

2N5545/46/47/JANTX/JANTXV

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

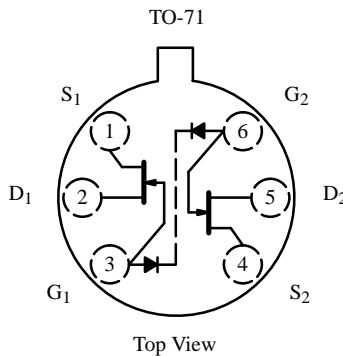
Applications

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

Description

The 2N5545/5546/5547JANTX/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).

The TO-71 package is available with full military processing (see Military Information).



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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70253.

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Specifications^a

Parameter	Symbol	Test Conditions	Typ ^b	Limits						Unit
				2N5545		2N5546		2N5547		
				Min	Max	Min	Max	Min	Max	
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1 \mu A, V_{DS} = 0 V$	-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 ^c	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
		$T_A = 150^\circ C$	-20		-150		-150		-150	nA
Gate Operating Current	I_G	$V_{DG} = 15 V, I_D = 200 \mu A$	-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 ^c	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
			2		25		25		25	μS
Common-Source Output Conductance ^c	g_{os}									μS
Common-Source Input Capacitance	C_{iss}	$V_{DS} = 15 V, V_{GS} = 0 V$ $f = 1 MHz$	3.5		6		6		6	pF
			1.3		2		2		2	
Common-Source Reverse Transfer Capacitance	C_{rss}									pF
Equivalent Input Noise Voltage	\bar{e}_n	$V_{DS} = 15 V, I_D = 200 \mu A$ $f = 10 Hz$	20		180		200			nV/ \sqrt{Hz}
Noise Figure	NF	$R_G = 1 M\Omega$	0.1		3.5		5			dB
Matching										
Differential Gate-Source Voltage	$ V_{GS1} - V_{GS2} $	$V_{DG} = 15 V, I_D = 50 \mu A$			5		10		15	mV
		$V_{DG} = 15 V, I_D = 200 \mu A$			5		10		15	
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta V_{GS1} - V_{GS2} }{\Delta T}$	$V_{DG} = 15 V, I_D = 200 \mu A$ $T_A = -55 \text{ to } 125^\circ C$			10		20		40	$\mu V/^\circ C$
Saturation Drain Current Ratio ^d	$\frac{I_{DSS1}}{I_{DSS2}}$	$V_{DS} = 15 V, V_{GS} = 0 V$	0.98	0.95	1	0.9	1	0.9	1	
Transconductance Ratio ^d	$\frac{g_{fs1}}{g_{fs2}}$	$V_{DS} = 15 V, I_D = 200 \mu A$ $f = 1 kHz$	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} $	$V_{DG} = 15 V, I_D = 200 \mu A$ $T_A = 125^\circ C$	1		5		5		5	nA

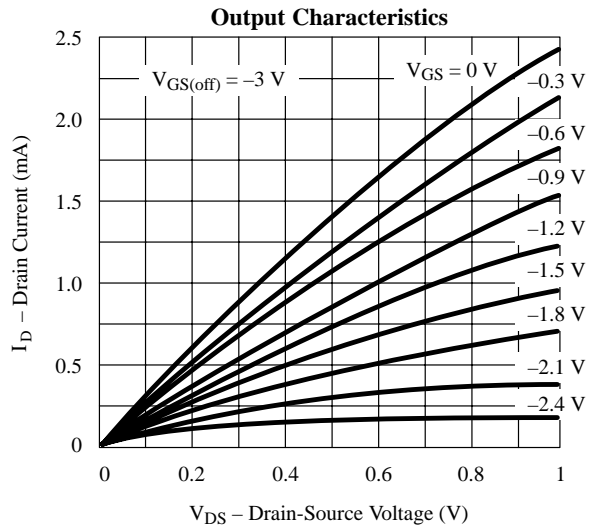
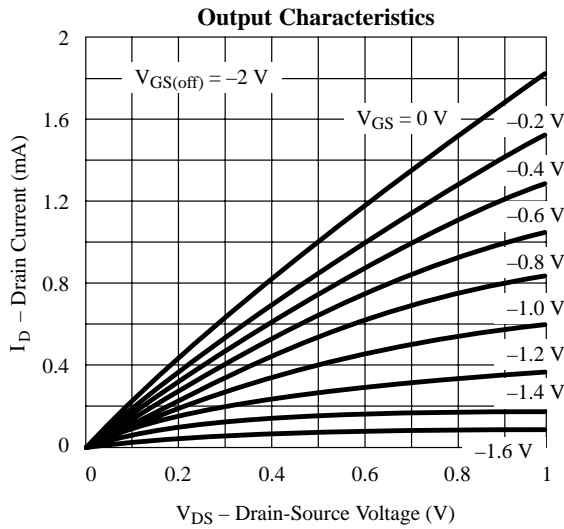
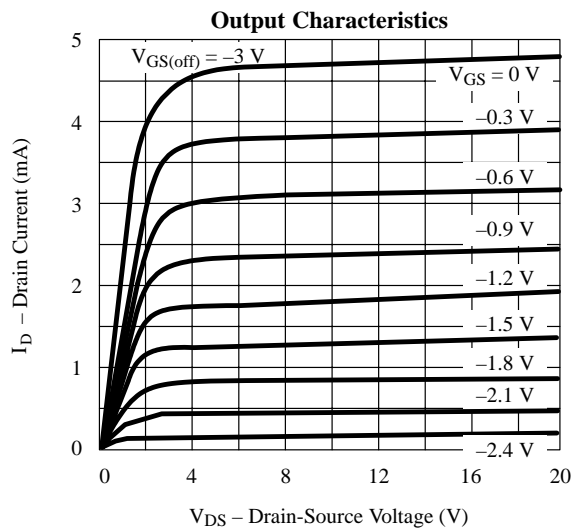
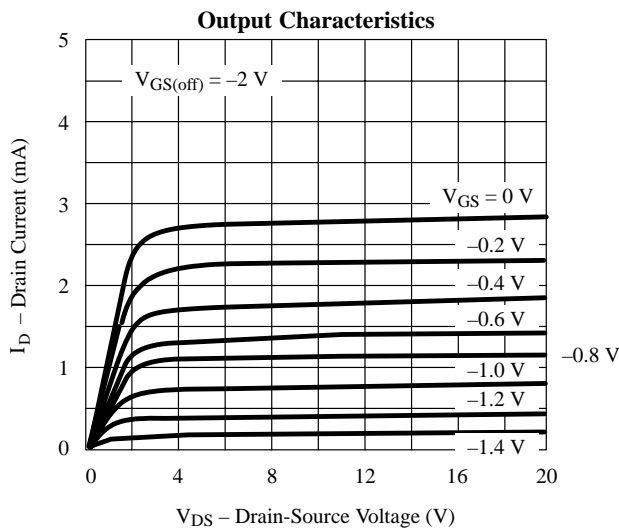
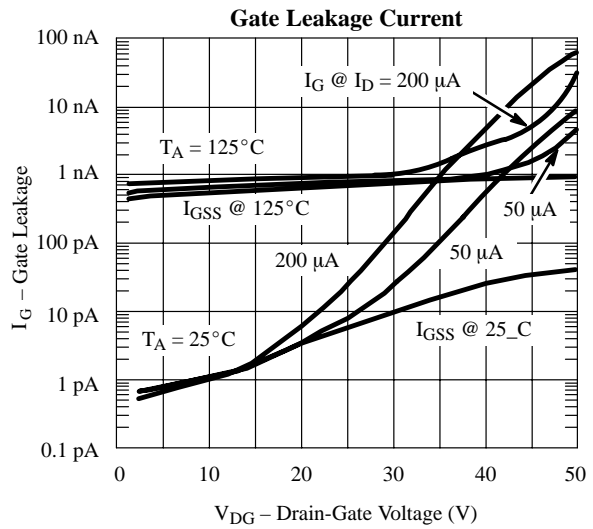
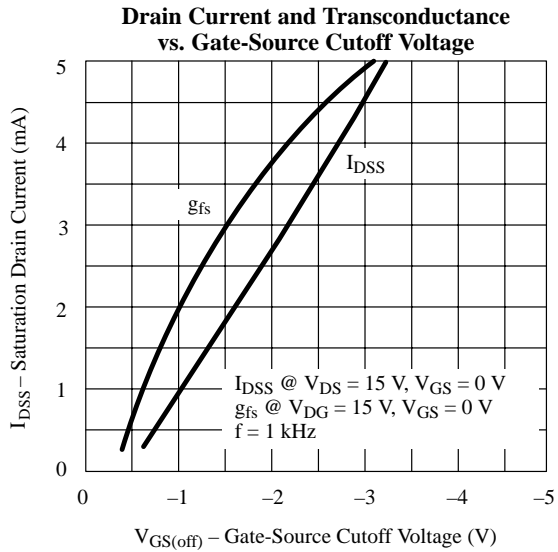
Notes

- $T_A = 25^\circ C$ unless otherwise noted.
- Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
- Pulse test: $PW \leq 300 \mu s$ duty cycle $\leq 3\%$.
- Assumes smaller value in the numerator.

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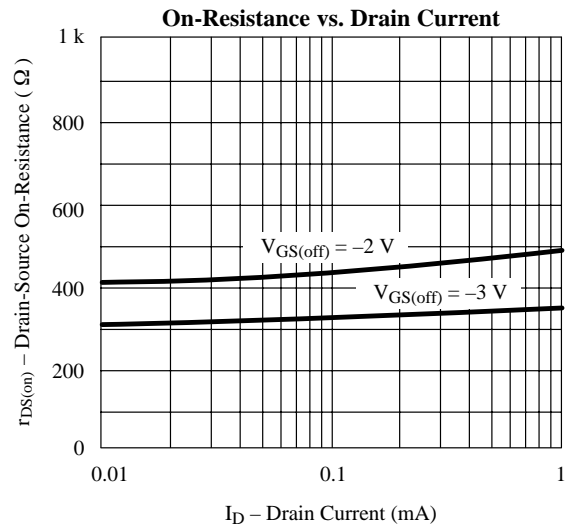
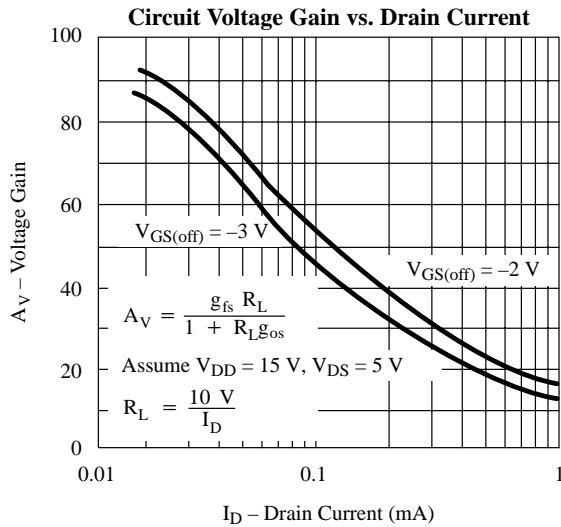
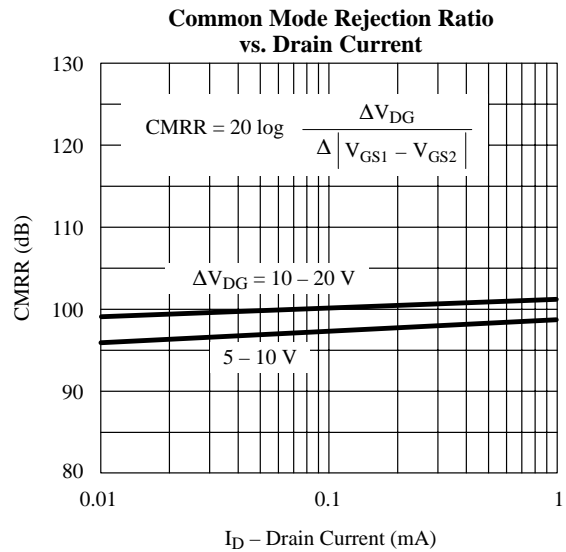
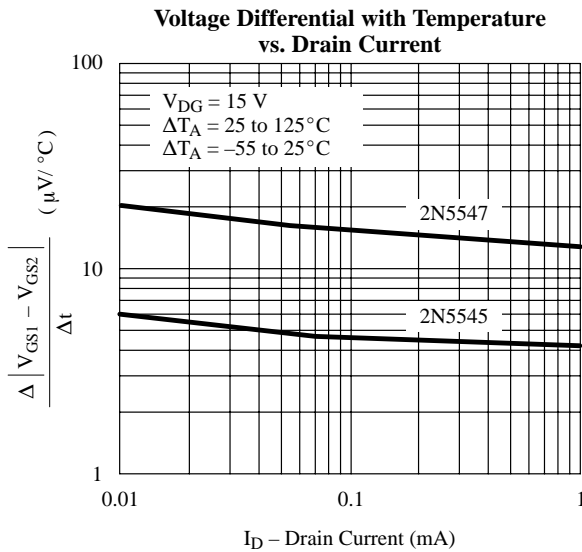
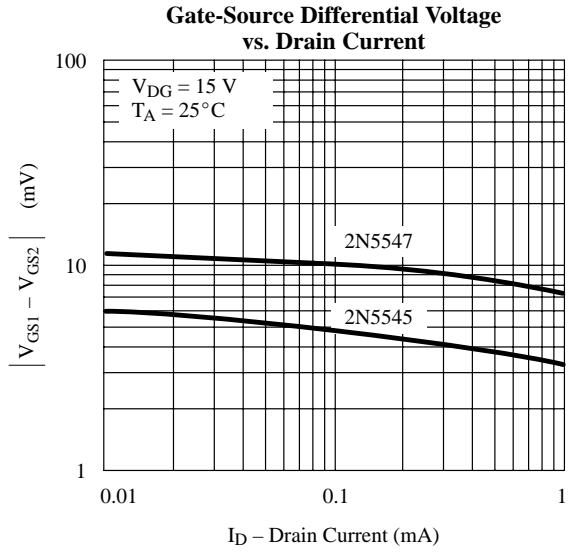
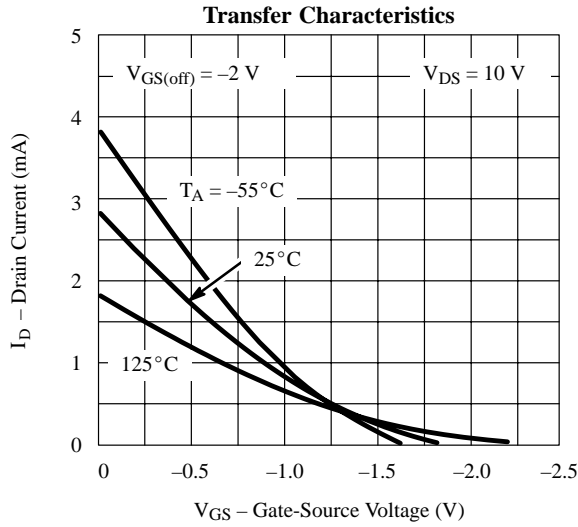
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Typical Characteristics



2N5545/46/47/JANTX/JANTXV

Typical Characteristics (Cont'd)



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Typical Characteristics (Cont'd)

