

# 2N3819

## JFET VHF/UHF Amplifier

### N-Channel – Depletion

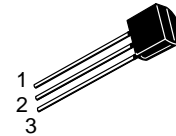
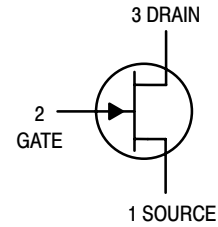


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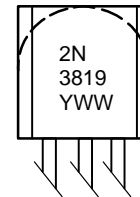
#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	25	Vdc
Drain-Gate Voltage	$V_{DG}$	25	Vdc
Gate-Source Voltage	$V_{GS}$	25	Vdc
Drain Current	$I_D$	100	mAdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/ $^\circ\text{C}$
Storage Channel Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$



TO-92  
CASE 29  
STYLE 22

#### MARKING DIAGRAM



2N3819 = Device Code  
Y = Year  
WW = Work Week

#### ORDERING INFORMATION

Device	Package	Shipping
2N3819	TO-92	5000 Units/Box

## 2N3819

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

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

Gate–Source Breakdown Voltage (I <sub>G</sub> = 1.0 μA <sub>dc</sub> , V <sub>DS</sub> = 0)	V <sub>(BR)GSS</sub>	25	–	–	V <sub>dc</sub>
Gate–Source (V <sub>DS</sub> = 15 V <sub>dc</sub> , I <sub>D</sub> = 200 μA <sub>dc</sub> )	V <sub>GS</sub>	0.5	–	7.5	V <sub>dc</sub>
Gate–Source Cutoff Voltage (V <sub>DS</sub> = 15 V <sub>dc</sub> , I <sub>D</sub> = 10 nA <sub>dc</sub> )	V <sub>GS(off)</sub>	–	–	–8.0	V <sub>dc</sub>
Gate Reverse Current (V <sub>GS</sub> = 15 V <sub>dc</sub> , V <sub>DS</sub> = 0)	I <sub>GSS</sub>	–	–	210	nA <sub>dc</sub>

#### ON CHARACTERISTICS

Zero–Gate–Voltage Drain Current (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0)	I <sub>DSS</sub>	2.0	–	20	mA <sub>dc</sub>
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#### SMALL–SIGNAL CHARACTERISTICS

Forward Transfer Admittance (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0, f = 1.0 kHz)	Y <sub>fs</sub>	3.0	–	6.5	mmhos
Output Admittance (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0, f = 1.0 kHz)	Y <sub>os</sub>	–	40	–	μmhos
Forward Transfer Admittance (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0, f = 200 MHz)	Y <sub>fs</sub>	–	5.6	–	mmhos
Reverse Transfer Admittance (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0, f = 200 MHz)	Y <sub>rs</sub>	–	1.0	–	mmhos
Input Capacitance (V <sub>DS</sub> = 20 V <sub>dc</sub> , –V <sub>GS</sub> = 1.0 V <sub>dc</sub> )	C <sub>iss</sub>	–	3.0	–	pF
Reverse Transfer Capacitance (V <sub>DS</sub> = 20 V <sub>dc</sub> , –V <sub>GS</sub> = 1.0 V <sub>dc</sub> , f = 1.0 MHz)	C <sub>rss</sub>	–	0.7	–	pF
Output Capacitance (V <sub>DS</sub> = 20 V <sub>dc</sub> , –V <sub>GS</sub> = 1.0 V <sub>dc</sub> , f = 1.0 MHz)	C <sub>oss</sub>	–	0.9	–	pF
Cut–off Frequency (Note 1) (V <sub>DS</sub> = 15 V <sub>dc</sub> , V <sub>GS</sub> = 0)	F <sub>(Yfs)</sub>	–	700	–	MHz

1. The frequency at which g<sub>fs</sub> is 0.7 of its value at 1 kHz.

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

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

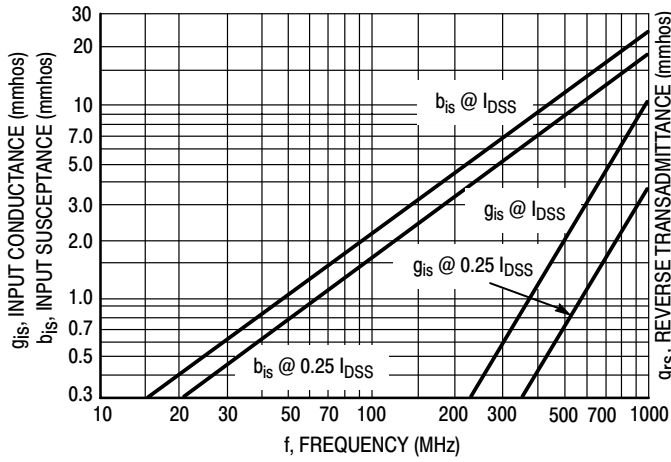


Figure 1. Input Admittance ( $y_{is}$ )

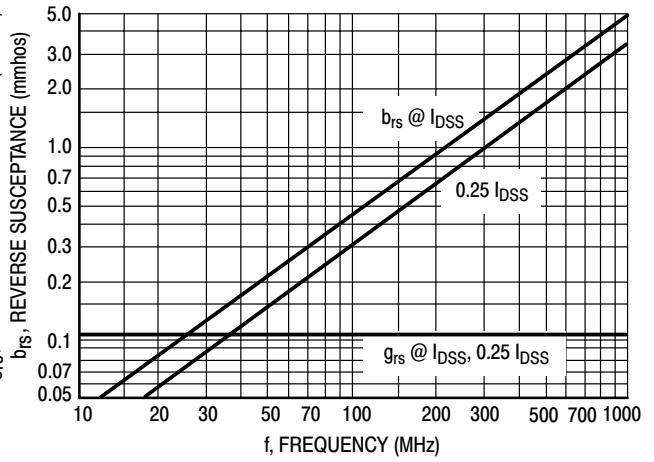


Figure 2. Reverse Transfer Admittance ( $y_{rs}$ )

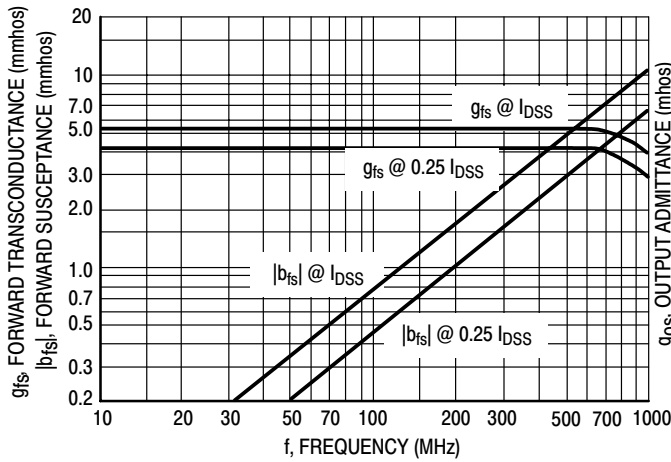


Figure 3. Forward Transadmittance ( $y_{fs}$ )

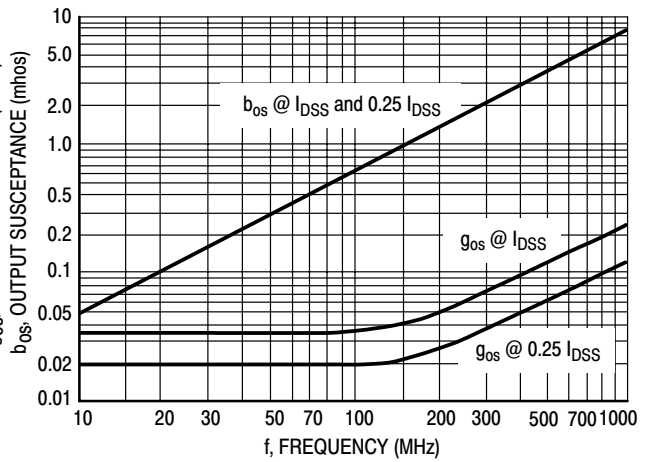
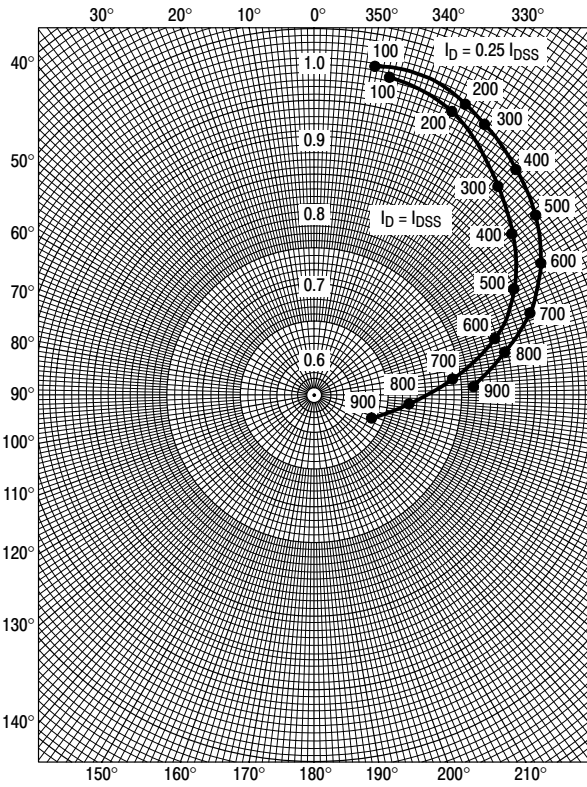


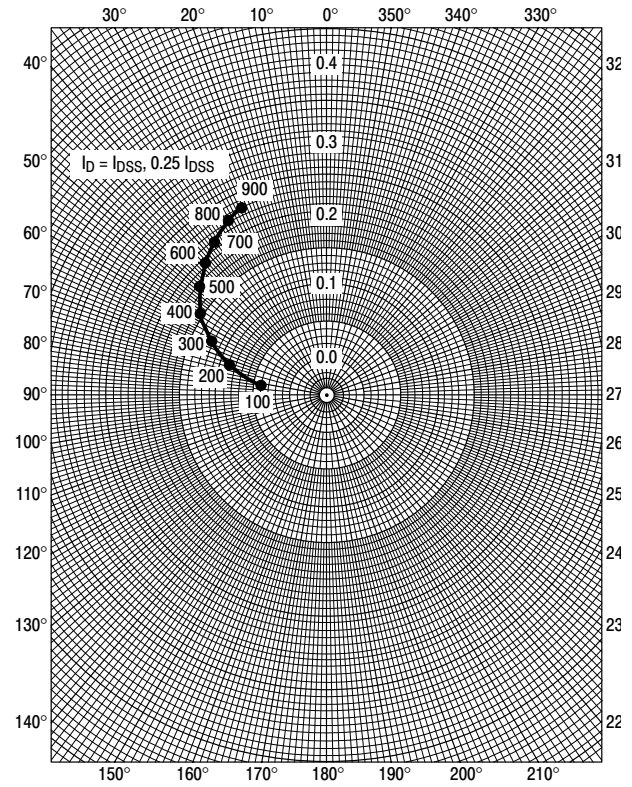
Figure 4. Output Admittance ( $y_{os}$ )

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

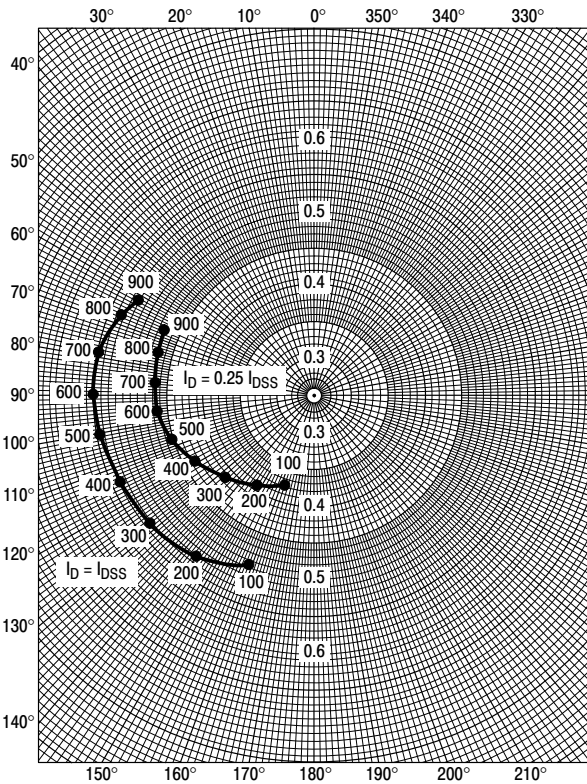
( $V_{DS} = 15 \text{ Vdc}$ ,  $T_{\text{channel}} = 25^\circ\text{C}$ , Data Points in MHz)



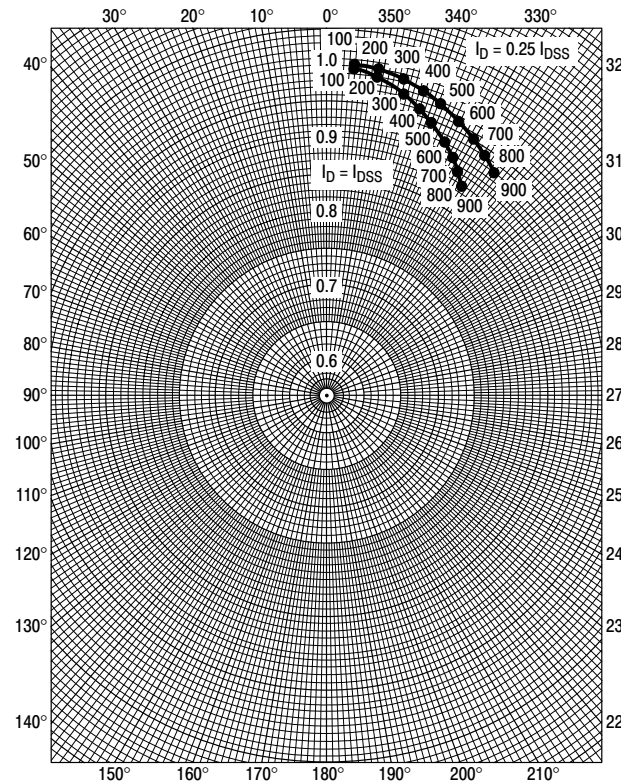
**Figure 5.  $S_{11s}$**



**Figure 6.  $S_{12s}$**



**Figure 7.  $S_{21s}$**



**Figure 8.  $S_{22s}$**

**COMMON GATE CHARACTERISTICS**  
**ADMITTANCE PARAMETERS**  
 ( $V_{DG} = 15 \text{ Vdc}$ ,  $T_{\text{channel}} = 25^\circ\text{C}$ )

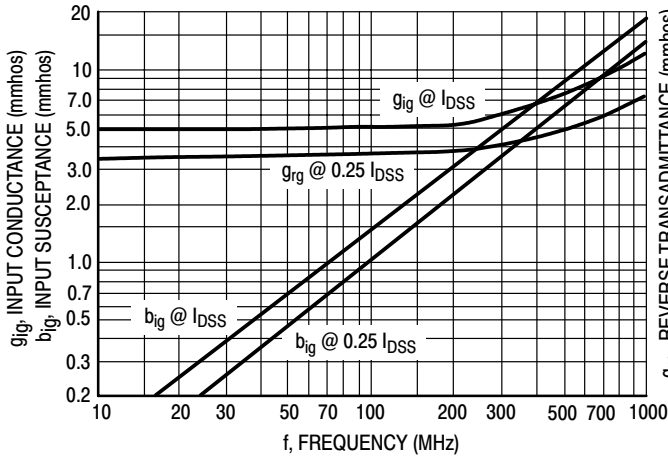


Figure 9. Input Admittance ( $y_{ig}$ )

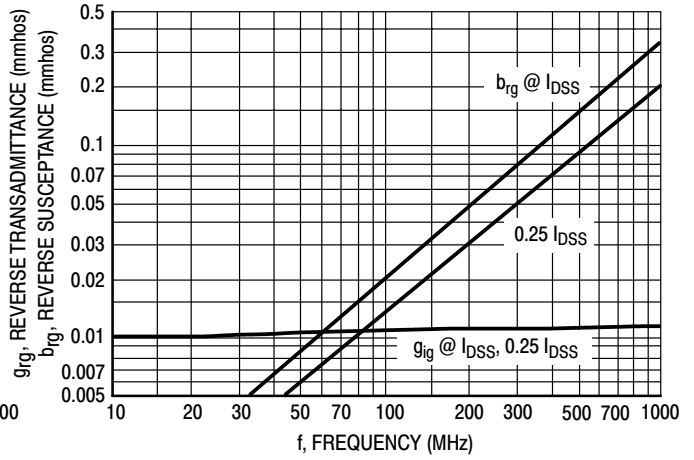


Figure 10. Reverse Transfer Admittance ( $y_{rg}$ )

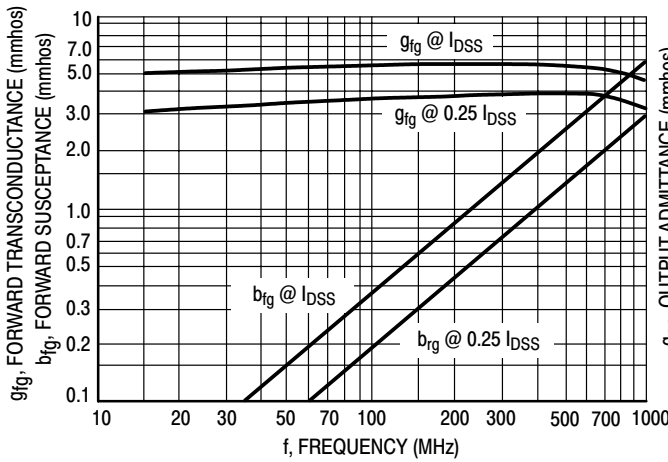


Figure 11. Forward Transfer Admittance ( $y_{fg}$ )

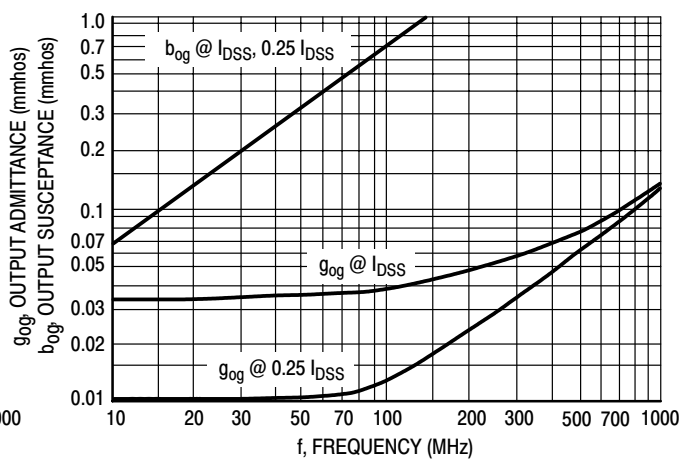


Figure 12. Output Admittance ( $y_{og}$ )

**COMMON GATE CHARACTERISTICS**  
**S-PARAMETERS**  
 ( $V_{DS} = 15 \text{ Vdc}$ ,  $T_{channel} = 25^\circ\text{C}$ , Data Points in MHz)

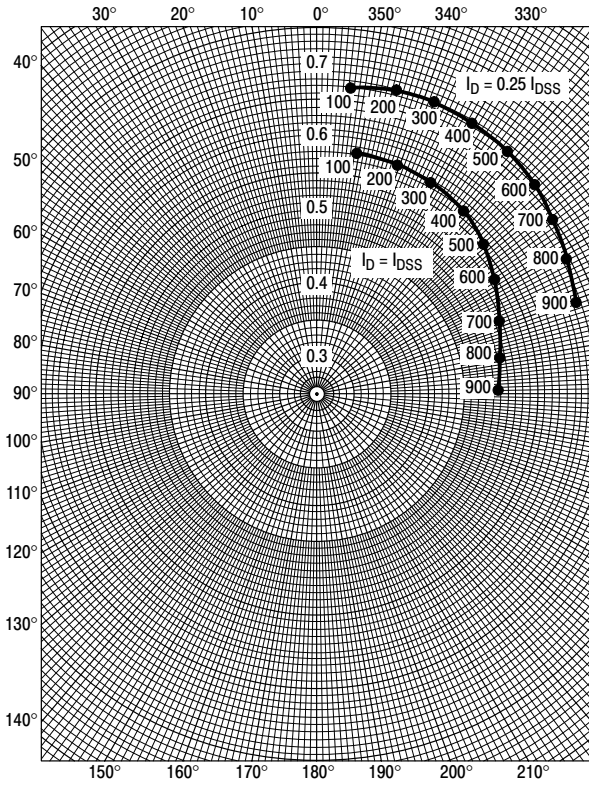


Figure 13.  $S_{11g}$

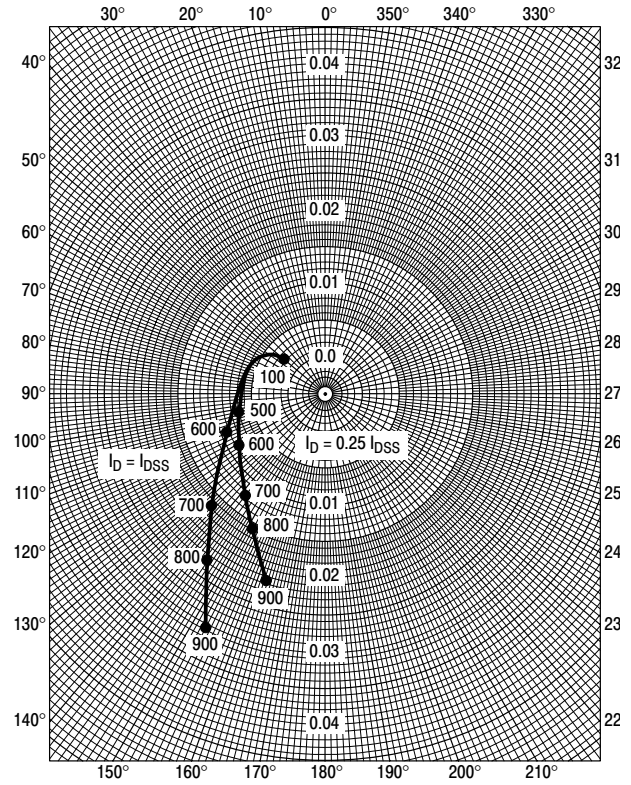


Figure 14.  $S_{12g}$

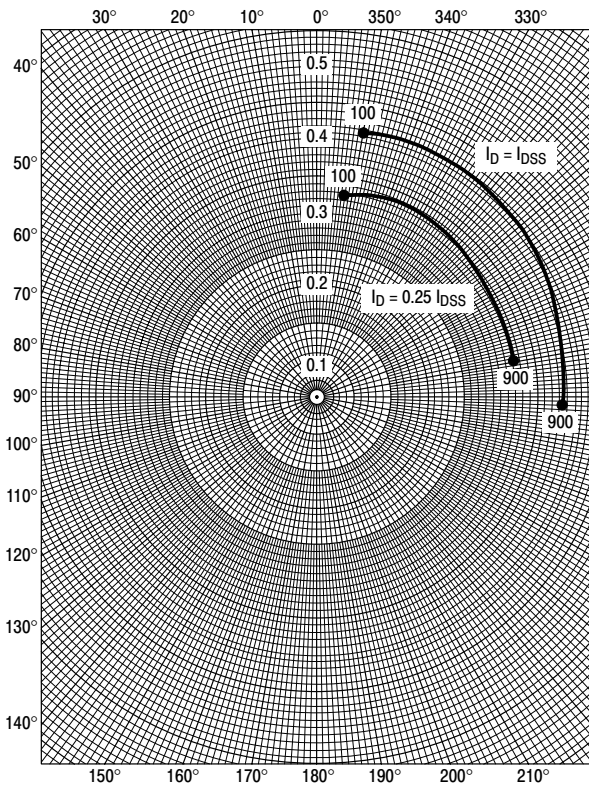


Figure 15.  $S_{21g}$

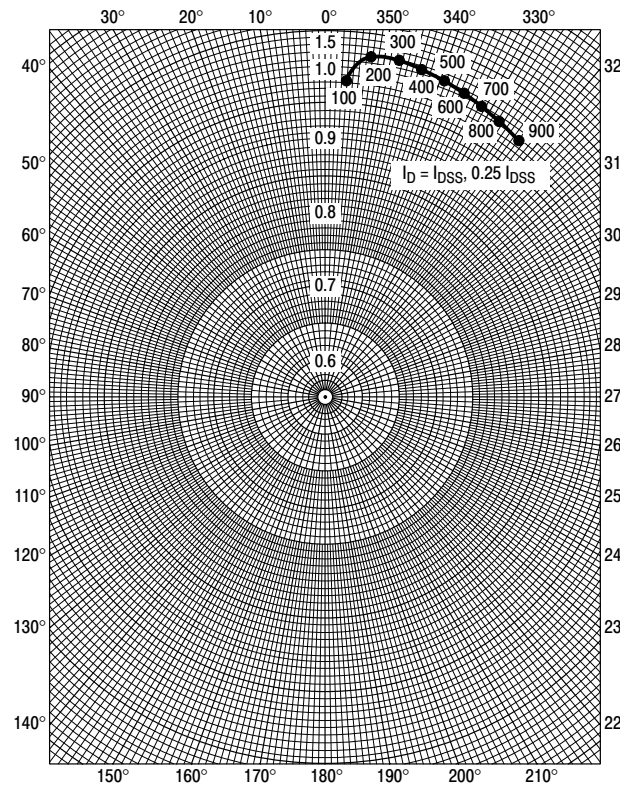
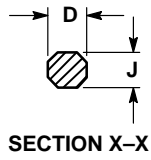
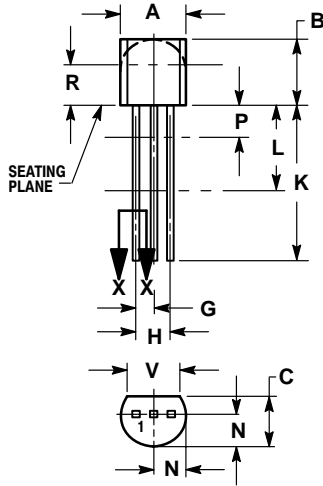


Figure 16.  $S_{22g}$

# 2N3819

## PACKAGE DIMENSIONS

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




#### 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	---

#### STYLE 22:

- PIN 1. SOURCE
- GATE
- DRAIN

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