

Linear Systems Ultra Low Leakage Low Drift Monolithic Dual JFET

The LS840 is a high-performance monolithic dual JFET featuring extremely low noise, tight offset voltage and low drift over temperature specifications, and is targeted for use in a wide range of precision instrumentation applications. The LS840 features a 5-mV offset and 5- $\mu\text{V}/^\circ\text{C}$ drift.

The 6 Pin SOT-23 package provides ease of manufacturing, and a lower cost assembly option.

(See Packaging Information).

LS840 Applications:

- Wideband Differential Amps
- High-Speed, Temp-Compensated Single-Ended Input Amps
- High-Speed Comparators
- Impedance Converters and vibrations detectors.

FEATURES

LOW DRIFT	$ V_{GS1-2}/T \leq 5\mu\text{V}/^\circ\text{C}$	
LOW LEAKAGE	$I_G = 10\text{pA TYP.}$	
LOW NOISE	$e_n = 8\text{nV}/\sqrt{\text{Hz}}$ TYP.	
LOW OFFSET VOLTAGE	$ V_{GS1-2} = 2\text{mV TYP.}$	
ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)		
Maximum Temperatures		
Storage Temperature	-65°C 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	60V
$-V_{DSO}$	Drain to Source Voltage	60V
$-I_{G(f)}$	Gate Forward Current	50mA
Maximum Power Dissipation		
Device Dissipation @ Free Air – Total	400mW @ +125°C	

MATCHING CHARACTERISTICS @ 25°C UNLESS OTHERWISE NOTED

SYMBOL	CHARACTERISTICS	VALUE	UNITS	CONDITIONS
$ V_{GS1-2}/T \text{ max.}$	DRIFT VS. TEMPERATURE	5	$\mu\text{V}/^\circ\text{C}$	$V_{DG}=20\text{V}, I_D=200\mu\text{A}$ $T_A=-55^\circ\text{C}$ to $+125^\circ\text{C}$
$ V_{GS1-2} \text{ max.}$	OFFSET VOLTAGE	5	mV	$V_{DG}=20\text{V}, I_D=200\mu\text{A}$

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTICS	MIN.	TYP.	MAX.	UNITS	CONDITIONS
BV_{GSS}	Breakdown Voltage	60	60	--	V	$V_{DS} = 0$ $I_D=1\text{nA}$
BV_{GGO}	Gate-To-Gate Breakdown	60	--	--	V	$I_G = 1\text{nA}$ $I_D = 0$ $I_S = 0$
TRANSCONDUCTANCE						
Y_{fSS}	Full Conduction	1000	--	4000	μmho	$V_{DG}=20\text{V}$ $V_{GS}=0\text{V}$ $f = 1\text{kHz}$
Y_{fS}	Typical Operation	500	--	1000	μmho	$V_{DG}=20\text{V}$ $I_D=200\mu\text{A}$
$ Y_{fS1-2}/Y_{fS} $	Mismatch	--	0.6	3	%	
DRAIN CURRENT						
I_{DSS}	Full Conduction	0.5	2	5	mA	$V_{DG}=20\text{V}$ $V_{GS}=0\text{V}$
$ I_{DSS1-2}/I_{DSS} $	Mismatch at Full Conduction	--	1	5	%	
GATE VOLTAGE						
$V_{GS}(\text{off})$ or V_p	Pinchoff voltage	1	2	4.5	V	$V_{DS}=20\text{V}$ $I_D=1\text{nA}$
$V_{GS}(\text{on})$	Operating Range	0.5	--	4	V	$V_{DS}=20\text{V}$ $I_D=200\mu\text{A}$
GATE CURRENT						
$-I_G \text{ max.}$	Operating	--	10	50	pA	$V_{DG}=20\text{V}$ $I_D=200\mu\text{A}$
$-I_G \text{ max.}$	High Temperature	--	--	50	nA	$T_A = +125^\circ\text{C}$
$-I_G \text{ max.}$	Reduced V_{DG}	--	5	--	pA	$V_{DG}=10\text{V}$ $I_D=200\mu\text{A}$
$-I_{GSS} \text{ max.}$	At Full Conduction	--	--	100	pA	$V_{DG}=20\text{V}, V_{DS}=0$
OUTPUT CONDUCTANCE						
Y_{OSS}	Full Conduction	--	--	10	μmho	$V_{DG}=20\text{V}$ $V_{GS}=0\text{V}$
Y_{OS}	Operating	--	0.1	1	μmho	$V_{DG}=20\text{V}$ $I_D=200\mu\text{A}$
$ 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 $I_D=200\mu\text{A}$
	$-20 \log V_{GS1-2}/V_{DS} $	--	75	--	dB	$\Delta V_{DS} = 5$ to 10V $I_D=200\mu\text{A}$
NOISE						
NF	Figure	--	--	0.5	dB	$V_{DS}=20\text{V}$ $V_{GS}=0\text{V}$ $R_G=10\text{M}\Omega$ $f=100\text{Hz}$ $\text{NBW}=6\text{Hz}$
e_n	Voltage	--	--	10	nV/ $\sqrt{\text{Hz}}$	$V_{DS}=20\text{V}$ $I_D=200\mu\text{A}$ $f=1\text{kHz}$ $\text{NBW}=1\text{Hz}$
		--	--	15		$V_{DS}=20\text{V}$ $I_D=200\mu\text{A}$ $f=10\text{Hz}$ $\text{NBW}=1\text{Hz}$
CAPACITANCE						
C_{ISS}	Input	--	4	10	pF	$V_{DS}=20\text{V}, I_D=200\mu\text{A}$
C_{RSS}	Reverse Transfer	--	1.2	5		
C_{DD}	Drain-to-Drain	--	0.1	--		

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

Available Packages:

LS840 / LS840 in SOT-23
LS840 / LS840 available as bare die
Please contact [Micross](http://www.micross.com) for full package and die dimensions

