

The LS3954A is a Low Noise, Low Drift, Monolithic Dual N-Channel JFET

The LS3954A family are matched JFET pairs for differential amplifiers. The LS3954A family of general purpose JFETs is characterized for low and medium frequency differential amplifiers requiring low offset voltage, drift, noise and capacitance

The LS3954A family exhibits low capacitance - 6pF max and a spot noise figure of - 0.5dB max. The part offers a superior tracking ability.

The 8 Pin P-DIP and 8 Pin SOIC provide ease of manufacturing, and the symmetrical pinout prevents improper orientation.

(See Packaging Information).

LS3954A Applications:

- Wideband Differential Amps
- High Input Impedance Amplifiers

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

@ 25°C (unless otherwise noted)

Maximum Temperatures

Storage Temperature	-65°C to +200°C
Operating Junction Temperature	+150°C

Maximum Voltage and Current for Each Transistor – Note 1

-V _{GSS}	Gate Voltage to Drain or Source	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
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MATCHING CHARACTERISTICS @ 25°C UNLESS OTHERWISE NOTED

SYMBOL	CHARACTERISTICS	VALUE	UNITS	CONDITIONS
$ V_{GS1-2} / T $ max.	DRIFT VS. TEMPERATURE	5	$\mu V/^{\circ}C$	V _{DG} =20V, I _D =200 μA T _A =-55°C to +125°C
$ V_{GS1-2} $ max.	OFFSET VOLTAGE	5	mV	V _{DG} =20V, I _D =200 μA

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

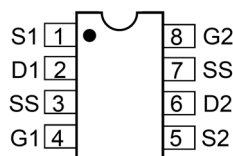
SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV _{GSS}	Breakdown Voltage	60	--	--	V	V _{DS} = 0 I _D =1 μA
BV _{GGO}	Gate-To-Gate Breakdown	60	--	--	V	I _G = 1nA I _D = 0 I _S = 0
TRANSCONDUCTANCE						
Y _{FSS}	Full Conduction	1000	2000	3000	μmho	V _{DG} = 20V V _{GS} = 0V f = 1kHz
Y _{FS}	Typical Operation	500	700	1000	μmho	V _{DG} = 20V I _D = 200 μA
$ Y_{FS1-2} / Y_{FS} $	Mismatch	--	0.6	3	%	
DRAIN CURRENT						
I _{DSS}	Full Conduction	0.5	2	5	mA	V _{DG} = 20V V _{GS} = 0V
$ I_{DSS1-2} / I_{DSS} $	Mismatch at Full Conduction	--	1	5	%	
GATE VOLTAGE						
V _{GS(off)} or V _p	Pinchoff voltage	1	2	4.5	V	V _{DS} = 20V I _D = 1nA
V _{GS(on)}	Operating Range	0.5	--	4	V	V _{DS} =20V I _D =200 μA
GATE CURRENT						
-I _G	Operating	--	20	50	pA	V _{DG} = 20V I _D = 200 μA
-I _G	High Temperature	--	--	50	nA	T _A = +125°C
-I _G	Reduced V _{DG}	--	5	--	pA	V _{DG} = 10V I _D = 200 μA
-I _{GSS}	At Full Conduction	--	--	100	pA	V _{DG} = 20V V _{DS} = 0
OUTPUT CONDUCTANCE						
Y _{OSS}	Full Conduction	--	--	5	μmho	V _{DG} = 20V V _{GS} = 0V
Y _{OS}	Operating	--	0.1	1	μmho	V _{DG} = 20V I _D = 200 μA
$ Y_{OS1-2} $	Differential	--	0.01	0.1	μmho	
COMMON MODE REJECTION						
CMR	-20 log V _{GS1-2} /V _{DS}	--	100	--	dB	$\Delta V_{DS} = 10$ to 20V I _D =200 μA
CMR	-20 log V _{GS1-2} /V _{DS}	--	75	--	dB	$\Delta V_{DS} = 5$ to 10V I _D =200 μA
NOISE						
NF	Figure	--	--	0.5	dB	V _{DS} = 20V V _{GS} = 0V R _G = 10M Ω f= 100Hz NBW= 6Hz
e _n	Voltage	--	--	15	nV/ $\sqrt{Hz}$	V _{DS} =20V I _D =200 μA f=10Hz NBW=1Hz
CAPACITANCE						
C _{ISS}	Input	--	--	6	pF	V _{DS} = 20V V _{GS} = 0V f= 1MHz
C _{RSS}	Reverse Transfer	--	--	2	pF	
C _{DD}	Drain-to-Drain	--	0.1	--	pF	V _{DG} = 20V I _D = 200 μA

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

Available Packages:

LS3954A in PDIP / SOIC
LS3954A available as bare die
Please contact [Micross](http://www.micross.com) for full package and die dimensions

PDIP / SOIC (Top View)



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