



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

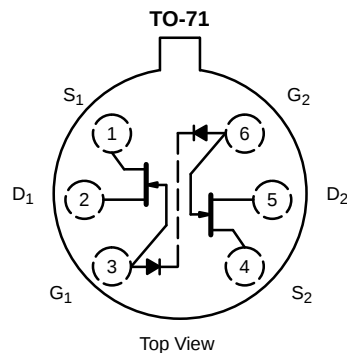
APPLICATIONS

- 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

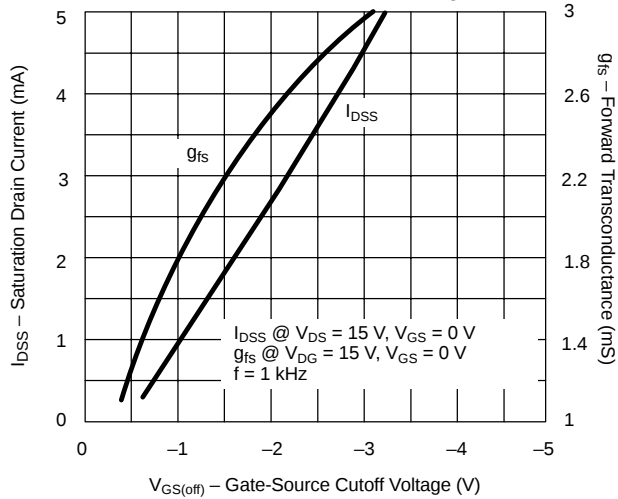
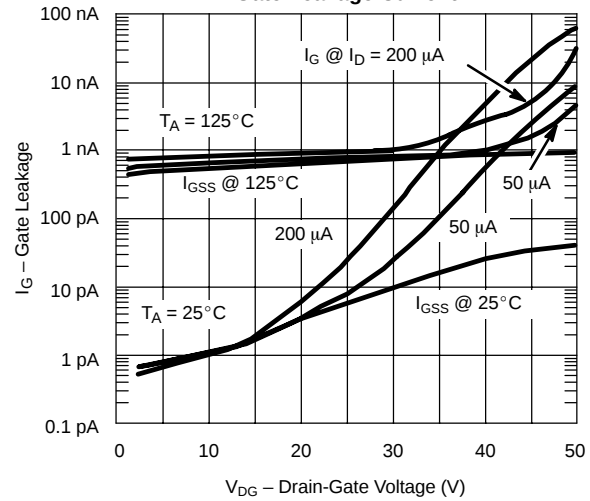
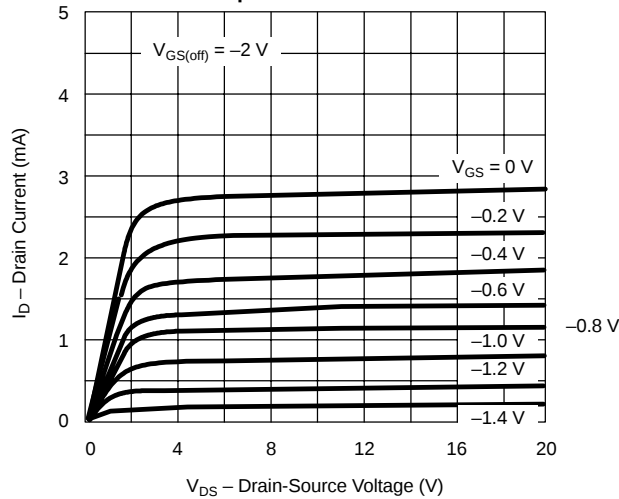
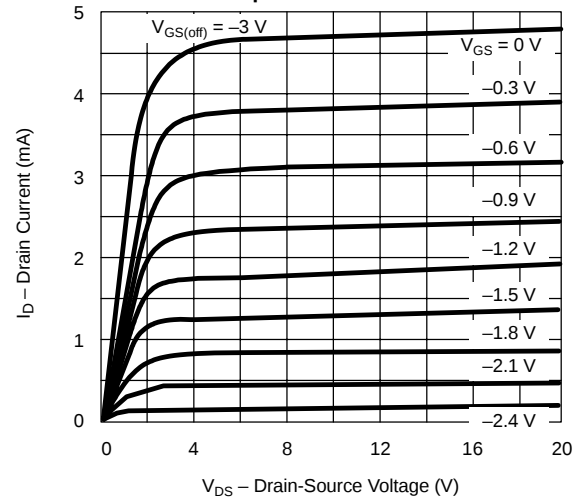
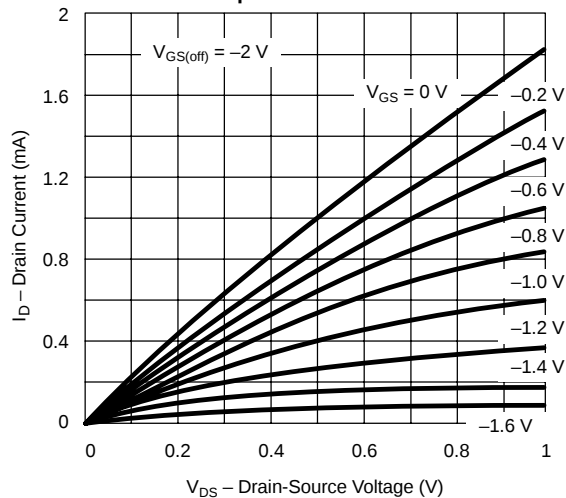
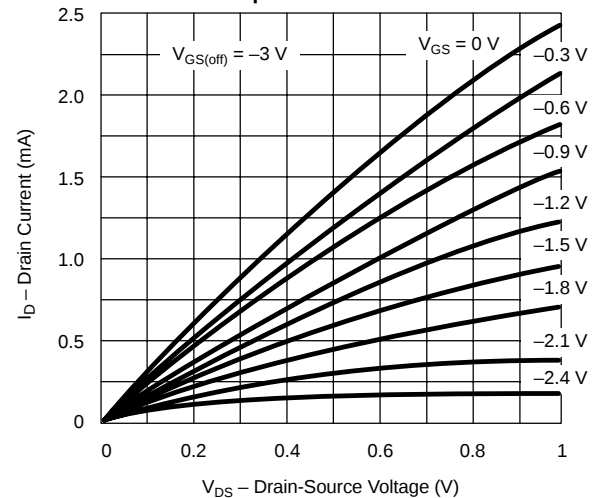
- Derate 2 mW/°C above 25°C
- Derate 4 mW/°C above 25°C

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	
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	$\bar{e}_n$	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 _{G7S1} − 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

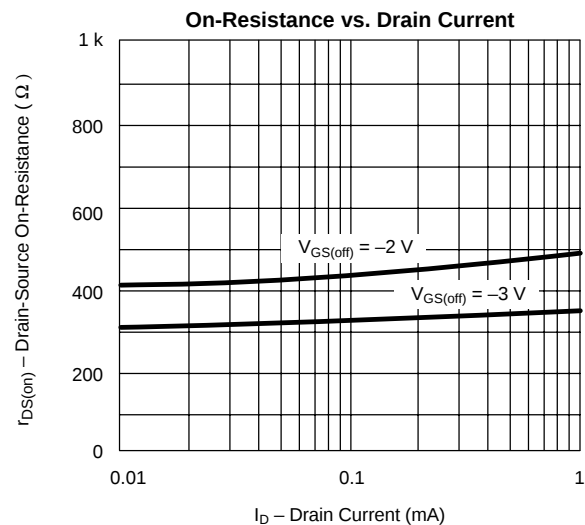
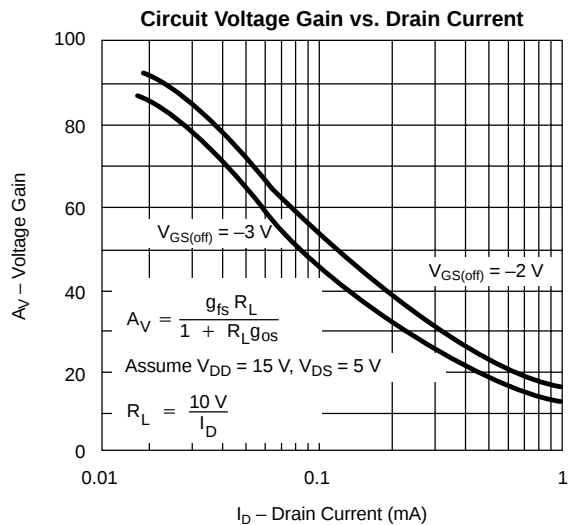
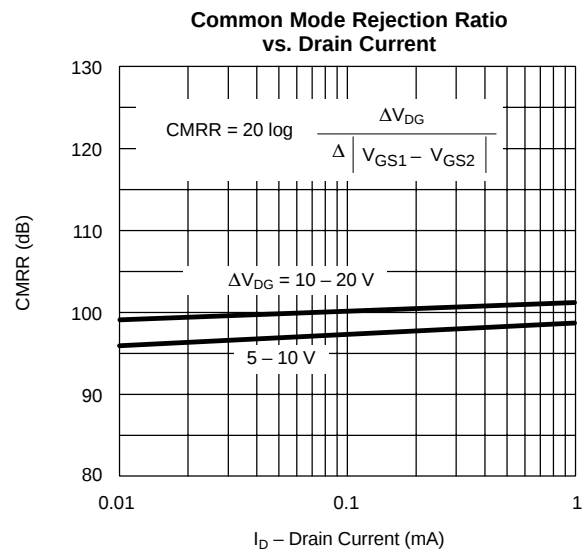
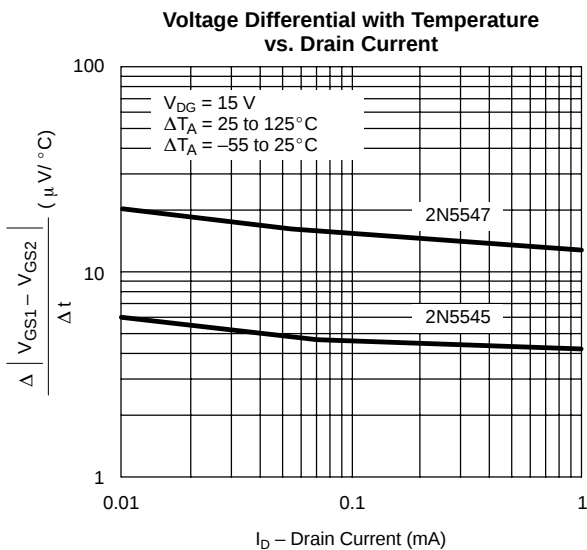
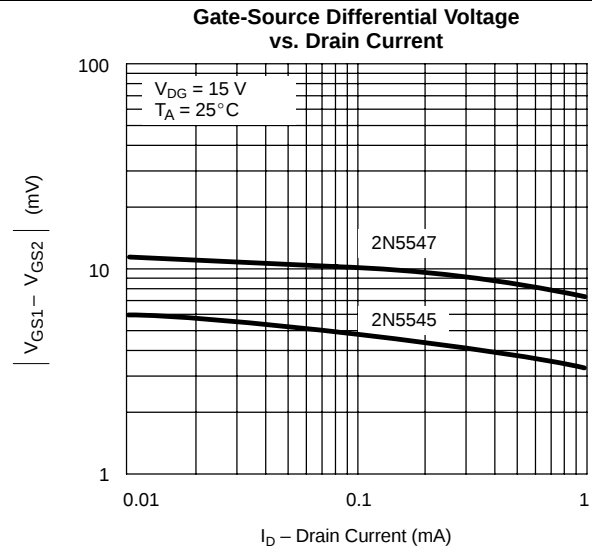
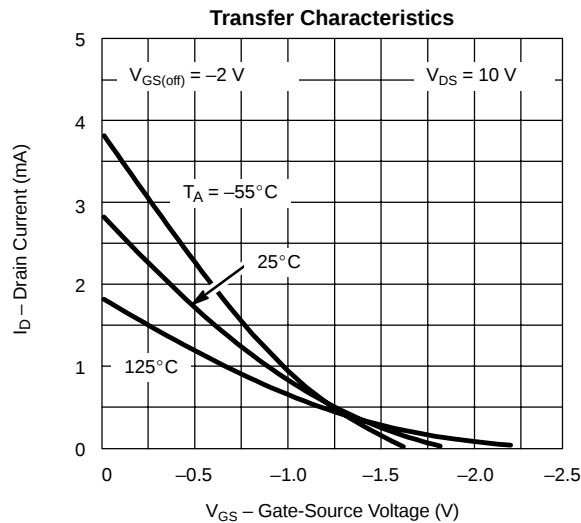
Notes

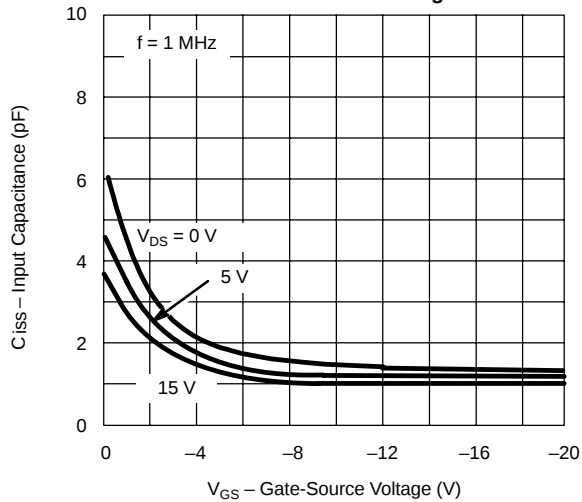
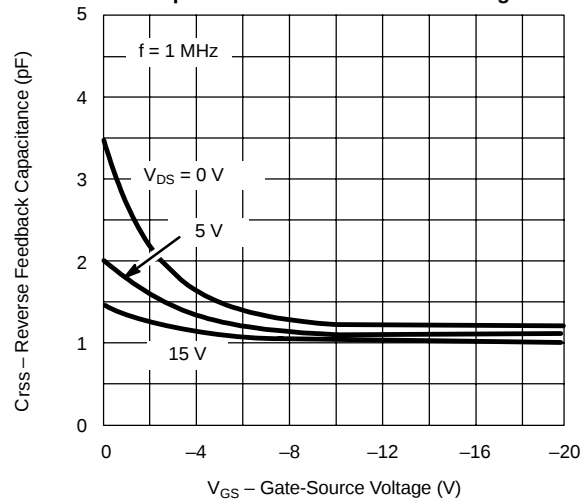
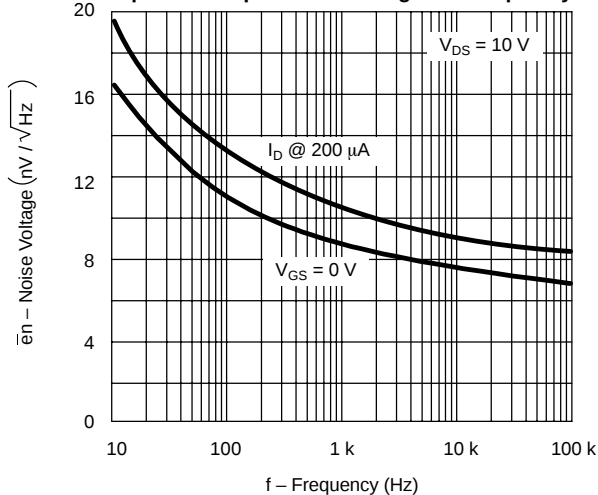
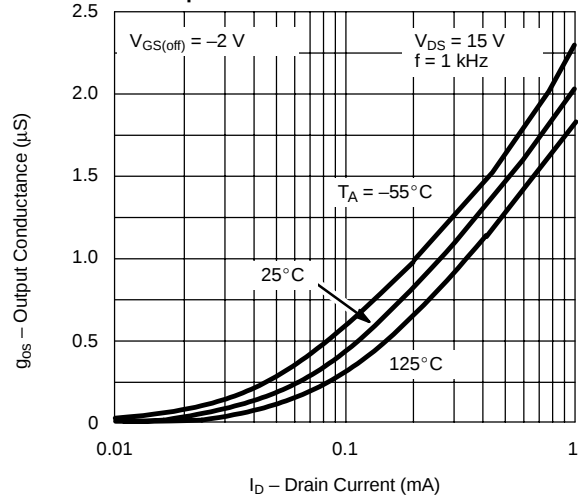
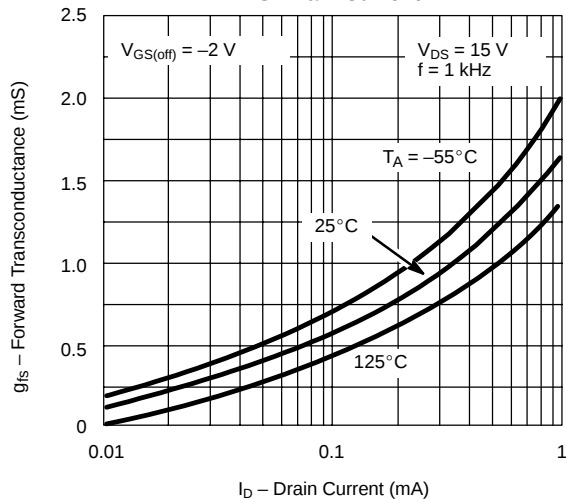
- a. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
b. Pulse test: PW ≤ 300 μs duty cycle ≤ 3%.
c. Assumes smaller value in the numerator.

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****Output Characteristics****Output Characteristics****Output Characteristics**

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



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