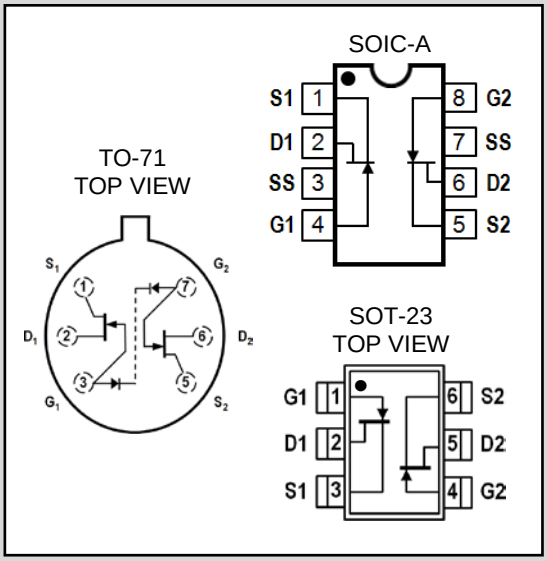
LINEAR SYSTEMS

Over 30 Years of Quality Through Innovation

LSK589

LOW NOISE, LOW CAPACITANCE MONOLITHIC DUAL N-CHANNEL JFET

FEATURES	
ULTRA LOW NOISE	e_n = 4.0 nV/√Hz
LOW INPUT CAPACITANCE	Ciss = 5pF
HIGH TRANSCONDUCTANCE	Gfs ≥ 4000µS



ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-55 to +150°C
Junction Operating Temperature	-55 to +150°C
Maximum Power Dissipation, TA = 25°C	
Continuous Power Dissipation, per side [4]	250mW
Power Dissipation, total [5]	500mW
Maximum Currents	
Gate Forward Current	$I_{G(F)}$ = 50mA
Maximum Voltages	
Gate to Source	V_{GSO} = 25V
Gate to Drain	V_{GDO} = 25V

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 = 5mA
$\frac{I_{DSS1}}{I_{DSS2}}$	Gate to Source Saturation Current Ratio	0.9		1.0		V_{DS} = 10V, V_{GS} = 0V (Note 2)
CMRR	**COMMON MODE REJECTION RATIO** $-20 \log \lvert \Delta V_{GS1-2}/\Delta V_{DS} \rvert$	85			dB	V_{DG} = 5V to 10V, I_D = 5mA

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
e_n	Noise Voltage		7		nV/√Hz	V_{DS} = 10V, I_D = 5mA, *f* = 100Hz
e_n	Noise Voltage		4		nV/√Hz	V_{DS} = 10V, I_D = 5mA, *f* = 10kHz
C_{ISS}	Common Source Input Capacitance			5	pF	V_{DS} = 10V, I_D = 5mA, *f* = 1MHz
C_{RSS}	Common Source Reverse Transfer Capacitance			1.2	pF	

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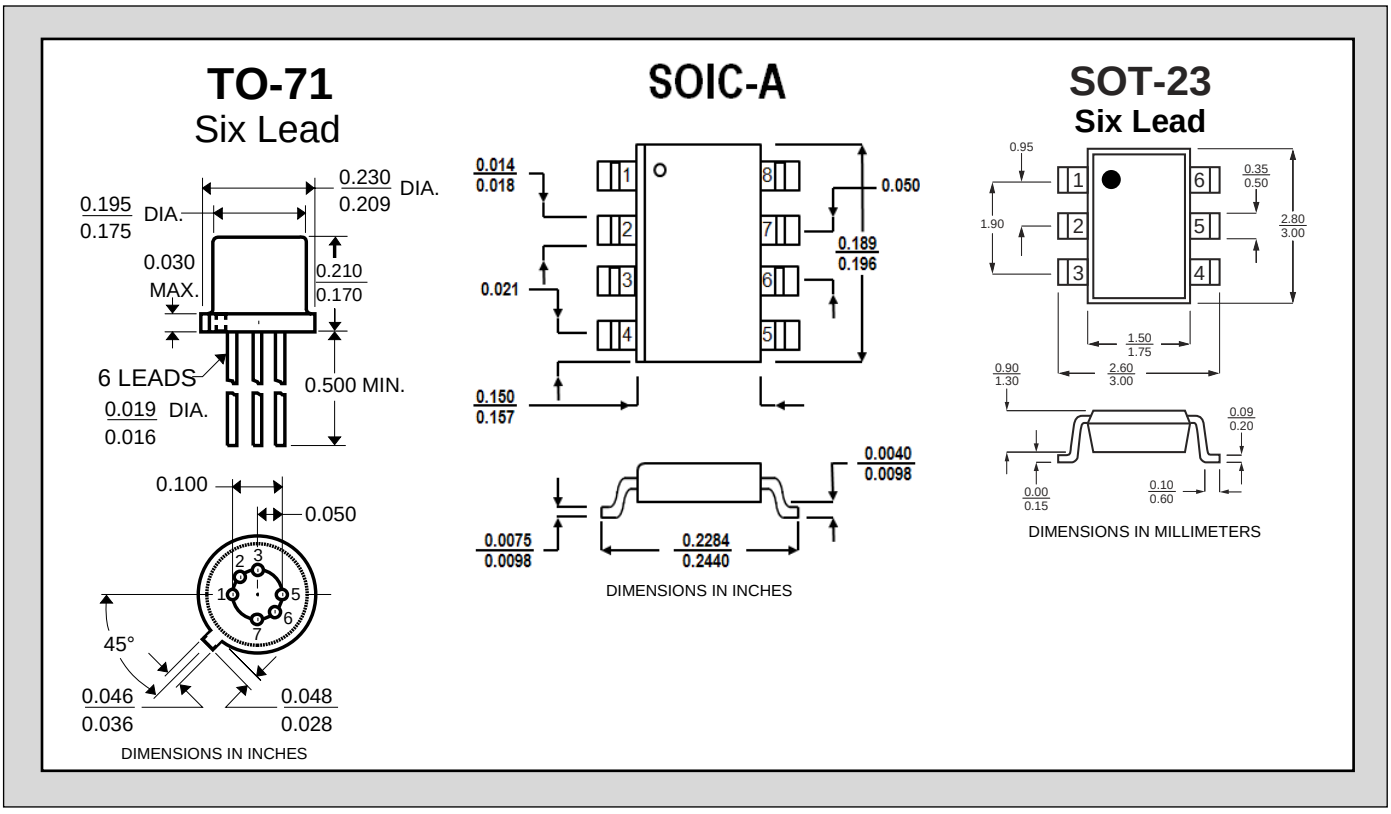
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise stated)

SYMBOL	CHARACTERISTIC		MIN	TYP	MAX	UNITS	CONDITIONS
BV_{GSS}	Gate to Source Breakdown Voltage		-25			V	V_{DS} = 0, I_D = 1µA
$V_{GS(OFF)}$	Gate to Source Pinch-off Voltage		-1.5		-5	V	V_{DS} = 10V, I_D = 1nA
V_{GS}	Gate to Source Operating Voltage		-0.3		-4.0	V	V_{DS} = 10V, I_D = 5mA
I_{DSS}	Drain to Source Saturation Current		7.0		40	mA	V_{DS} = 10V, V_{GS} = 0V (Note 2)
I_G	Gate Operating Current			-1	-50	pA	V_{DG} = 10V, I_D = 5mA
I_{GSS}	Gate to Source Leakage Current				-50	pA	V_{gs} = -15V, V_{DS} = 0
G_{OS}	Output Conductance F = 1kHz				100	µS	V_{DS} = 10V, I_D = 5mA
NF	Noise Figure				1.0	dB	V_{DS} = 10V, I_D = 5mA, R_G = 100KΩ, *f* = 100Hz
G_{fs}	Forward Transconductance	*f* = 1kHz	4000		10000	µS	V_{DS} = 10V, I_D = 5mA
		f = 100MHz		7000			
Gos	Output Transconductance	*f* = 1kHz			100		
		f = 100MHz		120			

PACKAGE DIMENSIONS



NOTES:

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse Test: PW ≤ 300 µs, Duty Cycle ≤ 3%
3. All MIN/TYP/MAX Limits are absolute values. Negative signs indicate electrical polarity only.
4. Derate 2.0 mW/°C above 25°C.
5. Derate 4 mW/°C above 25°C.

Linear Integrated Systems develops and produces the highest performance semiconductors of their kind in the industry. Linear Systems, founded in 1987, uses patented and proprietary processes and designs to create its high performance discrete semiconductors. Expertise brought to the company is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company founder John H. Hall.

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