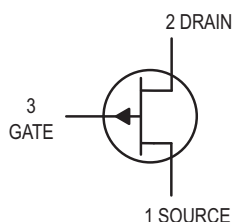


JFET Amplifiers

P-Channel — Depletion



**2N5460
thru
2N5462**



**CASE 29-04, STYLE 7
TO-92 (TO-226AA)**

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain–Gate Voltage	V_{DG}	40	Vdc
Reverse Gate–Source Voltage	V_{GSR}	40	Vdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Junction Temperature Range	T_J	–65 to +135	$^\circ\text{C}$
Storage Channel Temperature Range	T_{stg}	–65 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Gate–Source Breakdown Voltage ($I_G = 10\text{ }\mu\text{Adc}$, $V_{DS} = 0$)	2N5460, 2N5461, 2N5462	$V_{(BR)GSS}$	40	—	—	Vdc
Gate Reverse Current ($V_{GS} = 20\text{ Vdc}$, $V_{DS} = 0$)	2N5460, 2N5461, 2N5462	I_{GSS}	—	—	5.0	nAdc
($V_{GS} = 30\text{ Vdc}$, $V_{DS} = 0$)	2N5460, 2N5461, 2N5462		—	—	1.0	μAdc
($V_{GS} = 20\text{ Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$)	2N5460, 2N5461, 2N5462		—	—	1.0	μAdc
($V_{GS} = 30\text{ Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$)	2N5460, 2N5461, 2N5462		—	—	1.0	μAdc
Gate–Source Cutoff Voltage ($V_{DS} = 15\text{ Vdc}$, $I_D = 1.0\text{ }\mu\text{Adc}$)	2N5460 2N5461 2N5462	$V_{GS(off)}$	0.75 1.0 1.8	— — —	6.0 7.5 9.0	Vdc
Gate–Source Voltage ($V_{DS} = 15\text{ Vdc}$, $I_D = 0.1\text{ mAdc}$)	2N5460	V_{GS}	0.5	—	4.0	Vdc
($V_{DS} = 15\text{ Vdc}$, $I_D = 0.2\text{ mAdc}$)	2N5461		0.8	—	4.5	Vdc
($V_{DS} = 15\text{ Vdc}$, $I_D = 0.4\text{ mAdc}$)	2N5462		1.5	—	6.0	Vdc

ON CHARACTERISTICS

Zero–Gate–Voltage Drain Current ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\text{ kHz}$)	2N5460 2N5461 2N5462	I_{DSS}	–1.0 –2.0 –4.0	— — —	–5.0 –9.0 –16	mAdc
---	----------------------------	-----------	----------------------	-------------	---------------------	------

SMALL-SIGNAL CHARACTERISTICS

Forward Transfer Admittance ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\text{ kHz}$)	2N5460 2N5461 2N5462	$ y_{fs} $	1000 1500 2000	— — —	4000 5000 6000	μmhos
Output Admittance ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\text{ kHz}$)		$ y_{os} $	—	—	75	μmhos
Input Capacitance ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\text{ MHz}$)		C_{iss}	—	5.0	7.0	pF
Reverse Transfer Capacitance ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 1.0\text{ MHz}$)		C_{rss}	—	1.0	2.0	pF

FUNCTIONAL CHARACTERISTICS

Noise Figure ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $R_G = 1.0\text{ Megohm}$, $f = 100\text{ Hz}$, $BW = 1.0\text{ Hz}$)	NF	—	1.0	2.5	dB
Equivalent Short–Circuit Input Noise Voltage ($V_{DS} = 15\text{ Vdc}$, $V_{GS} = 0$, $f = 100\text{ Hz}$, $BW = 1.0\text{ Hz}$)	e_n	—	60	115	$\text{nV}/\sqrt{\text{Hz}}$



**DRAIN CURRENT versus GATE
SOURCE VOLTAGE**

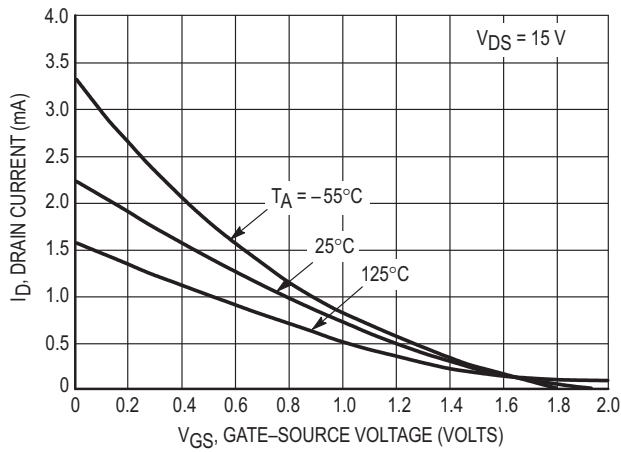


Figure 1. $V_{GS(off)} = 2.0$ Volts

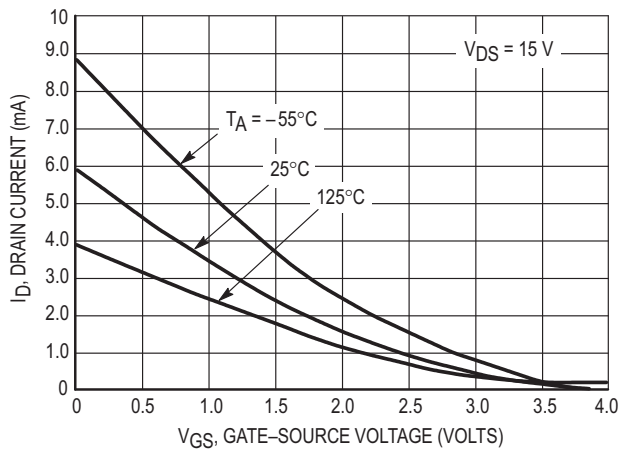


Figure 2. $V_{GS(off)} = 4.0$ Volts

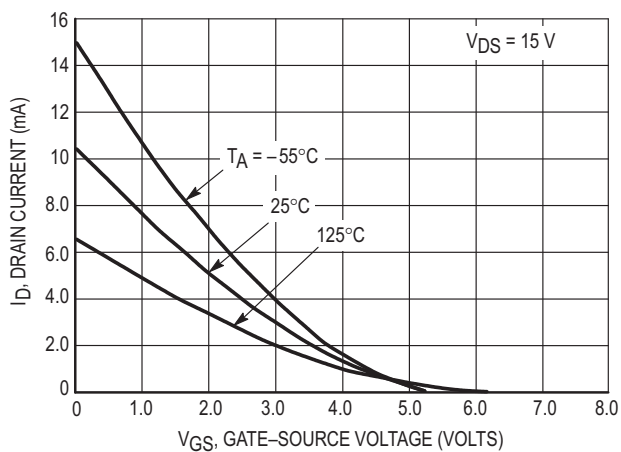


Figure 3. $V_{GS(off)} = 5.0$ Volts

**FORWARD TRANSFER ADMITTANCE
versus DRAIN CURRENT**

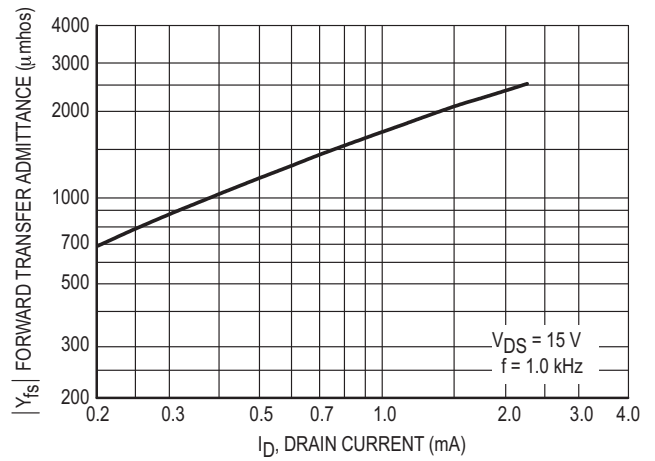


Figure 4. $V_{GS(off)} = 2.0$ Volts

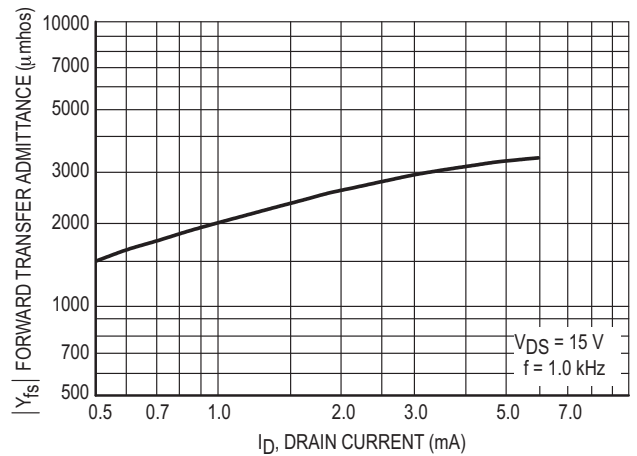


Figure 5. $V_{GS(off)} = 4.0$ Volts

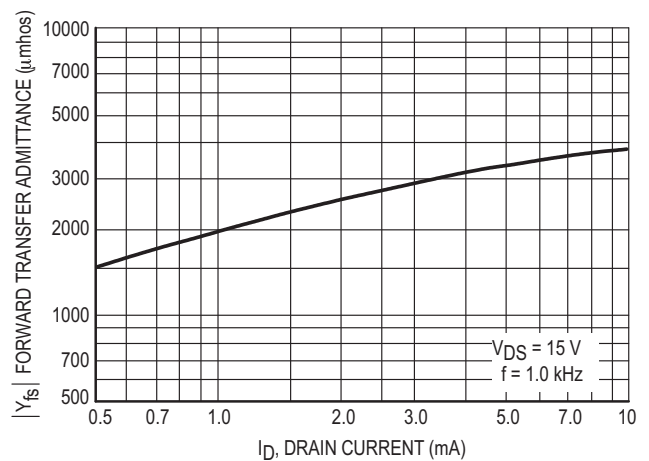


Figure 6. $V_{GS(off)} = 5.0$ Volts

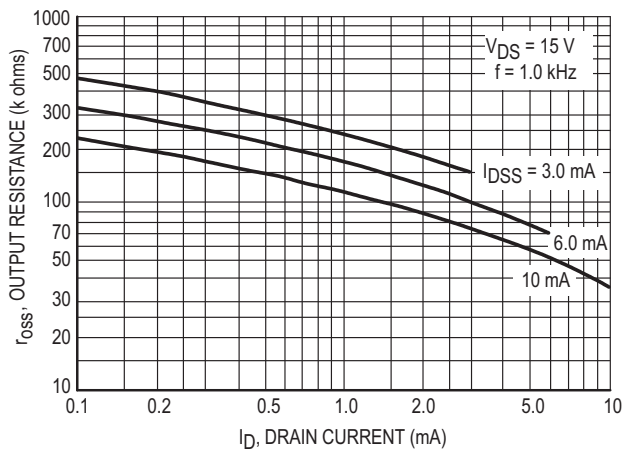


Figure 7. Output Resistance versus Drain Current

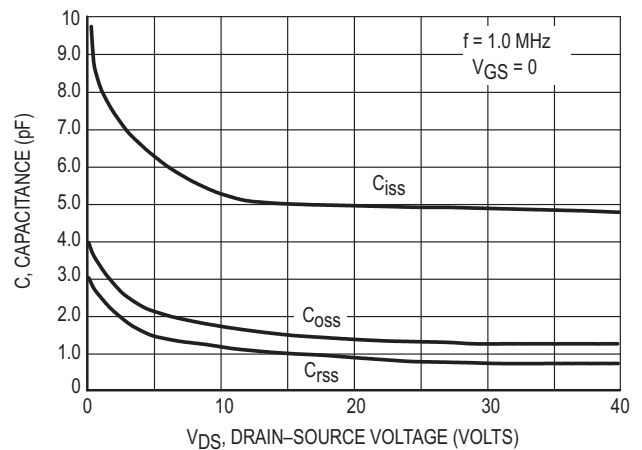


Figure 8. Capacitance versus Drain-Source Voltage

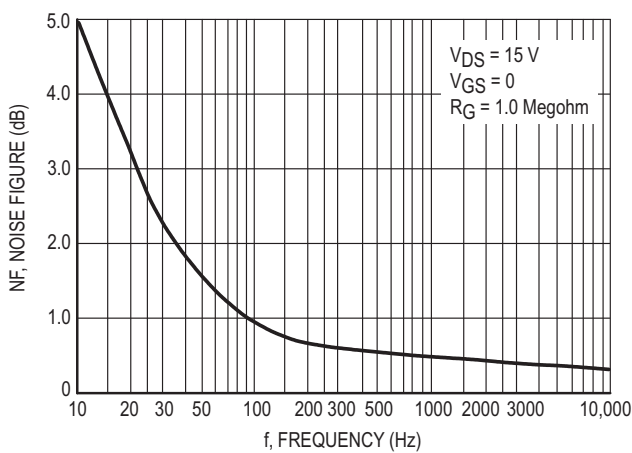


Figure 9. Noise Figure versus Frequency

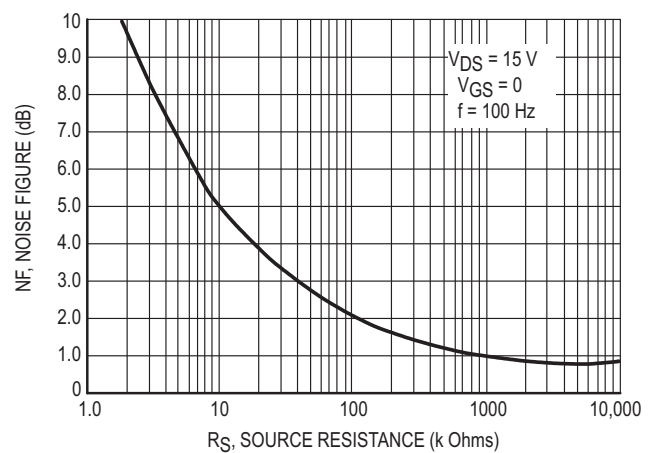
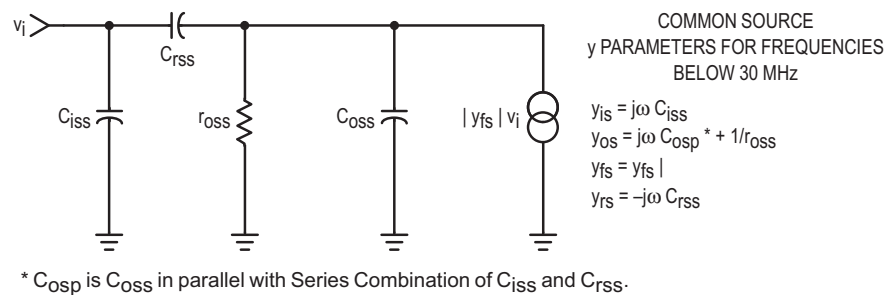


Figure 10. Noise Figure versus Source Resistance

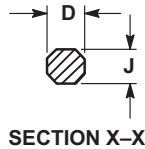
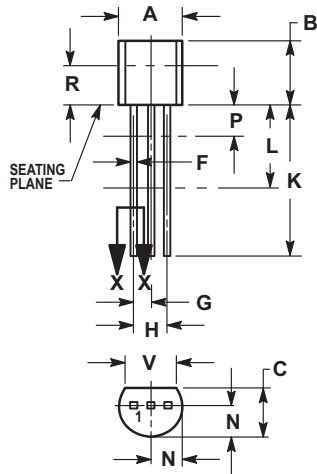


NOTE:

1. Graphical data is presented for dc conditions. Tabular data is given for pulsed conditions (Pulse Width = 630 ms, Duty Cycle = 10%).

Figure 11. Equivalent Low Frequency Circuit

PACKAGE DIMENSIONS



**CASE 029-04
(TO-226AA)
ISSUE AD**

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. DIMENSION F APPLIES BETWEEN P AND L. DIMENSION D AND J APPLY BETWEEN L AND K MINIMUM. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.022	0.41	0.55
F	0.016	0.019	0.41	0.48
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	—	12.70	—
L	0.250	—	6.35	—
N	0.080	0.105	2.04	2.66
P	—	0.100	—	2.54
R	0.115	—	2.93	—
V	0.135	—	3.43	—

STYLE 7:

- PIN 1. SOURCE
2. DRAIN
3. GATE

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405, Denver, Colorado 80217. 303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center,
3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 81-3-3521-8315

Mfax™: RMFAX0@email.sps.mot.com — TOUCHTONE 602-244-6609
— US & Canada ONLY 1-800-774-1848

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park,
51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

INTERNET: <http://motorola.com/sps>

