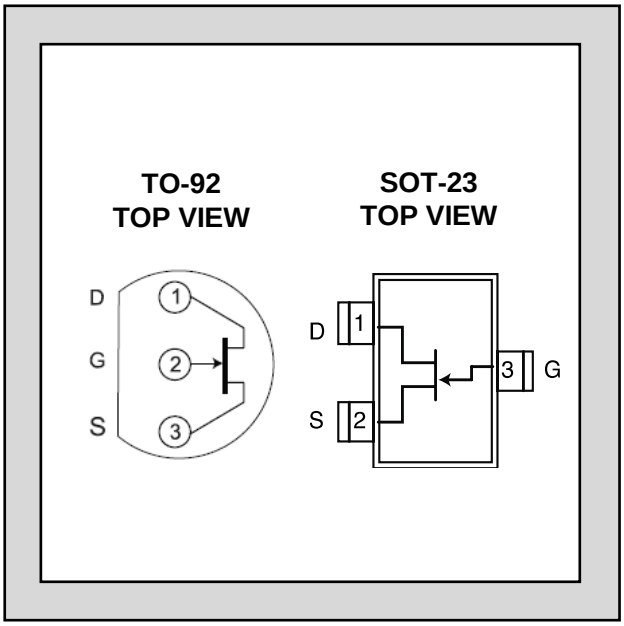
LINEAR SYSTEMS

Over Three Decades of Quality Through Innovation

LSK170

ULTRA LOW NOISE SINGLE N-CHANNEL JFET AMPLIFIER

FEATURES	
ULTRA LOW NOISE (f=1kHz)	e_n = 0.9NV/√HZ
HIGH BREAKDOWN VOLTAGE	BV_{GSS} = 40V max
HIGH GAIN	G_{fs} = 22mS (typ)
HIGH INPUT IMPEDANCE	I_G > 20GΩ
LOW CAPACITANCE	22pF max
IMPROVED SECOND SOURCE REPLACEMENT FOR 2SK170	
ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-55 to +150 °C
Operating Junction 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 monolithic dual, see LSK389 family.

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} = 0V, I_D = 100µA
$V_{GS(OFF)}$	Gate to Source Pinch-off Voltage		-0.2		-2	V	V_{DS} = 10V, I_D = 1nA
V_{GS}	Gate to Source Operating Voltage			0.5		V	V_{DS} = 10V, I_D = 1mA
I_{DSS}[2]	Drain to Source Saturation Current	LSK170A	2.6		6.5	mA	V_{DS} = 10V, V_{GS} = 0
		LSK170B	6		12		
		LSK170C	10		20		
		LSK170D	18		30		
I_G	Gate Operating Current				-0.5	nA	V_{DG} = 10V, I_D = 1mA
I_{GSS}	Gate to Source Leakage Current				-1	nA	V_{GS} = -10V, V_{DS} = 0V
G_{fS}	Full Conduction Transconductance			22		mS	V_{DS} = 10V, V_{GS} = 0, *f* = 1kHz
G_{fS}	Typical Conduction Transconductance			10		mS	V_{DS} = 15V, I_D = 1mA
e_n	Noise Voltage			1.9		nV/√Hz	V_{DS} = 10V, I_D = 2mA, *f* = 1kHz, NBW=1Hz
e_n	Noise Voltage			4		nV/√Hz	V_{DS} = 10V, I_D = 2mA, *f* = 10 Hz, NBW=1Hz
C_{ISS}	Common Source Input Capacitance			20		pF	V_{DS} = 15V, I_D = 100µA, *f* = 1MHz
C_{RSS}	Common Source Reverse Transfer Cap.			5		pF	

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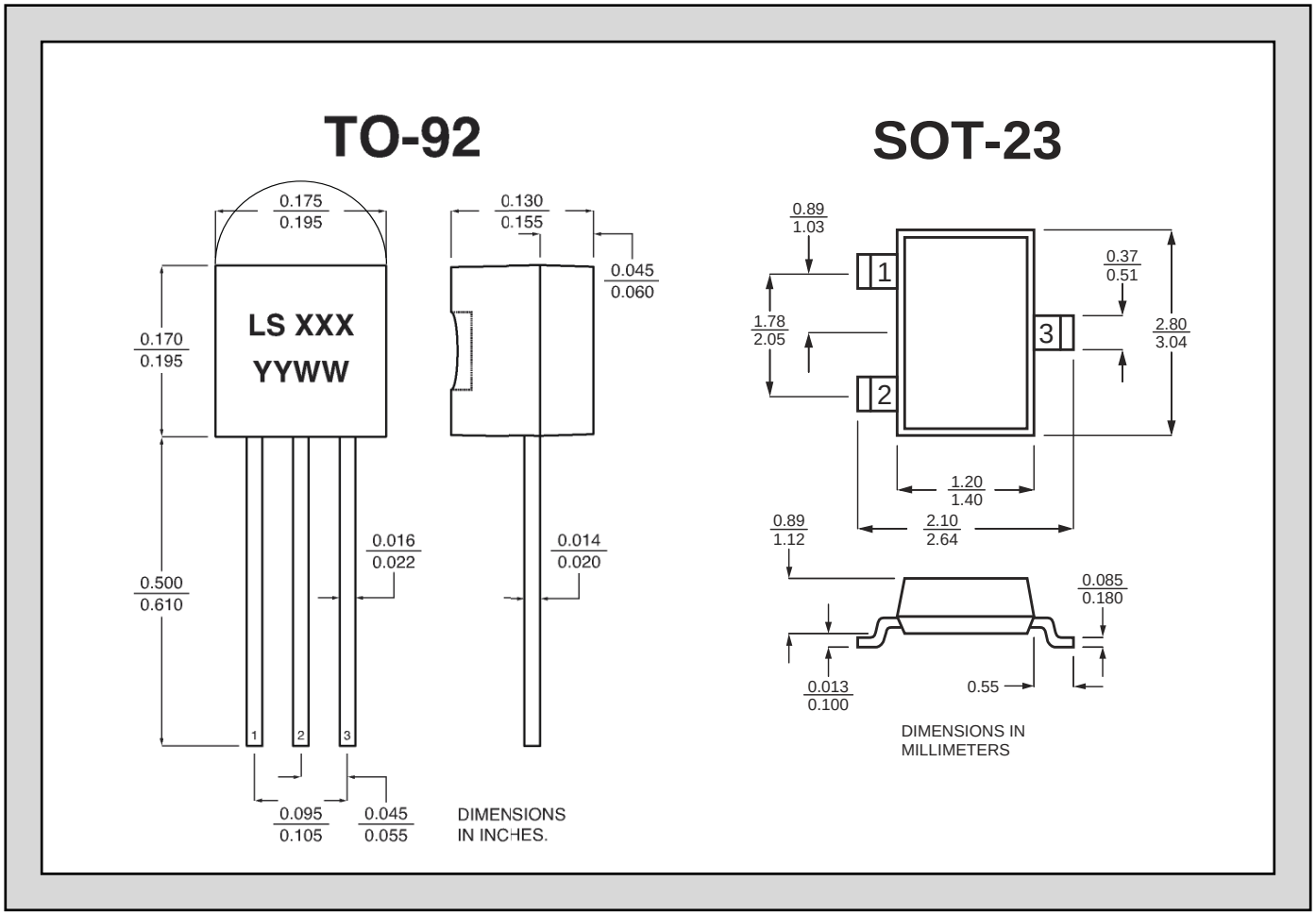

NOTES:

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 3%
3. All characteristics MIN/TYP/MAX numbers are absolute values. Negative values indicate electrical polarity only.

Linear Integrated Systems (LIS), established in 1987, is a 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 Founder 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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