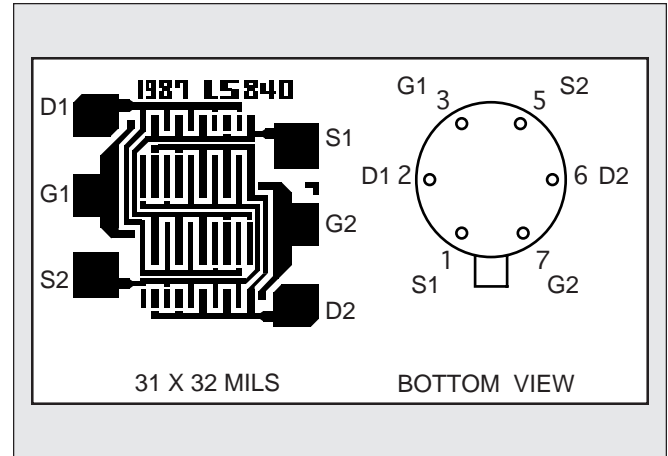
# LINEAR SYSTEMS

## Linear Integrated Systems

## LS840 LS841 LS842

LOW NOISE LOW DRIFT  
LOW CAPACITANCE  
MONOLITHIC DUAL N-CANNEL JFET

FEATURES		
LOW NOISE	$e_n = 8\text{nV}/\sqrt{\text{Hz}}$ TYP.	
LOW LEAKAGE	$I_G = 10\text{pA}$ TYP.	
LOW DRIFT	$ \Delta V_{GS1-2} / \Delta T  = 5\mu\text{V}/^\circ\text{C}$ max.	
LOW OFFSET VOLTAGE	$ V_{GS1-2}  = 2\text{mV}$ TYP.	
ABSOLUTE MAXIMUM RATINGS <u>NOTE 1</u>		
@ 25°C (unless otherwise noted)		
Maximum Temperatures		
Storage Temperature	-65° to +150°C	
Operating Junction Temperature	+150°C	
Maximum Voltage and Current for Each Transistor <u>NOTE 1</u>		
-V <sub>GSS</sub>	Gate Voltage to Drain or Source	60V
-V <sub>DSO</sub>	Drain to Source Voltage	60V
-I <sub>G(f)</sub>	Gate Forward Current	50mA
Maximum Power Dissipation		
Device Dissipation @ Free Air - Total		400mW @ +125°C



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

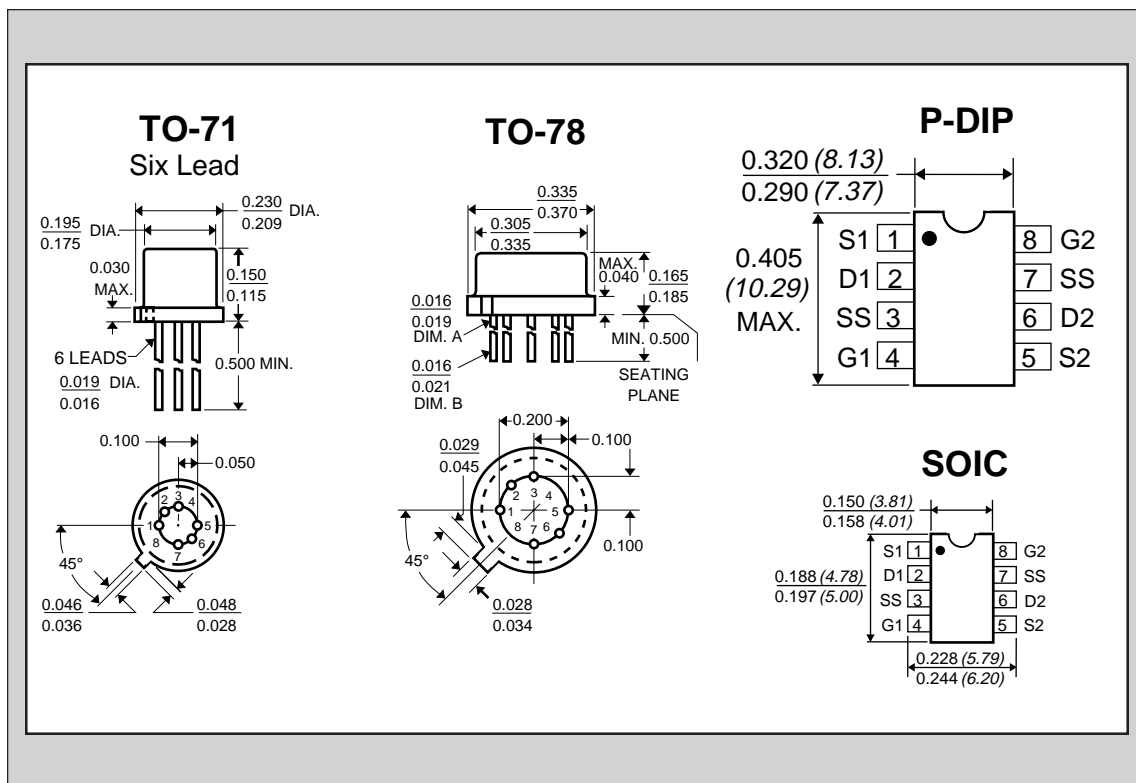
SYMBOL	CHARACTERISTICS	LS840	LS841	LS842	UNITS	CONDITIONS
$ \Delta V_{GS1-2}/\Delta T $ max.	Drift vs. Temperature	5	10	40	$\mu\text{V}/^\circ\text{C}$	$V_{DG} = 20\text{V}$ $T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$ $I_D = 200\mu\text{A}$
$ V_{GS1-2} $ max.	Offset Voltage	5	10	25	mV	$V_{DG} =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

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
$BV_{GSS}$	Breakdown Voltage	60	--	--	V	$V_{DS} = 0$ $I_D = 1\text{nA}$
$BV_{GGO}$	Gate-to-Gate Breakdown	60	--	--	V	$I_G = 1\text{nA}$ $I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>						
$Y_{fss}$	Full Conduction	1000	--	4000	$\mu\text{mho}$	$V_{DG} = 20\text{V}$ $V_{GS} = 0$ $f = 1\text{kHz}$
$Y_{fs}$	Typical Conduction	500	--	1000	$\mu\text{mho}$	$V_{DG} = 20\text{V}$ $I_D = 200\mu\text{A}$
$ Y_{fs1-2}/Y_{fs} $	Mismatch	--	0.6	3	%	
<b>DRAIN CURRENT</b>						
$I_{DSS}$	Full Conduction	0.5	2	5	mA	$V_{DG} = 20\text{V}$ $V_{GS} = 0$
$ I_{DSS1-2}/I_{DSS} $	Mismatch at Full Conduction	--	1	5	%	
<b>GATE VOLTAGE</b>						
$V_{GS(off)}$ or $V_P$	Pinchoff Voltage	1	2	4.5	V	$V_{DS} = 20\text{V}$ $I_D = 1\text{nA}$
$V_{GS}$	Operating Range	0.5	--	4	V	$V_{DS} = 20\text{V}$ $I_D = 200\mu\text{A}$
<b>GATE CURRENT</b>						
$-I_G$	Operating	--	10	50	pA	$V_{DG} = 20\text{V}$ $I_D = 200\mu\text{A}$
$-I_G$	High Temperature	--	--	50	nA	$V_{DG} = 20\text{V}$ $I_D = 200\mu\text{A}$ $T_A = +125^\circ\text{C}$
$-I_G$	Reduced VDG	--	5	--	pA	$V_{DG} = 10\text{V}$ $I_D = 200\mu\text{A}$
$-I_{GSS}$	At Full Conduction	--	--	100	pA	$V_{DG} = 20\text{V}$ $V_{DS} = 0$

## Linear Integrated Systems

4042 Clipper Court, Fremont, CA 94538 • TEL: (510) 490-9160 • FAX: (510) 353-0261

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
OUTPUT CONDUCTANCE						
Y <sub>oss</sub>	Full Conduction	--	--	10	μmho	V <sub>DG</sub> = 20V      V <sub>GS</sub> = 0
Y <sub>os</sub>	Operating	--	0.1	1	μmho	V <sub>DG</sub> = 20V      I <sub>D</sub> = 200μA
Y <sub>os1-2</sub>	Differential	--	0.01	0.1	μmho	
COMMON MODE REJECTION						
CMR	-20 log  ΔV <sub>GS1-2</sub> /ΔV <sub>DS</sub>	--	100	--	dB	ΔV <sub>DS</sub> = 10 to 20V      I <sub>D</sub> = 200μA
CMR		--	75	--	dB	ΔV <sub>DS</sub> = 5 to 10V      I <sub>D</sub> = 200μA
NOISE						
NF	Figure	--	--	0.5	dB	V <sub>DS</sub> = 20V      V <sub>GS</sub> = 0    R <sub>G</sub> = 10MΩ f= 100Hz      NBW= 6Hz
e <sub>n</sub>	Voltage	--	--	10	nV/√Hz	V <sub>DS</sub> = 20V      I <sub>D</sub> = 200μA    f= 1KHz NBW= 1Hz
e <sub>n</sub>	Voltage	--	--	15	nV/√Hz	V <sub>DS</sub> = 20V      I <sub>D</sub> = 200μA    f= 10Hz NBW= 1Hz
CAPACITANCE						
C <sub>iss</sub>	Input	--	4	10	pF	V <sub>DS</sub> = 20V      I <sub>D</sub> = 200μA
C <sub>RSS</sub>	Reverse Transfer	--	1.2	5	pF	
C <sub>DD</sub>	Drain-to-Drain	--	0.1	--	pF	V <sub>DG</sub> = 20V      I <sub>D</sub> = 200μA



#### NOTES:

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