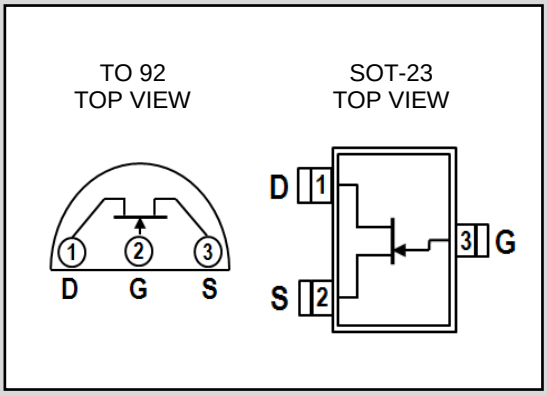
LINEAR SYSTEMS

Twenty-Five Years Of Quality Through Innovation

LSK189

LOW NOISE, LOW CAPACITANCE SINGLE N-CHANNEL JFET

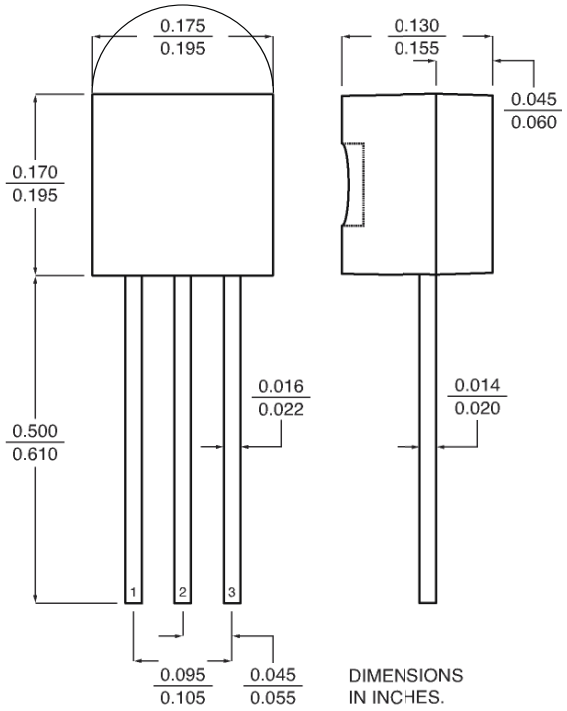
FEATURES	
ULTRA LOW NOISE	e_n = 1.8nV/√Hz
LOW INPUT CAPACITANCE	C_{ISS} = 4pF
ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-55 to +150°C
Junction Operating Temperature	-55 to +150°C
Maximum Power Dissipation	
Continuous Power Dissipation TA=25°C	300mW[4]
Maximum Currents	
Gate Forward Current	$I_{G(F)}$ = 10mA
Maximum Voltages	
Gate to Source	V_{GSO} = 60V
Gate to Drain	V_{GDO} = 60V



* For equivalent monolithic dual, see LSK489

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNITS	CONDITIONS
BV_{GSS}	Gate to Source Breakdown Voltage	-60			V	V_{DS} = 0, I_D = -1nA
$V_{GS(OFF)}$	Gate to Source Pinch-off Voltage	-1.5		-3.5	V	V_{DS} = 15V, I_D = 1nA
V_{GS}	Gate to Source Operating Voltage	-0.5		-3.5	V	V_{DS} = 15V, I_D = 500µA
I_{DSS}[2]	Drain to Source Saturation Current	2.5	5	15	mA	V_{DS} = 15V, V_{GS} = 0
I_G	Gate Operating Current		-2	-25	pA	V_{DG} = 15V, I_D = 200µA
I_G			-0.8	-10	nA	TA=125°C
I_{GSS}	Gate to Source Leakage Current			-100	pA	V_{GS} = -15V
G_{fs}	Full Conductance Transconductance	1500			µS	V_{DS} = 15V, V_{GS} = 0, *f* = 1kHz
		1000	1500		µS	V_{DS} = 15V, I_D = 500µA
G_{OS}	Full Output Conductance			40	µS	V_{DS} = 15V, V_{GS} = 0
G_{OS}	Output Conductance		1.8	2.7	µS	V_{DS} = 15V, I_D = 200µA
NF	Noise Figure			0.5	dB	V_{DS} = 15V, V_{GS} = 0, R_G = 10MΩ, *f* = 100Hz, NBW = 6Hz
e_n	Noise Voltage		1.8	2.0	nV/√Hz	V_{DS} = 15V, I_D = 2mA, *f* = 1kHz, NBW = 1Hz
e_n	Noise Voltage		2.8	3.5	nV/√Hz	V_{DS} = 15V, I_D = 2mA, *f* = 10Hz, NBW = 1Hz
C_{ISS}	Common Source Input Capacitance		4	8	pF	V_{DS} = 15V, I_D = 500µA, *f* = 1MHz
C_{RSS}	Common Source Reverse Transfer Cap.			3	pF	

TO-92



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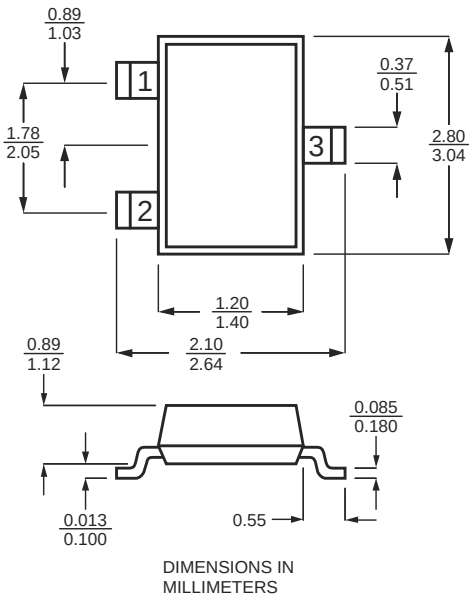
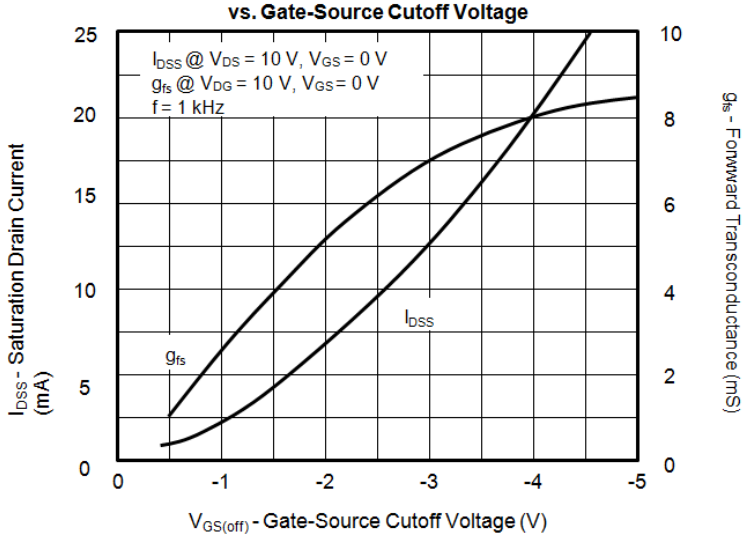


NOTES:

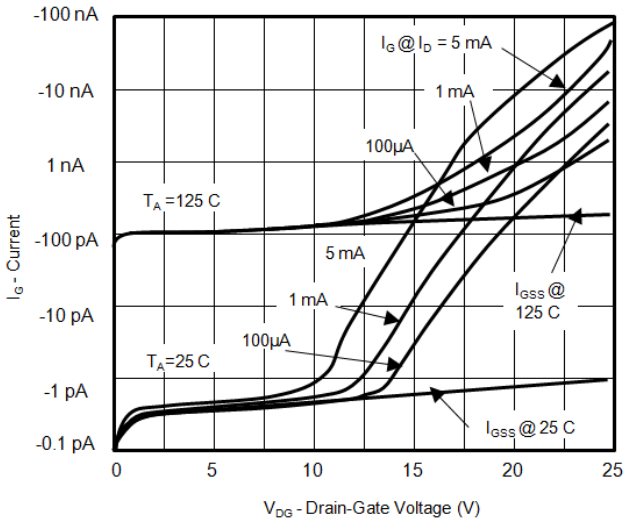
1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 3%.
3. All characteristics MIN/TYP/MAX numbers are absolute values. Negative values indicate electrical polarity only.
4. Derate 2.8 mW °C above 25°C.

Typical Characteristics

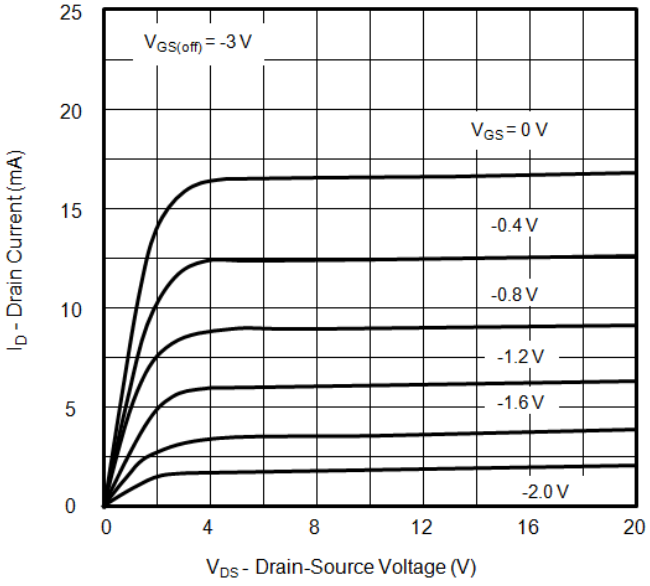
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



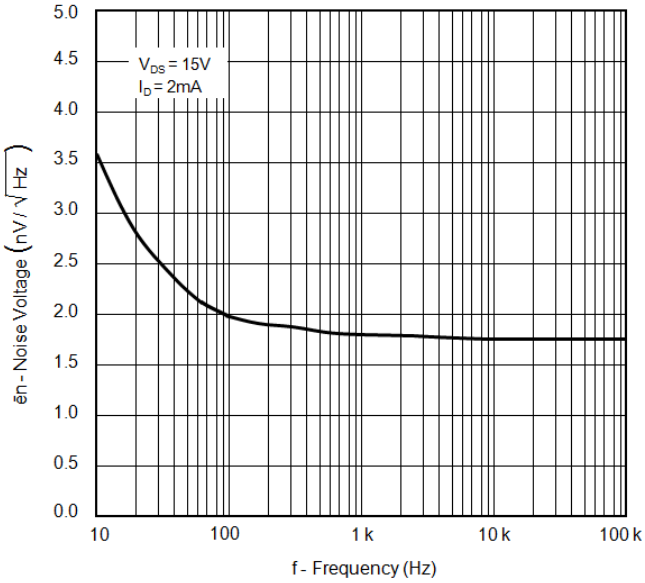
Operating Gate Current



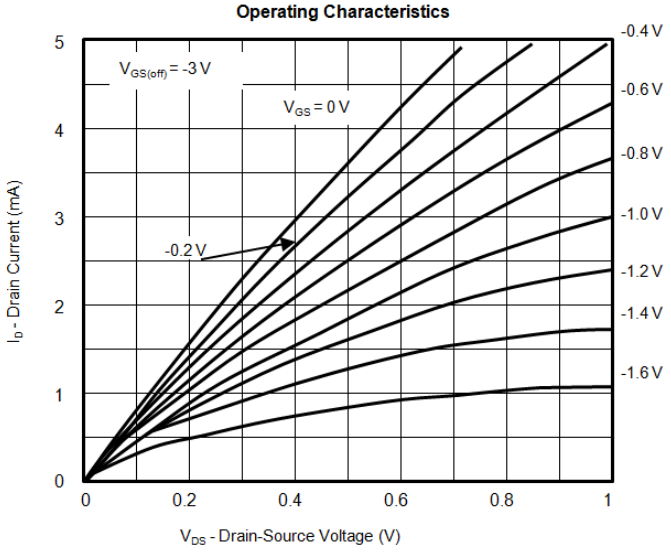
Output Characteristics



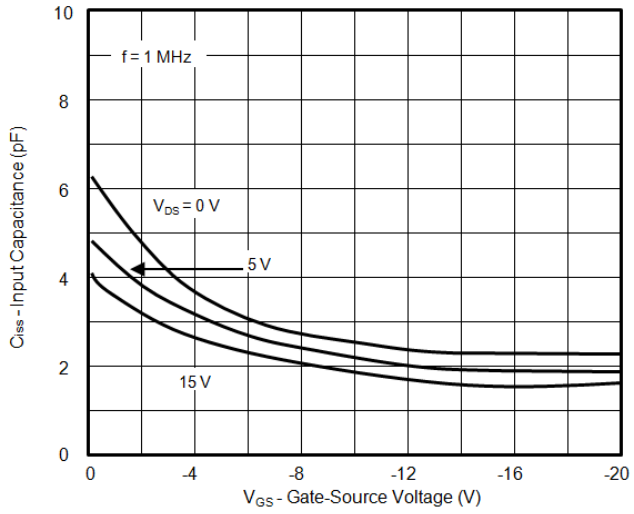
Equivalent Input Noise Voltage vs. Frequency



Operating Characteristics

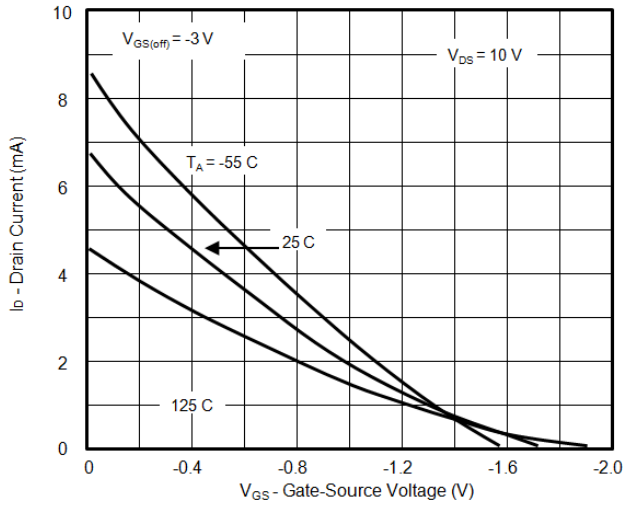


Common-Source Input Capacitance vs. Gate-Source Voltage

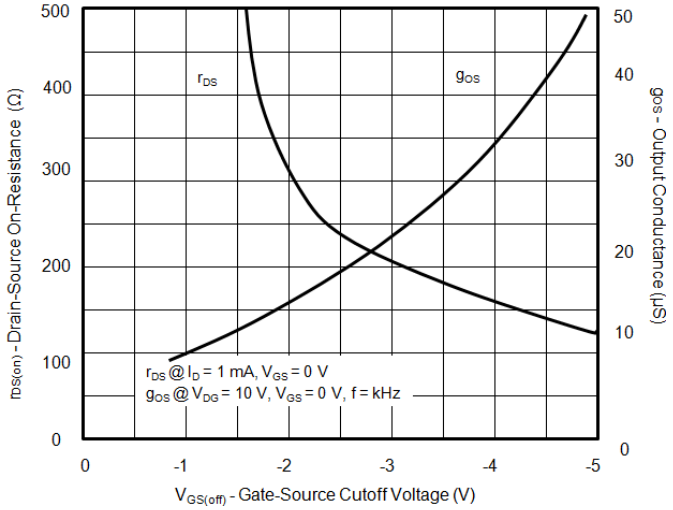


Typical Characteristics (Cont'd)

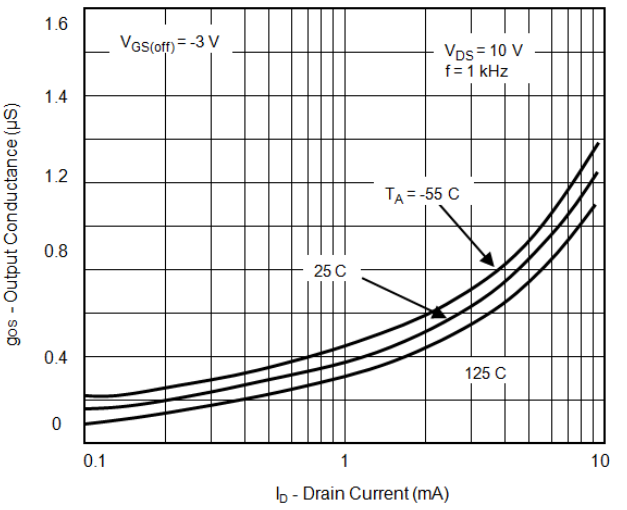
Transfer Characteristics



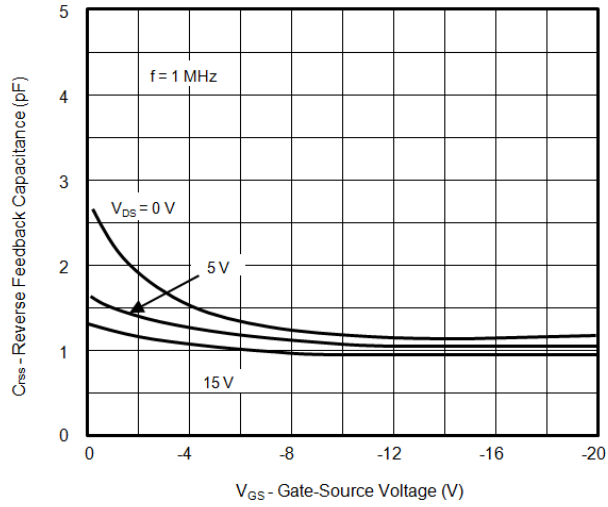
On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage



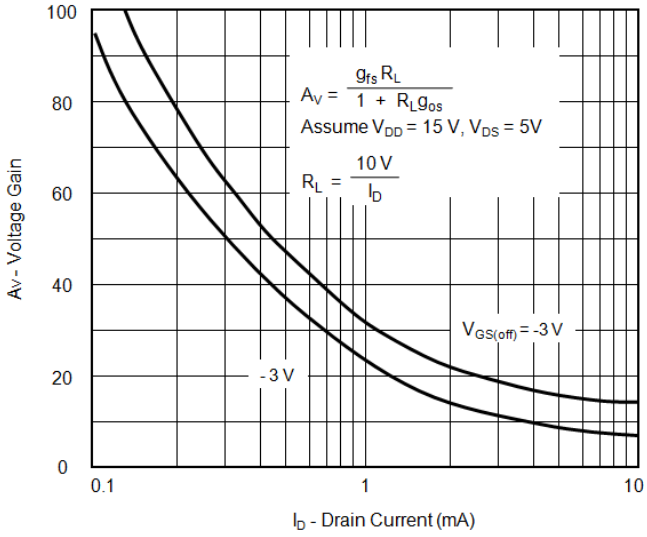
Output Conductance vs. Drain Current



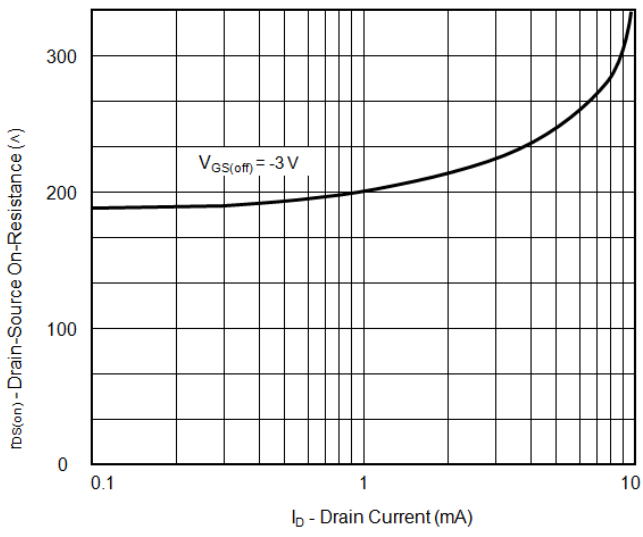
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



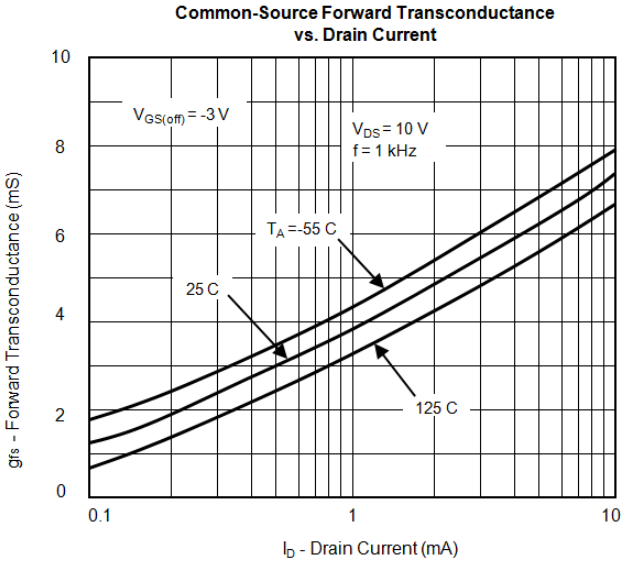
Circuit Voltage Gain vs. Drain Current



On-Resistance vs. Drain Current



Typical Characteristics (Cont'd)



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.