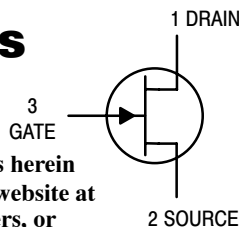
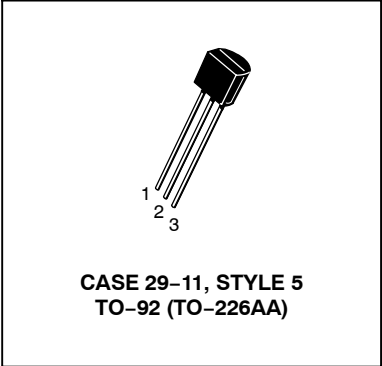


# JFET VHF/UHF Amplifiers

## N-Channel — Depletion



- This device is available in Pb-free package(s). Specifications herein apply to both standard and Pb-free devices. Please see our website at [www.onsemi.com](http://www.onsemi.com) for specific Pb-free orderable part numbers, or contact your local ON Semiconductor sales office or representative.



### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain – Gate Voltage	$V_{DG}$	25	Vdc
Reverse Gate – Source Voltage	$V_{GSR}$	25	Vdc
Drain Current	$I_D$	30	mAdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-65 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
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#### OFF CHARACTERISTICS

Gate – Source Breakdown Voltage ( $I_G = -1.0 \mu\text{Adc}, V_{DS} = 0$ )	$V_{(BR)GSS}$	-25	—	—	Vdc
Gate Reverse Current ( $V_{GS} = -20 \text{ Vdc}, V_{DS} = 0$ ) ( $V_{GS} = -20 \text{ Vdc}, V_{DS} = 0, T_A = 100^\circ\text{C}$ )	$I_{GSS}$	— —	— —	-1.0 -0.2	nAdc $\mu\text{Adc}$
Gate Source Cutoff Voltage ( $V_{DS} = 15 \text{ Vdc}, I_D = 10 \text{ nAdc}$ )	$V_{GS(off)}$	-2.0	—	-6.0	Vdc

#### ON CHARACTERISTICS

Zero – Gate – Voltage Drain Current ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0$ )	$I_{DSS}$	8.0	—	20	mAdc
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#### SMALL-SIGNAL CHARACTERISTICS

Forward Transfer Admittance ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ kHz}$ )	$ y_{fs} $	4000	—	8000	$\mu\text{hos}$
Input Admittance ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 400 \text{ MHz}$ )	$\text{Re}(y_{is})$	—	—	1000	$\mu\text{hos}$
Output Admittance ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ kHz}$ )	$ y_{os} $	—	—	75	$\mu\text{hos}$
Output Conductance ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 400 \text{ MHz}$ )	$\text{Re}(y_{os})$	—	—	100	$\mu\text{hos}$
Forward Transconductance ( $V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 400 \text{ MHz}$ )	$\text{Re}(y_{fs})$	3500	—	—	$\mu\text{hos}$

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>SMALL-SIGNAL CHARACTERISTICS (continued)</b>					
Input Capacitance ( $V_{DS} = 15\text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{iss}$	—	—	5.0	pF
Reverse Transfer Capacitance ( $V_{DS} = 15\text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{rss}$	—	—	1.0	pF
Output Capacitance ( $V_{DS} = 15\text{ Vdc}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{oss}$	—	—	2.0	pF

**COMMON SOURCE CHARACTERISTICS**  
**ADMITTANCE PARAMETERS**

( $V_{DS} = 15\text{ Vdc}$ ,  $T_{channel} = 25^\circ\text{C}$ )

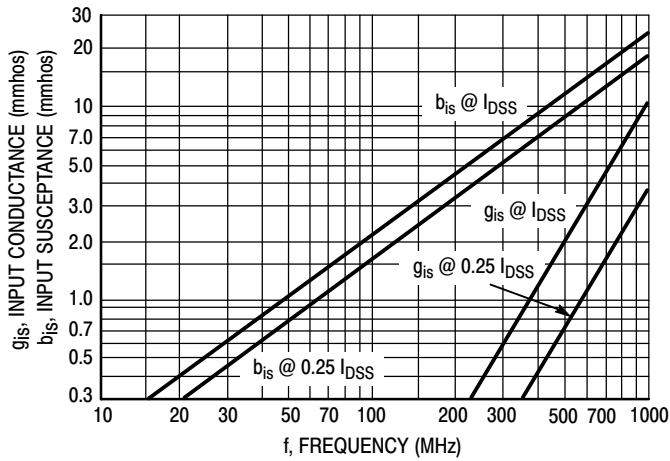


Figure 1. Input Admittance ( $y_{is}$ )

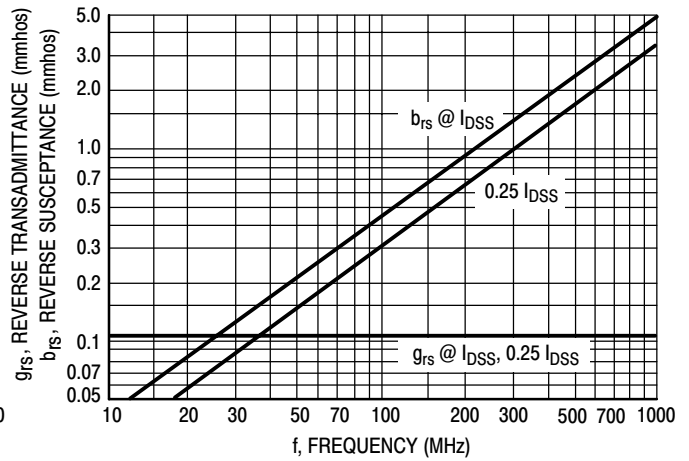


Figure 2. Reverse Transfer Admittance ( $y_{rs}$ )

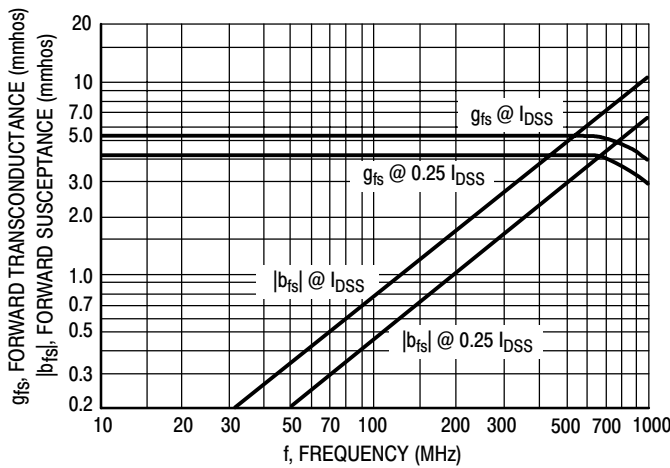


Figure 3. Forward Transadmittance ( $y_{fs}$ )

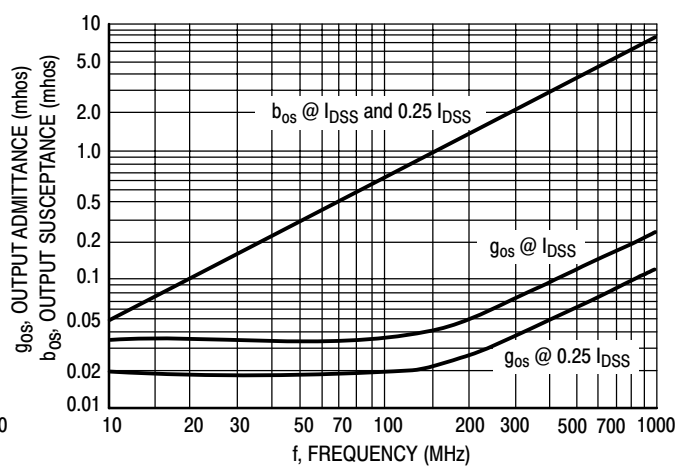


Figure 4. Output Admittance ( $y_{os}$ )

**COMMON SOURCE CHARACTERISTICS**  
**S-PARAMETERS**

( $V_{DS} = 15 \text{ Vdc}$ ,  $T_{channel} = 25^\circ\text{C}$ , Data Points in MHz)

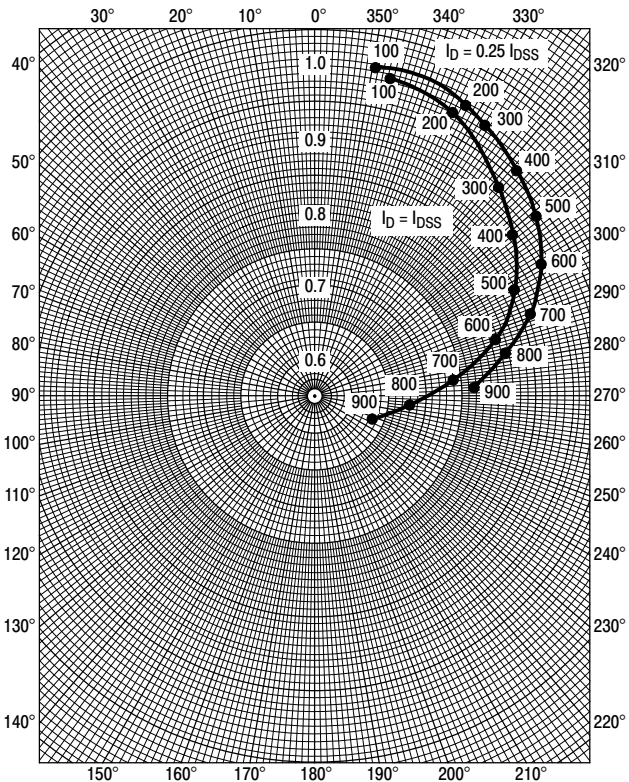


Figure 5.  $S_{11s}$

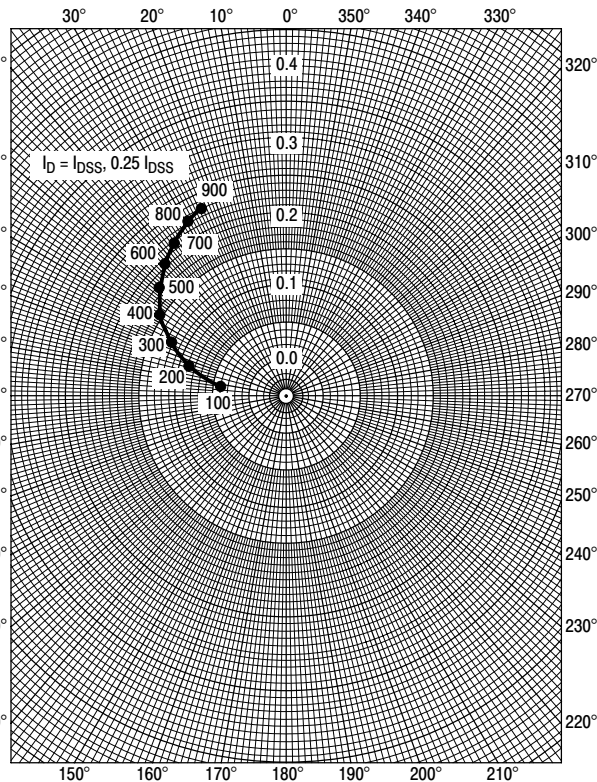


Figure 6.  $S_{12s}$

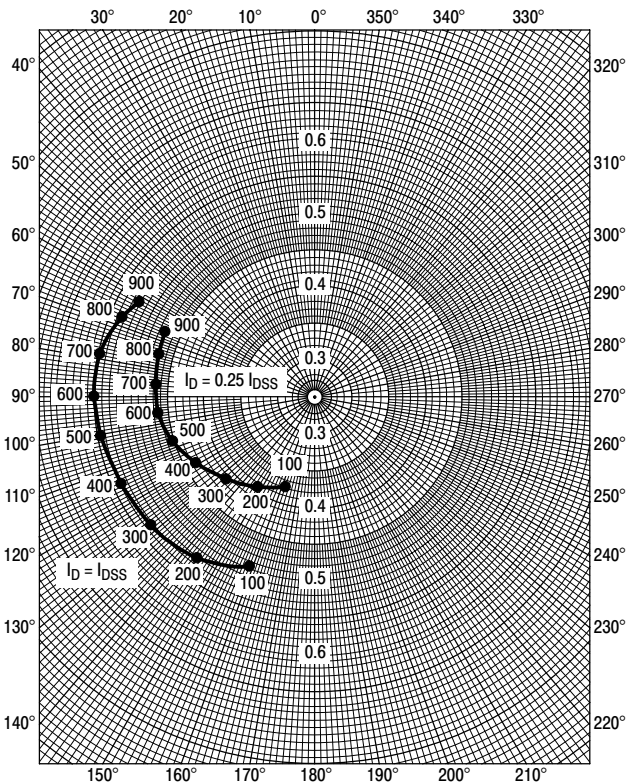


Figure 7.  $S_{21s}$

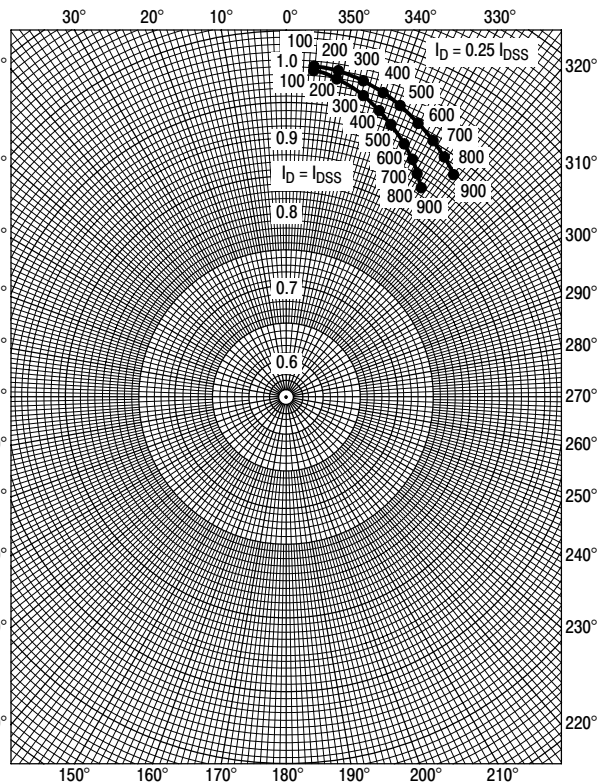


Figure 8.  $S_{22s}$

COMMON GATE CHARACTERISTICS

ADMITTANCE PARAMETERS

( $V_{DG} = 15 \text{ Vdc}$ ,  $T_{channel} = 25^\circ\text{C}$ )

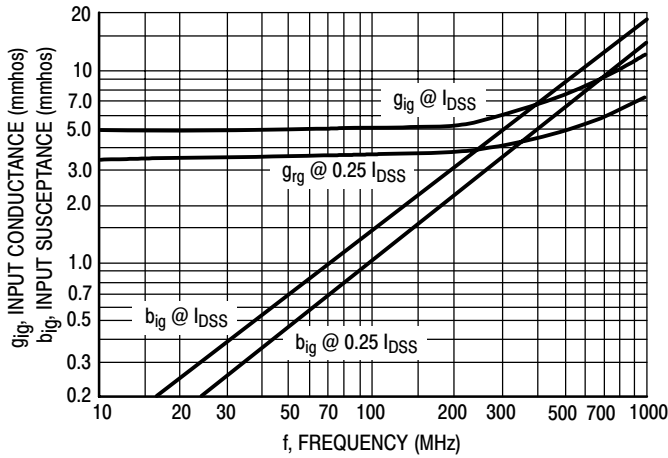


Figure 9. Input Admittance ( $y_{ig}$ )

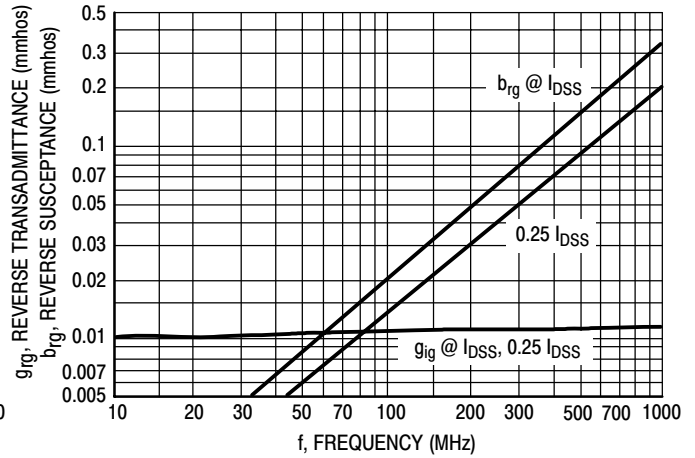


Figure 10. Reverse Transfer Admittance ( $y_{rg}$ )

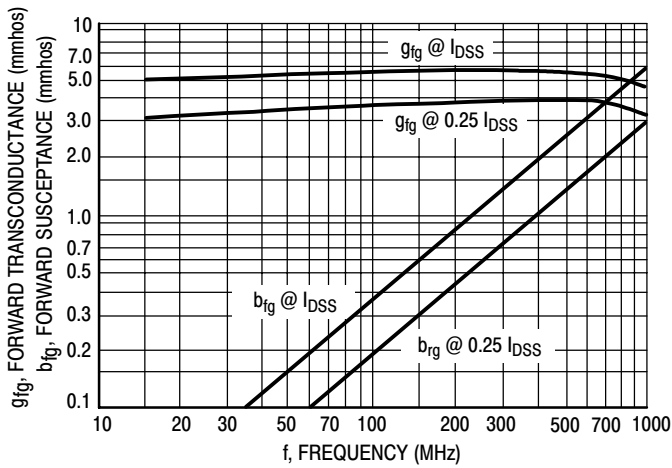


Figure 11. Forward Transfer Admittance ( $y_{fg}$ )

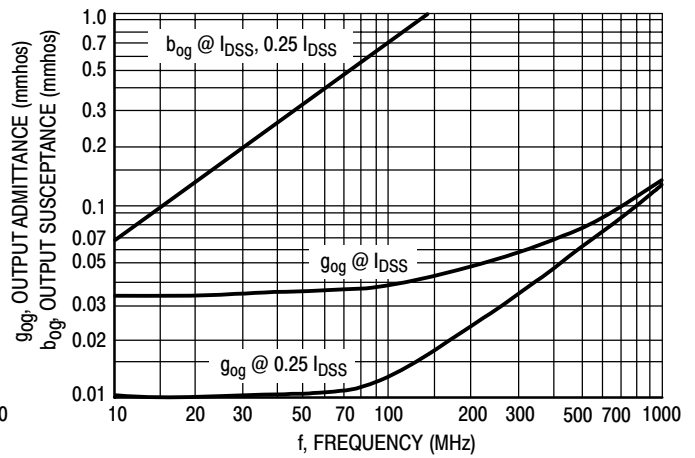


Figure 12. Output Admittance ( $y_{og}$ )

**COMMON GATE CHARACTERISTICS  
S-PARAMETERS**

( $V_{DS} = 15 \text{ Vdc}$ ,  $T_{channel} = 25^\circ\text{C}$ , Data Points in MHz)

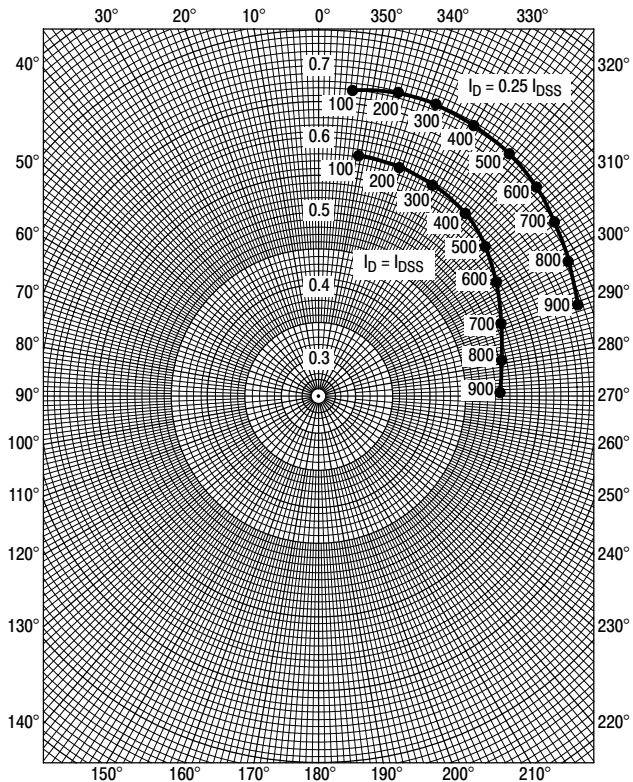


Figure 13.  $S_{11g}$

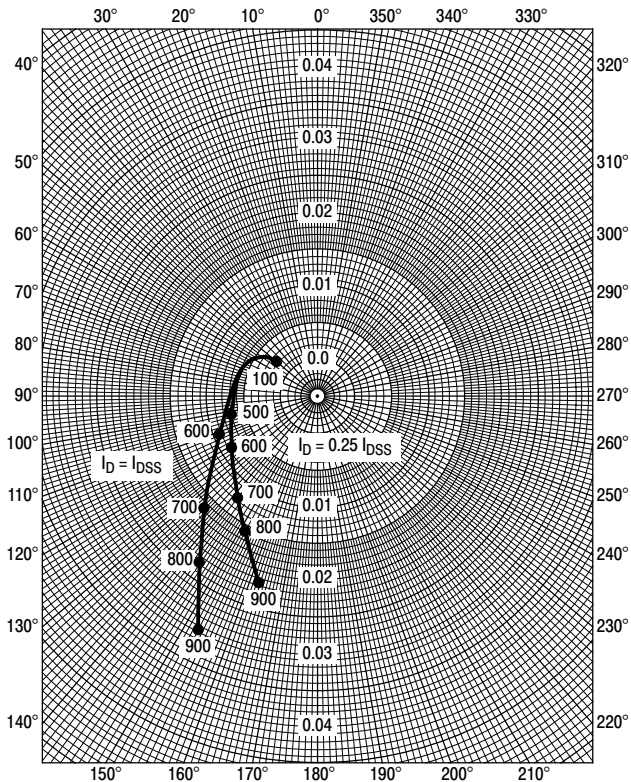


Figure 14.  $S_{12g}$

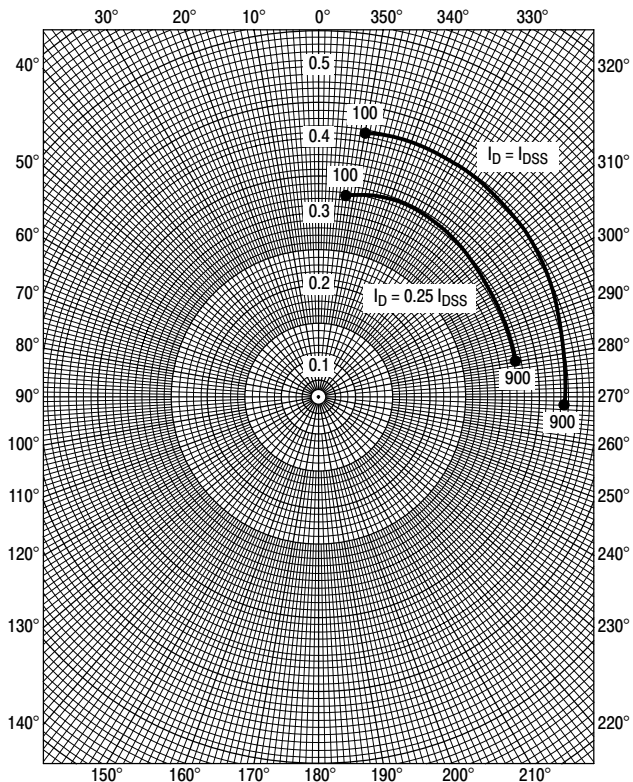


Figure 15.  $S_{21a}$

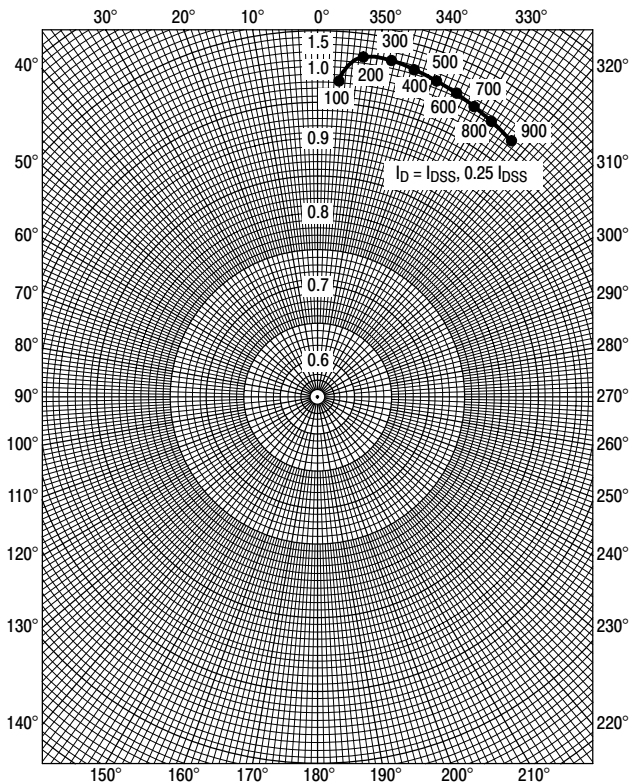
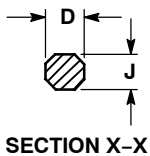
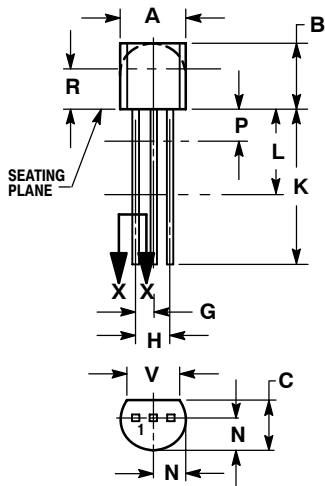


Figure 16.  $S_{22a}$

# 2N5486

## PACKAGE DIMENSIONS

### TO-92 (TO-226AA) CASE 29-11 ISSUE AL



STYLE 5:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE

#### 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.

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	0.021	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	---

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