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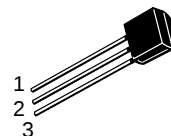
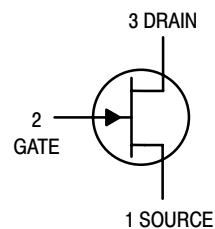


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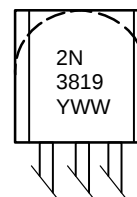
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**2N3819****JFET VHF/UHF Amplifier****N-Channel – Depletion****ON Semiconductor®**<http://onsemi.com>**MAXIMUM RATINGS**

| 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<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$      | 350<br>2.8  | mW<br>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 ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

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

#### OFF CHARACTERISTICS

|                                                                                       |               |     |   |      |      |
|---------------------------------------------------------------------------------------|---------------|-----|---|------|------|
| Gate–Source Breakdown Voltage<br>( $I_G = 1.0\ \mu\text{Adc}$ , $V_{DS} = 0$ )        | $V_{(BR)GSS}$ | 25  | – | –    | Vdc  |
| Gate–Source<br>( $V_{DS} = 15\ \text{Vdc}$ , $I_D = 200\ \mu\text{Adc}$ )             | $V_{GS}$      | 0.5 | – | 7.5  | Vdc  |
| Gate–Source Cutoff Voltage<br>( $V_{DS} = 15\ \text{Vdc}$ , $I_D = 10\ \text{nAdc}$ ) | $V_{GS(off)}$ | –   | – | –8.0 | Vdc  |
| Gate Reverse Current<br>( $V_{GS} = 15\ \text{Vdc}$ , $V_{DS} = 0$ )                  | $I_{GSS}$     | –   | – | 210  | nAdc |

#### ON CHARACTERISTICS

|                                                                                 |           |     |   |    |      |
|---------------------------------------------------------------------------------|-----------|-----|---|----|------|
| Zero–Gate–Voltage Drain Current<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ ) | $I_{DSS}$ | 2.0 | – | 20 | mAdc |
|---------------------------------------------------------------------------------|-----------|-----|---|----|------|

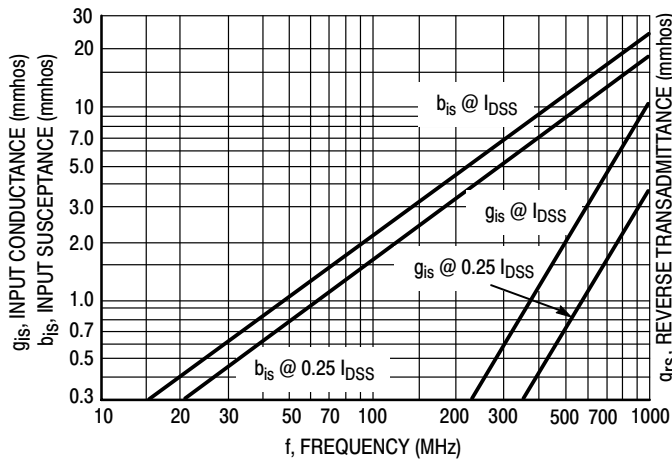
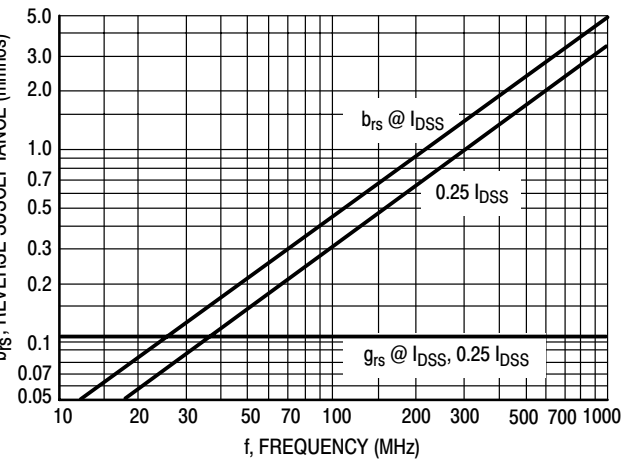
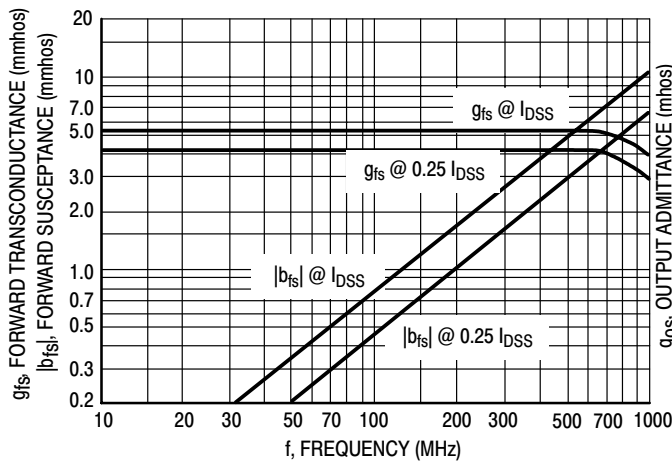
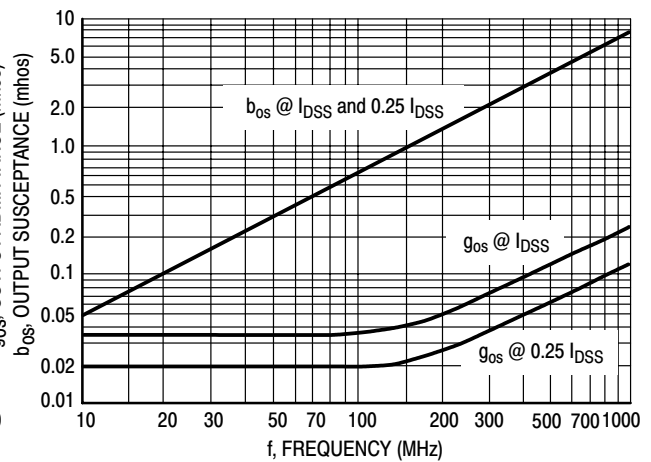
#### SMALL–SIGNAL CHARACTERISTICS

|                                                                                                                     |             |     |     |     |                  |
|---------------------------------------------------------------------------------------------------------------------|-------------|-----|-----|-----|------------------|
| Forward Transfer Admittance<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 1.0\ \text{kHz}$ )                 | $ Y_{fs} $  | 3.0 | –   | 6.5 | mmhos            |
| Output Admittance<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 1.0\ \text{kHz}$ )                           | $ Y_{os} $  | –   | 40  | –   | $\mu\text{mhos}$ |
| Forward Transfer Admittance<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 200\ \text{MHz}$ )                 | $ Y_{fs} $  | –   | 5.6 | –   | mmhos            |
| Reverse Transfer Admittance<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 200\ \text{MHz}$ )                 | $ Y_{rs} $  | –   | 1.0 | –   | mmhos            |
| Input Capacitance<br>( $V_{DS} = 20\ \text{Vdc}$ , $-V_{GS} = 1.0\ \text{Vdc}$ )                                    | $C_{iss}$   | –   | 3.0 | –   | pF               |
| Reverse Transfer Capacitance<br>( $V_{DS} = 20\ \text{Vdc}$ , $-V_{GS} = 1.0\ \text{Vdc}$ , $f = 1.0\ \text{MHz}$ ) | $C_{rss}$   | –   | 0.7 | –   | pF               |
| Output Capacitance<br>( $V_{DS} = 20\ \text{Vdc}$ , $-V_{GS} = 1.0\ \text{Vdc}$ , $f = 1.0\ \text{MHz}$ )           | $C_{oss}$   | –   | 0.9 | –   | pF               |
| Cut–off Frequency (Note 1)<br>( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ )                                          | $F_{(Yfs)}$ | –   | 700 | –   | MHz              |

1. The frequency at which  $g_{fs}$  is 0.7 of its value at 1 kHz.

## COMMON SOURCE CHARACTERISTICS

## ADMITTANCE PARAMETERS

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

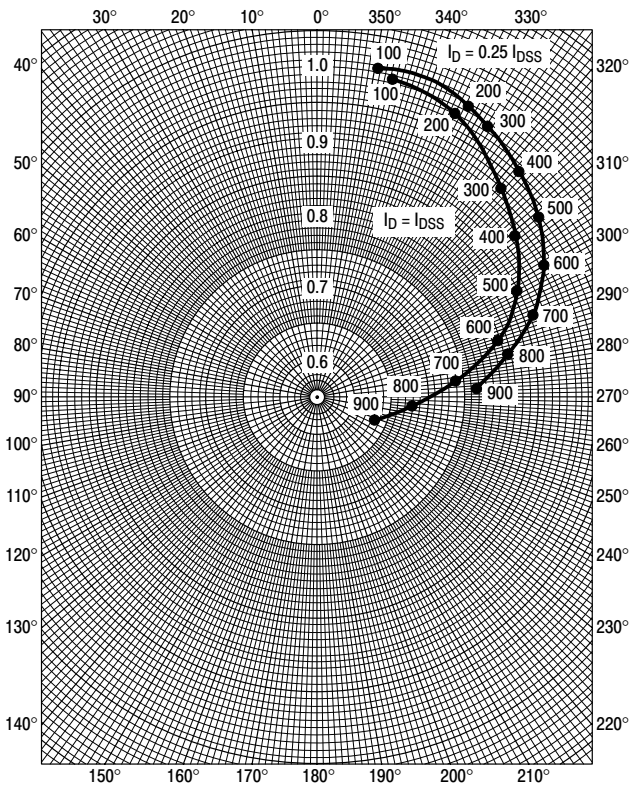


Figure 5.  $S_{11s}$

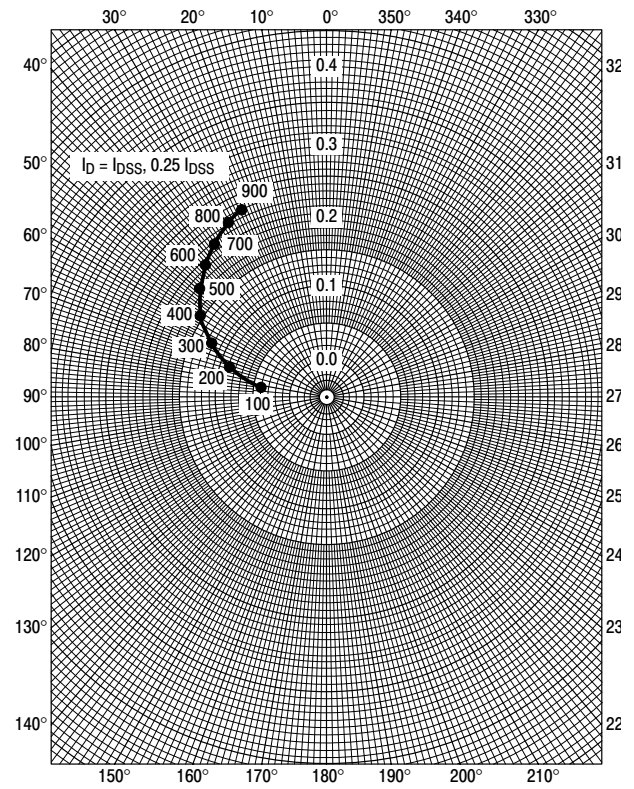


Figure 6.  $S_{12s}$

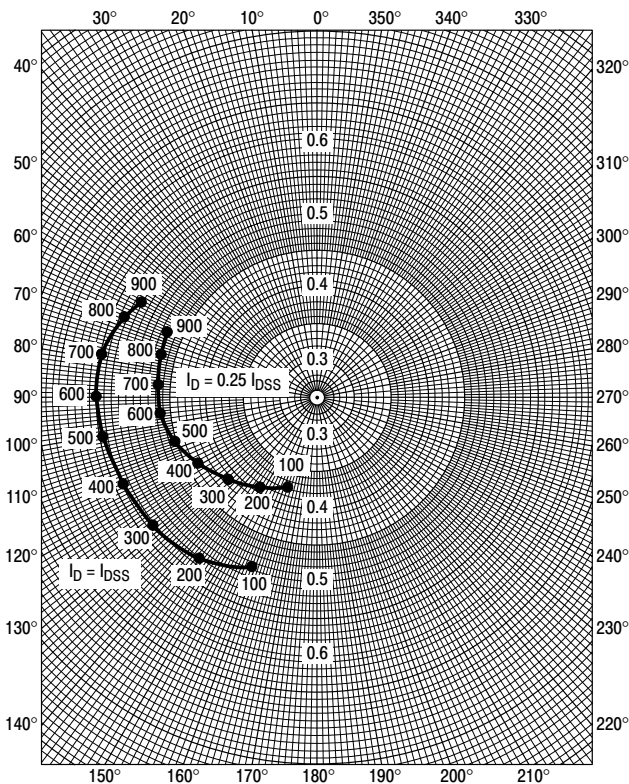


Figure 7.  $S_{21s}$

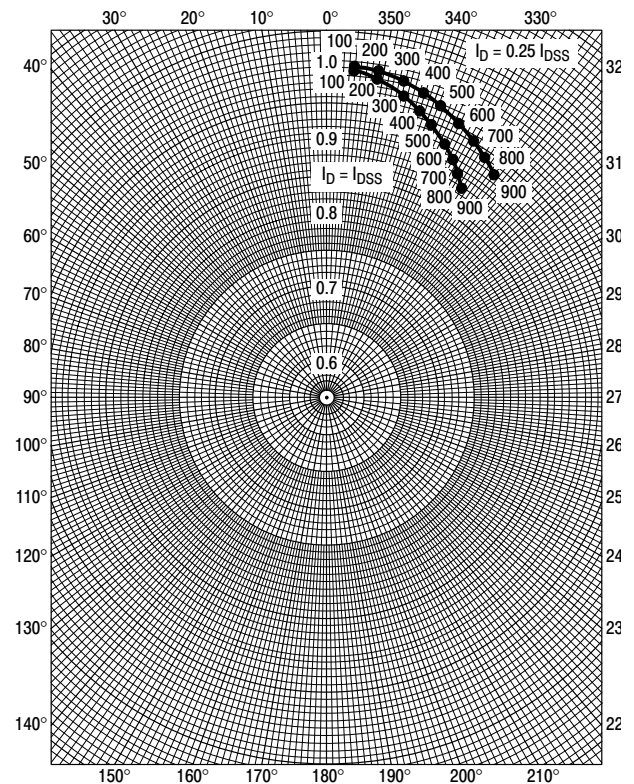
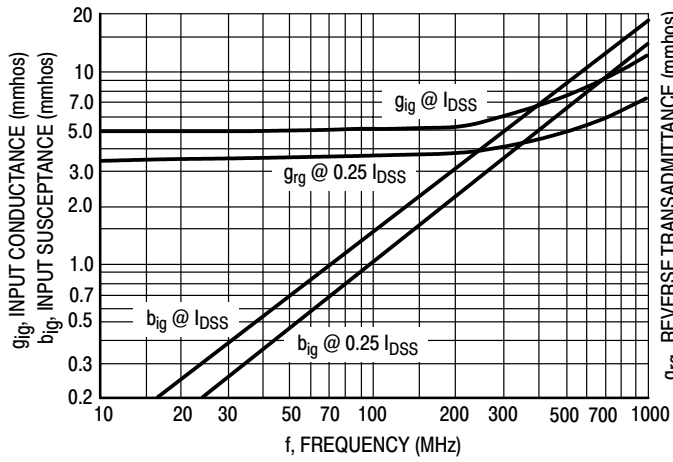
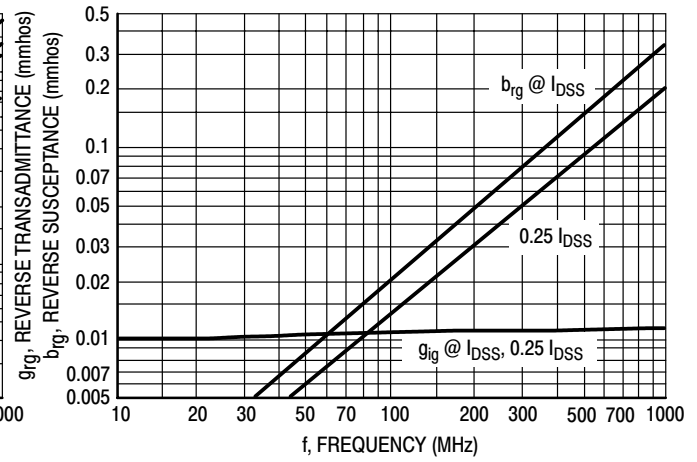
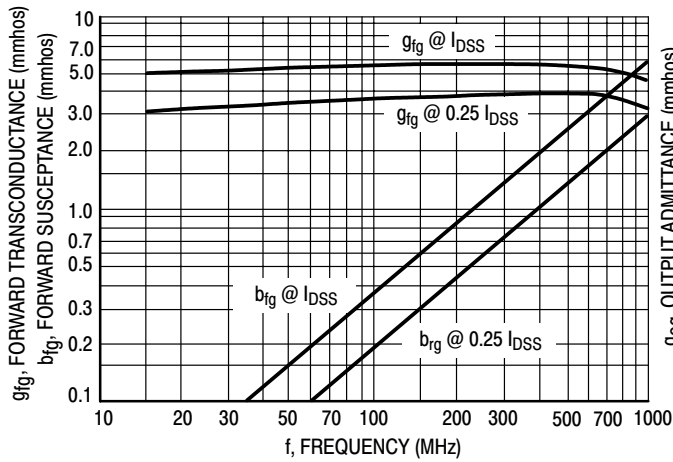
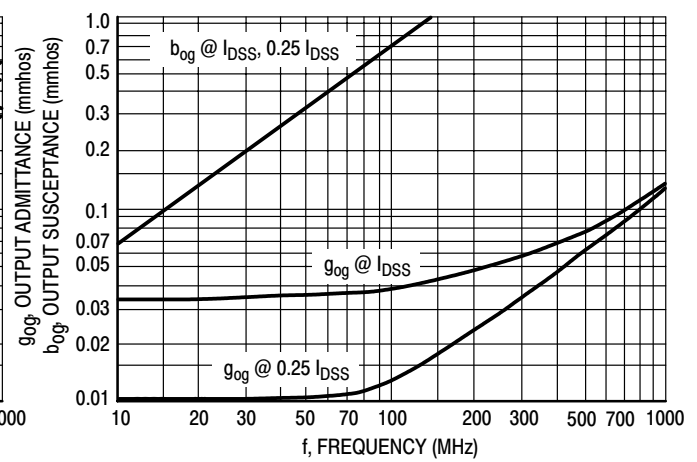


Figure 8.  $S_{22s}$

**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

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

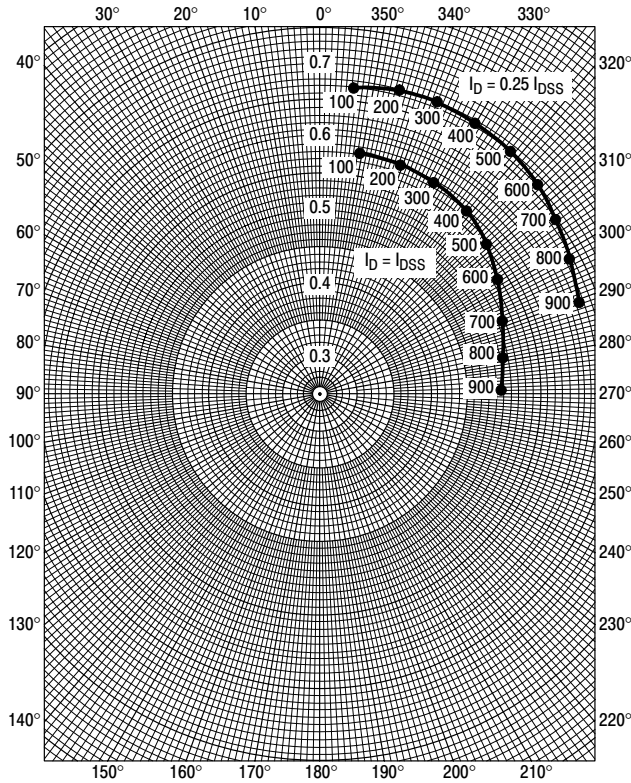


Figure 13.  $S_{11g}$

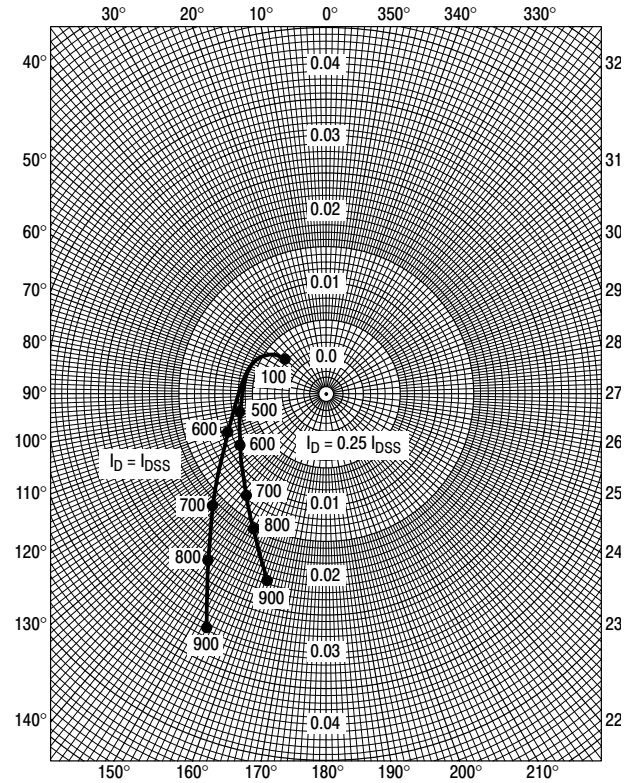


Figure 14.  $S_{12g}$

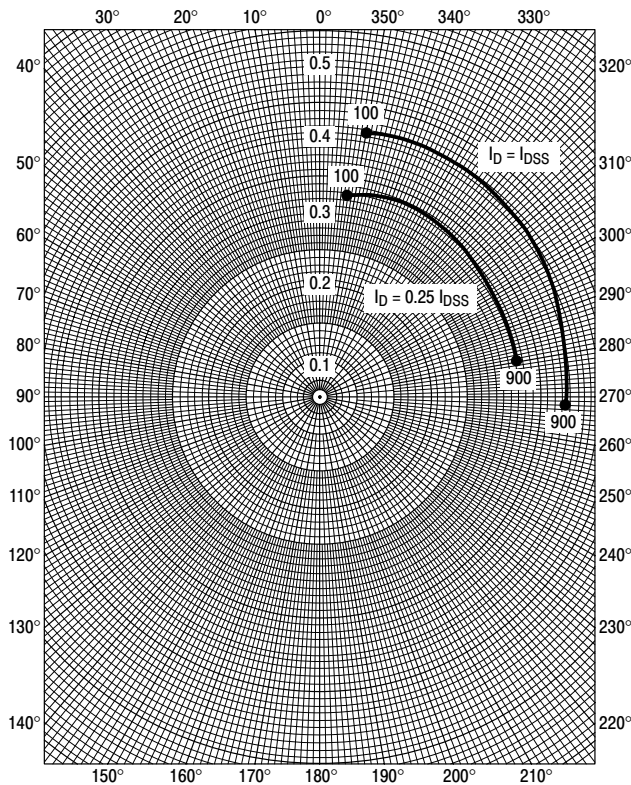


Figure 15.  $S_{21g}$

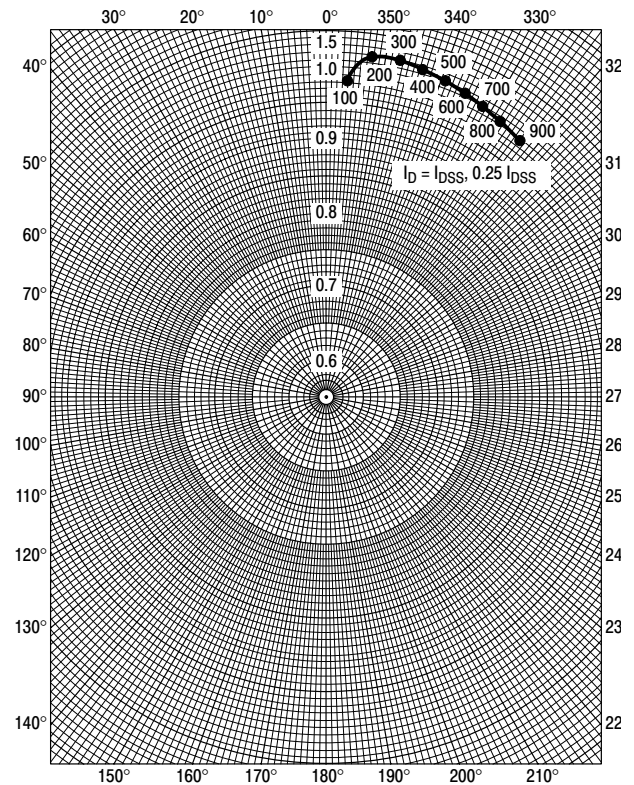
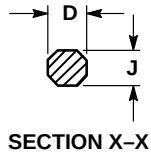
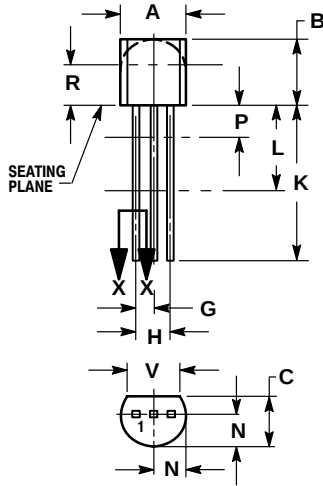


Figure 16.  $S_{22g}$

# 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  
2. GATE  
3. DRAIN

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