Monolithic N-Channel JFET Dual

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

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

BENEFITS

- 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

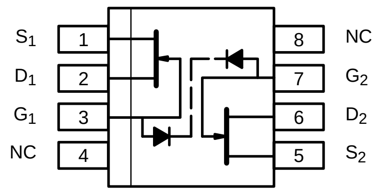
DESCRIPTION

The SST441 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.

The SO-8 package is available with tape-and-reel options to support automated assembly (see Packaging Information).

For similar products in TO-71 packaging, see the U441 data sheet.

Narrow Body SOIC



Top View

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[a] . . . . 500 mW

Notes
a. Derate 2.4 mW/°C above 25°C

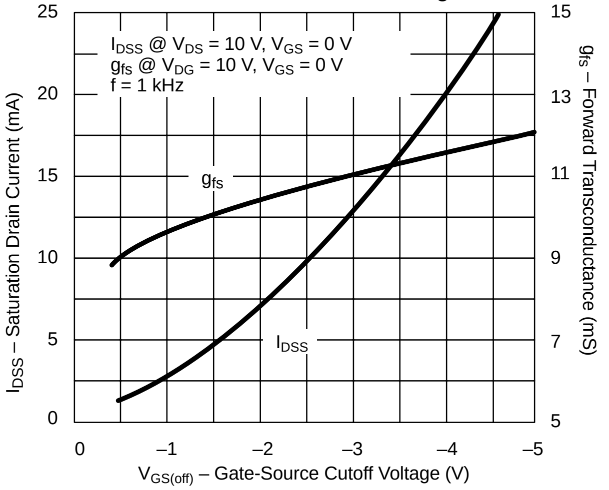
For applications information see AN102.

SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)						
			Limits			
Parameter	Symbol	Test Conditions	Min	Typ[a]	Max	Unit
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	V
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}	V_{DS} = 10 V, I_D = 5 mA f = 1 kHz		20	200	µS
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}	V_{DS} = 10 V, I_D = 5 mA f = 100 MHz		30		µS
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}	V_{DS} = 10 V, I_D = 5 mA f = 1 MHz		1		pF
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DS} = 10 V, I_D = 5 mA f = 10 kHz		4		$nV/\sqrt{Hz}$
Matching						
Differential Gate-Source Voltage	$\lvert V_{GS1} - V_{GS2}\rvert$	V_{DG} = 10 V, I_D = 5 mA		7	20	mV
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta\lvert V_{GS1} - V_{GS2}\rvert}{\Delta T}$	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

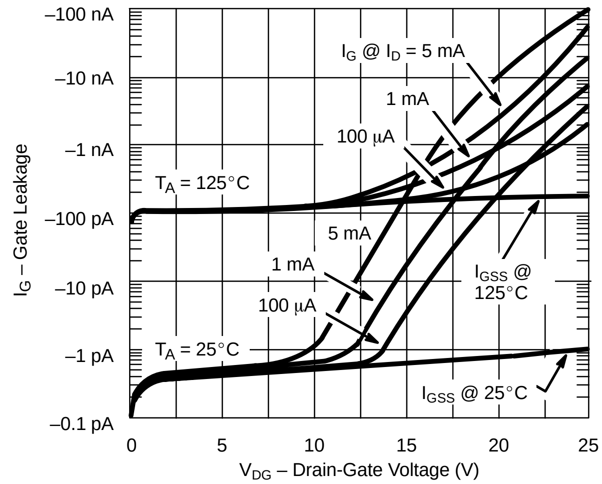
Notes
a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing. NNZ
b. Pulse test: PW ≤ 300 µs duty cycle ≤ 3%.
c. Assumes smaller value in the numerator.

TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

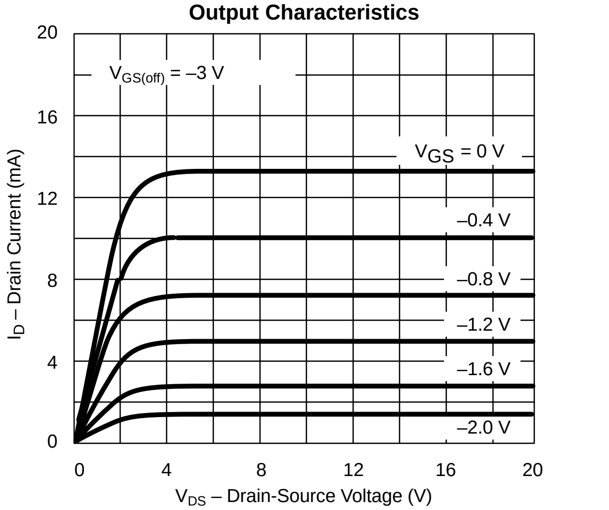
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



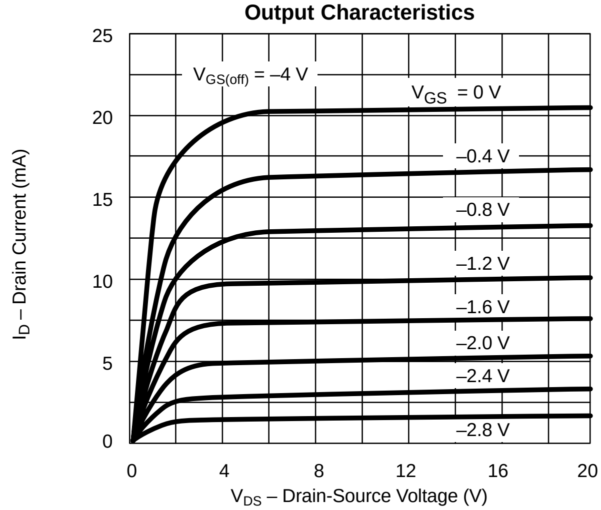
Gate Leakage Current



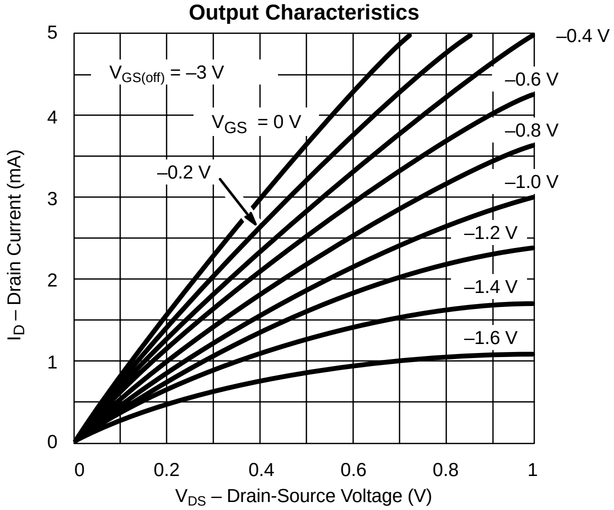
Output Characteristics



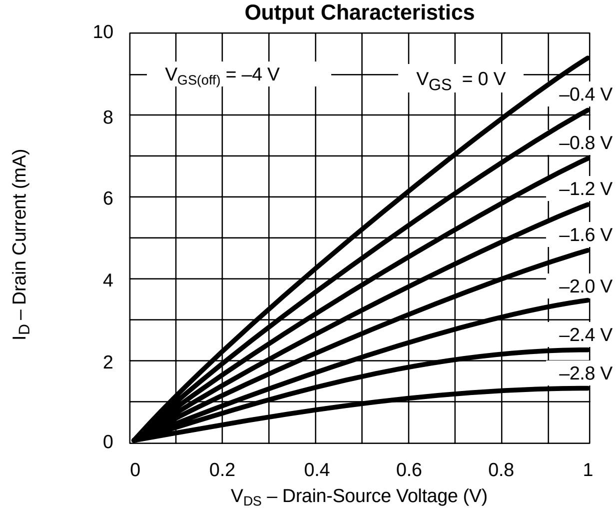
Output Characteristics



Output Characteristics

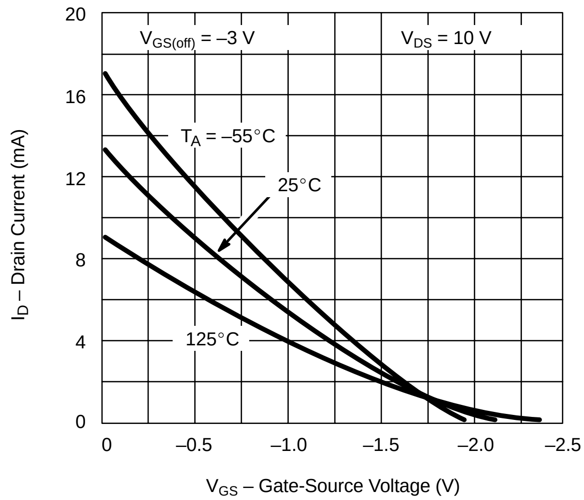


Output Characteristics

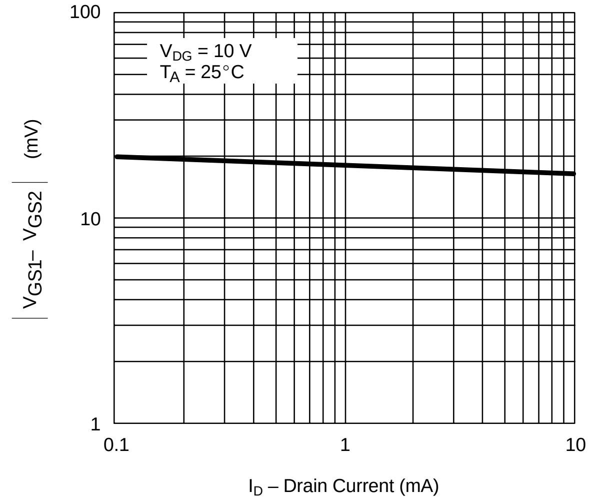


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

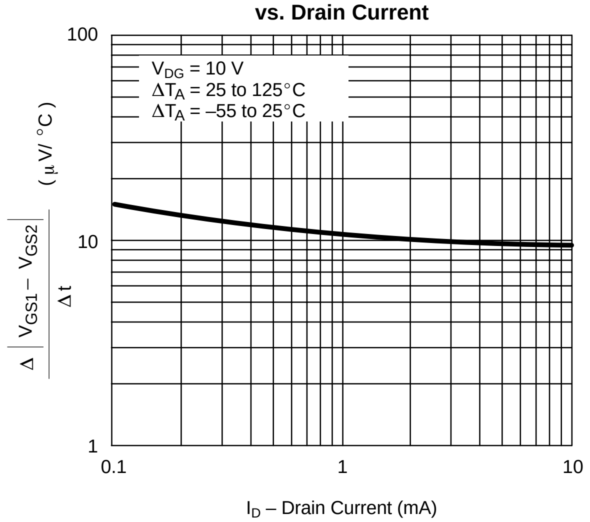
Transfer Characteristics



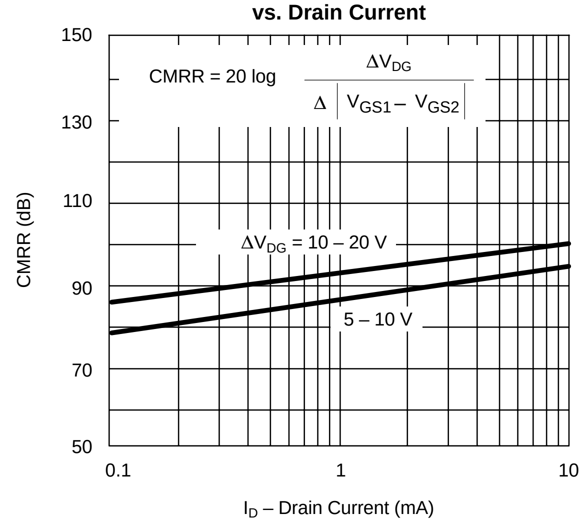
Gate-Source Differential Voltage vs. Drain Current



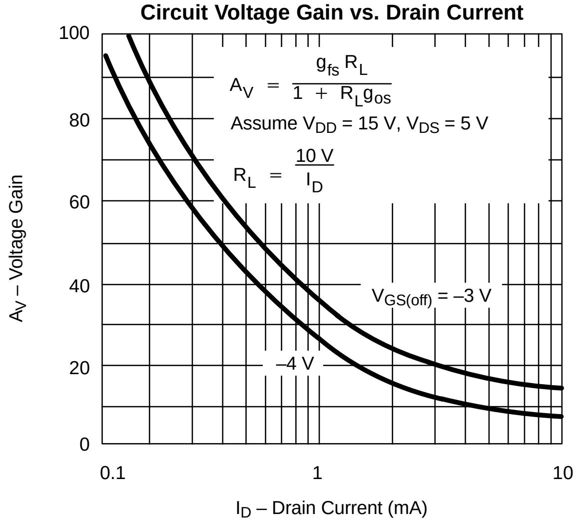
Voltage Differential with Temperature vs. Drain Current



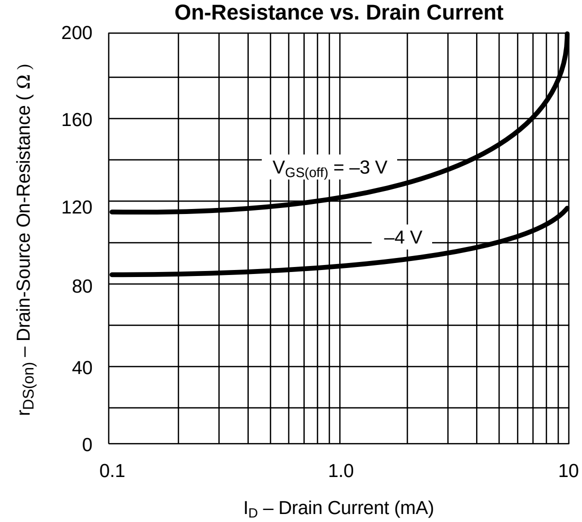
Common Mode Rejection Ratio vs. Drain Current



Circuit Voltage Gain vs. Drain Current



On-Resistance vs. Drain Current



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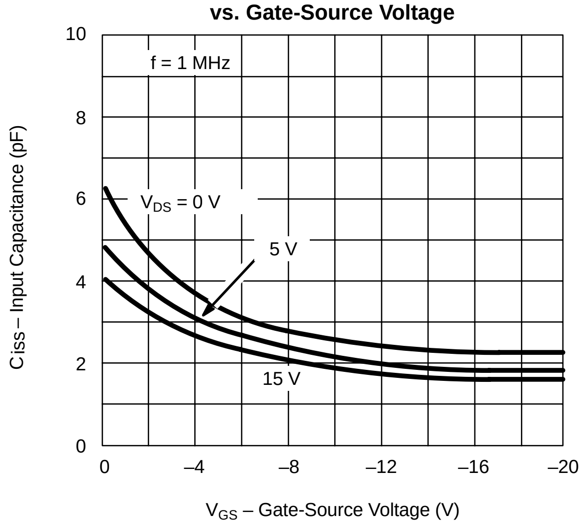
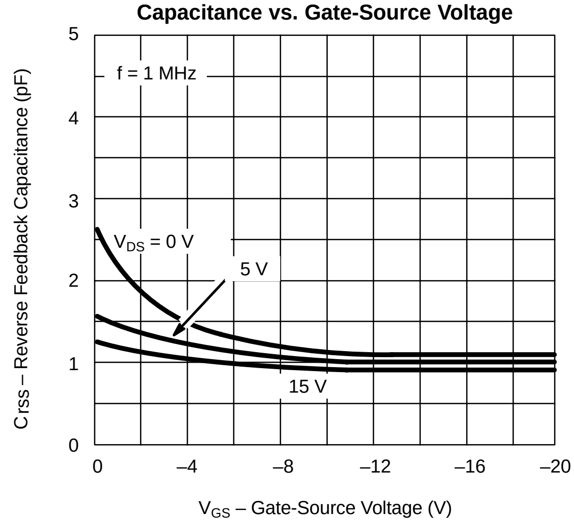
TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

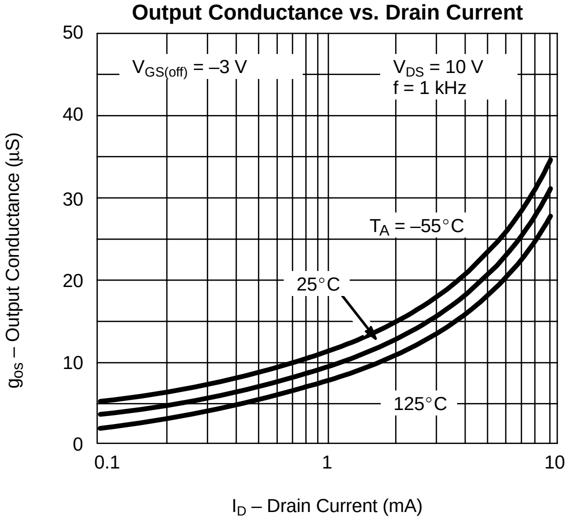
Common-Source Input Capacitance vs. Gate-Source Voltage



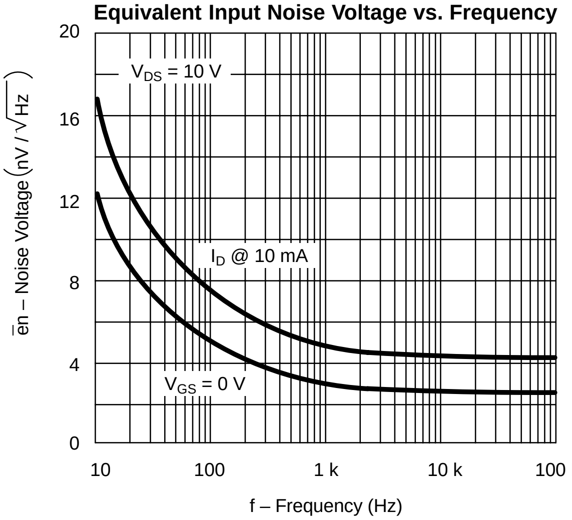
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



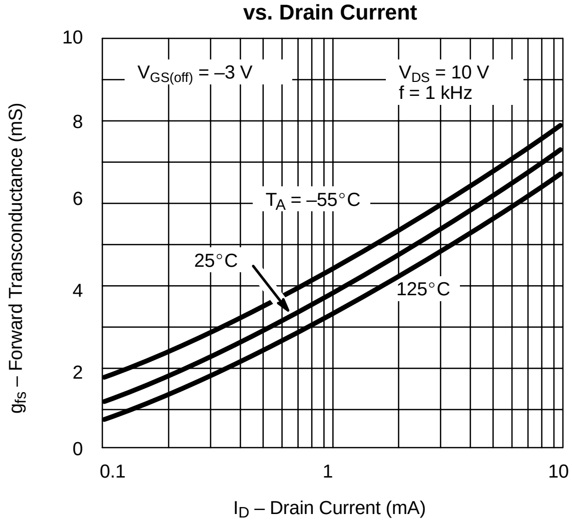
Output Conductance vs. Drain Current



Equivalent Input Noise Voltage vs. Frequency



Common-Source Forward Transconductance vs. Drain Current



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