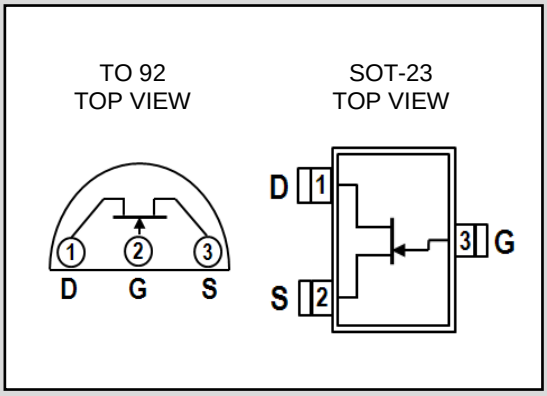
LINEAR SYSTEMS

Over 30 Years of Quality Through Innovation

LSK189

LOW NOISE, LOW CAPACITANCE SINGLE N-CHANNEL JFET

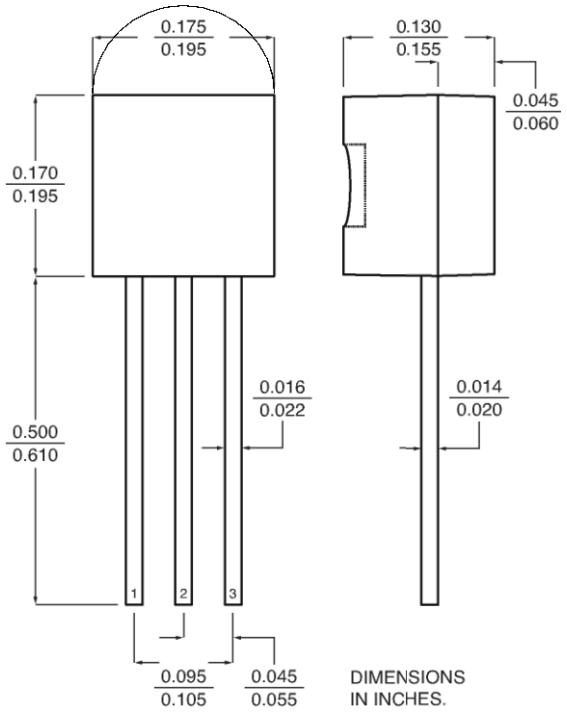
FEATURES	
ULTRA LOW NOISE	e_n = 1.8nV/√Hz
LOW INPUT CAPACITANCE	C_{ISS} = 4pF
ABSOLUTE MAXIMUM RATINGS[1] @ 25 °C (unless otherwise stated)	
Maximum Temperatures	
Storage Temperature	-55 to +150°C
Junction Operating Temperature	-55 to +150°C
Maximum Power Dissipation	
Continuous Power Dissipation TA=25°C	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



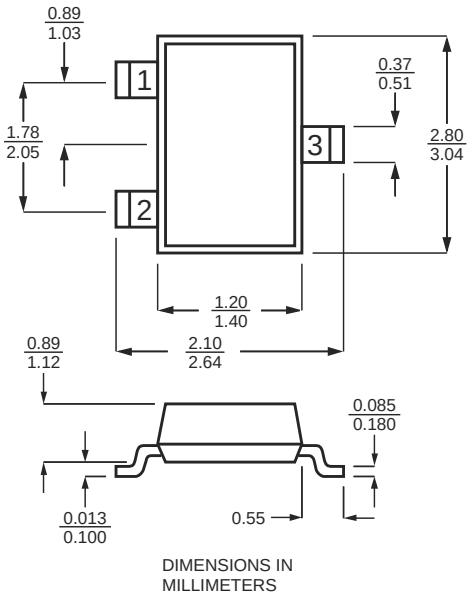
* For equivalent monolithic dual, see LSK489

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



SOT-23



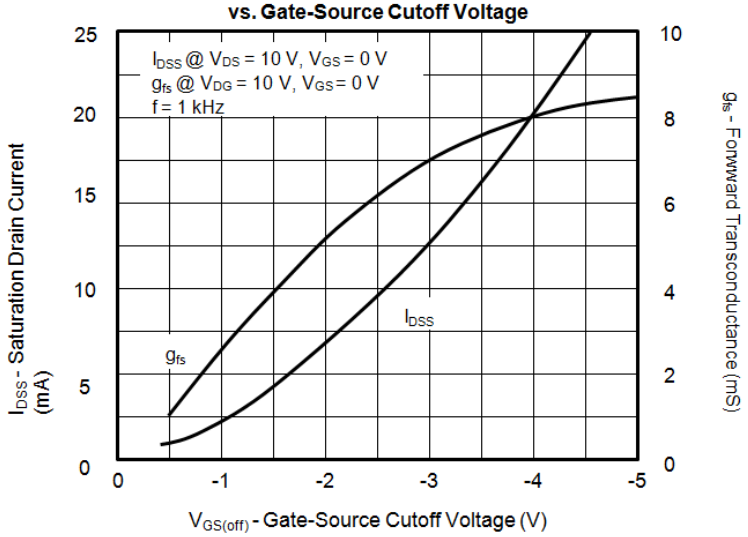
NOTES:

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.

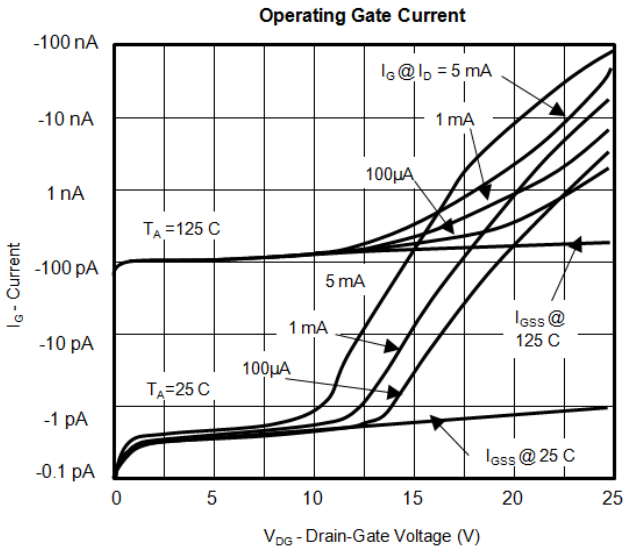
Information furnished by Linear Integrated Systems is believed to be accurate and reliable. However, no responsibility is assumed for its use; nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Linear Integrated Systems.

Typical Characteristics

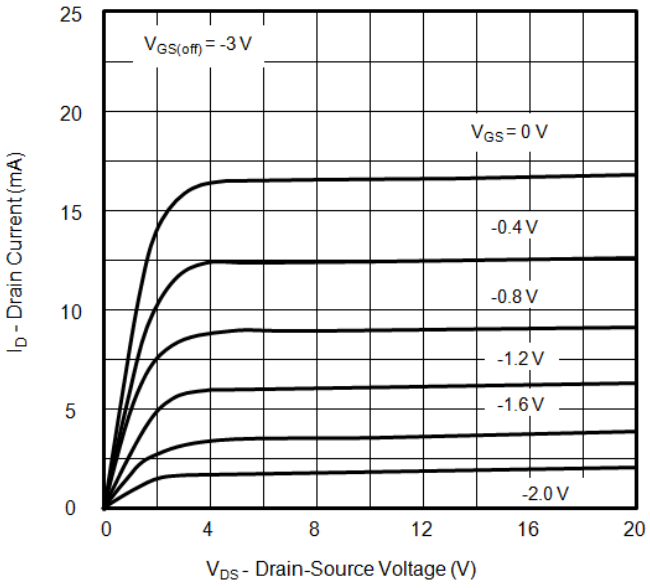
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



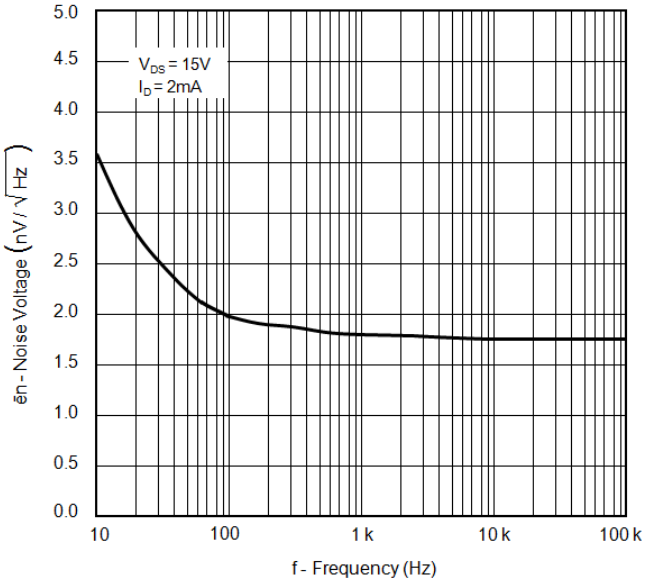
Operating Gate Current



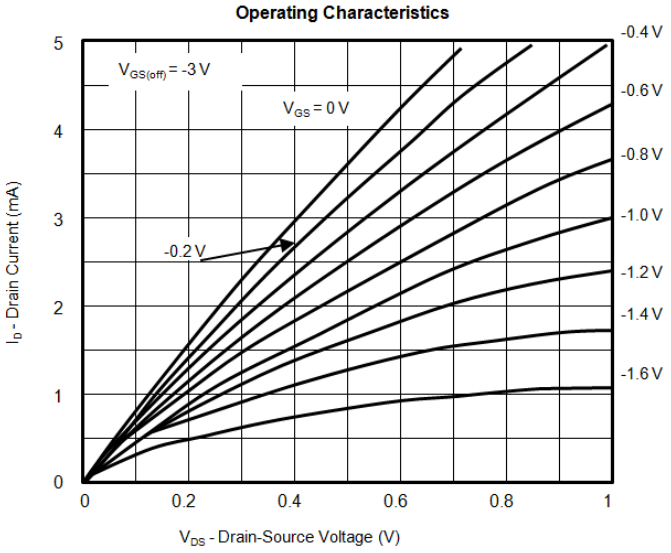
Output Characteristics



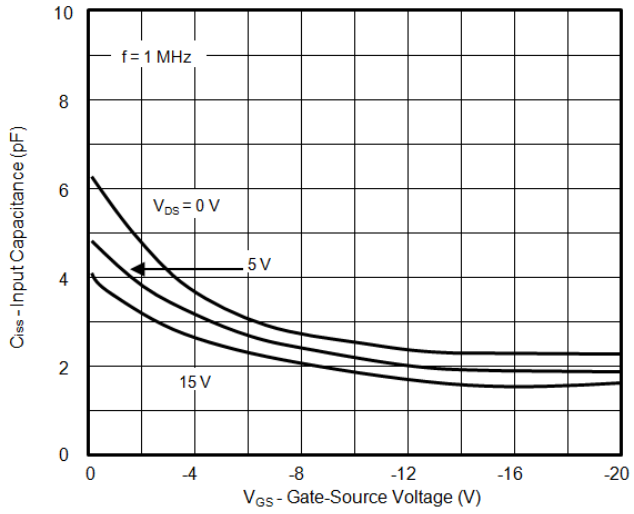
Equivalent Input Noise Voltage vs. Frequency



Operating Characteristics

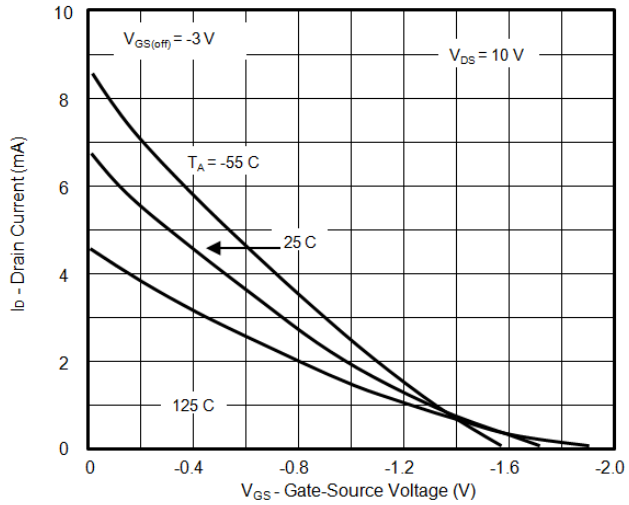


Common-Source Input Capacitance vs. Gate-Source Voltage

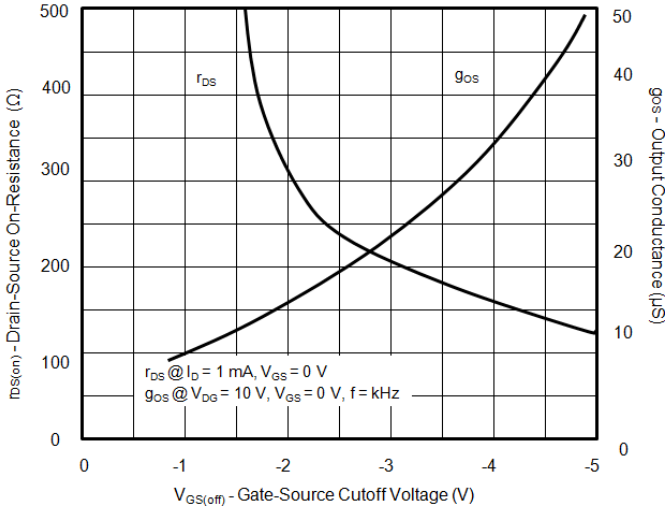


Typical Characteristics (Cont'd)

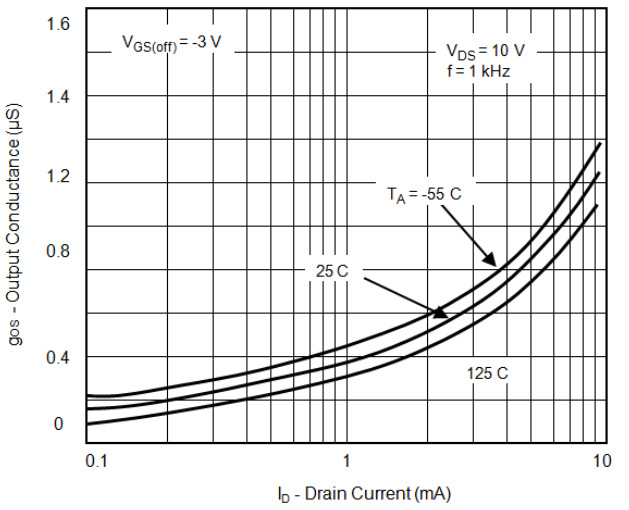
Transfer Characteristics



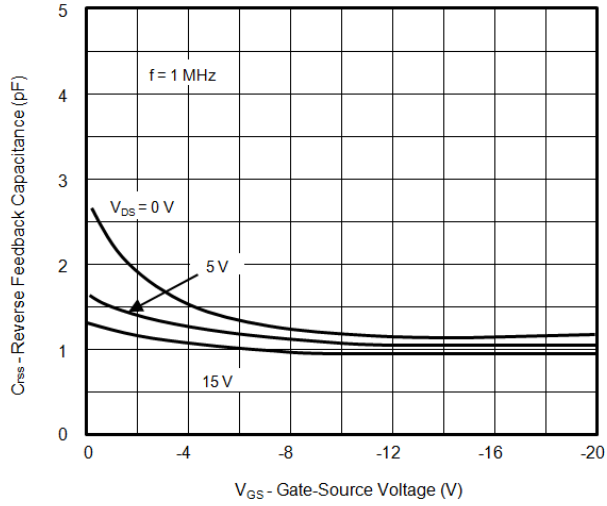
On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage



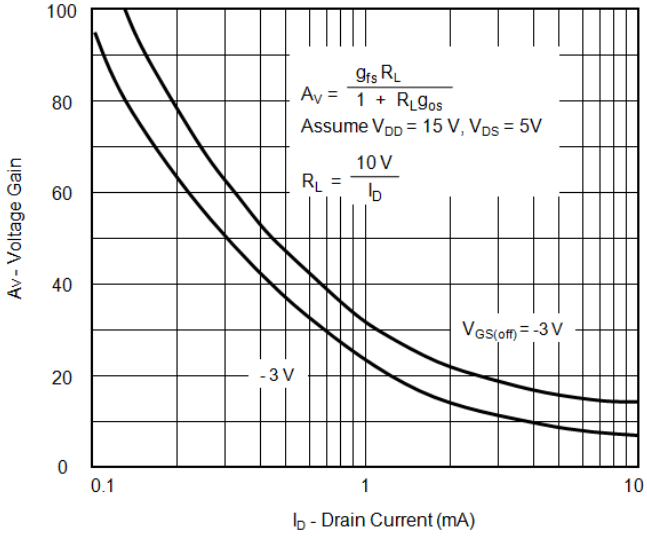
Output Conductance vs. Drain Current



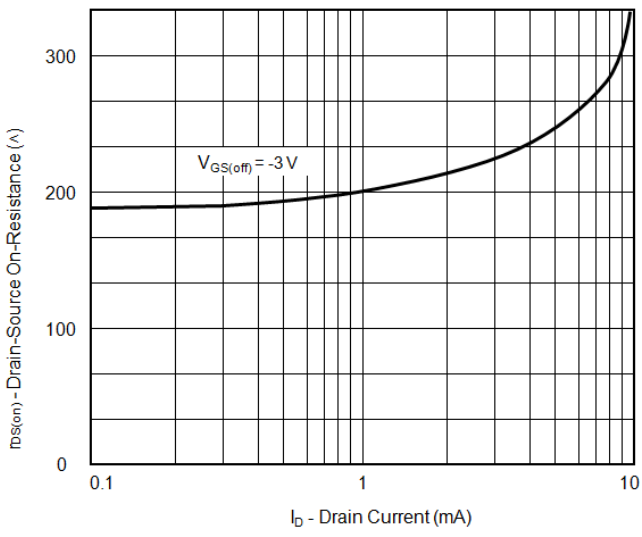
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



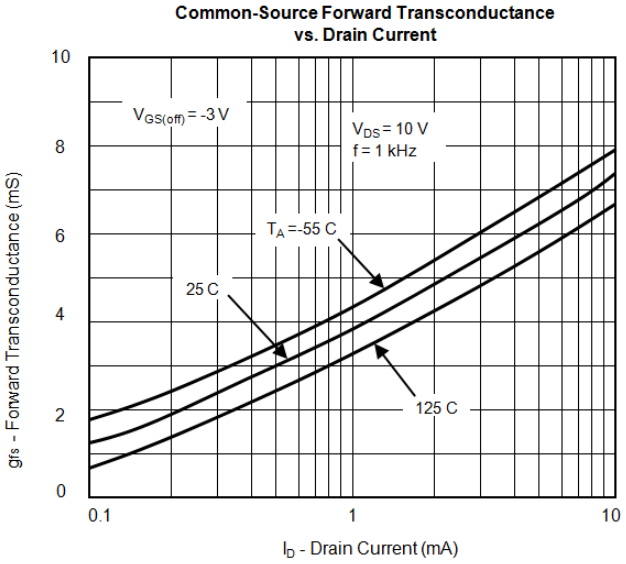
Circuit Voltage Gain vs. Drain Current



On-Resistance vs. Drain Current



Typical Characteristics (Cont'd)



Linear Integrated Systems 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.