



Monolithic N-Channel JFET Duals

PRODUCT SUMMARY				
$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_G Typ (pA)	$ V_{GS1} - V_{GS2} $ Max (mV)
-1 to -6	-25	4.5	-1	20

FEATURES

- Anti Latchup Capability
- Monolithic Design
- High Slew Rate
- Low Offset/Drift Voltage
- Low Gate Leakage: 1 pA
- Low Noise
- High CMRR: 90 dB

BENEFITS

- External Substrate Bias—Avoids Latchup
- Tight Differential Match vs. Current
- Improved Op Amp Speed, Settling Time Accuracy
- High-Speed Performance
- Minimum Input Error/Trimming Requirement
- Insignificant Signal Loss/Error Voltage
- High System Sensitivity
- Minimum Error with Large Input Signal

APPLICATIONS

- Wideband Differential Amps
- High-Speed, Temp-Compensated, Single-Ended Input Amps
- High Speed Comparators
- Impedance Converters

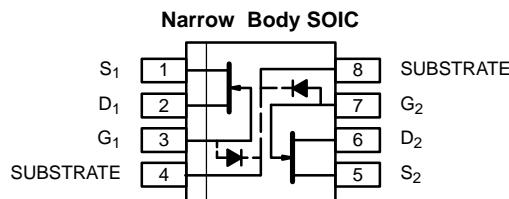
DESCRIPTION

The SST441NL is a monolithic high-speed dual JFET mounted in a single SO-8 package. This JFET is an excellent choice for use as wideband differential amplifiers in demanding test and measurement applications.

Pins 4 and 8 on the SST441NL and pin 4 on the U441NL part numbers enable the substrate to be connected to a positive, external bias (V_{DD}) to avoid latchup.

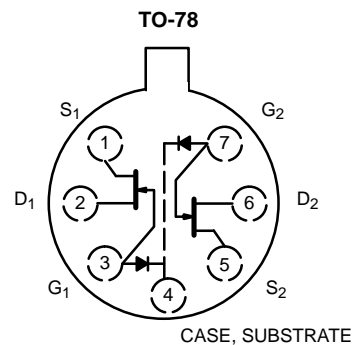
The U441NL in the hermetically sealed TO-78 package is available with full military processing.

The SO-8 package provides ease of manufacturing. The symmetrical pinout prevents improper orientation. The SO-8 package is available with tape-and-reel options for compatibility with automatic assembly methods.



Top View

Marking Codes:
SST441NL - 441NL



Top View
U441NL

ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage	-25 V
Gate Current	50 mA
Lead Temperature ($1/16$ " from case for 10 sec.)	300°C
Storage Temperature	-55 to 150°C
Operating Junction Temperature	-55 to 150°C

Power Dissipation:	Per Side ^a	300 mW
	Total ^b	500 mW

- Notes
- Derate 2.4 mW/°C above 25°C
 - Derate 4 mW/°C above 25°C

For applications information see AN102.

SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ ^a	Max	
Static						
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = -1 μA, V _{DS} = 0 V	-25	-35		V
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 nA	-1	-3.5	-6	
Saturation Drain Current ^b	I _{DSS}	V _{DS} = 10 V, V _{GS} = 0 V	6	15	30	mA
Gate Reverse Current	I _{GSS}	V _{GS} = -15 V, V _{DS} = 0 V		-1	-500	pA
		T _A = 125 °C		-0.2		nA
Gate Operating Current	I _G	V _{DG} = 10 V, I _D = 5 mA		-1	-500	pA
		T _A = 125 °C		-0.2		nA
Gate-Source Forward Voltage	V _{GS(F)}	I _G = 1 mA, V _{DS} = 0 V		0.7		V
Dynamic						
Common-Source Forward Transconductance	g _{fs}	V _{DS} = 10 V, I _D = 5 mA f = 1 kHz	4.5	6	9	mS
Common-Source Output Conductance	g _{os}				20	200
Common-Source Forward Transconductance	g _{fs}	V _{DS} = 10 V, I _D = 5 mA f = 100 MHz		5.5		mS
Common-Source Output Conductance	g _{os}				30	
Common-Source Input Capacitance	C _{iss}	V _{DS} = 10 V, I _D = 5 mA f = 1 MHz		3.5		pF
Common-Source Reverse Transfer Capacitance	C _{rss}				1	
Equivalent Input Noise Voltage	e _n	V _{DS} = 10 V, I _D = 5 mA f = 10 kHz		4		nV/ √Hz
Matching						
Differential Gate-Source Voltage	V _{GS1} - V _{GS2}	V _{DG} = 10 V, I _D = 5 mA		7	20	mV
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta V_{GS1} - V_{GS2} }{\Delta T}$	V _{DG} = 10 V, I _D = 5 mA T _A = -55 to 125 °C		10		μV/°C
Saturation Drain Current Ratio ^c	$\frac{I_{DSS1}}{I_{DSS2}}$	V _{DS} = 10 V, V _{GS} = 0 V		0.98		
Transconductance Ratio ^c	$\frac{g_{fs1}}{g_{fs2}}$	V _{DS} = 10 V, I _D = 5 mA f = 1 kHz		0.98		
Common Mode Rejection Ratio	CMRR	V _{DG} = 10 to 15 V, I _D = 5 mA		90		dB

Notes

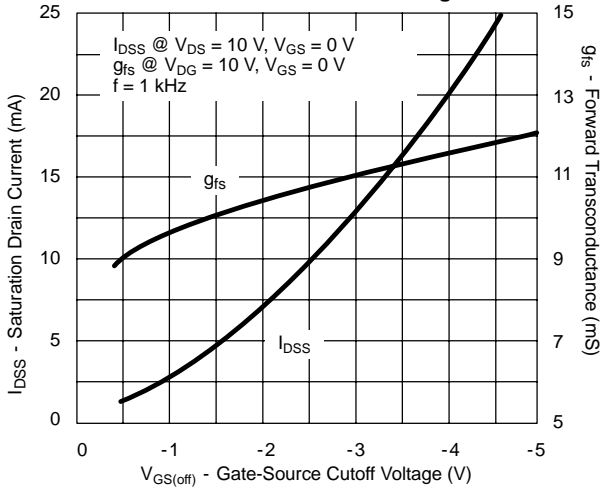
- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.
c. Assumes smaller value in the numerator.

NNZ

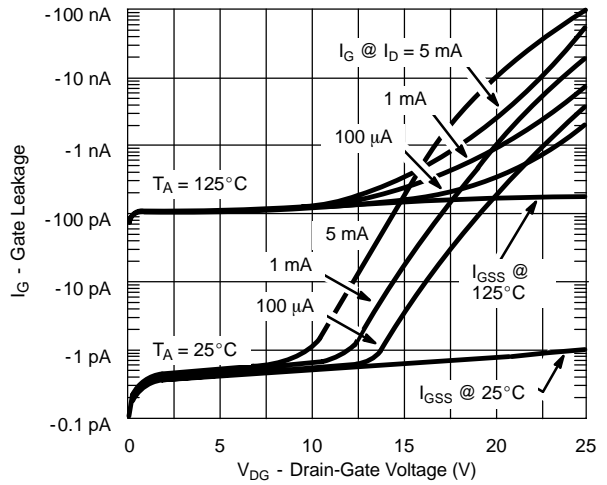


TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

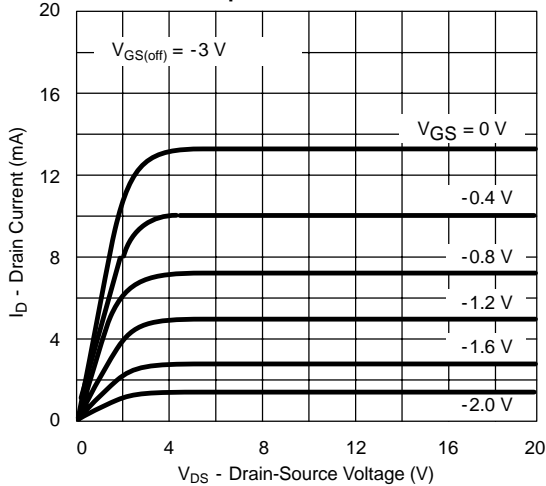
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



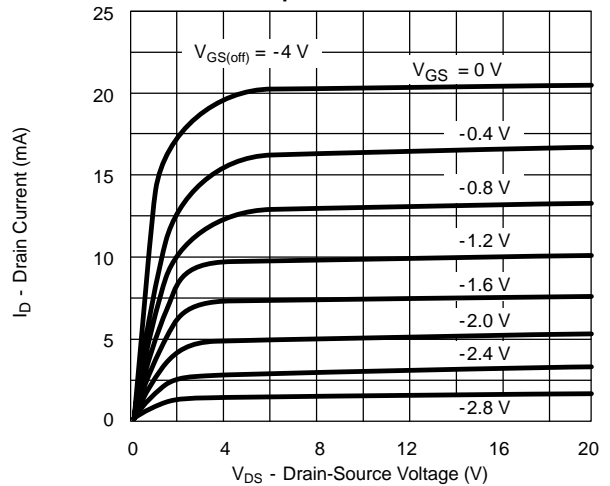
Gate Leakage Current



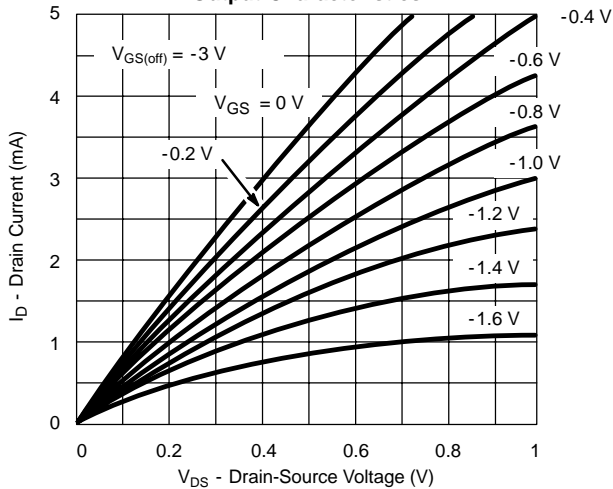
Output Characteristics



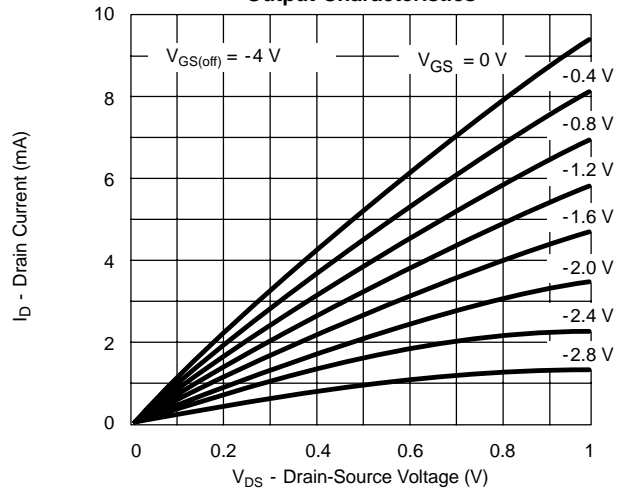
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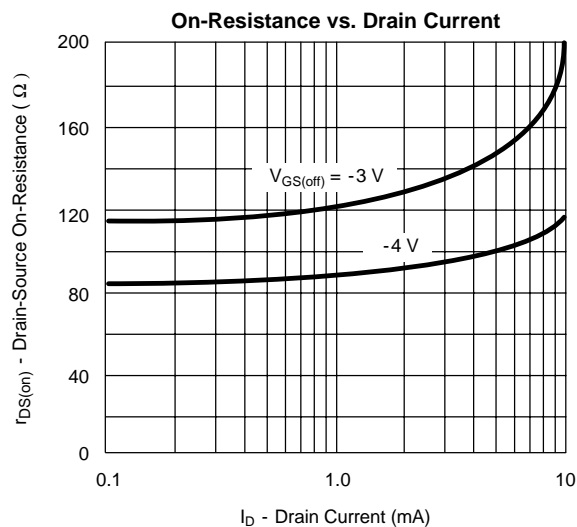
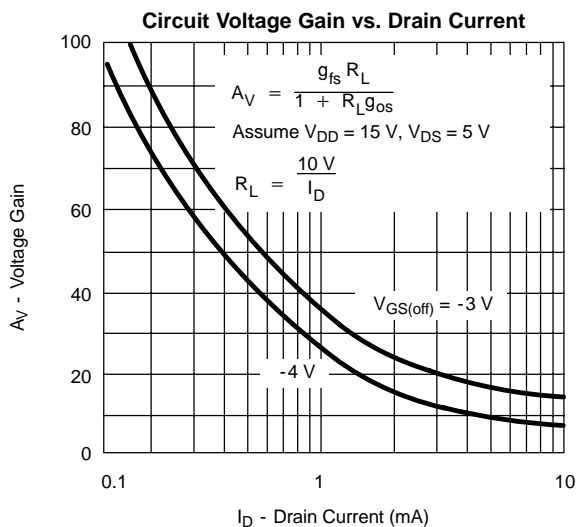
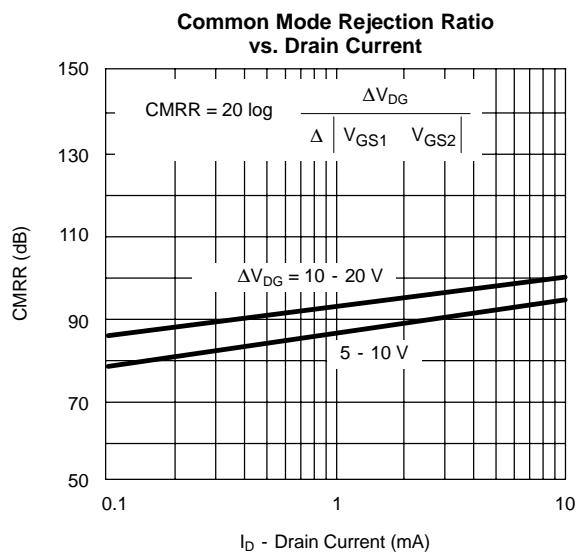
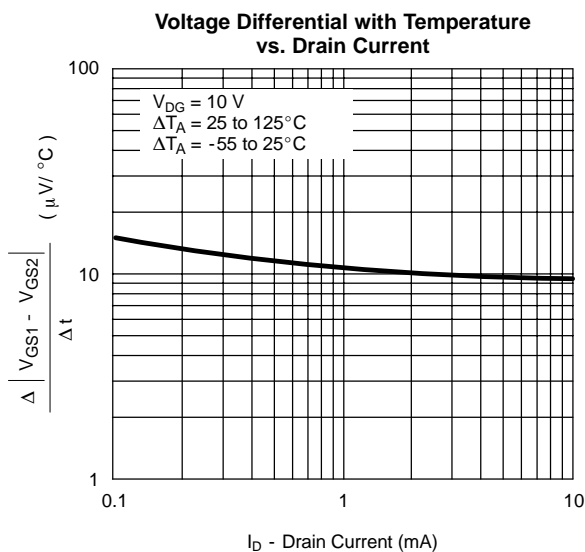
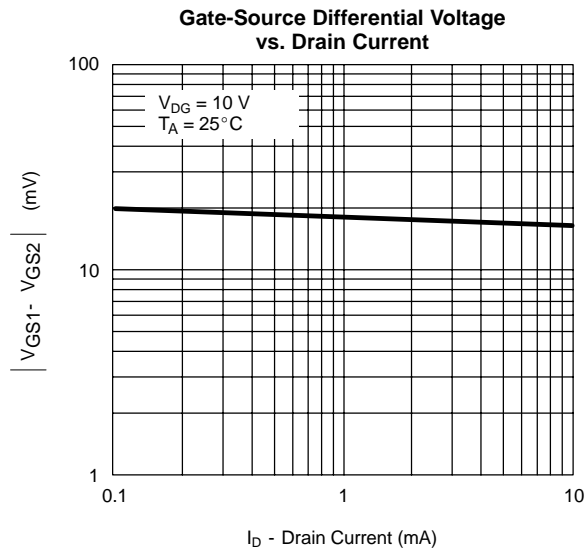
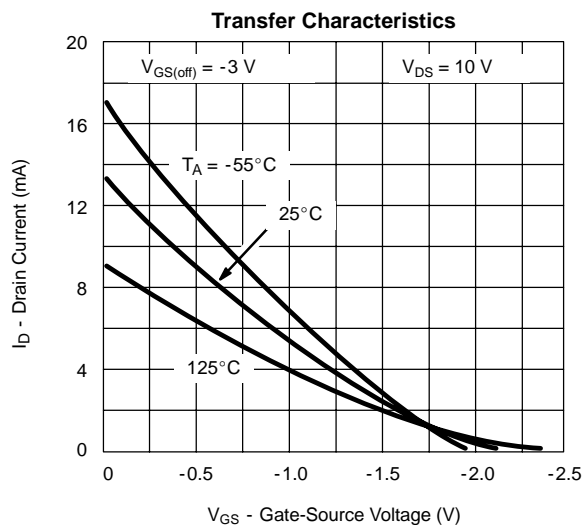
Output Characteristics



Output Characteristics

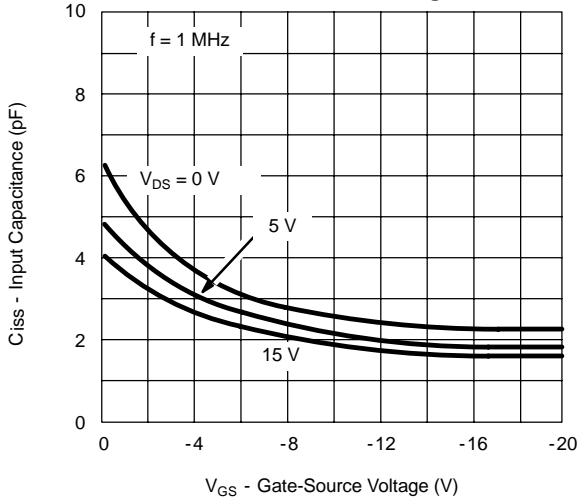


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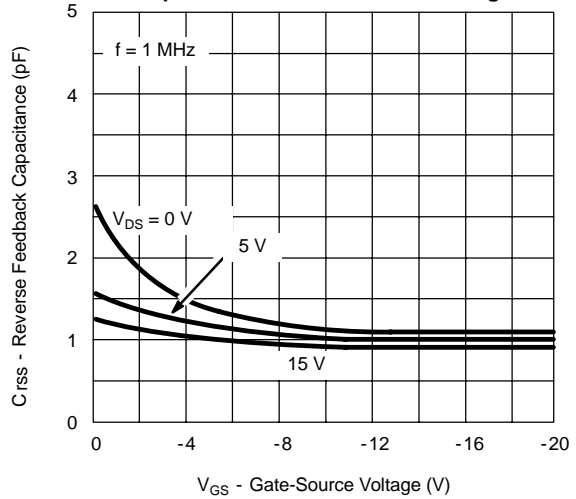


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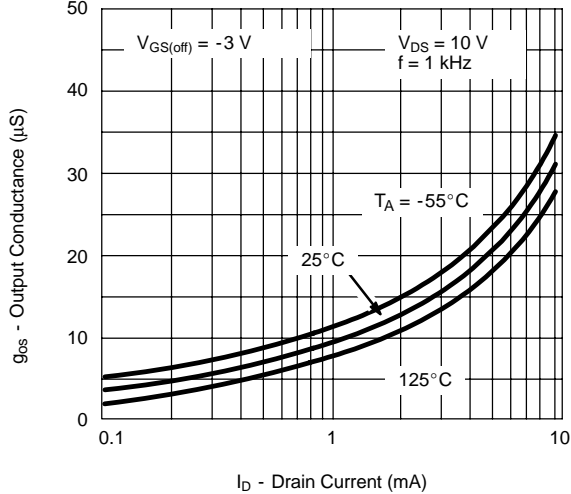
Common-Source Input Capacitance vs. Gate-Source Voltage



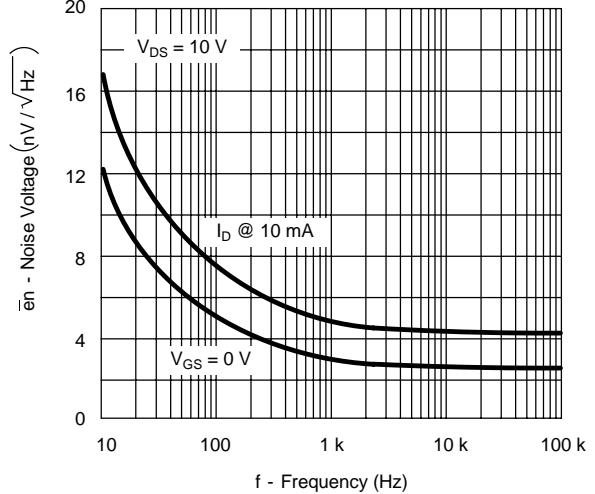
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



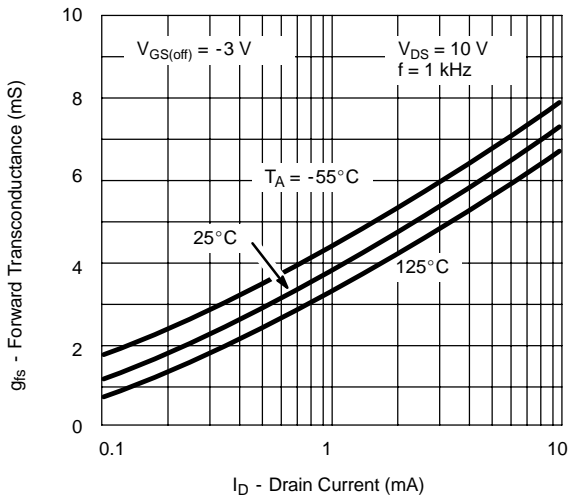
Output Conductance vs. Drain Current



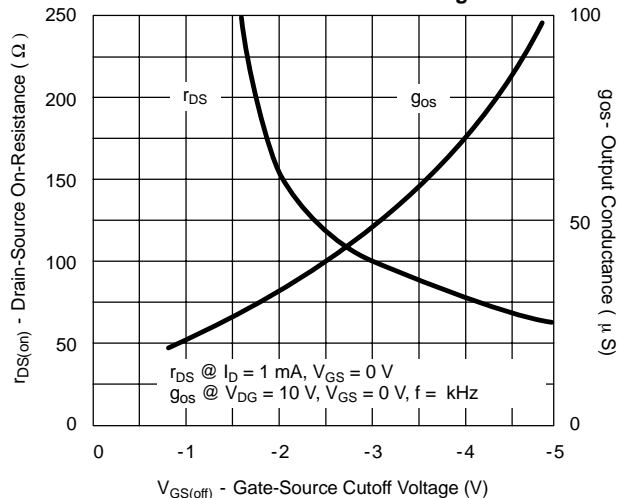
Equivalent Input Noise Voltage vs. Frequency



Common-Source Forward Transconductance vs. Drain Current



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





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