

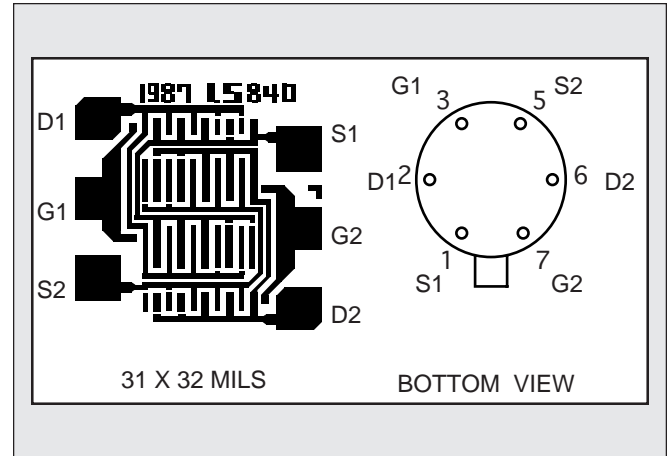
# LINEAR SYSTEMS

*Linear Integrated Systems*

## LS3954A LS3954 LS3955 LS3956 LS3958

LOW NOISE LOW DRIFT  
MONOLITHIC DUAL N-CHANNEL JFET

FEATURES		
LOW DRIFT	$ \Delta V_{GS1-2}/\Delta T  = 5\mu V/^{\circ}C$ max.	
LOW LEAKAGE	$I_G = 20pA$ TYP.	
LOW NOISE	$e_n = 10nV/\sqrt{Hz}$ TYP.	
ABSOLUTE MAXIMUM RATINGS NOTE 1		
@ 25°C (unless otherwise noted)		
Maximum Temperatures		
Storage Temperature	-65° to +200°C	
Operating Junction Temperature	+150°C	
Maximum Voltage and Current for Each Transistor NOTE 1		
$-V_{GSS}$	Gate to Drain or Source Voltage	60V
$-V_{DSO}$	Drain to Source Voltage	60V
$-I_{G(f)}$	Gate Forward Current	50mA
Maximum Power Dissipation		
Device Dissipation @ Free Air - Total	400mW @ 25°C	



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

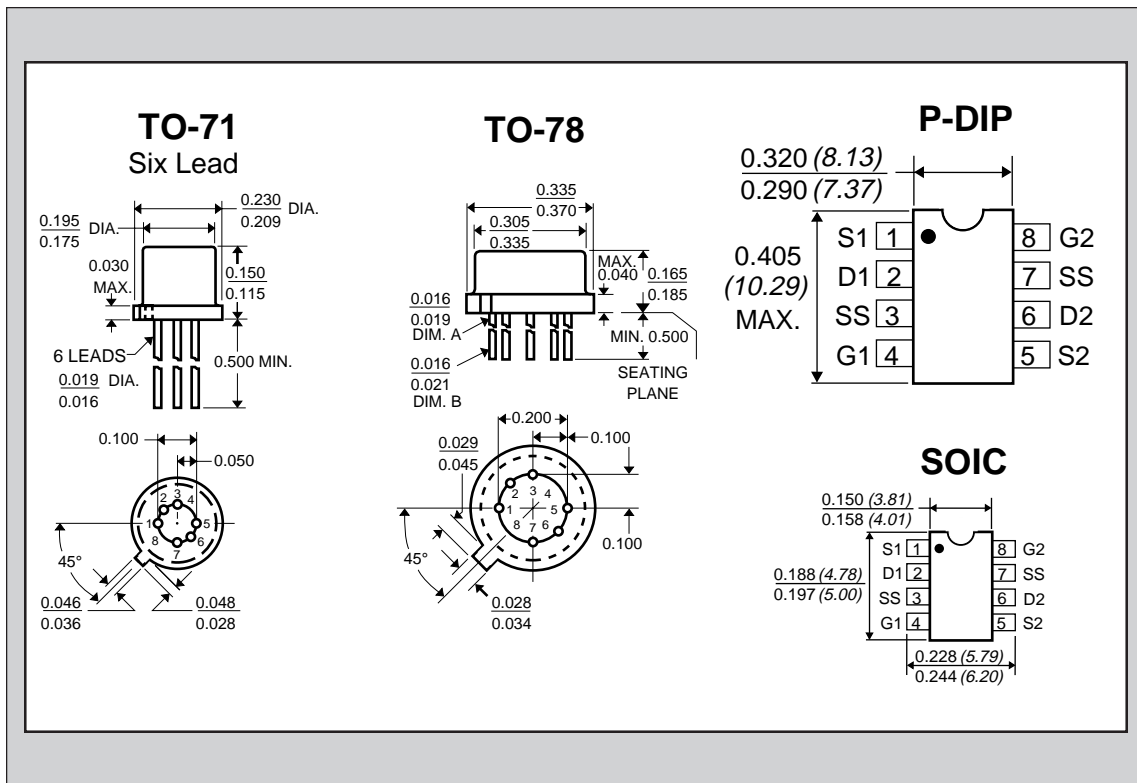
SYMBOL	CHARACTERISTICS	LS3954A	LS3954	LS3955	LS3956	LS3958	UNITS	CONDITIONS
$ \Delta V_{GS1-2}/\Delta T $ max.	Drift vs. Temperature	5	10	25	50	100	$\mu V/^{\circ}C$	$V_{DG} = 20V, I_D = 200\mu A$ $T_A = -55^{\circ}C$ to $+125^{\circ}C$
$ V_{GS1-2} $ max.	Offset Voltage	5	5	10	15	25	mV	$V_{DG} = 20V, I_D = 200\mu A$

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS	
$BV_{GSS}$	Breakdown Voltage	60	--	--	V	$V_{DS} = 0$	$I_D = 1\mu A$
$BV_{GGO}$	Gate-to-Gate Breakdown	60	--	--	V	$I_G = 1nA$	$I_D = 0$ $I_S = 0$
<b>TRANSCONDUCTANCE</b>							
$Y_{fss}$	Full Conduction	1000	2000	3000	$\mu mho$	$V_{DG} = 20V$	$V_{GS} = 0$ $f = 1kHz$
$Y_{fs}$	Typical Operation	500	700	1000	$\mu mho$	$V_{DG} = 20V$	$I_D = 200\mu A$
$ Y_{fs1-2}/Y_{fs} $	Mismatch	--	0.6	3	%		
<b>DRAIN CURRENT</b>							
$I_{DSS}$	Full Conduction	0.5	2	5	mA	$V_{DG} = 20V$	$V_{GS} = 0$
$ 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	$V_{DS} = 20V$	$I_D = 1nA$
$V_{GS}$	Operating Range	0.5	--	4	V	$V_{DS} = 20V$	$I_D = 200\mu A$
<b>GATE CURRENT</b>							
$-I_G$	Operating	--	20	50	pA	$V_{DG} = 20V$	$I_D = 200\mu A$
$-I_G$	High Temperature	--	--	50	nA	$V_{DG} = 20V$	$I_D = 200\mu A$ $T_A = +125^{\circ}C$
$-I_G$	Reduced $V_{DG}$	--	5	--	pA	$V_{DG} = 10V$	$I_D = 200\mu A$
$-I_{GSS}$	At Full Conduction	--	--	100	pA	$V_{DG} = 20V$	$V_{DS} = 0$

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

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
<b>OUTPUT CONDUCTANCE</b>						
$Y_{OSS}$	Full Conduction	--	--	5	$\mu\text{mho}$	$V_{DG} = 20V$ $V_{GS} = 0$
$Y_{OS}$	Operating	--	0.1	1	$\mu\text{mho}$	$V_{DG} = 20V$ $I_D = 200\mu\text{A}$
$ Y_{OS1-2} $	Differential	--	0.01	0.1	$\mu\text{mho}$	
<b>COMMON MODE REJECTION</b>						
CMR	$-20 \log  \Delta V_{GS1-2} / \Delta V_{DS} $	--	100	--	dB	$\Delta V_{DS} = 10$ to $20V$ $I_D = 200\mu\text{A}$
CMR	$-20 \log  \Delta V_{GS1-2} / \Delta V_{DS} $	--	75	--	dB	$\Delta V_{DS} = 5$ to $10V$ $I_D = 200\mu\text{A}$
<b>NOISE</b>						
NF	Figure	--	--	0.5	dB	$V_{DS} = 20V$ $V_{GS} = 0$ $R_G = 10M\Omega$ $f = 100\text{Hz}$ $\text{NBW} = 6\text{Hz}$
$e_n$	Voltage	--	--	15	$\text{nV}/\sqrt{\text{Hz}}$	$V_{DS} = 20V$ $I_D = 200\mu\text{A}$ $f = 10\text{Hz}$ $\text{NBW} = 1\text{Hz}$
<b>CAPACITANCE</b>						
$C_{ISS}$	Input	--	--	6	pF	$V_{DS} = 20V$ $V_{GS} = 0$ $f = 1\text{MHz}$
$C_{RSS}$	Reverse Transfer	--	--	2	pF	
$C_{DD}$	Drain-to-Drain	--	0.1	--	pF	$V_{DG} = 20V$ $I_D = 200\mu\text{A}$



**NOTES:**

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