LINEAR SYSTEMS

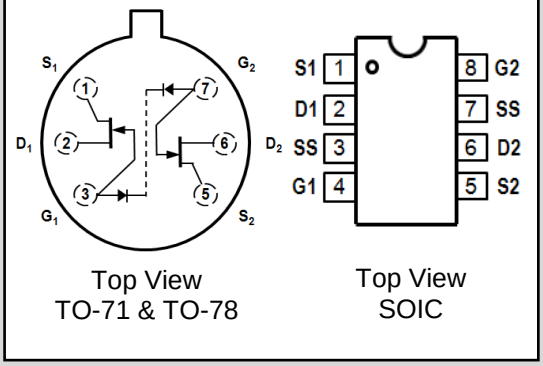
Twenty-Five Years Of Quality Through Innovation

LS3954A LS3954 LS3955 LS3956 LS3958

LOW NOISE LOW DRIFT MONOLITHIC DUAL N-CHANNEL JFET AMPLIFIER

FEATURES	
LOW DRIFT	$\lvert\Delta V_{GS1-2}/\Delta T\rvert$ =5µV/°C max.
LOW LEAKAGE	I_G=20pA TYP.
LOW NOISE	e_n=10Nv/√Hz TYP.

ABSOLUTE MAXIMUM RATINGS[1] @ 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[1]		
$-V_{GSS}$	Gate Voltage to Drain or Source	60V
$-I_{G(f)}$	Gate Forward Current	50mV
Maximum Power Dissipation		
Device Dissipation @ Free Air - Total		400mW @ 25ºC[2]



Top View TO-71 & TO-78

Top View SOIC

ELECTRICAL CHARACTERISTICS @ 25ºC (unless otherwise noted)

SYMBOL	CHARACTERISTIC	LS3954A	LS3954	LS3955	LS3956	LS3958	UNITS	CONDITIONS
$\lvert\Delta V_{GS1-2}/\Delta T\rvert$ max.	Drift vs. Temperature	5	10	25	50	100	µV/ºC	V_{DG} = 20V, I_D=200µA T_A = -55ºC to +125ºC
$\lvert V_{GS1-2}\rvert$ max.	Offset Voltage	5	5	10	15	25	mV	V_{DG} =20V, I_D=200µA

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS		
BV_{GSS}	Breakdown Voltage	60	--	--	V	V_{DS}= 0	I_G= 1µA	
BV_{GGO}	Gate-to-Gate Breakdown	60	--	--	V	I_{GG}= ±1µA	I_D= 0	I_S= 0
	TRANSCONDUCTANCE							
g_{fss}	Full Conduction	1000	2000	4000	µS	V_{DG}= 20V	V_{GS}= 0	f = 1kHz
g_{fs}	Typical Operation	500	700	1250	µS	V_{DG}= 20V	I_D= 200µA	
$\lvert g_{fs1-2}/g_{fs}\rvert$	Differential	--	±0.6	±3	%			
	DRAIN CURRENT							
I_{DSS}	Full Conduction	0.5	2	5	mA	V_{DS}= 20V	V_{GS}= 0	
$\lvert I_{DSS1-2}/I_{DSS}\rvert$	Differential	--	±1	±5	%			
	GATE VOLTAGE							
V_{GS}(off)	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= 200µA	
	GATE CURRENT							
$-I_G$	Operating	--	20	50	pA	V_{DG}= 20V	I_D= 200µA	
$-I_G$	High Temperature	--	--	50	nA	V_{DG}= 20V	I_D= 200µA	T_A=+125 ºC
$-I_G$	Reduced V_{DG}	--	5	--	pA	V_{DG}= 10V	I_D= 200µA	
$-I_{GSS}$	At Full Conduction	--	--	100	pA	V_{DG}= 20V	V_{DS}= 0	

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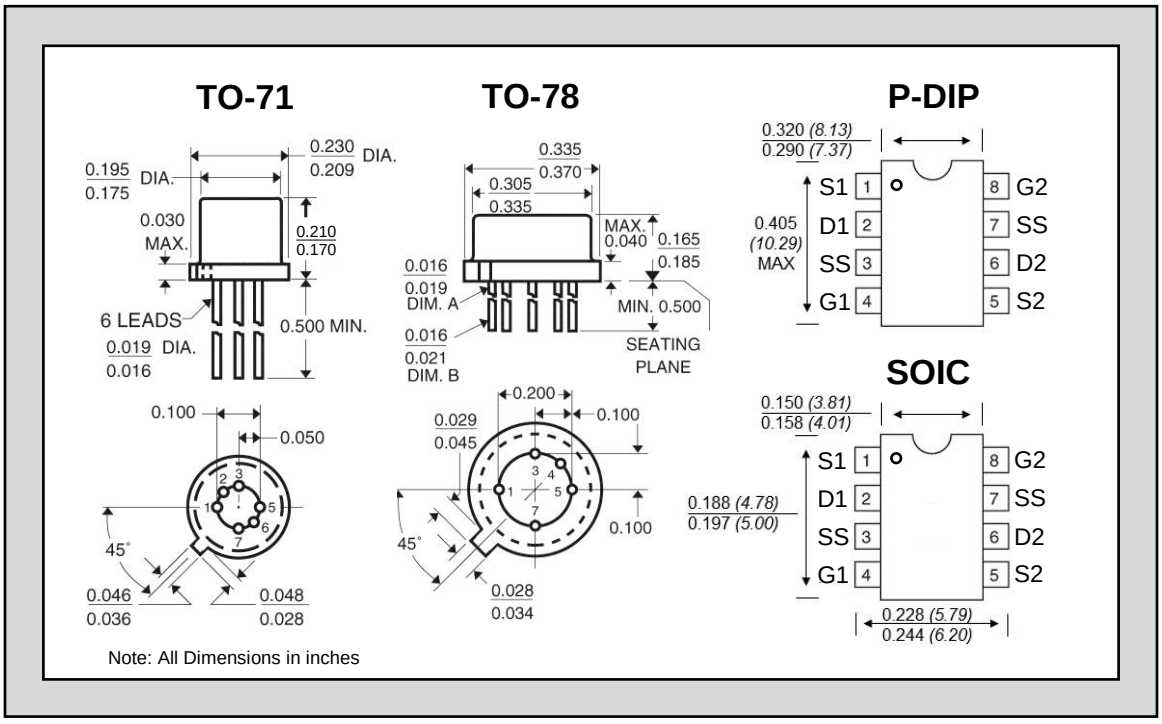
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNITS	CONDITIONS
	OUTPUT CONDUCTANCE					
g_{oss}	Full Conduction	--	--	35	µS	V_{DG}= 20V V_{GS}= 0
g_{os}	Operating	--	0.5	1	µS	V_{DG}= 20V I_D= 200µA
$\lvert g_{os1-2} \rvert$	Differential	--	0.05		µS	
	COMMON MODE REJECTION					
CMRR	-20 log $\lvert \Delta V_{GS1-2}/\Delta V_{DS} \rvert$	--	100	--	dB	ΔV_{DS}= 10 to 20V I_D=200µA
CMRR	-20 log $\lvert \Delta V_{GS1-2}/\Delta V_{DS} \rvert$	--	75	--	dB	ΔV_{DS}= 5 to 10V I_D=200µA
	NOISE					
NF	Figure	--	--	0.5	dB	V_{DS}= 20V V_{GS}= 0 R_G=10MΩ f= 100Hz NBW=6Hz
e_n	Voltage	--	--	15	nV/√Hz	V_{DS}= 20V I_D= 200µA f= 10Hz NBW=1Hz
	CAPACITANCE					
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= 200µA



NOTES:

1. These ratings are limiting values above which the serviceability of any semiconductor may be impaired.
2. Derate 4mWºC above 25ºC

Linear Integrated Systems (LIS) is a 25-year-old, third-generation precision semiconductor company providing high-quality discrete components. Expertise brought to LIS is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company President John H. Hall. Hall, a protégé of Silicon Valley legend Dr. Jean Hoerni, was the director of IC Development at Union Carbide, Co-Founder and Vice President of R&D at Intersil, and Founder/President of Micro Power Systems.

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