

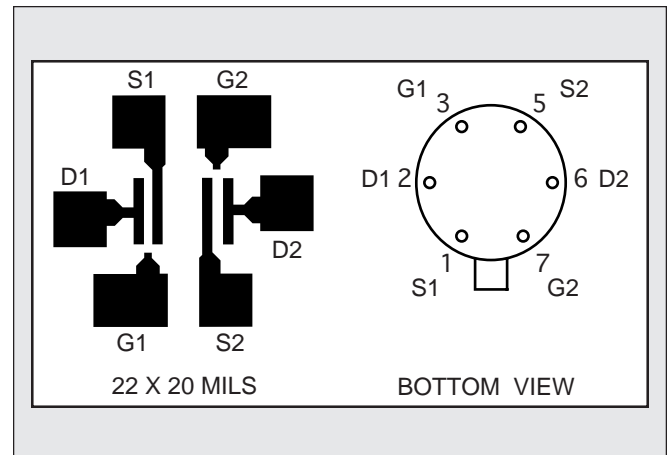
# LINEAR SYSTEMS

## Linear Integrated Systems

# LS830 LS831 LS832 LS833

## ULTRA LOW LEAKAGE LOW DRIFT MONOLITHIC DUAL N-CHANNEL JFET

FEATURES		
ULTRA LOW DRIFT	$ \Delta V_{GS1-2}/\Delta T  = 5\mu V/^{\circ}C$ max.	
ULTRA LOW LEAKAGE	$I_G = 80fA$ TYP.	
LOW NOISE	$e_n = 70nV/\sqrt{Hz}$ TYP.	
LOW CAPACITANCE	$C_{ISS} = 3pf$ MAX.	
ABSOLUTE MAXIMUM RATINGS NOTE 1 @ 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 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
$-I_G$	Gate Reverse Current	10μA
Maximum Power Dissipation		
Device Dissipation @ Free Air - Total		40mW @ +125°C

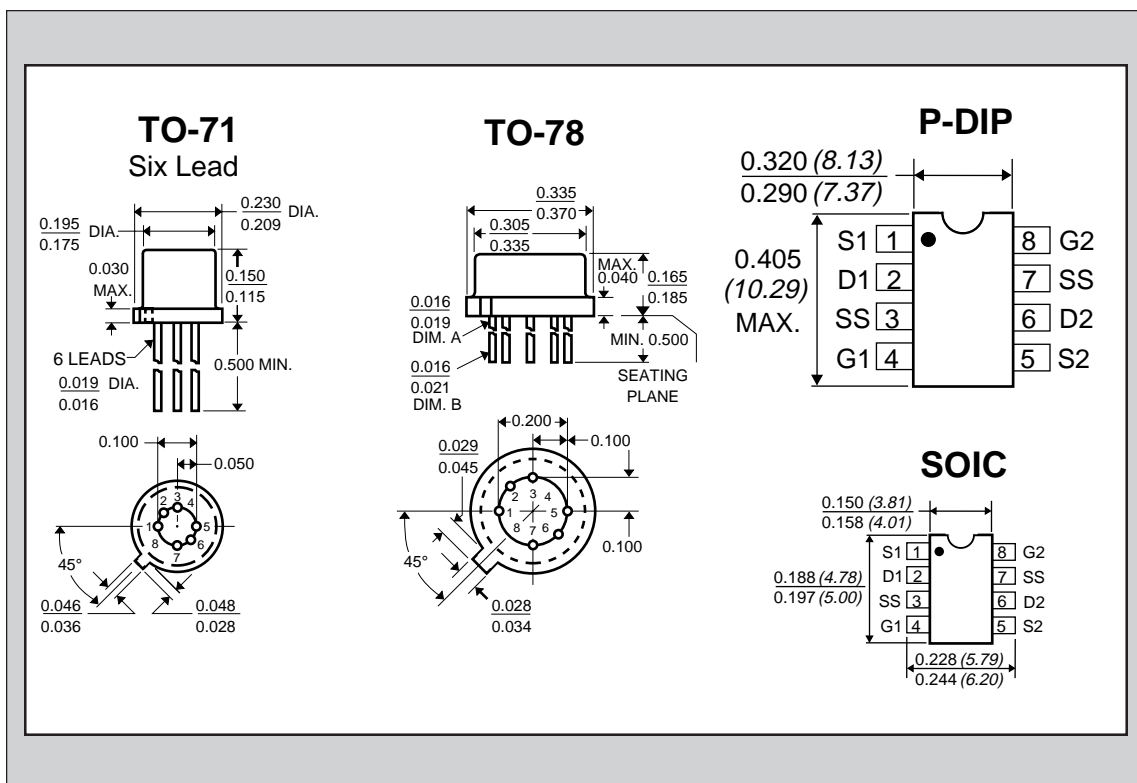


### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS	LS830	LS831	LS832	LS833	UNITS	CONDITIONS
$ \Delta V_{GS1-2}/\Delta T $ max.	Drift vs. Temperature	5	10	20	75	$\mu V/^{\circ}C$	$V_{DG} = 10V$ $I_D = 30\mu A$ $T_A = -55^{\circ}C$ to $+125^{\circ}C$
$ V_{GS1-2} $ max.	Offset Voltage	25	25	25	25	mV	$V_{DG} = 10V$ $I_D = 30\mu A$
$-I_G$ max	Operating	0.1	0.1	0.1	0.5	pA	
$-I_G$ max	High Temperature	0.1	0.1	0.1	0.5	nA	$T_A = +125^{\circ}C$
$-I_{GSS}$	At Full Conduction	0.2	0.2	0.2	1.0	pA	
$-I_{GSS}$	High Temperature	0.5	0.5	0.5	1.0	nA	$V_{GS} = 0$ $V_{GS} = -20V$ $T_A = +125^{\circ}C$

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
$BV_{GSS}$	Breakdown Voltage	40	60	--	V	$V_{DS} = 0$ $I_D = 1nA$
$BV_{GGO}$	Gate-to-Gate Breakdown	40	--	--	V	$I_G = 1nA$ $I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>						
$Y_{fss}$	Full Conduction	70	300	500	$\mu mho$	$V_{DG} = 10V$ $V_{GS} = 0$ $f = 1kHz$
$Y_{fs}$	Typical Operation	50	100	200	$\mu mho$	$V_{DG} = 10V$ $I_D = 30\mu A$ $f = 1kHz$
$ Y_{fs1-2}/Y_{fs} $	Mismatch	--	1	5	%	
<b>DRAIN CURRENT</b>						
$I_{DSS}$	Full Conduction	60	400	1000	$\mu A$	$V_{DG} = 10V$ $V_{GS} = 0$
$ I_{DSS1-2}/I_{DSS} $	Mismatch at Full Conduction	--	2	5	%	
<b>GATE VOLTAGE</b>						
$V_{GS(off)}$ or $V_P$	Pinchoff Voltage	0.6	2	4.5	V	$V_{DS} = 10V$ $I_D = 1nA$
$V_{GS}$	Operating Range	--	--	4	V	$V_{DG} = 10V$ $I_D = 30\mu A$
<b>GATE CURRENT</b>						
$I_{GGO}$	Gate-to-Gate Leakage	--	1	--	pA	$V_{GG} = 20V$

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
<b>OUTPUT CONDUCTANCE</b>						
$Y_{OSS}$	Full Conduction	--	--	5	$\mu\text{mho}$	$V_{DG} = 10\text{V}$ $V_{GS} = 0$
$Y_{OS}$	Operating	--	--	0.5	$\mu\text{mho}$	$V_{DG} = 10\text{V}$ $I_D = 30\mu\text{A}$
$ Y_{OS1-2} $	Differential	--	--	0.1	$\mu\text{mho}$	
<b>COMMON MODE REJECTION</b>						
CMR	$-20 \log  \Delta V_{GS1-2} / \Delta V_{DS} $	--	90	--	dB	$\Delta V_{DS} = 10 \text{ to } 20\text{V}$ $I_D = 30\mu\text{A}$
CMR	$-20 \log  \Delta V_{GS1-2} / \Delta V_{DS} $	--	90	--	dB	$\Delta V_{DS} = 5 \text{ to } 10\text{V}$ $I_D = 30\mu\text{A}$
<b>NOISE</b>						
NF	Figure	--	--	1	dB	$V_{DS} = 10\text{V}$ $V_{GS} = 0$ $R_G = 10\text{M}\Omega$ $f = 100\text{Hz}$ $\text{NBW} = 6\text{Hz}$
$e_n$	Voltage	--	20	70	$\text{nV}/\sqrt{\text{Hz}}$	$V_{DG} = 10\text{V}$ $I_D = 30\mu\text{A}$ $f = 10\text{Hz}$ $\text{NBW} = 1\text{Hz}$
<b>CAPACITANCE</b>						
$C_{ISS}$	Input	--	--	3	$\text{pF}$	$V_{DS} = 10\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
$C_{RSS}$	Reverse Transfer	--	--	1.5	$\text{pF}$	$V_{DS} = 10\text{V}$ $V_{GS} = 0$ $f = 1\text{MHz}$
$C_{DD}$	Drain-to-Drain	--	--	0.1	$\text{pF}$	$V_{DG} = 10\text{V}$ $I_D = 30\mu\text{A}$



**NOTES:**

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