



Monolithic N-Channel JFET Duals

SST404
SST406U401
U404

U406

PRODUCT SUMMARY

Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_G Typ (pA)	$ V_{GS1} - V_{GS2} $ Max (mV)
U401	-0.5 to -2.5	-40	1	-2	5
SST/U404	-0.5 to -2.5	-40	1	-2	15
SST/U406	-0.5 to -2.5	-40	1	-2	40

FEATURES

- Monolithic Design
- High Slew Rate
- Low Offset/Drift Voltage
- Low Gate Leakage: 2 pA
- Low Noise
- High CMRR: 102 dB

BENEFITS

- Tight Differential Match vs. Current
- Improved Op Amp Speed, Settling Time Accuracy
- 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

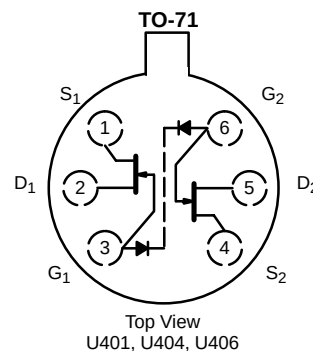
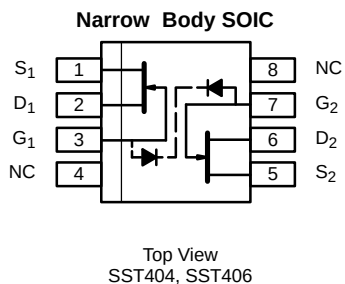
DESCRIPTION

The SST/U401 series of high-performance monolithic dual JFETs features extremely low noise, tight offset voltage and low drift over temperature specifications, and is targeted for use in a wide range of precision instrumentation applications. This series has a wide selection of offset and drift specifications with the U401 featuring a 5-mV offset and 10- μ V/ $^{\circ}$ C drift.

The U series, hermetically sealed TO-71 package is available

with full military processing (see Military Information). The SST series SO-8 package provides ease of manufacturing, and the symmetrical pinout prevents improper orientation. The SO-8 package is available with tape-and-reel options for compatibility with automatic assembly methods (see Packaging Information).

For similar high-gain products in TO-78 packaging, see the 2N5911/5912 data sheet.



ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage	-40 V
Gate Current	10 mA
Lead Temperature ($1/16$ " from case for 10 sec.)	300 $^{\circ}$ C
Storage Temperature:	
U Prefix	-65 to 200 $^{\circ}$ C
SST Prefix	-55 to 150 $^{\circ}$ C

Operating Junction Temperature	-55 to 150 $^{\circ}$ C
Power Dissipation:	
Per Side ^a	300 mW
Total ^b	500 mW

Notes

- Derate 2.4 mW/ $^{\circ}$ C above 25 $^{\circ}$ C
- Derate 4 mW/ $^{\circ}$ C above 25 $^{\circ}$ C

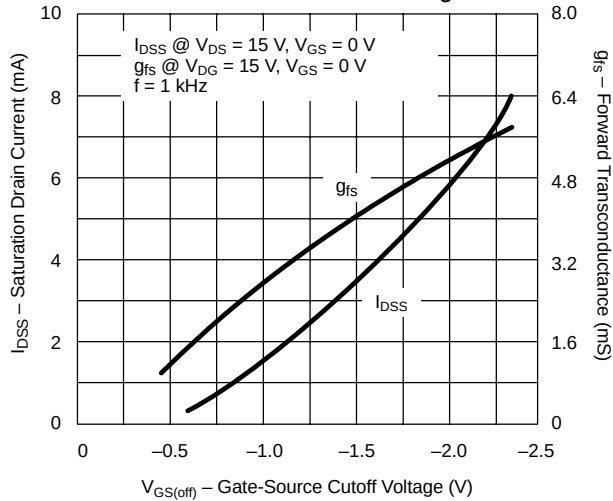
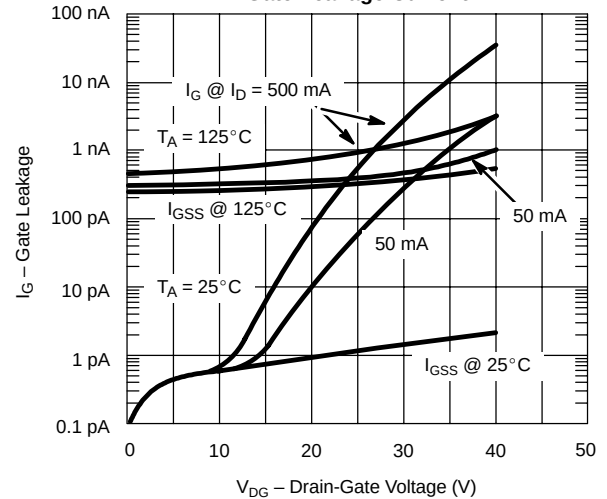
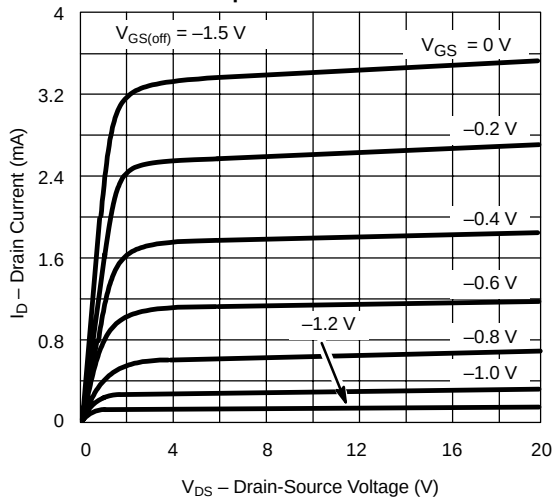
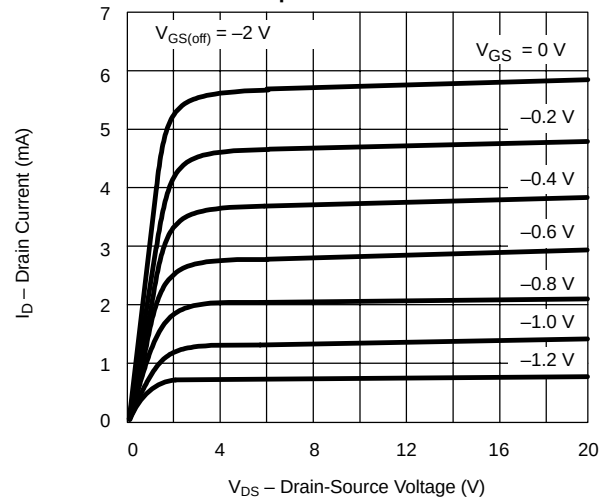
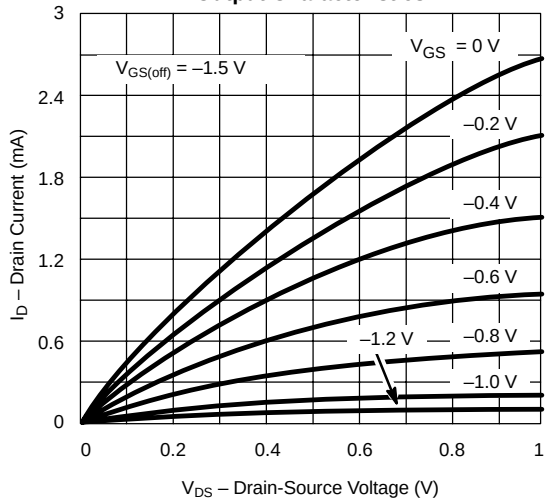
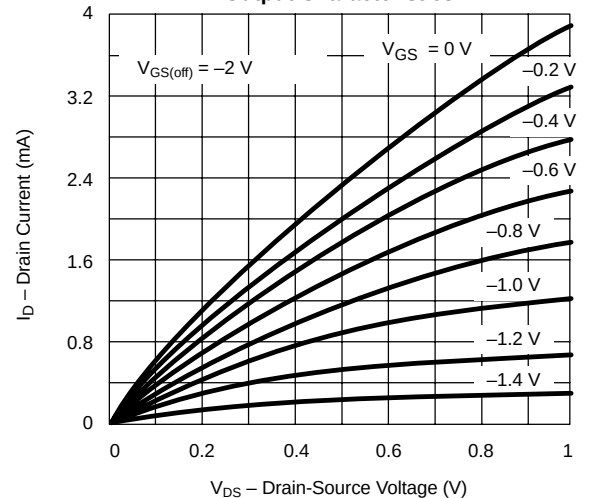
For applications information see AN106.

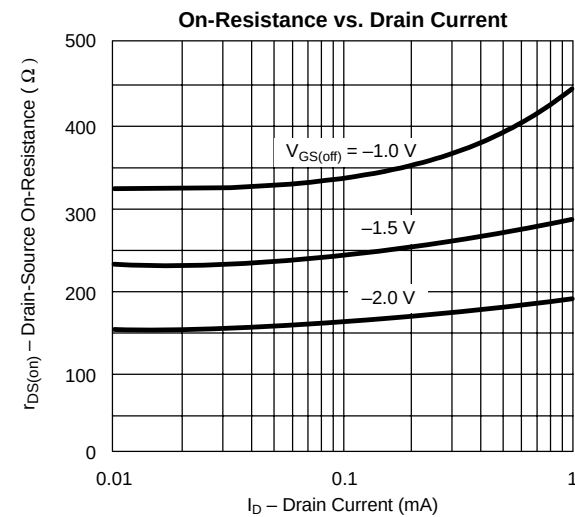
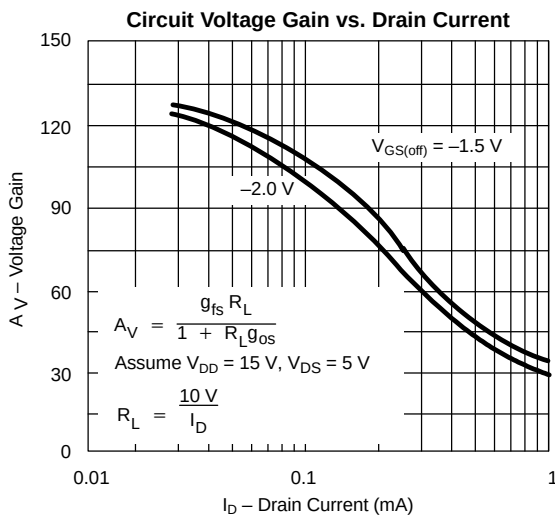
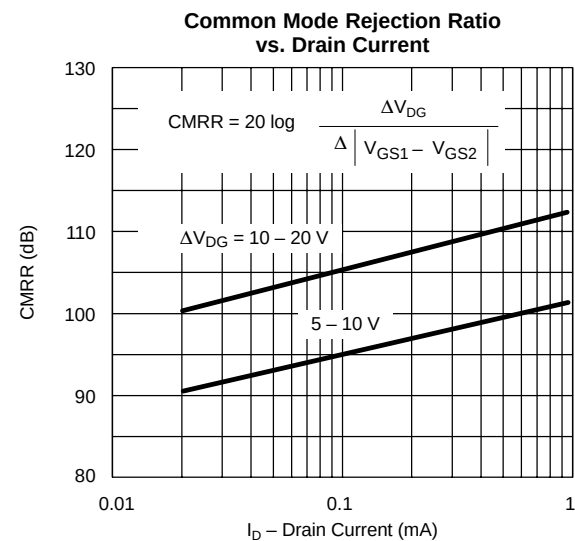
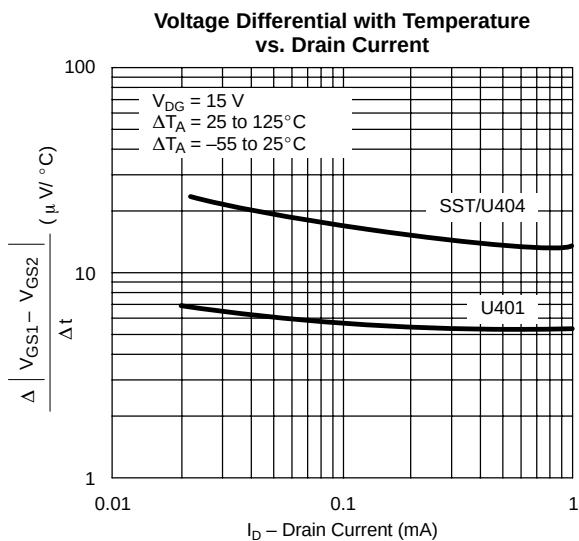
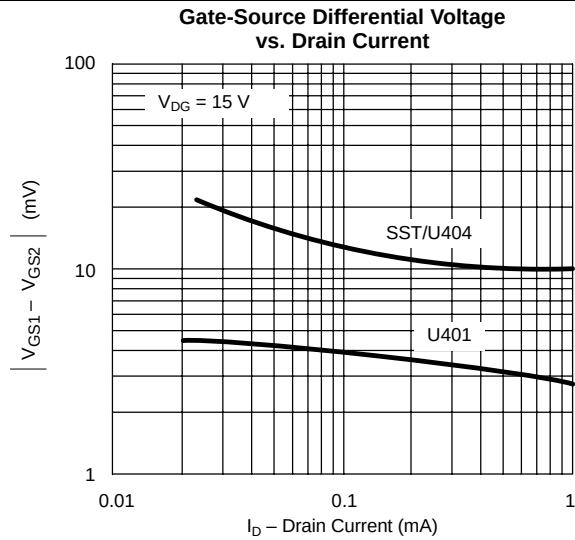
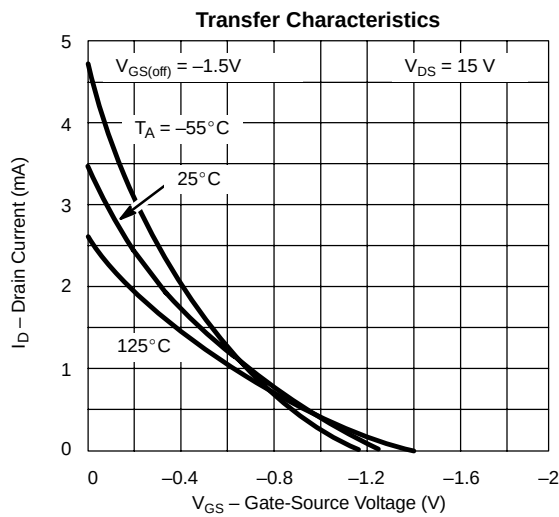
SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)										
Parameter	Symbol	Test Conditions	Typ ^a	Limits						Unit
				U401		SST/U404		SST/U406		
				Min	Max	Min	Max	Min	Max	
Static										
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = −1 μA, V _{DS} = 0 V	−58	−40		−40		−40		V
	V _{(BR)G1 − G2}	I _G = ±1 μA, V _{DS} = 0 V, V _{GS} = 0 V	±45	±30		±30		±30		
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 15 V, I _D = 1 nA	−1.5	−0.5	−2.5	−0.5	−2.5	−0.5	−2.5	
Saturation Drain Current ^b	I _{DSS}	V _{DS} = 10 V, V _{GS} = 0 V	3.5	0.5	10	0.5	10	0.5	10	mA
Gate Reverse Current	I _{GSS}	V _{GS} = −30 V, V _{DS} = 0 V	−2		−25		−25		−25	pA
		T _A = 125 °C	−1						nA	
Gate Operating Current	I _G	V _{DG} = 15 V, I _D = 200 μA	−2		−15		−15		−15	pA
		T _A = 125 °C	−0.8		−10		−10		−10	nA
Drain-Source On-Resistance	r _{DS(on)}	V _{GS} = 0 V, I _D = 0.1 mA	250							Ω
Gate-Source Voltage	V _{GS}	V _{DG} = 15 V, I _D = 200 μA	−1		−2.3		−2.3		−2.3	V
Gate-Source Forward Voltage	V _{GS(F)}	I _G = 1 mA , V _{DS} = 0 V	0.7							
Dynamic										
Common-Source Forward Transconductance	g _{fs}	V _{DS} = 15 V, I _D = 200 μA f = 1 kHz	1.5	1	2	1	2	1	2	mS
Common-Source Output Conductance	g _{os}		1.3		2		2		2	μS
Common-Source Forward Transconductance	g _{fs}	V _{DS} = 10 V, V _{GS} = 0 V f = 1 kHz	4	2	7	2	7	2	7	mS
Common-Source Output Conductance	g _{os}		5		30		30		30	μS
Common-Source Input Capacitance	C _{iss}	V _{DS} = 15 V, I _D = 200 μA f = 1 MHz	4		8		8		8	pF
Common-Source Reverse Transfer Capacitance	C _{rss}		1.5		3		3		3	
Equivalent Input Noise Voltage	e _n	V _{DS} = 15 V, I _D = 200 μA f = 10 Hz	10		20		20		20	nV/ √Hz
Matching										
Differential Gate-Source Voltage	V _{GS1} − V _{GS2}	V _{DG} = 10 V, I _D = 200 μA			5		15		40	mV
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta V_{GS1} - V_{GS2} }{\Delta T}$	V _{DG} = 10 V I _D = 200 μA T _A = −55 to 125 °C	SST404	20						μV/°C
			SST406	40						
			All U		10		25		80	
Common Mode Rejection Ratio	CMRR	V _{DG} = 10 to 20 V, I _D = 200 μA	102	95		95				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%.

NNR

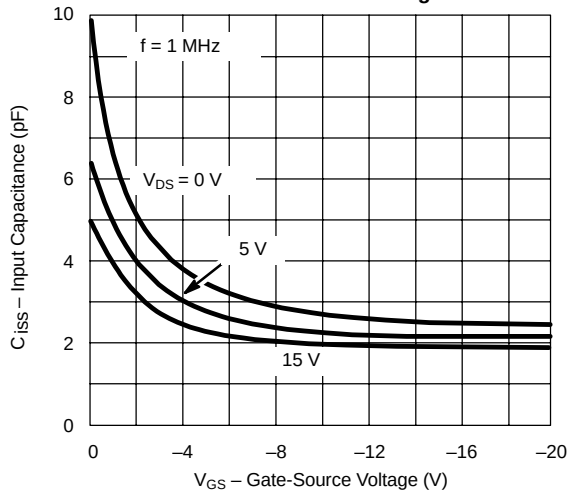
**TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)****Drain Current and Transconductance
vs. Gate-Source Cutoff Voltage****Gate Leakage Current****Output Characteristics****Output Characteristics****Output Characteristics****Output Characteristics**

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


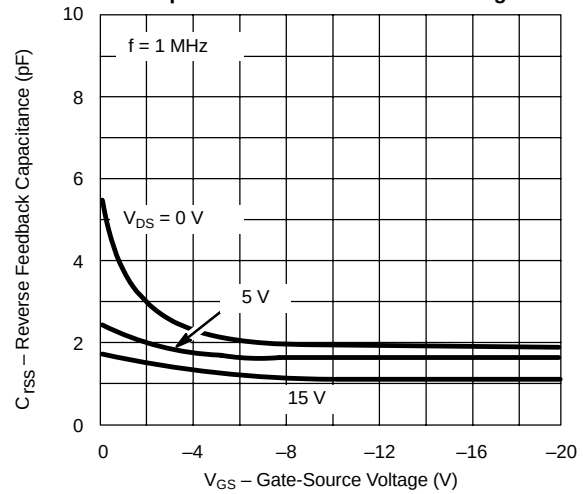


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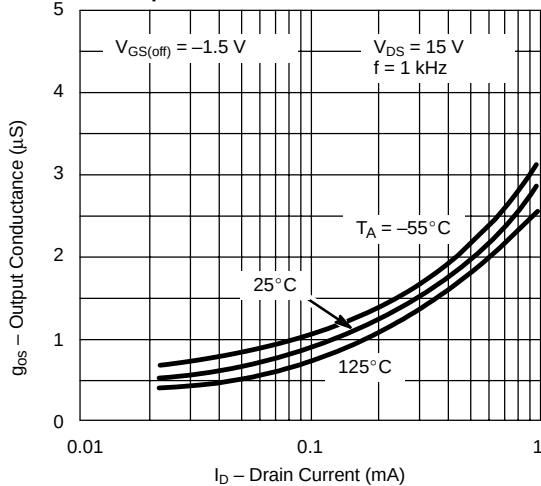
Common-Source Input Capacitance vs. Gate-Source Voltage



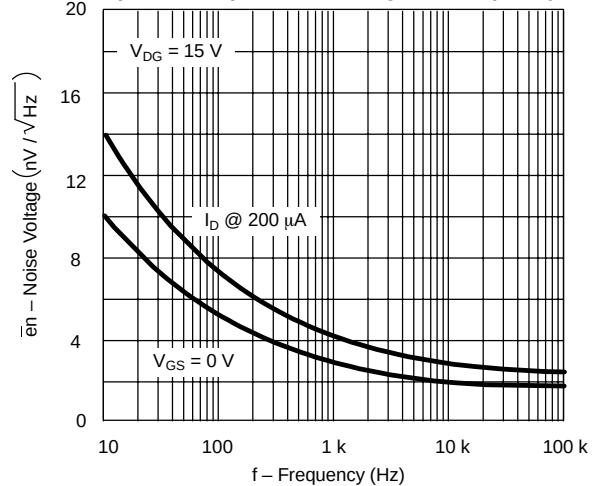
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



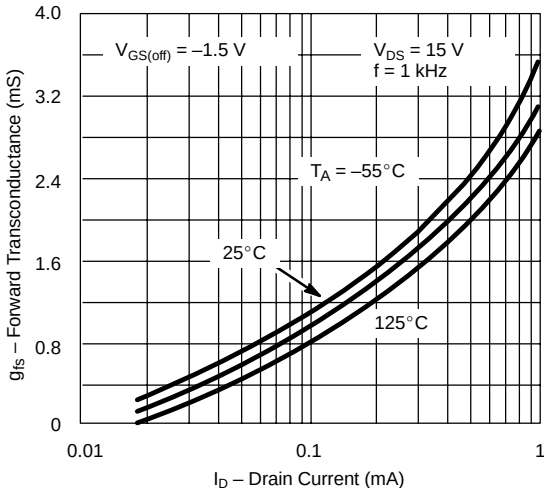
Output Conductance vs. Drain Current



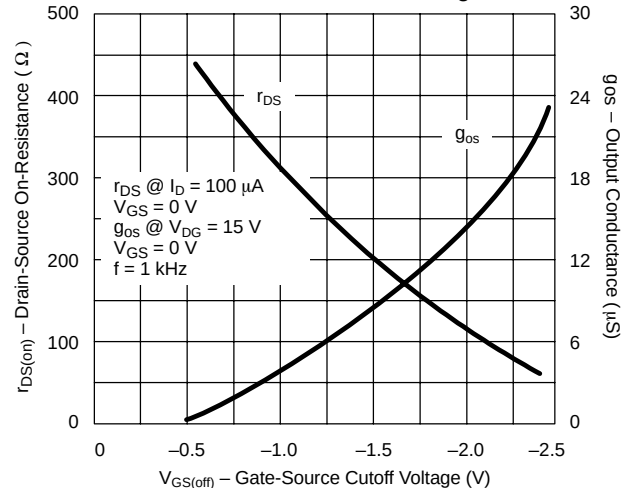
Equivalent Input Noise Voltage vs. Frequency



Common-Source Forward Transconductance vs. Drain Current



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





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