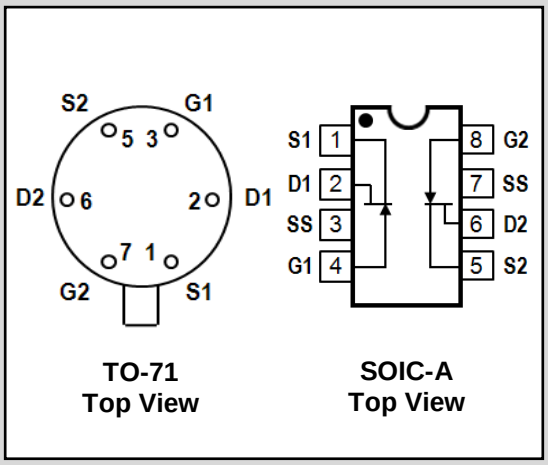
LINEAR SYSTEMS

Over Three Decades of Quality Through Innovation

LSK389

ULTRA LOW NOISE MONOLITHIC DUAL N-CHANNEL JFET AMPLIFIER

FEATURES	
ULTRA LOW NOISE	e_n = 0.9nV/√Hz (typ)
TIGHT MATCHING	$\lvert V_{GS1-2} \rvert$ = 20mV max
HIGH BREAKDOWN VOLTAGE	BV_{GSS} = 40V max
HIGH GAIN	G_{fs} = 20mS (typ)
LOW CAPACITANCE	25pF typ
IMPROVED SECOND SOURCE REPLACEMENT FOR 2SK389	
ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-65 to +150°C
Junction Operating Temperature	-55 to +135°C
Maximum Power Dissipation	
Continuous Power Dissipation @ +25°C	400mW
Maximum Currents	
Gate Forward Current	$I_{G(F)}$ = 10mA
Maximum Voltages	
Gate to Source	V_{GSS} = 40V
Gate to Drain	V_{GDS} = 40V



* For equivalent single version, see LSK170 family

MATCHING CHARACTERISTICS @ 25°C (unless otherwise stated)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
$\lvert V_{GS1} - V_{GS2} \rvert$	Differential Gate to Source Cutoff Voltage			20	mV	V_{DS} = 10V, I_D = 1mA
$\frac{I_{DSS1}}{I_{DSS2}}$	Gate to Source Saturation Current Ratio	0.9			---	V_{DS} = 10V, V_{GS} = 0V

ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise stated)

SYMBOL	CHARACTERISTIC		MIN	TYP	MAX	UNITS	CONDITIONS
BV_{GSS}	Gate to Source Breakdown Voltage		-40			V	V_{DS} = 0, I_D = -100µA
$V_{GS(OFF)}$	Gate to Source Pinch-off Voltage		-0.15		-2	V	V_{DS} = 10V, I_D = 0.1µA
I_{DSS}	Drain to Source Saturation Current	LSK389A	2.6		6.5	mA	V_{DS} = 10V, V_{GS} = 0
		LSK389B	6		12		
		LSK389C	10		20		
		LSK389D	17		30		
I_{GSS}	Gate to Source Leakage Current				-200	pA	V_{GS} = -30V, V_{DS} = 0
I_{G1G2}	Gate to Gate Isolation Current				±1.0	µA	V_{G1-G2} = ±45V, I_D = I_S = 0A

Note: All MIN/TYP/MAX limits are absolute numbers. Negative signs indicate electrical polarity only.

Linear Integrated Systems

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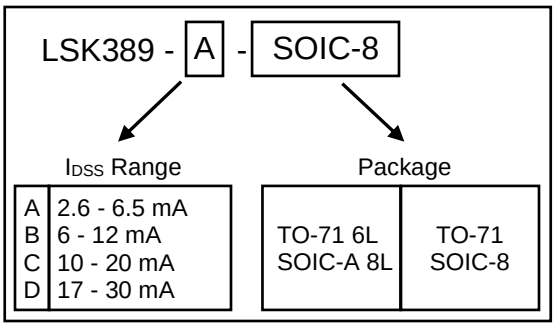
ELECTRICAL CHARACTERISTICS CONT. @ 25°C (unless otherwise stated)

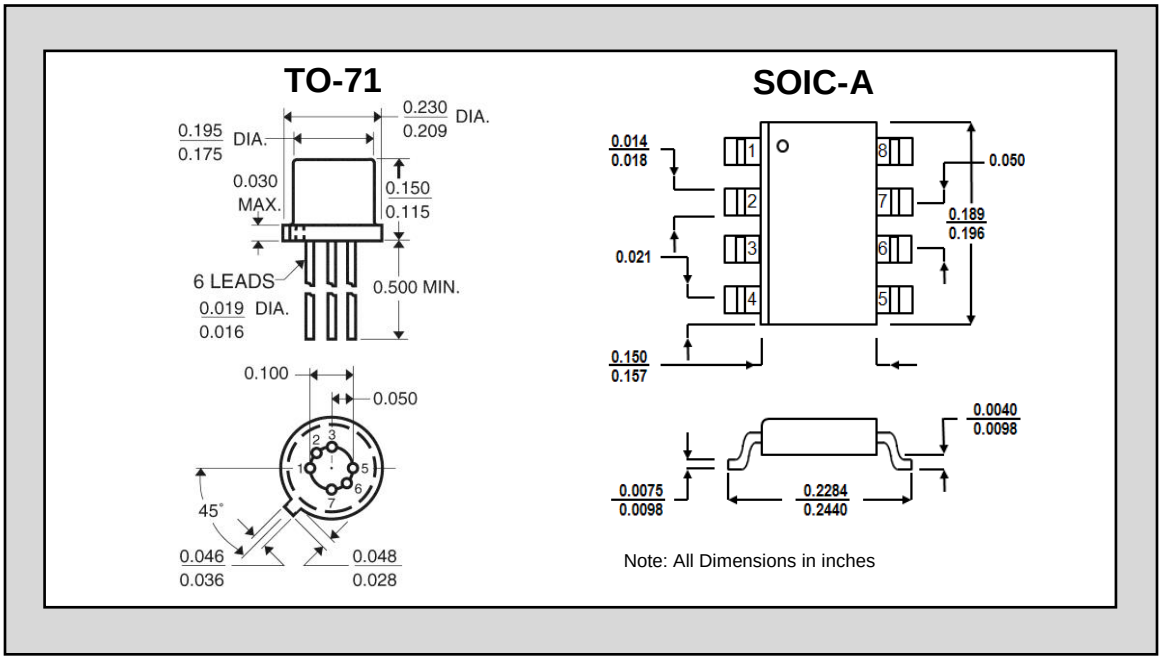
SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
G_{fs}	Full Conduction Transconductance	8	20		mS	V_{DS} = 10V, V_{GS} = 0, *f* = 1kHz
e_n	Noise Voltage		1.9		Nv/√Hz	V_{DS} = 10V, I_D = 2mA, *f* = 1kHz, NBW = 1Hz
e_n	Noise Voltage		4.0		Nv/√Hz	V_{DS} = 10V, I_D = 2mA, *f* = 10Hz, NBW = 1Hz
C_{ISS}	Common Source Input Capacitance		25		pF	V_{DS} = 10V, V_{GS} = 0, *f* = 1MHz,
C_{RSS}	Common Source Reverse Transfer Cap.		5.5		pF	V_{DG} = 10V, I_D = 0, *f* = 1MHz,

Note: The noise spec is a spec that is guaranteed by design.

ORDERING INFORMATION



PACKAGE DIMENSIONS



NOTES:

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.

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.