LINEAR SYSTEMS

Linear Integrated Systems

LS830 LS831 LS832 LS833

ULTRA LOW LEAKAGE LOW DRIFT MONOLITHIC DUAL N-CHANNEL JFET

FEATURES	
ULTRA LOW DRIFT	$|\Delta V_{GS1-2}/\Delta T|$ = 5µV/°C max.
ULTRA LOW LEAKAGE	I_G = 80fA TYP.
LOW NOISE	e_n = 70nV/√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

22 X 20 MILS   BOTTOM VIEW
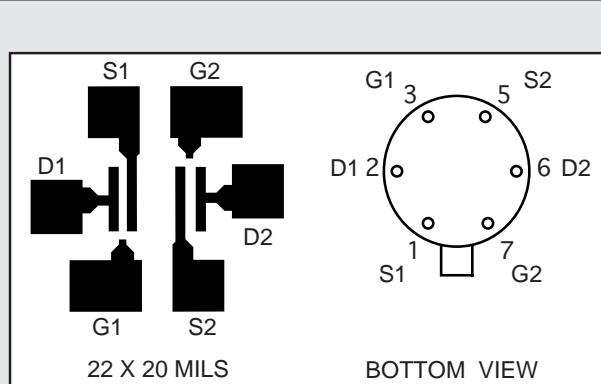
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS	LS830	LS831	LS832	LS833	UNITS	CONDITIONS
$|\Delta V_{GS1-2}/\Delta T|$ max.	Drift vs. Temperature	5	10	20	75	µV/°C	V_{DG} = 10V I_D = 30µA T_A = -55°C to +125°C
$|V_{GS1-2}|$ max.	Offset Voltage	25	25	25	25	mV	V_{DG} = 10V I_D = 30µA
$-I_G$ 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°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°C
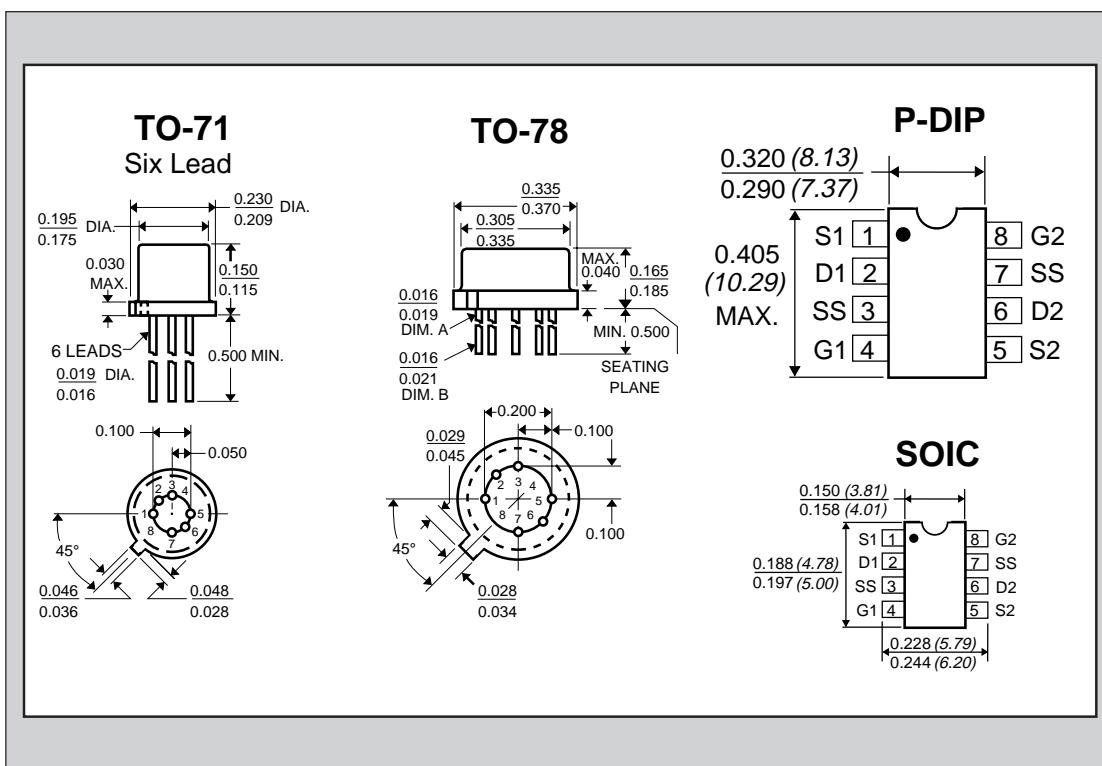
SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV_{GSS}	Breakdown Voltage	40	60	--	V	V_{DS} = 0 I_D = 1nA
BV_{GGO}	Gate-to-Gate Breakdown	40	--	--	V	I_G = 1nA I_D = 0 I_S = 0
Y_{fss}	**TRANSCONDUCTANCE** Full Conduction	70	300	500	µmho	V_{DG} = 10V V_{GS} = 0 f = 1kHz
Y_{fs}	Typical Operation	50	100	200	µmho	V_{DG} = 10V I_D = 30µA f = 1kHz
$|Y_{fs1-2}/Y_{fs}|$	Mismatch	--	1	5	%	
I_{DSS}	**DRAIN CURRENT** Full Conduction	60	400	1000	µA	V_{DG} = 10V V_{GS} = 0
$|I_{DSS1-2}/I_{DSS}|$	Mismatch at Full Conduction	--	2	5	%	
V_{GS}(off) or V_P	**GATE VOLTAGE** 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 = 30µA
I_{GGO}	**GATE CURRENT** Gate-to-Gate Leakage	--	1	--	pA	V_{GG} = 20V

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
	OUTPUT CONDUCTANCE					
Y_{OSS}	Full Conduction	--	--	5	µmho	V_{DG}= 10V $\quad$ V_{GS}= 0
Y_{OS}	Operating	--	--	0.5	µmho	V_{DG}= 10V $\quad$ I_{D}= 30µA
$|Y_{OS1\text{-}2}|$	Differential	--	--	0.1	µmho	
	COMMON MODE REJECTION					
CMR	-20 log $|\Delta V_{GS1\text{-}2}/\Delta V_{DS}|$	--	90	--	dB	ΔV_{DS}= 10 to 20V $\quad$ I_{D}= 30µA
CMR	-20 log $|\Delta V_{GS1\text{-}2}/\Delta V_{DS}|$	--	90	--	dB	ΔV_{DS}= 5 to 10V $\quad$ I_{D}= 30µA
	NOISE					
NF	Figure	--	--	1	dB	V_{DS}= 10V $\quad$ V_{GS}= 0 $\quad$ R_{G}= 10MΩ f= 100Hz $\quad$ NBW= 6Hz
e_{n}	Voltage	--	20	70	nV/√Hz	V_{DG}= 10V $\quad$ I_{D}= 30µA $\quad$ f= 10Hz NBW= 1Hz
	CAPACITANCE					
C_{ISS}	Input	--	--	3	pF	V_{DS}= 10V $\quad$ V_{GS}= 0 $\quad$ f= 1MHz
C_{RSS}	Reverse Transfer	--	--	1.5	pF	V_{DS}= 10V $\quad$ V_{GS}= 0 $\quad$ f= 1MHz
C_{DD}	Drain-to-Drain	--	--	0.1	pF	V_{DG}= 10V $\quad$ I_{D}= 30µA

TO-71
Six Lead

TO-78

P-DIP

$\frac{0.320 (8.13)}{0.290 (7.37)}$

0.405 (10.29) MAX.

S1 ⌷1 ●		8⌷ G2
D1 ⌷2		7⌷ SS
SS ⌷3		6⌷ D2
G1 ⌷4		5⌷ S2

SOIC

$\frac{0.150 (3.81)}{0.158 (4.01)}$

$\frac{0.188 (4.78)}{0.197 (5.00)}$

S1 ⌷1 ●		8⌷ G2
D1 ⌷2		7⌷ SS
SS ⌷3		6⌷ D2
G1 ⌷4		5⌷ S2

$\frac{0.228 (5.79)}{0.244 (6.20)}$

NOTES:

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