

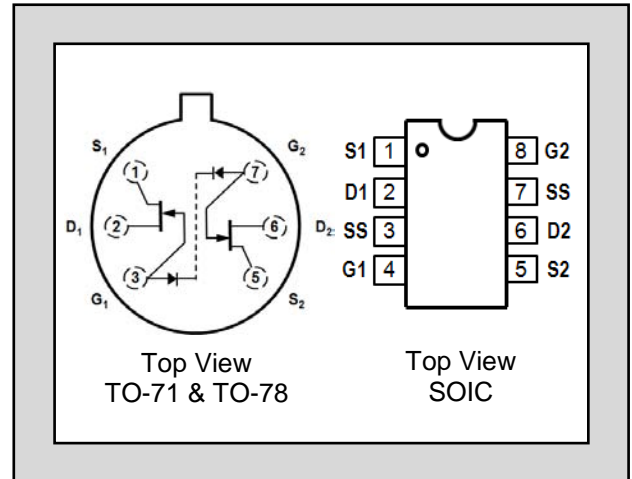
# LINEAR SYSTEMS

Twenty-Five Years Of Quality Through Innovation

## LS3954A LS3954 LS3955 LS3956 LS3958

LOW NOISE LOW DRIFT  
MONOLITHIC DUAL N-CHANNEL  
JFET AMPLIFIER

FEATURES	
LOW DRIFT	$ dV_{GS1-2}/dT  = 5\mu V/^\circ C$ max.
LOW LEAKAGE	$I_G = 20pA$ TYP.
LOW NOISE	$e_n = 10Nv/\sqrt{Hz}$ TYP.
ABSOLUTE MAXIMUM RATINGS <sup>1</sup>	
@ 25 °C (unless otherwise noted)	
Maximum Temperatures	
Storage Temperature	-55 to +150°C
Operating Junction Temperature	-55 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 50mV
Maximum Power Dissipation	
Device Dissipation @ Free Air - Total	400mW @ 25°C <sup>2</sup>

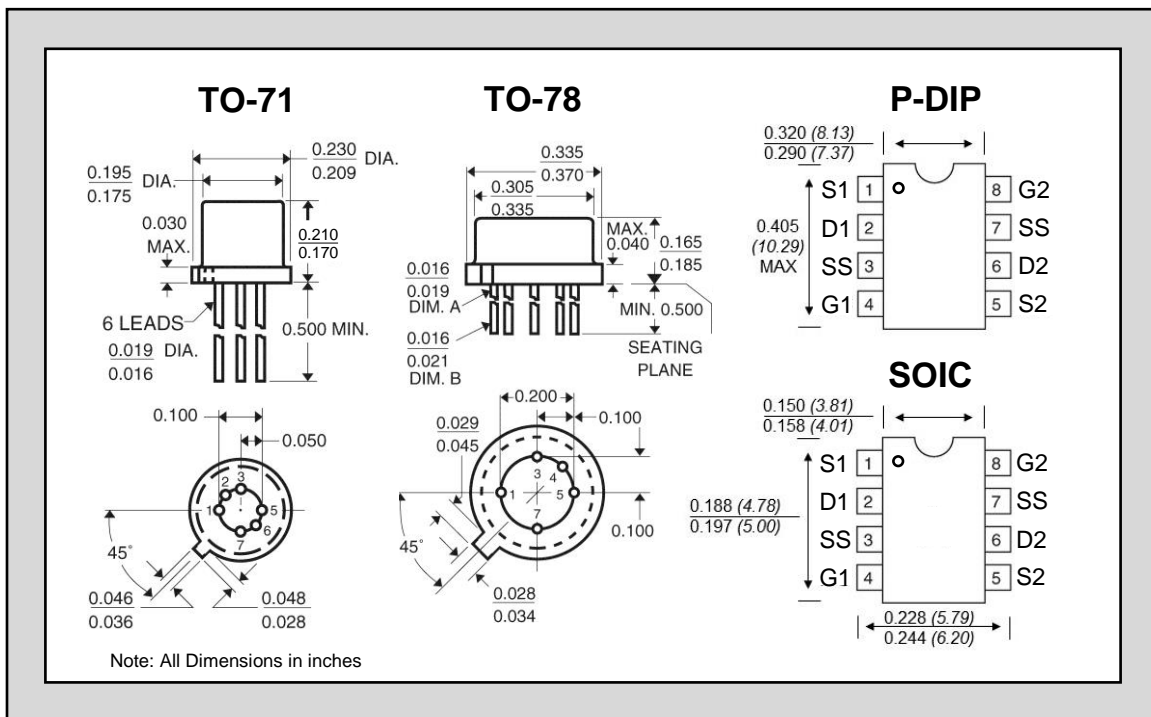


### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	LS3954A	LS3954	LS3955	LS3956	LS3958	UNITS	CONDITIONS
$ dV_{GS1-2}/dT $ 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	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV <sub>GSS</sub>	Breakdown Voltage	60	--	--	V	$V_{DS} = 0, I_G = 1\mu A$
BV <sub>GGO</sub>	Gate-to-Gate Breakdown	60	--	--	V	$I_{GG} = \pm 1\mu A, I_D = 0, I_S = 0$
<b>TRANSCONDUCTANCE</b>						
$g_{fss}$	Full Conduction	1000	2000	4000	$\mu S$	$V_{DG} = 20V, V_{GS} = 0, f = 1kHz$
$g_{fs}$	Typical Operation	500	700	1250	$\mu S$	$V_{DG} = 20V, I_D = 200\mu A$
$ g_{fs1-2}/g_{fs} $	Differential	--	$\pm 0.6$	$\pm 3$	%	
<b>DRAIN CURRENT</b>						
I <sub>DSS</sub>	Full Conduction	0.5	2	5	mA	$V_{DS} = 20V, V_{GS} = 0$
$ I_{DSS1-2}/I_{DSS} $	Differential	--	$\pm 1$	$\pm 5$	%	
<b>GATE VOLTAGE</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	--	20	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 V <sub>DG</sub>	--	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	--	--	35	$\mu S$	$V_{DG}=20V$ $V_{GS}=0$
$g_{os}$	Operating	--	0.5	1	$\mu S$	$V_{DG}=20V$ $I_D=200\mu A$
$ g_{os1-2} $	Differential	--	0.05		$\mu S$	
<b>COMMON MODE REJECTION</b>						
CMRR	$-20 \log  \Delta V_{GS1-2}/\Delta V_{DS} $	--	100	--	dB	$\Delta V_{DS}=10$ to $20V$ $I_D=200\mu A$
CMRR	$-20 \log  \Delta V_{GS1-2}/\Delta V_{DS} $	--	75	--	dB	$\Delta V_{DS}=5$ to $10V$ $I_D=200\mu A$
<b>NOISE</b>						
NF	Figure	--	--	0.5	dB	$V_{DS}=20V$ $V_{GS}=0$ $R_G=10M\Omega$ $f=100Hz$ $NBW=6Hz$
$e_n$	Voltage	--	--	15	$nV/\sqrt{Hz}$	$V_{DS}=20V$ $I_D=200\mu A$ $f=10Hz$ $NBW=1Hz$
<b>CAPACITANCE</b>						
$C_{ISS}$	Input	--	--	6	pF	$V_{DS}=20V$ $V_{GS}=0$ $f=1MHz$
$C_{RSS}$	Reverse Transfer	--	--	2	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  $4mW/^\circ C$  above  $25^\circ C$

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