TEMIC

Siliconix

2N5545/5546/5547JANTX/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

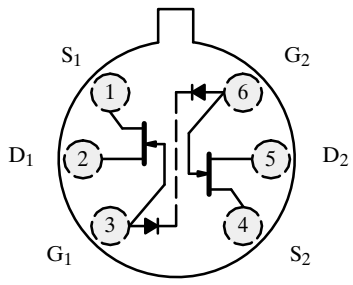
- Wideband Differential Amps
- High-Speed,Temp-Compensated, Single-Ended Input Amps
- High-Speed Comparators
- Impedance Converters

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).

TO-71



Top View

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

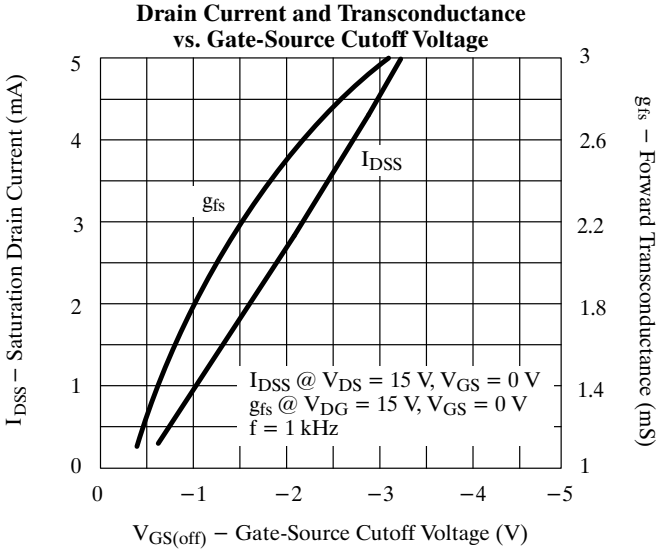
2N5545/5546/5547JANTX/JANTXV

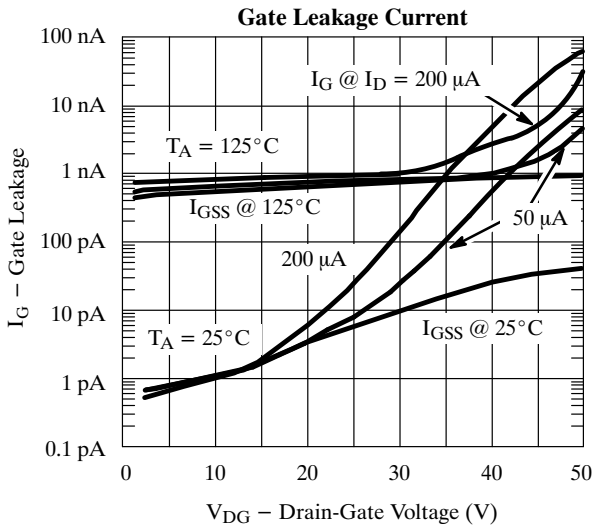
Specifications[a]

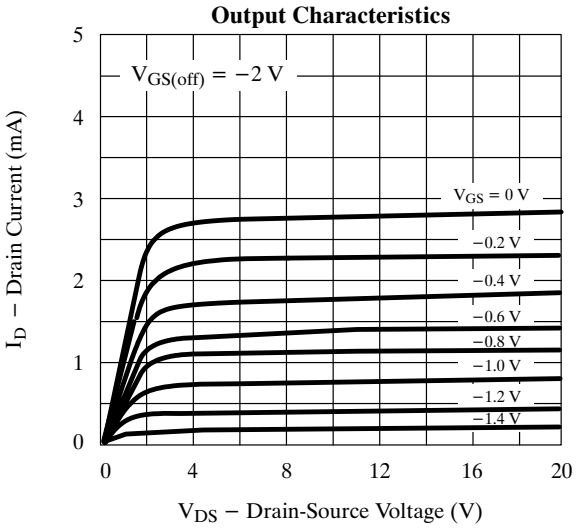
Parameter	Symbol	Test Conditions	Typ[b]	Limits 2N5545 Min	2N5545 Max	2N5546 Min	2N5546 Max	2N5547 Min	2N5547 Max	Unit
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = -1$ µA, $V_{DS} = 0$ V	−57	−50		−50		−50		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15$ V, $I_D = 0.5$ nA	−2	−0.5	−4.5	−0.5	−4.5	−0.5	−4.5	
Saturation Drain Current[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
		$T_A = 150°C$	−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[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
Common-Source Output Conductance[c]	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			$nV/\sqrt{Hz}$
Noise Figure	NF	$R_G = 1$ MΩ	0.1		3.5		5			dB
Matching										
Differential Gate-Source Voltage	$\lvert V_{GS1} - V_{GS2}\rvert$	$V_{DG} = 15$ V, $I_D = 50$ µA			5		10		15	mV
	$\lvert V_{GS1} - V_{GS2}\rvert$	$V_{DG} = 15$ V, $I_D = 200$ µA			5		10		15	
Gate-Source Voltage Differential Change with Temperature	$\frac{\Delta\lvert V_{GS1} - V_{GS2}\rvert}{\Delta T}$	$V_{DG} = 15$ V, $I_D = 200$ µA, $T_A = -55$ to 125°C			10		20		40	µV/°C
Saturation Drain Current Ratio[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, $I_D = 200$ µA, f = 1 kHz	0.99	0.97	1	0.95	1	0.9	1	
Differential Output Conductance	$\lvert g_{os1} - g_{os2}\rvert$	$V_{DG} = 15$ V, $V_{GS} = 0$ V, f = 1 kHz	0.1		1		2		3	µS
Differential Gate Current	$\lvert I_{G1} - I_{G2}\rvert$	$V_{DG} = 15$ V, $I_D = 200$ µA, $T_A = 125°C$	1		5		5		5	nA

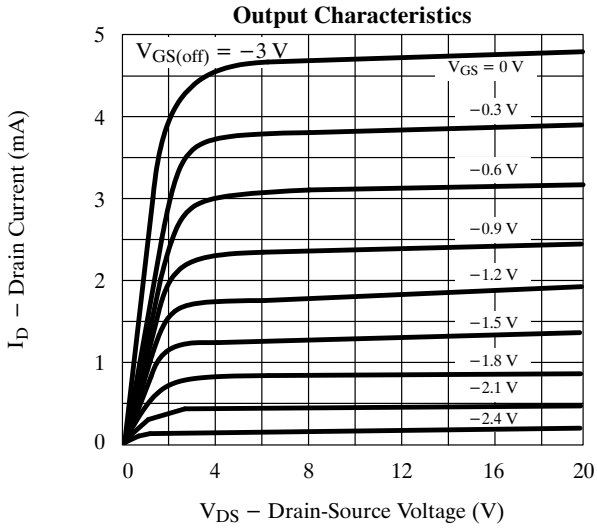
Notes
a. $T_A = 25°C$ unless otherwise noted. NQP
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
c. Pulse test: PW ≤ 300 µs duty cycle ≤ 3%.
d. Assumes smaller value in the numerator.

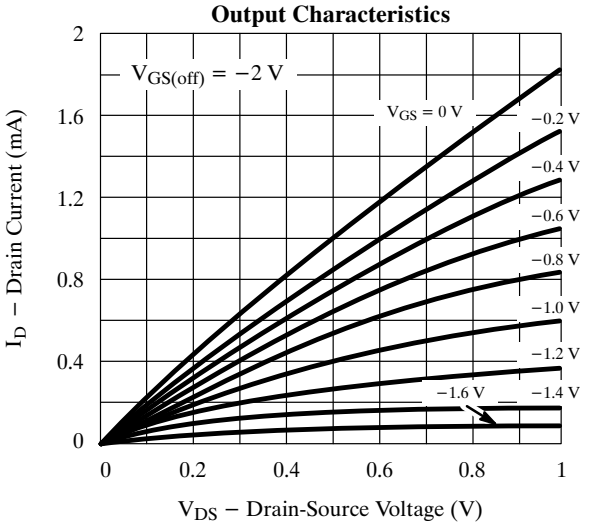
Typical Characteristics

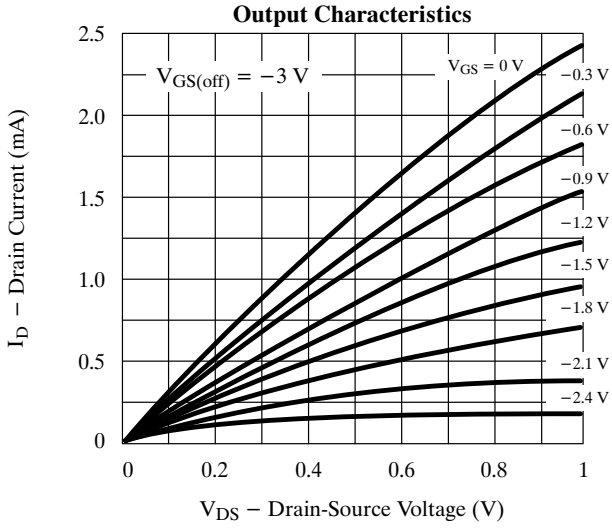








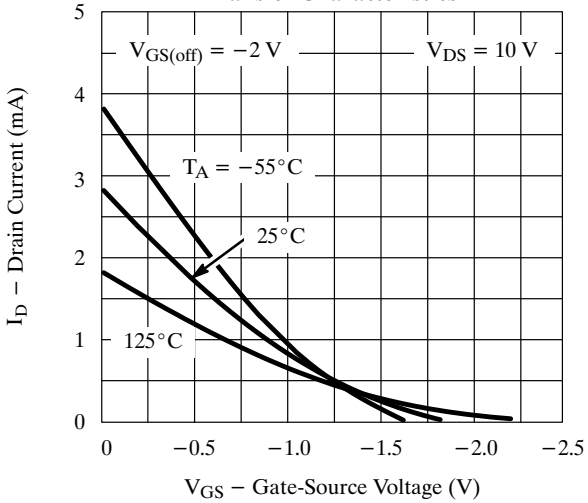




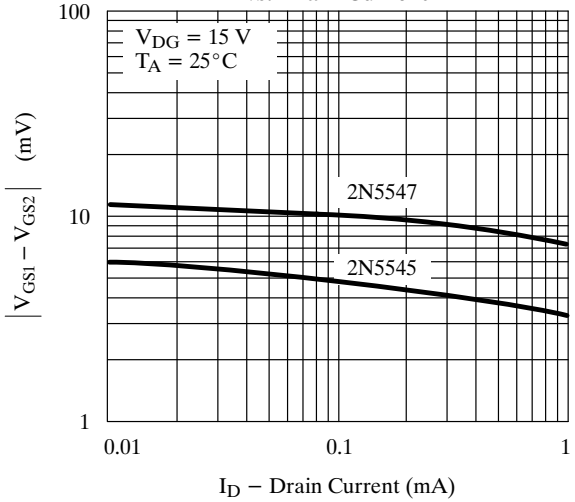
2N5545/5546/5547JANTX/JANTXV

Typical Characteristics (Cont'd)

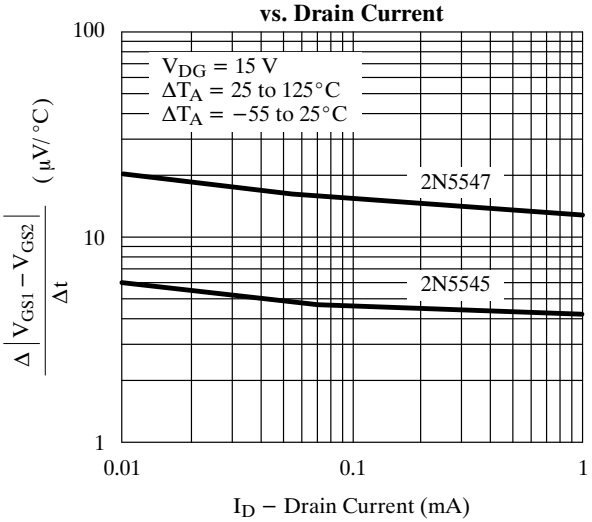
Transfer Characteristics



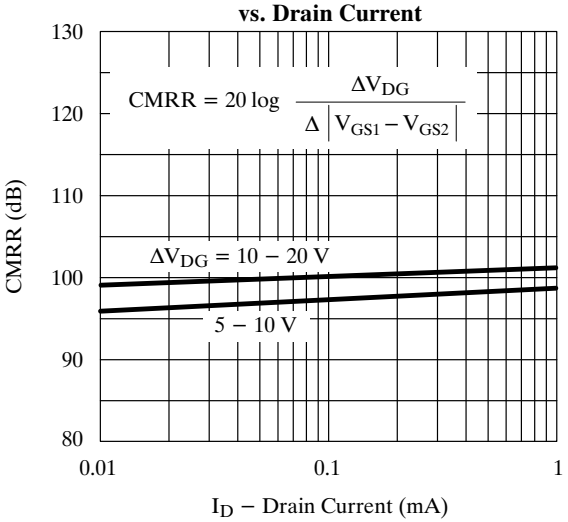
Gate-Source Differential Voltage vs. Drain Current



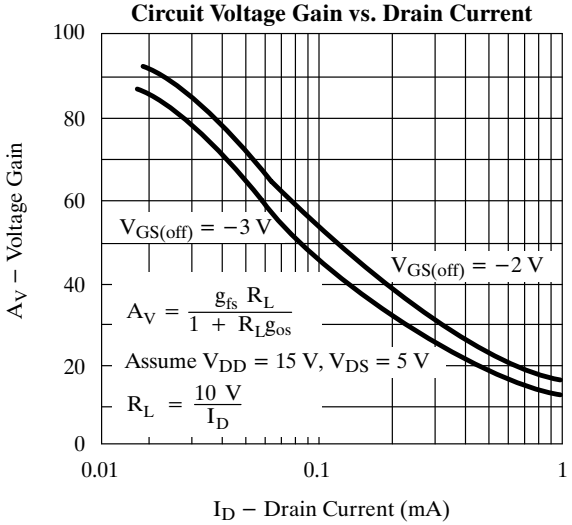
Voltage Differential with Temperature vs. Drain Current



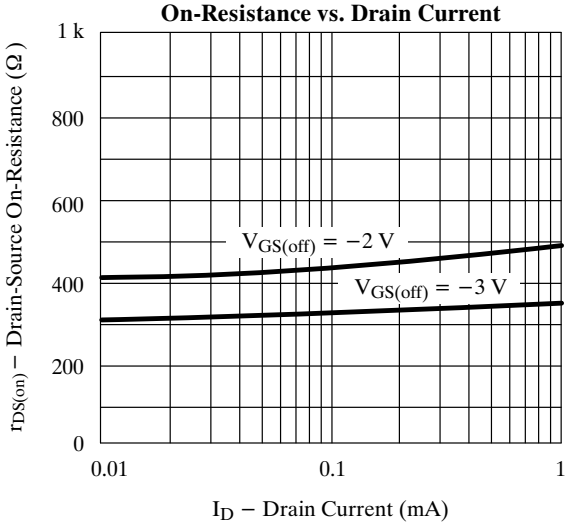
Common Mode Rejection Ratio vs. Drain Current



Circuit Voltage Gain vs. Drain Current

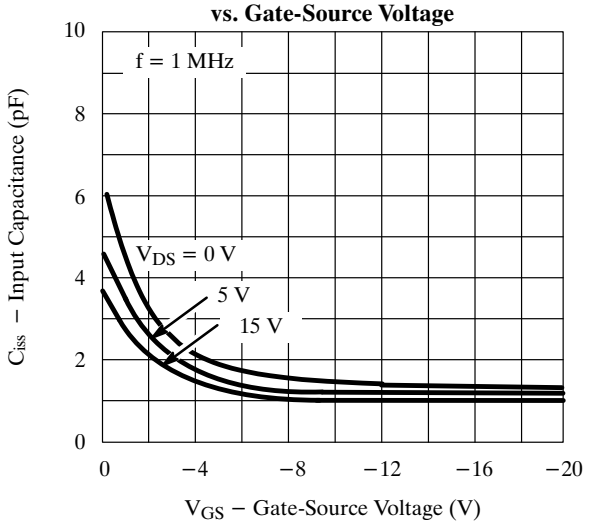


On-Resistance vs. Drain Current

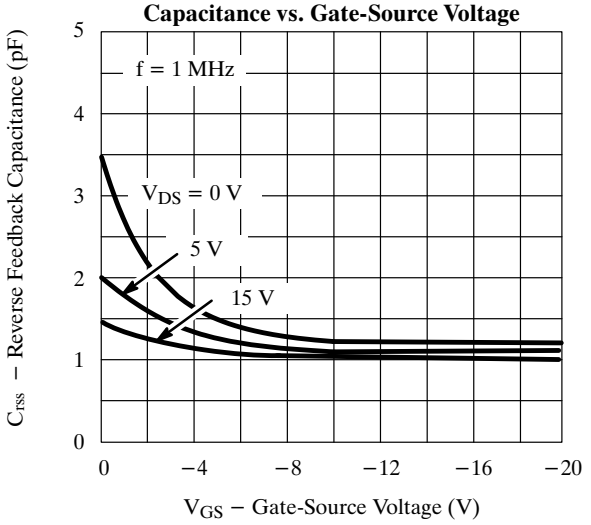


Typical Characteristics (Cont'd)

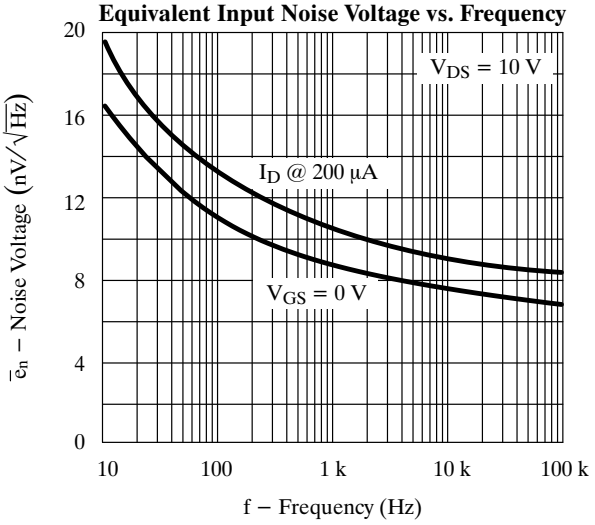
Common-Source Input Capacitance vs. Gate-Source Voltage



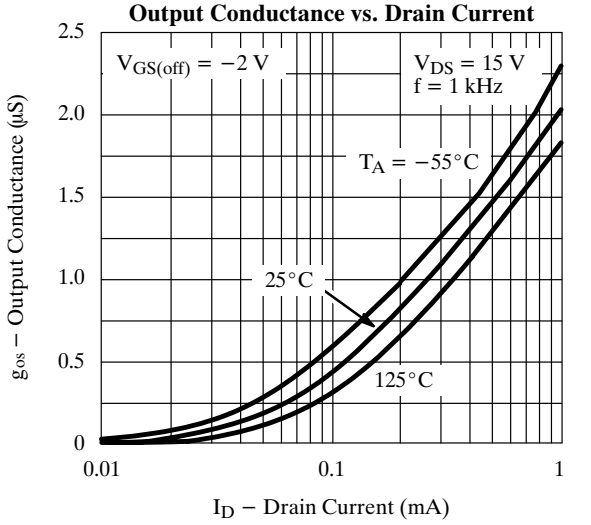
Common-Source Reverse Feedback Capacitance vs. Gate-Source Voltage



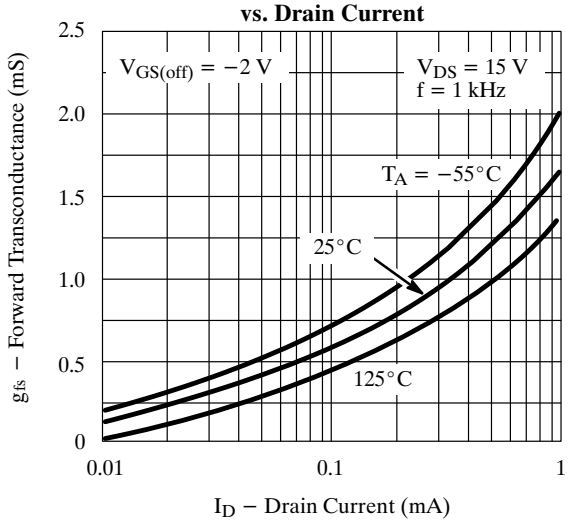
Equivalent Input Noise Voltage vs. Frequency



Output Conductance vs. Drain Current



Common-Source Forward Transconductance vs. Drain Current



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