2N5460/5461/5462

P-Channel JFETs

Product Summary

Part Number	$V_{GS(off)}$ (V)	$V_{(BR)GSS}$ Min (V)	g_{fs} Min (mS)	I_{DSS} Min (mA)
2N5460	0.75 to 6	40	1	−1
2N5461	1 to 7.5	40	1.5	−2
2N5462	1.8 to 9	40	2	−4

Features

- High Input Impedance
- Very Low Noise
- High Gain: A_V = 80 @ 20 μA

Benefits

- Low Signal Loss/System Error
- High System Sensitivity
- High-Quality Low-Level Signal Amplification

Applications

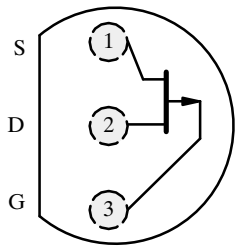
- Low-Current, Low-Voltage Amplifiers
- High-Side Switching
- Ultrahigh Input Impedance Pre-Amplifiers

Description

The 2N5460/5461/5462 are p-channel JFETs designed to provide all-around performance in a wide range of amplifier and analog switch applications.

The TO-226AA (TO-92) plastic package provides a low cost option, and the series is also available in tape-and-reel for automated assembly, (see Packaging Information).

TO-226AA
(TO-92)



Top View

Absolute Maximum Ratings

Gate-Drain Voltage . . . . . 40 V
Gate-Source Voltage . . . . . 40 V
Gate Current . . . . . −10 mA
Storage Temperature . . . . . −65 to 150°C
Operating Junction Temperature . . . . . −55 to 150°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.) . . . . . 300°C
Power Dissipation[a] . . . . . 350 mW

Notes
a. Derate 2.8 mW/°C above 25°C

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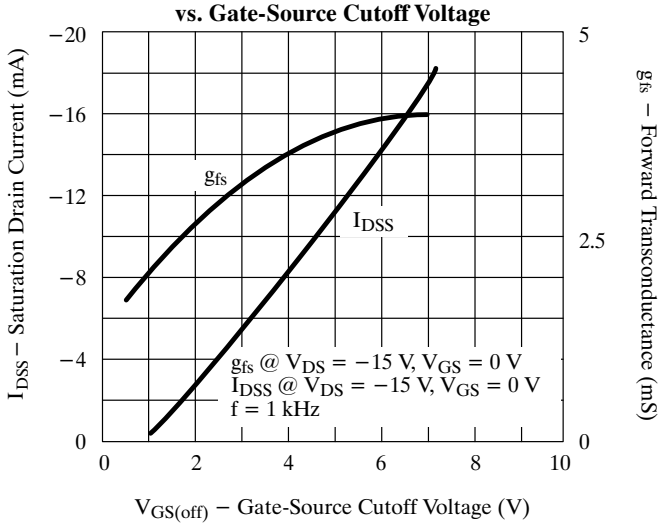
Specifications[a]

Parameter	Symbol	Test Conditions	Typ[b]	Limits 2N5460 Min	2N5460 Max	2N5461 Min	2N5461 Max	2N5462 Min	2N5462 Max	Unit
Static										
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G = 10 μA , V_{DS} = 0 V	55	40		40		40		V
Gate-Source Cutoff Voltage	$V_{GS(off)}$	V_{DS} = −15 V, I_D = −1 μA		0.75	6	1	7.5	1.8	9	
Saturation Drain Current[c]	I_{DSS}	V_{DS} = −15 V, V_{GS} = 0 V		−1	−5	−2	−9	−4	−16	mA
Gate Reverse Current	I_{GSS}	V_{GS} = 20 V, V_{DS} = 0 V	0.003		5		5		5	nA
		T_A = 100°C	0.0003		1		1		1	μA
Gate Operating Current	I_G	V_{DG} = −20 V, I_D = −0.1 mA	3							pA
Drain Cutoff Current	$I_{D(off)}$	V_{DS} = −15 V, V_{GS} = 10 V	−5							
Gate-Source Voltage	V_{GS}	V_{DS} = −15 V, I_D = −0.1 mA	1.3	0.5	4					V
		V_{DS} = −15 V, I_D = −0.2 mA	2.3			0.8	4.5			
		V_{DS} = −15 V, I_D = −0.4 mA	3.8					1.5	6	
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, V_{GS} = 0 V, f = 1 kHz		1	4	1.5	5	2	6	mS
Common-Source Output Conductance	g_{os}				75		75		75	μS
Common-Source Input Capacitance	C_{iss}	V_{DS} = −15 V, V_{GS} = 0 V, f = 1 MHz	4.5		7		7		7	pF
Common-Source Reverse Transfer Capacitance	C_{rss}		1.2							
Common-Source Output Capacitance	C_{oss}		1.5		2		2		2	
Equivalent Input Noise Voltage	$\bar{e}_n$	V_{DS} = −15 V, V_{GS} = 0 V, f = 100 Hz	15		115		115		115	$\frac{nV}{\sqrt{Hz}}$
Noise Figure	NF	V_{DS} = −15 V, V_{GS} = 0 V, f = 100 Hz, R_G = 1 MΩ, BW = 1 Hz	0.2		2.5		2.5		2.5	dB

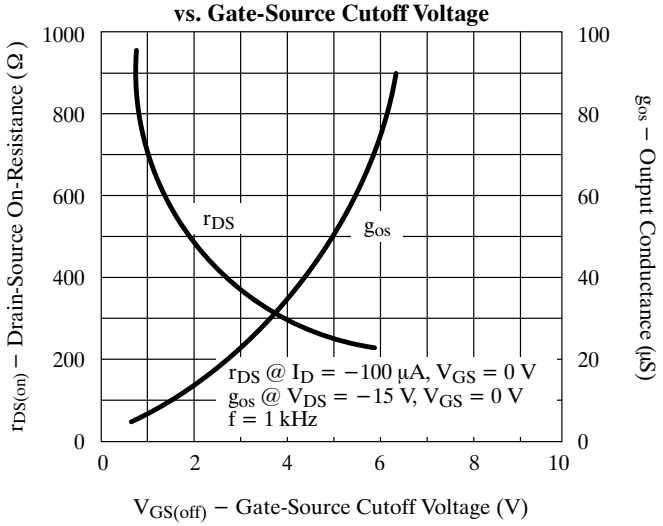
Notes
a. T_A = 25°C unless otherwise noted. PSCIB
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.
c. Pulse test: PW ≤ 300 μs duty cycle ≤ 2%.

Typical Characteristics

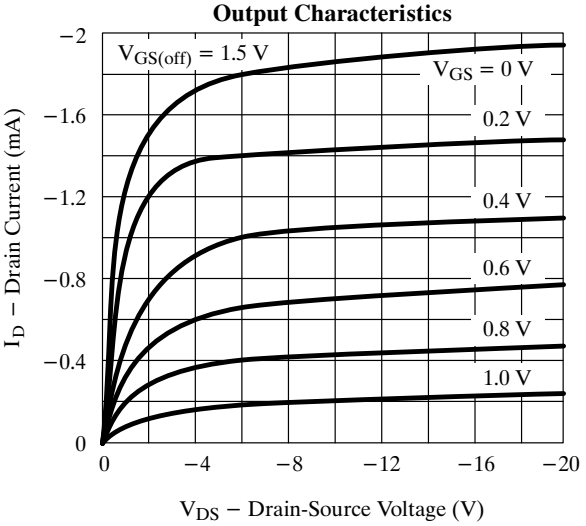
Drain Current and Transconductance vs. Gate-Source Cutoff Voltage



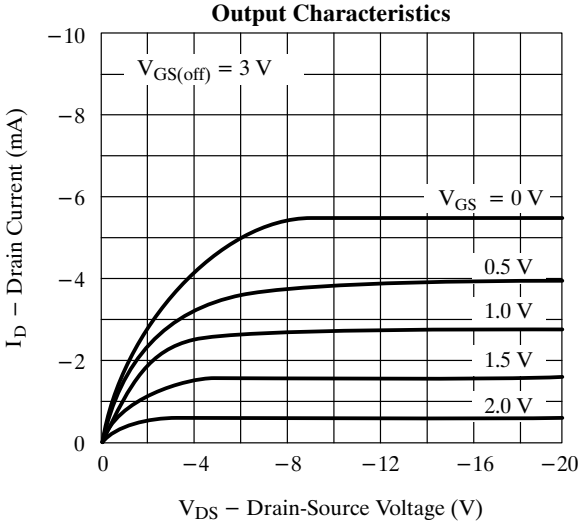
On-Resistance and Output Conductance vs. Gate-Source Cutoff Voltage



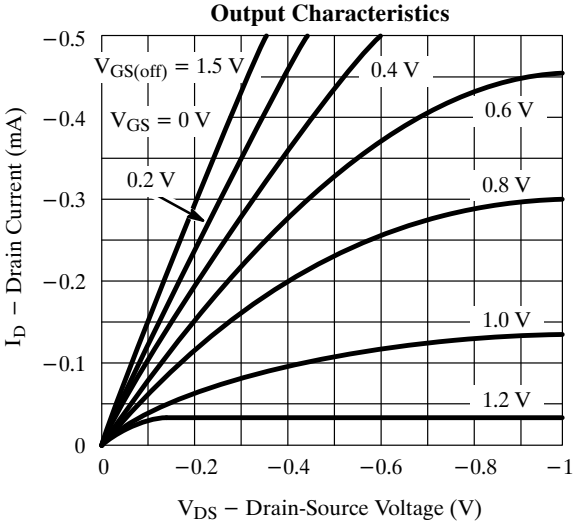
Output Characteristics



Output Characteristics



Output Characteristics



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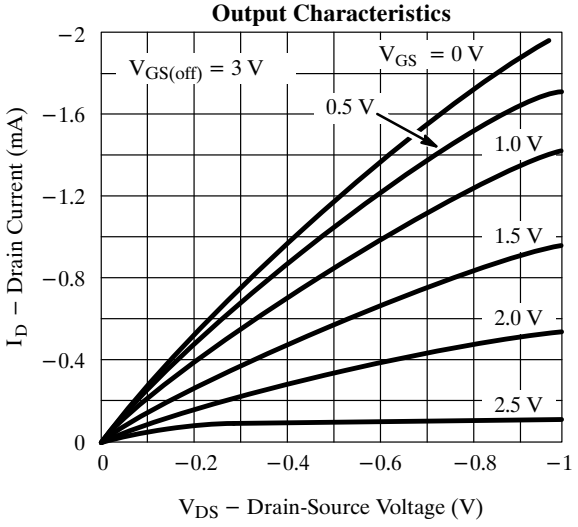

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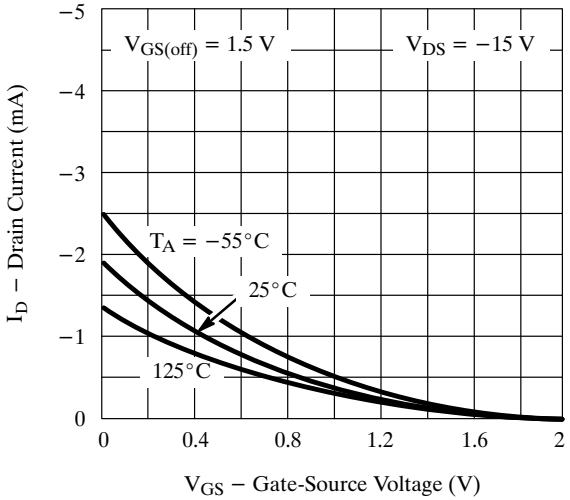
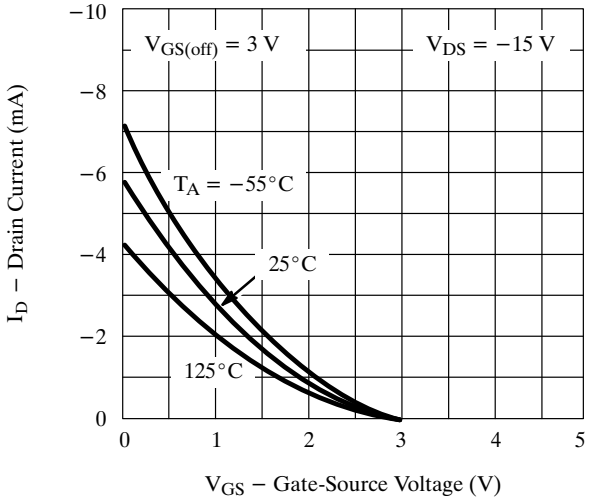
Typical Characteristics (Cont'd)

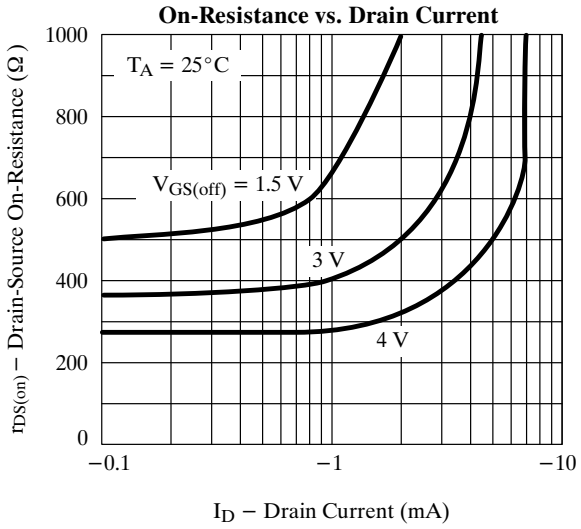
Transfer Characteristics



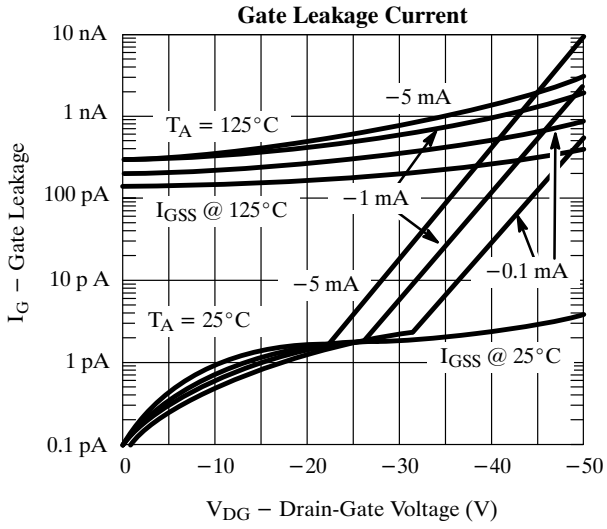
Transfer Characteristics



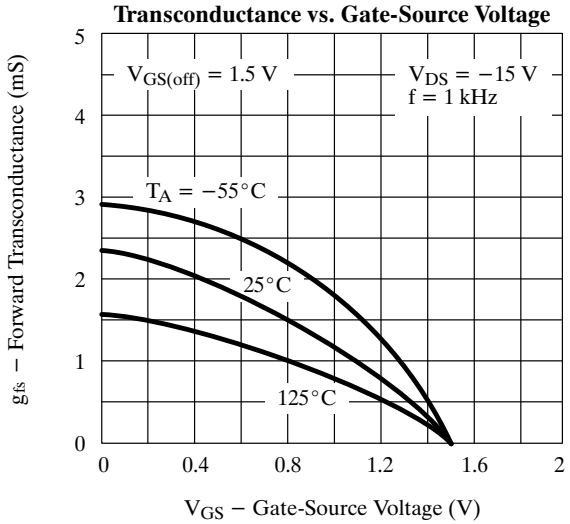
On-Resistance vs. Drain Current



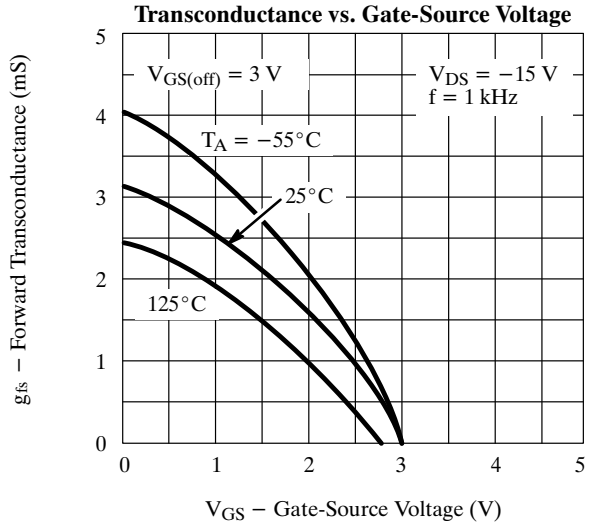
Gate Leakage Current



Transconductance vs. Gate-Source Voltage

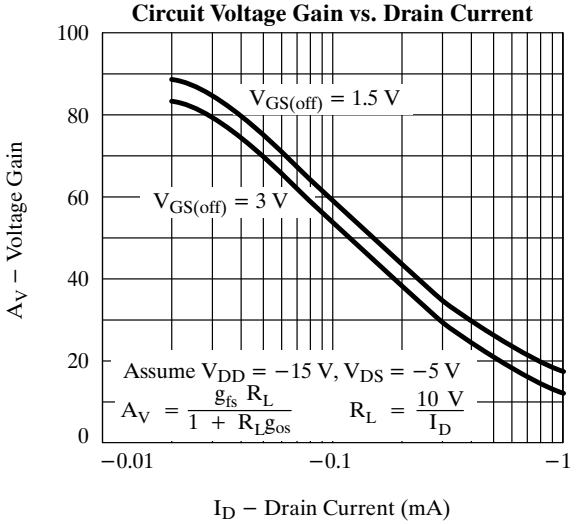


Transconductance vs. Gate-Source Voltage

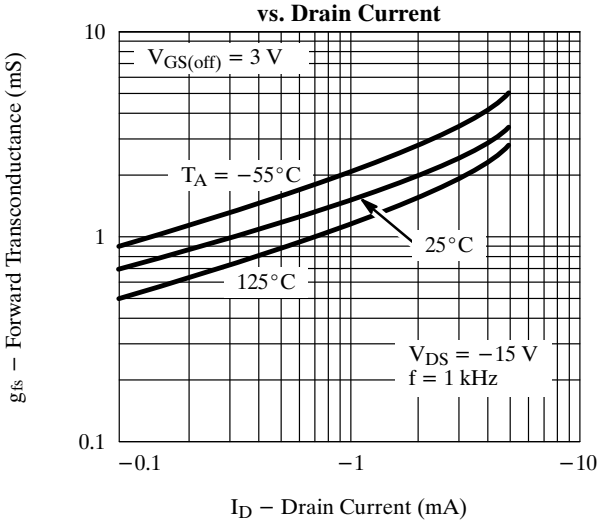


Typical Characteristics (Cont'd)

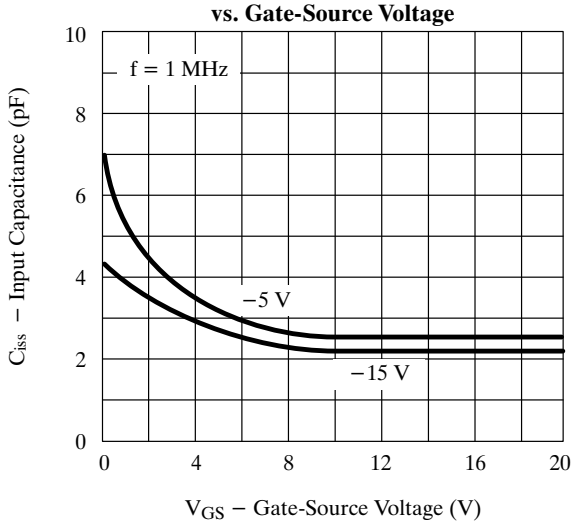
Circuit Voltage Gain vs. Drain Current



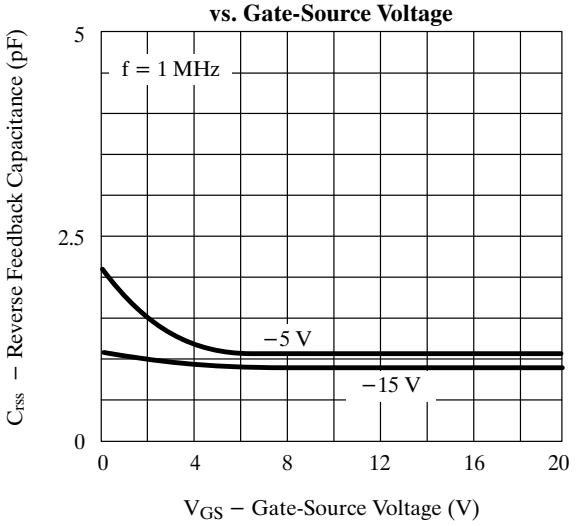
Common-Source Forward Transconductance vs. Drain Current



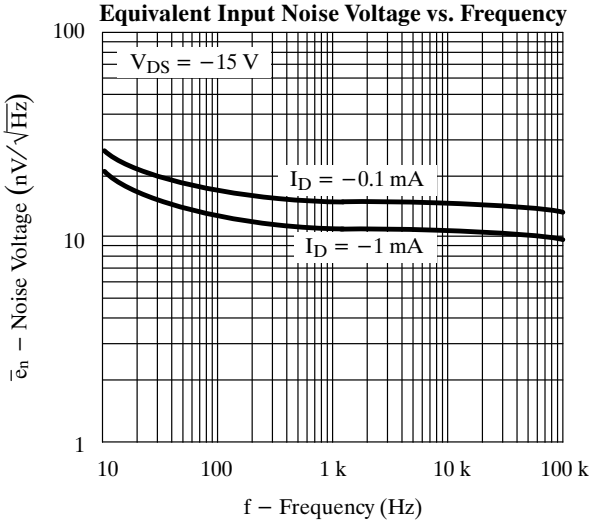
Common-Source Input Capacitance vs. Gate-Source Voltage



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



Equivalent Input Noise Voltage vs. Frequency



Output Conductance vs. Drain Current