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

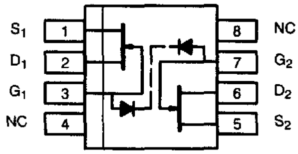
DESCRIPTION

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		$\frac{nV}{\sqrt{Hz}}$
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.
b. Pulse test: PW ≤300 µs duty cycle ≤3%.
c. Assumes smaller value in the numerator.

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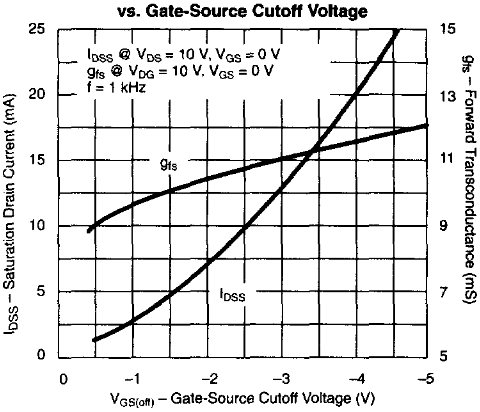
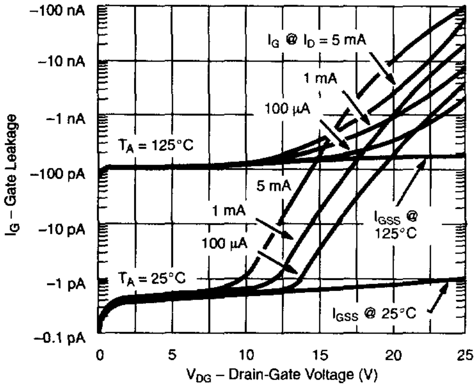
TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

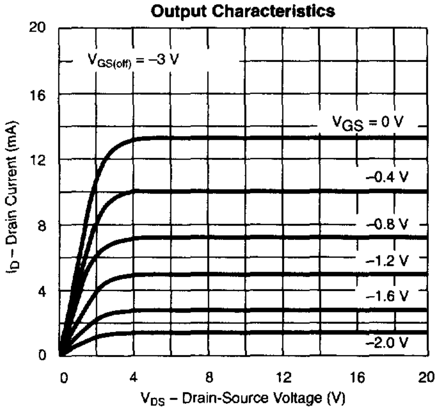
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



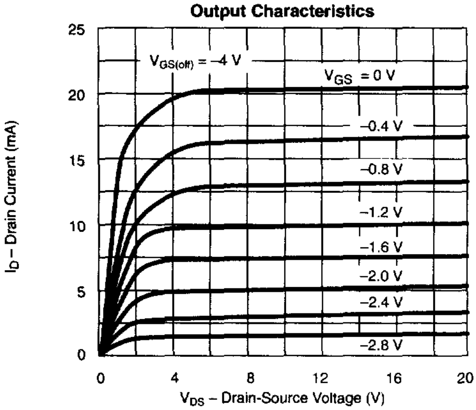
Gate Leakage Current



Output Characteristics



Output Characteristics



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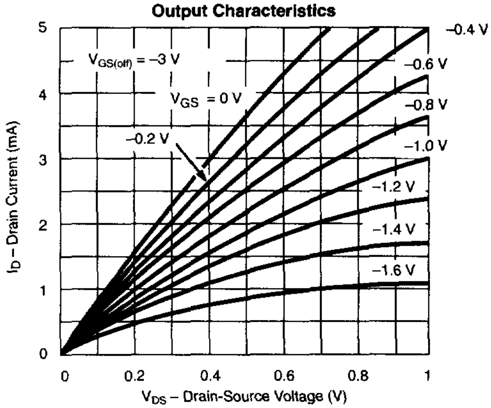
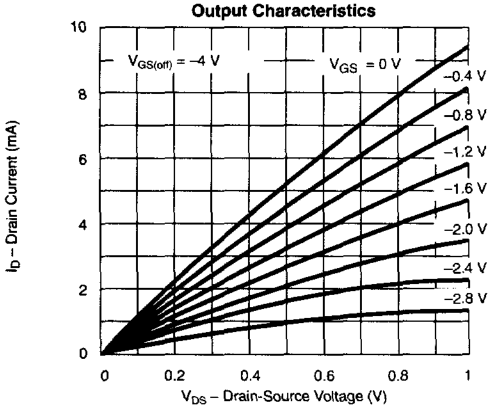
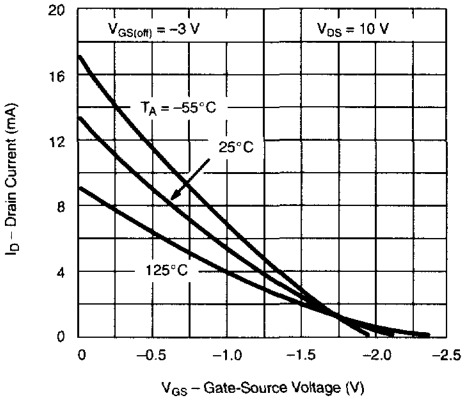


Output Characteristics

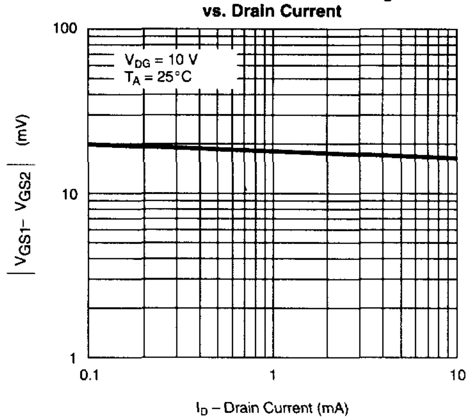


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

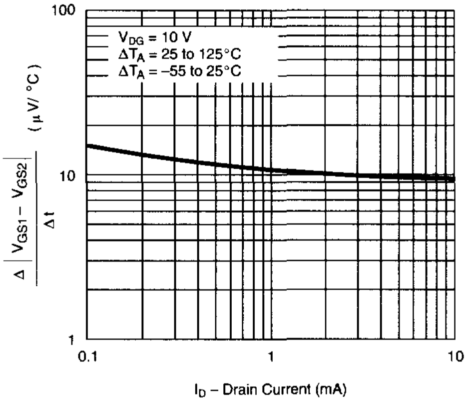
Transfer Characteristics



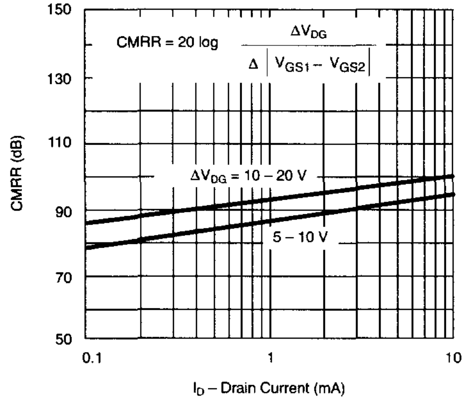
Gate-Source Differential Voltage vs. Drain Current



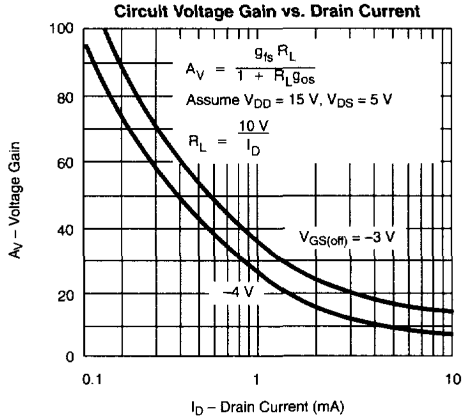
Voltage Differential with Temperature vs. Drain Current



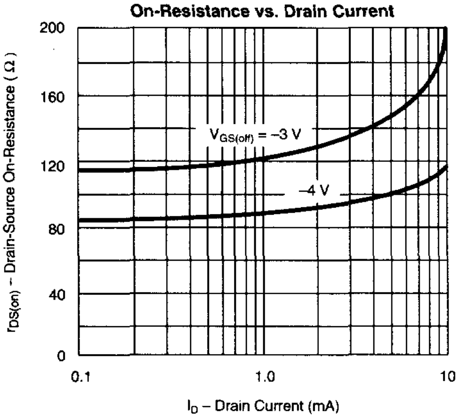
Common Mode Rejection Ratio vs. Drain Current



Circuit Voltage Gain vs. Drain Current

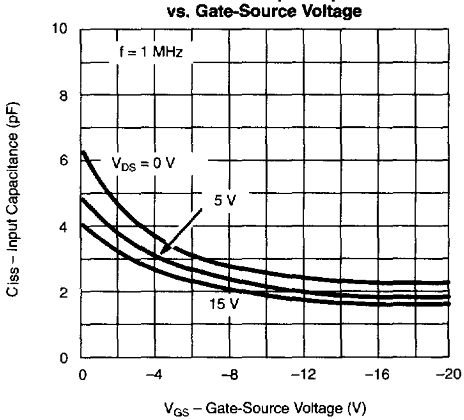


On-Resistance vs. Drain Current

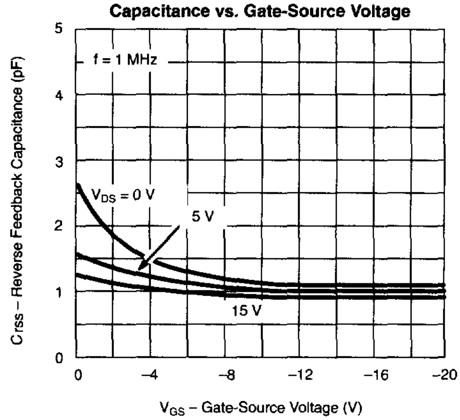


TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)

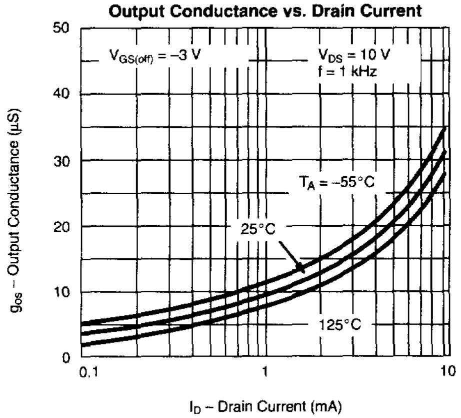
Common-Source Input Capacitance vs. Gate-Source Voltage



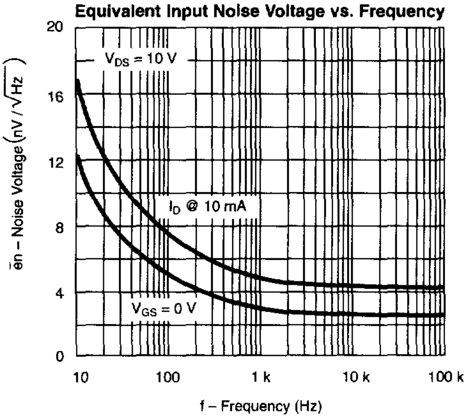
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



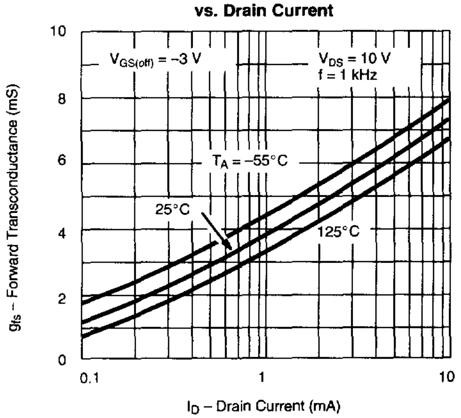
Output Conductance vs. Drain Current



Equivalent Input Noise Voltage vs. Frequency



Common-Source Forward Transconductance vs. Drain Current



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