J309, J310

Preferred Device

JFET VHF/UHF Amplifiers

N−Channel — Depletion

Features

- Pb−Free Packages are Available*

MAXIMUM RATINGS

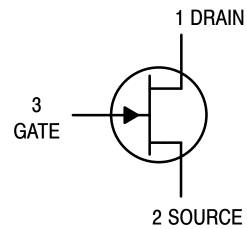
Rating	Symbol	Value	Unit
Drain−Source Voltage	V_{DS}	25	Vdc
Gate−Source Voltage	V_{GS}	25	Vdc
Forward Gate Current	I_{GF}	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate above = 25°C	P_D	350 2.8	mW mW/°C
Junction Temperature Range	T_J	−65 to +125	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C

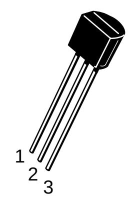
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

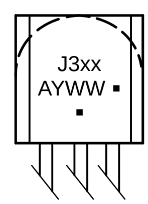
http://onsemi.com





TO−92
CASE 29−11
STYLE 5

MARKING DIAGRAM



J3xx = Device Code
xx = 09 or 10
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate−Source Breakdown Voltage (I_G = −1.0 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	−25	−	−	Vdc
Gate Reverse Current (V_{GS} = −15 Vdc, V_{DS} = 0, T_A = 25°C)		I_{GSS}	−	−	−1.0	nAdc
(V_{GS} = −15 Vdc, V_{DS} = 0, T_A = +125°C)			−	−	−1.0	μAdc
Gate Source Cutoff Voltage (V_{DS} = 10 Vdc, I_D = 1.0 nAdc)	J309	$V_{GS(off)}$	−1.0	−	−4.0	Vdc
	J310		−2.0	−	−6.5	
ON CHARACTERISTICS						
Zero−Gate−Voltage Drain Current[(1)] (V_{DS} = 10 Vdc, V_{GS} = 0)	J309	I_{DSS}	12	−	30	mAdc
	J310		24	−	60	
Gate−Source Forward Voltage (V_{DS} = 0, I_G = 1.0 mAdc)		$V_{GS(f)}$	−	−	1.0	Vdc
SMALL−SIGNAL CHARACTERISTICS						
Common−Source Input Conductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 MHz)	J309	$Re(y_{is})$	−	0.7	−	mmhos
	J310		−	0.5	−	
Common−Source Output Conductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 MHz)		$Re(y_{os})$	−	0.25	−	mmhos
Common−Gate Power Gain (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 MHz)		G_{pg}	−	16	−	dB
Common−Source Forward Transconductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 MHz)		$Re(y_{fs})$	−	12	−	mmhos
Common−Gate Input Conductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 MHz)		$Re(y_{ig})$	−	12	−	mmhos
Common−Source Forward Transconductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 1.0 kHz)	J309	g_{fs}	10000	−	20000	μmhos
	J310		8000	−	18000	
Common−Source Output Conductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 1.0 kHz)		g_{os}	−	−	250	μmhos
Common−Gate Forward Transconductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 1.0 kHz)	J309	g_{fg}	−	13000	−	μmhos
	J310		−	12000	−	
Common−Gate Output Conductance (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 1.0 kHz)	J309	g_{og}	−	100	−	μmhos
	J310		−	150	−	
Gate−Drain Capacitance (V_{DS} = 0, V_{GS} = −10 Vdc, f = 1.0 MHz)		C_{gd}	−	1.8	2.5	pF
Gate−Source Capacitance (V_{DS} = 0, V_{GS} = −10 Vdc, f = 1.0 MHz)		C_{gs}	−	4.3	5.0	pF
FUNCTIONAL CHARACTERISTICS						
Equivalent Short−Circuit Input Noise Voltage (V_{DS} = 10 Vdc, I_D = 10 mAdc, f = 100 Hz)		$\bar{e}_n$	−	10	−	$nV/\sqrt{Hz}$

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 3.0%.

ORDERING INFORMATION

Device	Package	Shipping†
J309	TO−92	1000 Units / Bulk
J309G	TO−92 (Pb−Free)	
J310	TO−92	1000 Units / Bulk
J310G	TO−92 (Pb−Free)	
J310RLRP	TO−92	2000 Units / Tape & Ammo Box
J310RLRPG	TO−92 (Pb−Free)	
J310ZL1	TO−92	2000 Units / Tape & Ammo Box
J310ZL1G	TO−92 (Pb−Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

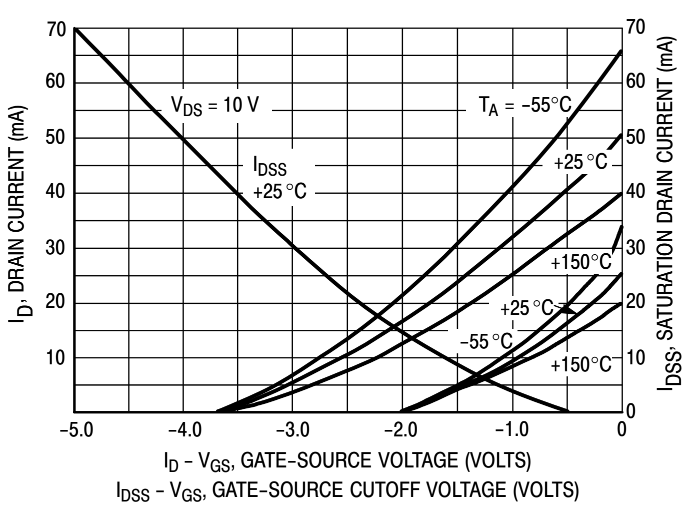


Figure 1. Drain Current and Transfer Characteristics versus Gate−Source Voltage

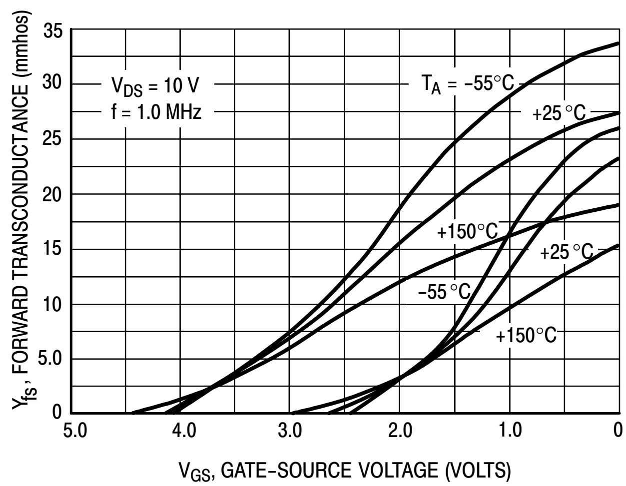


Figure 2. Forward Transconductance versus Gate−Source Voltage

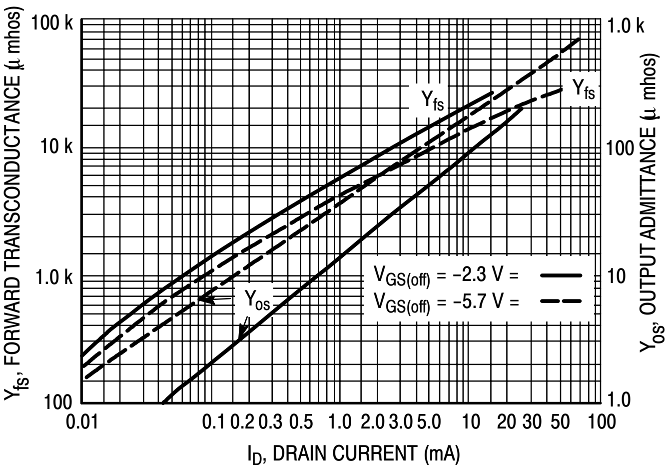


Figure 3. Common−Source Output Admittance and Forward Transconductance versus Drain Current

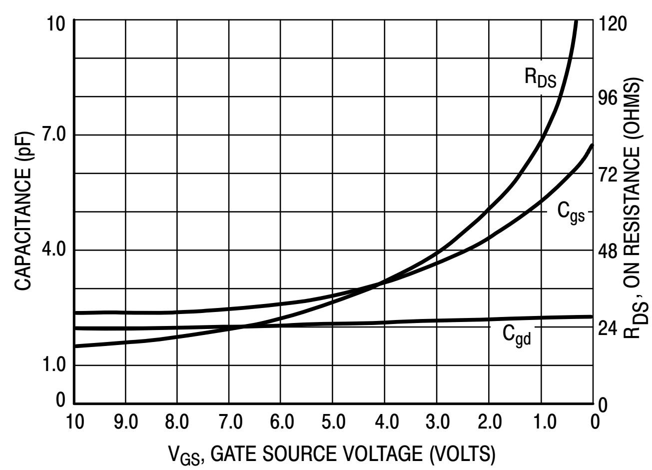


Figure 4. On Resistance and Junction Capacitance versus Gate−Source Voltage

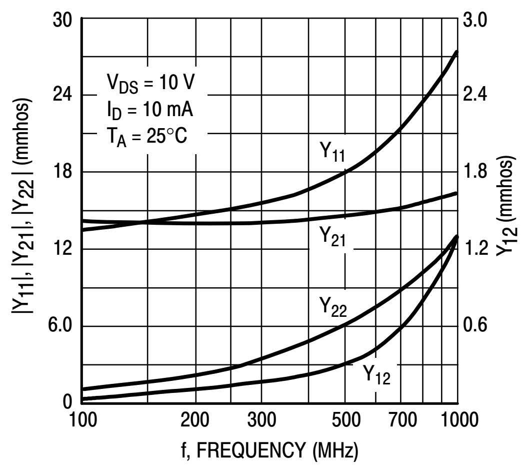


Figure 5. Common−Gate Y Parameter Magnitude versus Frequency

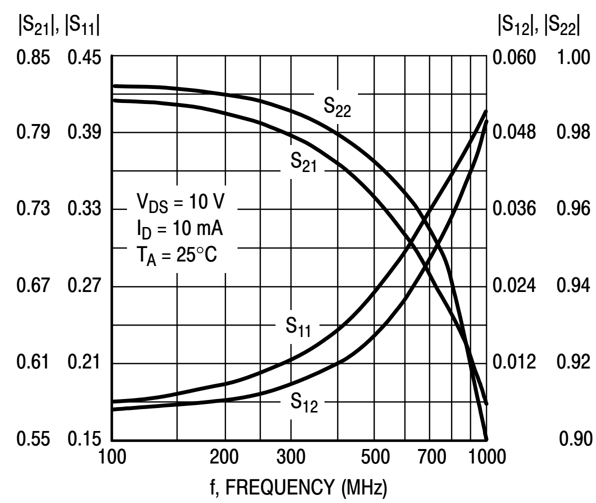


Figure 6. Common−Gate S Parameter Magnitude versus Frequency

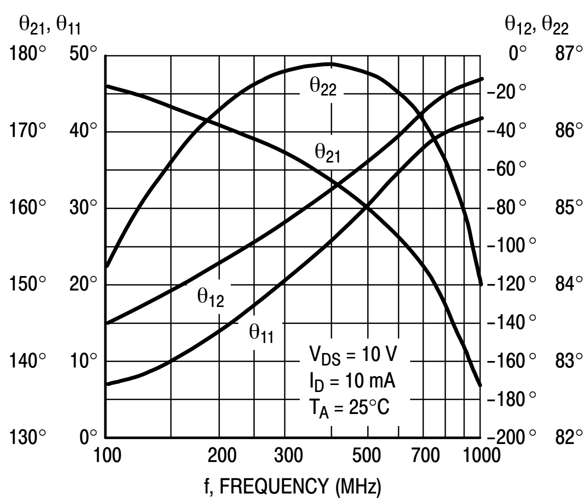


Figure 7. Common−Gate Y Parameter Phase−Angle versus Frequency

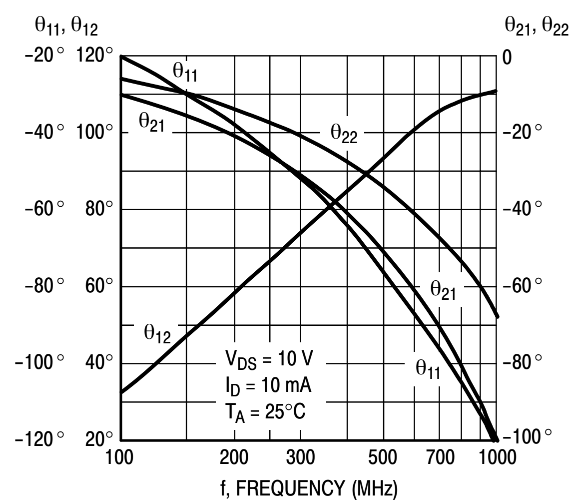
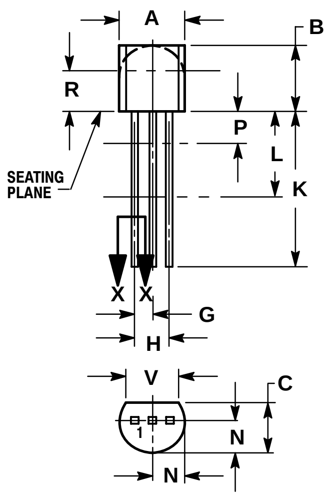
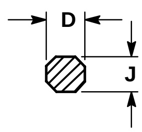


Figure 8. S Parameter Phase−Angle versus Frequency

PACKAGE DIMENSIONS

TO−92 (TO−226)
CASE 29−11
ISSUE AL





SECTION X−X

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

	INCHES		MILLIMETERS	
DIM	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	0.021	0.407	0.533
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 5:
PIN 1. DRAIN
2. SOURCE
3. GATE

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.

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