



Monolithic N-Channel JFET Duals

PRODUCT SUMMARY					
Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_G Max (pA)	$ V_{GS1} - V_{GS2} $ Max (mV)
2N5545	-0.5 to -4.5	-50	1.5	-50	5
2N5546	-0.5 to -4.5	-50	1.5	-50	10
2N5547	-0.5 to -4.5	-50	1.5	-50	15

FEATURES

- Monolithic Design
- High Slew Rate
- Low Offset/Drift Voltage
- Low Gate Leakage: 3 pA
- Low Noise
- High CMRR: 100 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

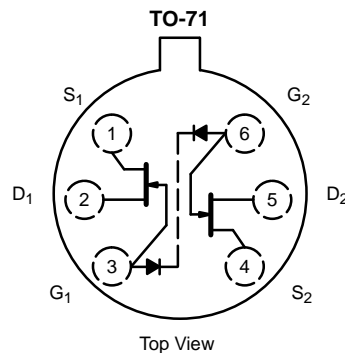
APPLICATIONS

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

DESCRIPTION

The 2N5545/5546/5547 JANTX/JANTXV are monolithic dual n-channel JFETs designed to provide high input impedance ($I_G < 50$ pA) for general-purpose differential amplifiers. The

2N5545 features minimum system error and calibration (5 mV offset maximum).



ABSOLUTE MAXIMUM RATINGS

Gate-Drain, Gate-Source Voltage -50 V
 Gate Current 30 mA
 Lead Temperature ($1/16$ " from case for 10 sec.) 300°C
 Storage Temperature -65 to 200°C
 Operating Junction Temperature -55 to 150°C

Power Dissipation : Per Side^a 250 mW
 Total^b 500 mW

Notes
 a. Derate 2 mW/°C above 25°C
 b. Derate 4 mW/°C above 25°C



SPECIFICATIONS (T _A = 25 °C UNLESS OTHERWISE NOTED)										
Parameter	Symbol	Test Conditions	Typ ^a	Limits						Unit
				2N5545		2N5546		2N5547		
				Min	Max	Min	Max	Min	Max	
Static										
Gate-Source Breakdown Voltage	V _{(BR)GSS}	I _G = -1 μA, V _{DS} = 0 V	-57	-50		-50		-50		V
Gate-Source Cutoff Voltage	V _{GS(off)}	V _{DS} = 15 V, I _D = 0.5 nA	-2	-0.5	-4.5	-0.5	-4.5	-0.5	-4.5	V
Saturation Drain Current ^b	I _{DSS}	V _{DS} = 15 V, V _{GS} = 0 V	3	0.5	8	0.5	8	0.5	8	mA
Gate Reverse Current	I _{GSS}	V _{GS} = -30 V, V _{DS} = 0 V	-10		-100		-100		-100	pA
		T _A = 150 °C	-20		-150		-150		-150	nA
Gate Operating Current	I _G	V _{DG} = 15 V, I _D = 200 μA	-3		-50		-50		-50	pA
Gate-Source Forward Voltage	V _{GS(F)}	I _G = 1 mA, V _{DS} = 0 V	0.7							V
Dynamic										
Common-Source Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, V _{GS} = 0 V f = 1 kHz	2.5	1.5	6.0	1.5	6.0	1.5	6.0	mS
Common-Source Output Conductance ^b	g _{os}		2		25		25		25	μS
Common-Source Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V f = 1 MHz	3.5		6		6		6	pF
Common-Source Reverse Transfer Capacitance	C _{rss}		1.3		2		2		2	
Equivalent Input Noise Voltage	e _n	V _{DS} = 15 V, I _D = 200 μA f = 10 Hz	20		180		200			nV/ √Hz
Noise Figure	NF	R _G = 1 MΩ	0.1		3.5		5			dB
Matching										
Differential Gate-Source Voltage	V _{GS1} - V _{GS2}	V _{DG} = 15 V, I _D = 50 μA			5		10		15	mV
		V _{DG} = 15 V, I _D = 200 μA			5		10		15	
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta V_{GS1} - V_{GS2} }{\Delta T}$	V _{DG} = 15 V, I _D = 200 μA T _A = -55 to 125 °C			10		20		40	μV/ °C
Saturation Drain Current Ratio ^c	$\frac{I_{DSS1}}{I_{DSS2}}$	V _{DS} = 15 V, V _{GS} = 0 V	0.98	0.95	1	0.9	1	0.9	1	
Transconductance Ratio ^c	$\frac{g_{fs1}}{g_{fs2}}$	V _{DS} = 15 V, I _D = 200 μA f = 1 kHz	0.99	0.97	1	0.95	1	0.9	1	
Differential Output Conductance	g _{os1} - g _{os2}	V _{DG} = 15 V, V _{GS} = 0 V f = 1 kHz	0.1		1		2		3	μS
Differential Gate Current	I _{G1} - I _{G2}	V _{DG} = 15 V, I _D = 200 μA T _A = 125 °C	1		5		5		5	nA

Notes

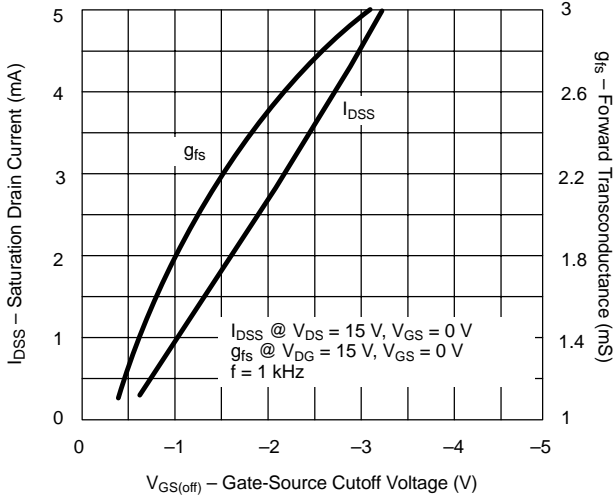
- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.
- c. Assumes smaller value in the numerator.

NQP

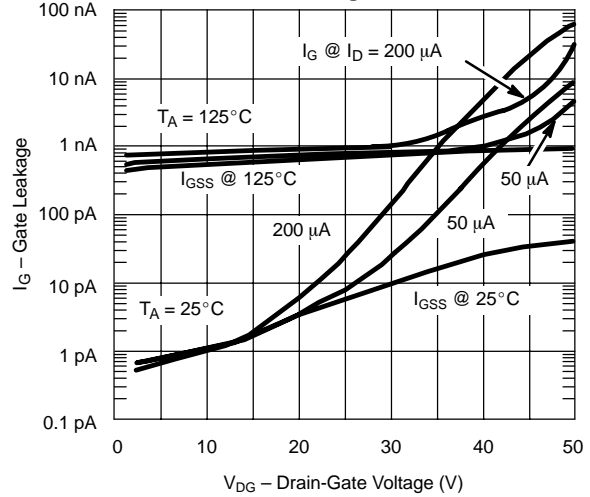


TYPICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

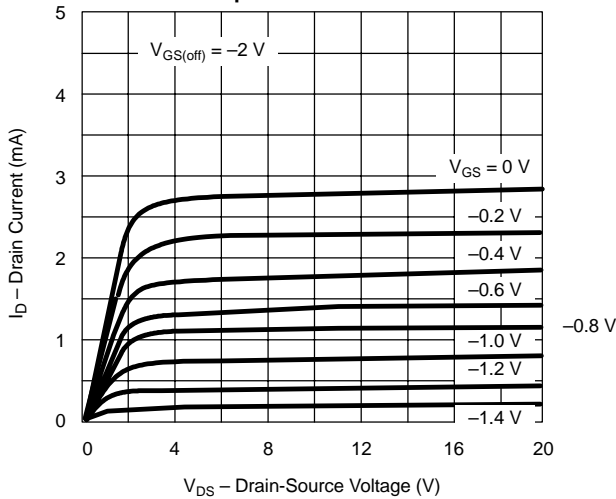
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



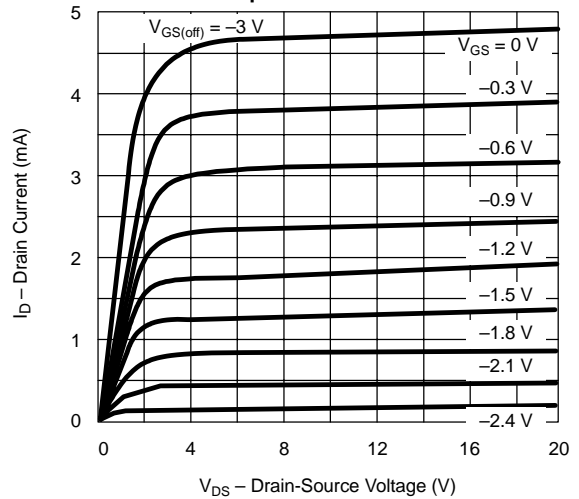
Gate Leakage Current



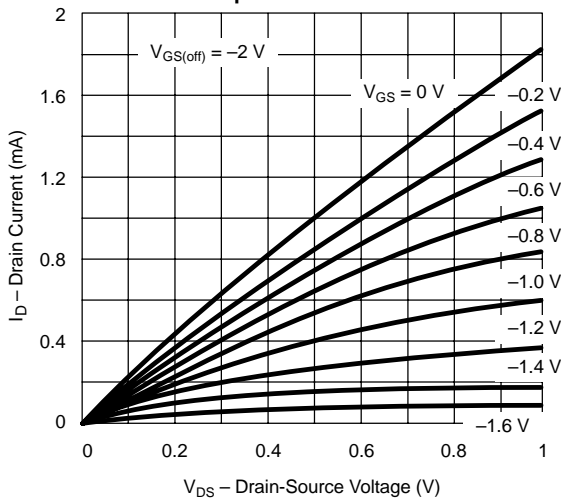
Output Characteristics



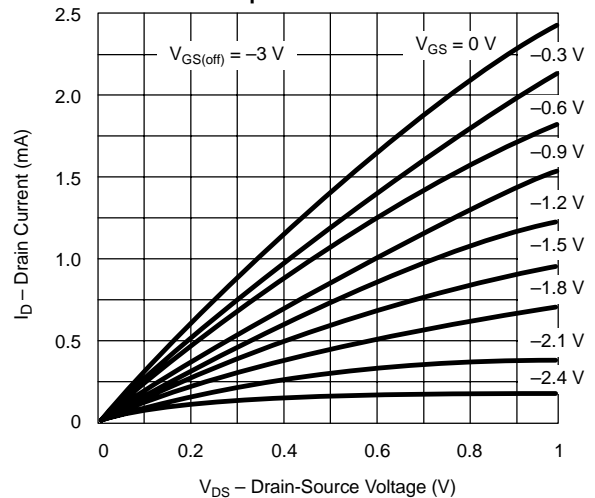
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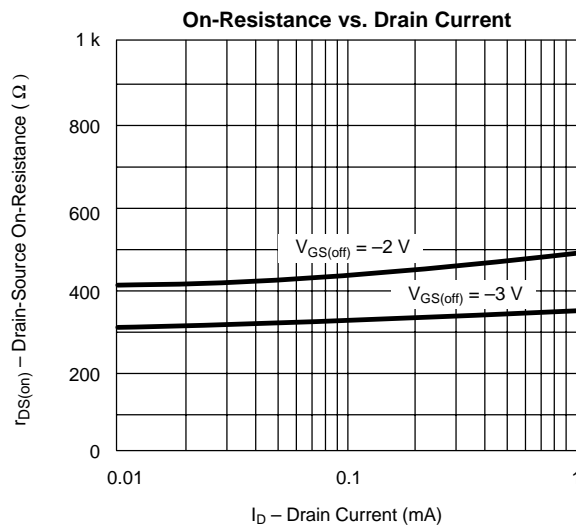
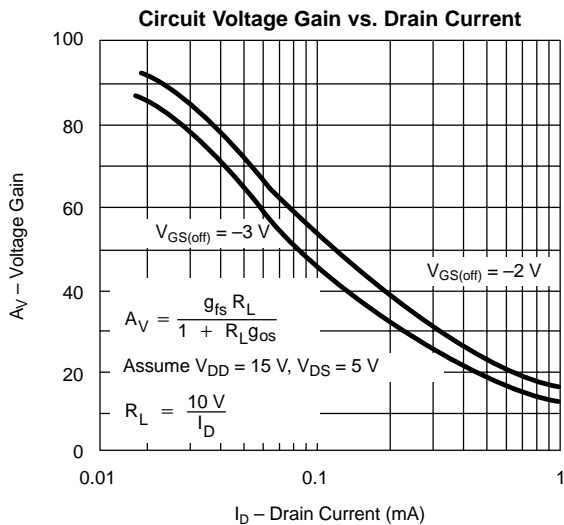
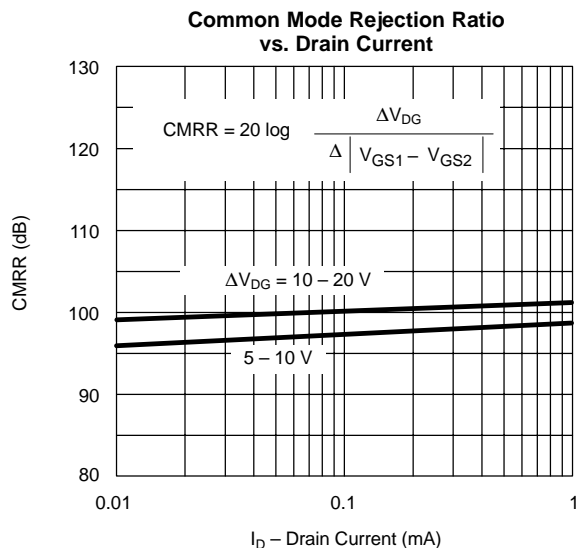
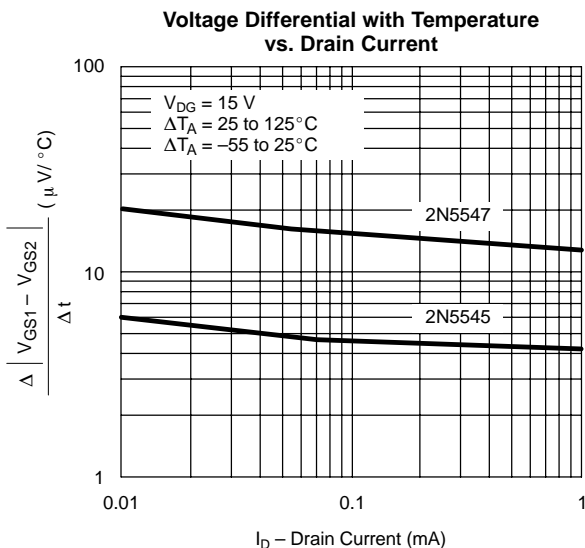
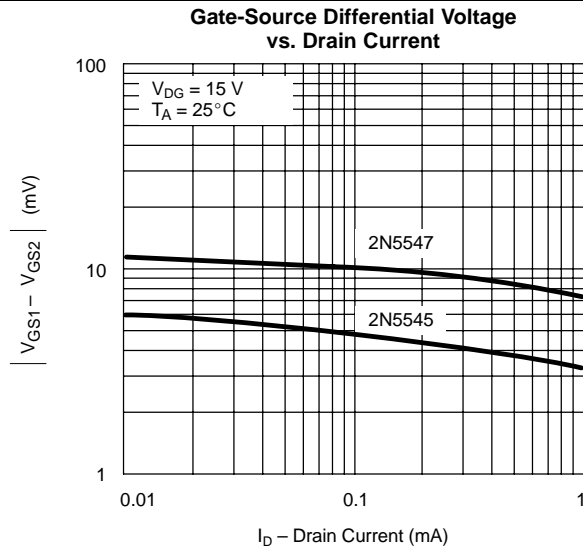
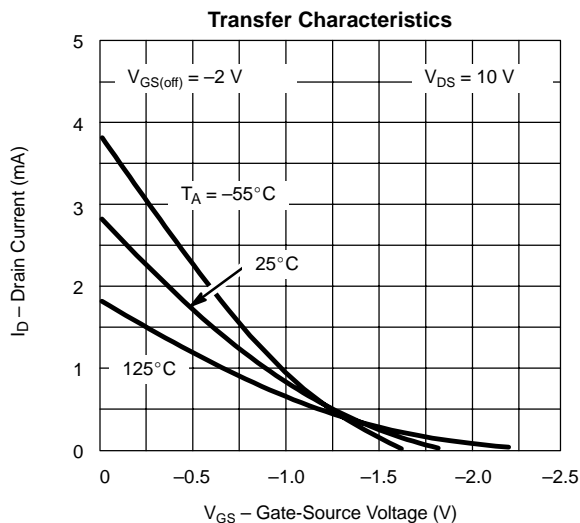
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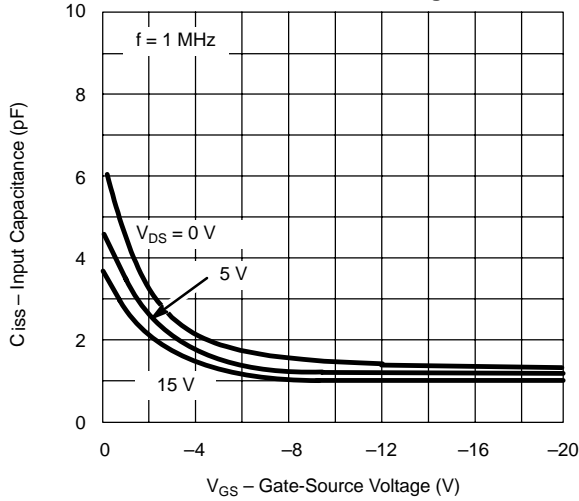
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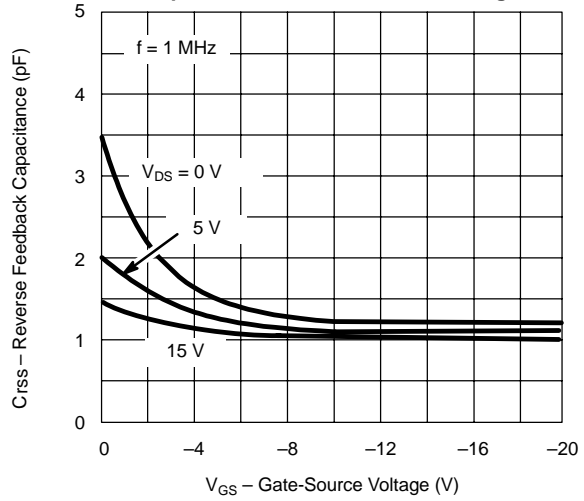


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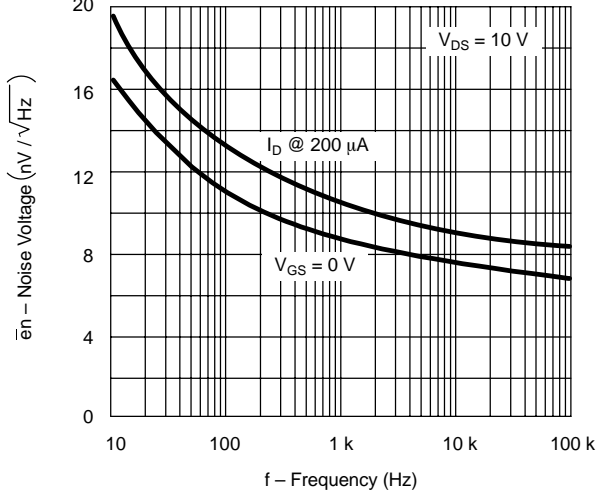
Common-Source Input Capacitance vs. Gate-Source Voltage



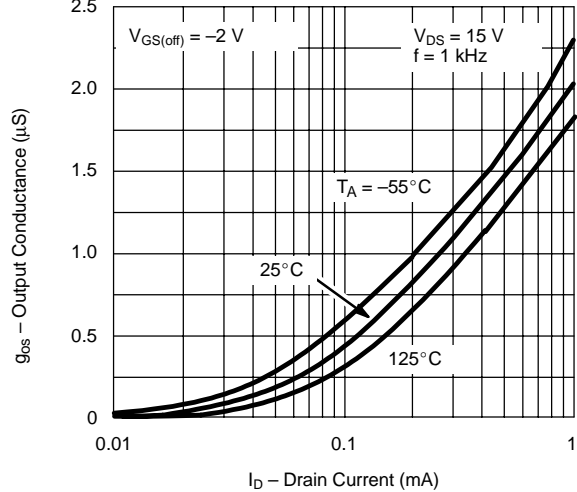
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



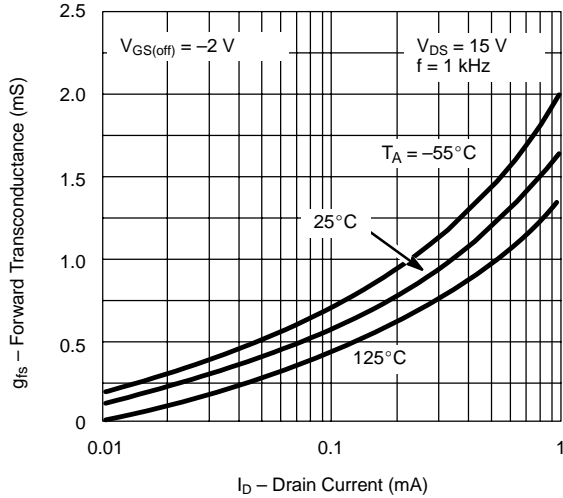
Equivalent Input Noise Voltage vs. Frequency



Output Conductance vs. Drain Current



Common-Source Forward Transconductance vs. Drain Current



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

