

2N3819

JFET VHF/UHF Amplifier

N-Channel – Depletion

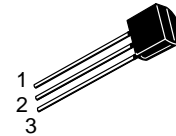
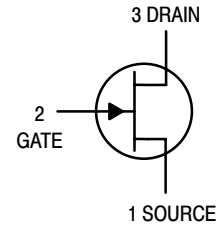


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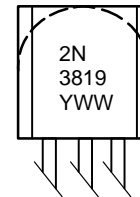
MAXIMUM RATINGS

| 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°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_A = 25°C unless otherwise noted)

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

OFF CHARACTERISTICS

| | | | | | |
|--|----------------------|-----|---|------|------------------|
| Gate–Source Breakdown Voltage (I _G = 1.0 μA _{dc} , V _{DS} = 0) | V _{(BR)GSS} | 25 | – | – | V _{dc} |
| Gate–Source (V _{DS} = 15 V _{dc} , I _D = 200 μA _{dc}) | V _{GS} | 0.5 | – | 7.5 | V _{dc} |
| Gate–Source Cutoff Voltage (V _{DS} = 15 V _{dc} , I _D = 10 nA _{dc}) | V _{GS(off)} | – | – | –8.0 | V _{dc} |
| Gate Reverse Current (V _{GS} = 15 V _{dc} , V _{DS} = 0) | I _{GSS} | – | – | 210 | nA _{dc} |

ON CHARACTERISTICS

| | | | | | |
|---|------------------|-----|---|----|------------------|
| Zero–Gate–Voltage Drain Current (V _{DS} = 15 V _{dc} , V _{GS} = 0) | I _{DSS} | 2.0 | – | 20 | mA _{dc} |
|---|------------------|-----|---|----|------------------|

SMALL–SIGNAL CHARACTERISTICS

| | | | | | |
|---|--------------------|-----|-----|-----|-------|
| Forward Transfer Admittance (V _{DS} = 15 V _{dc} , V _{GS} = 0, f = 1.0 kHz) | Y _{fs} | 3.0 | – | 6.5 | mmhos |
| Output Admittance (V _{DS} = 15 V _{dc} , V _{GS} = 0, f = 1.0 kHz) | Y _{os} | – | 40 | – | μmhos |
| Forward Transfer Admittance (V _{DS} = 15 V _{dc} , V _{GS} = 0, f = 200 MHz) | Y _{fs} | – | 5.6 | – | mmhos |
| Reverse Transfer Admittance (V _{DS} = 15 V _{dc} , V _{GS} = 0, f = 200 MHz) | Y _{rs} | – | 1.0 | – | mmhos |
| Input Capacitance (V _{DS} = 20 V _{dc} , –V _{GS} = 1.0 V _{dc}) | C _{iss} | – | 3.0 | – | pF |
| Reverse Transfer Capacitance (V _{DS} = 20 V _{dc} , –V _{GS} = 1.0 V _{dc} , f = 1.0 MHz) | C _{rss} | – | 0.7 | – | pF |
| Output Capacitance (V _{DS} = 20 V _{dc} , –V _{GS} = 1.0 V _{dc} , f = 1.0 MHz) | C _{oss} | – | 0.9 | – | pF |
| Cut–off Frequency (Note 1) (V _{DS} = 15 V _{dc} , 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

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

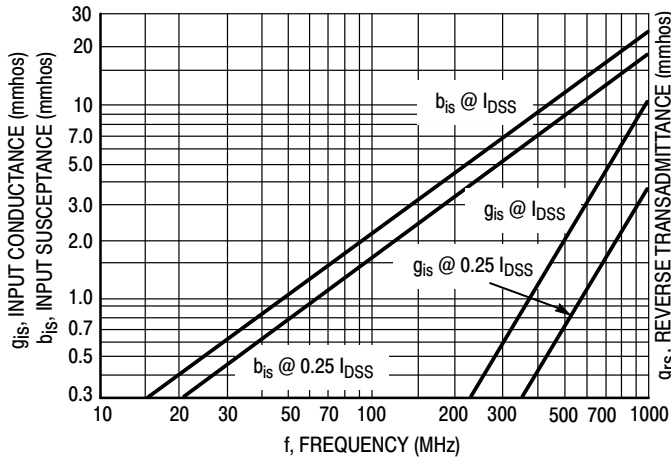


Figure 1. Input Admittance (y_{is})

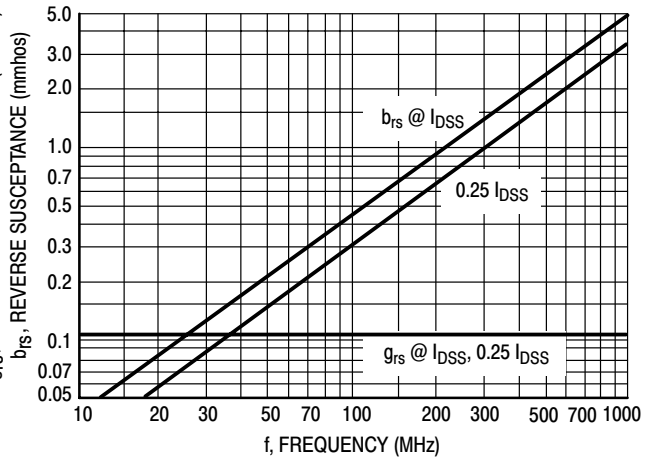


Figure 2. Reverse Transfer Admittance (y_{rs})

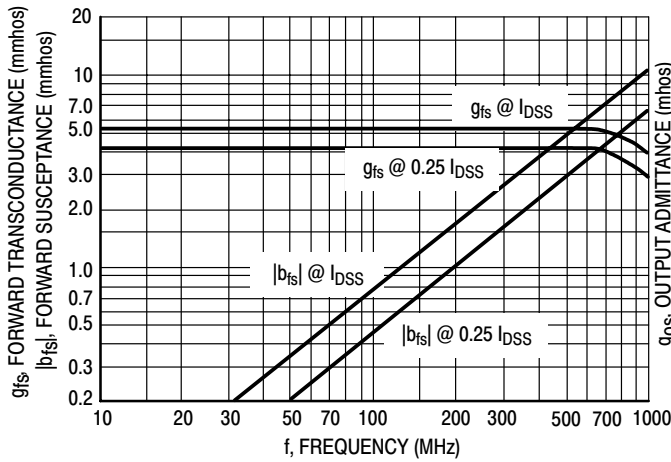


Figure 3. Forward Transadmittance (y_{fs})

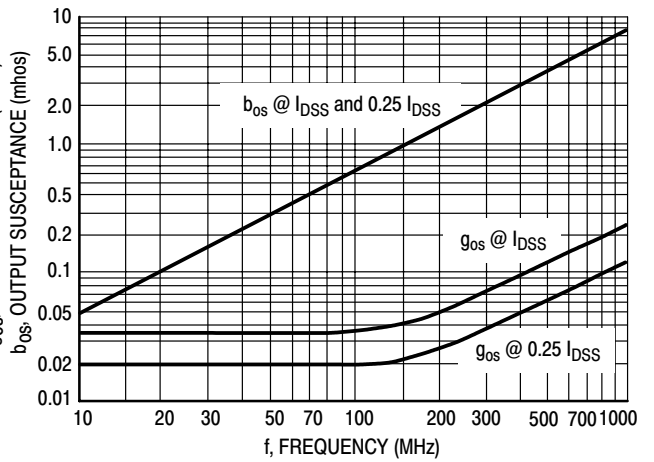


Figure 4. Output Admittance (y_{os})

COMMON SOURCE CHARACTERISTICS
S-PARAMETERS

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

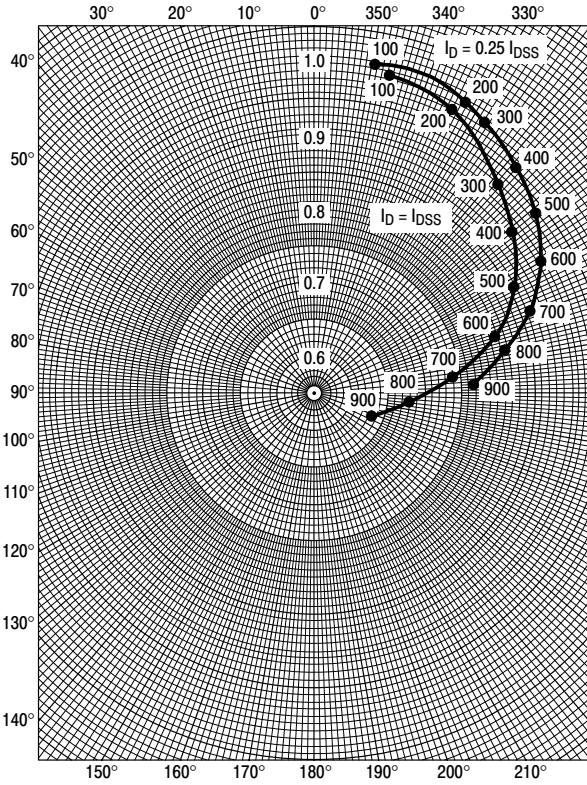


Figure 5. S_{11s}

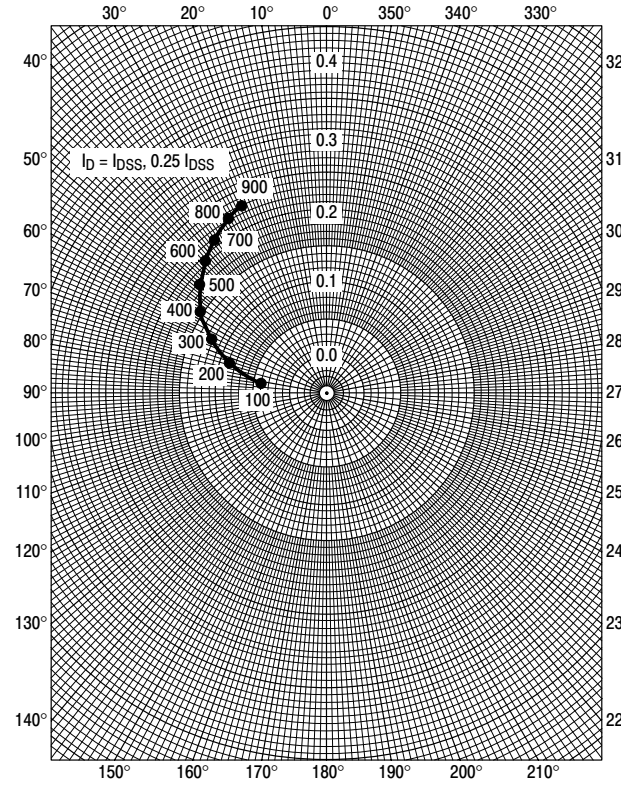


Figure 6. S_{12s}

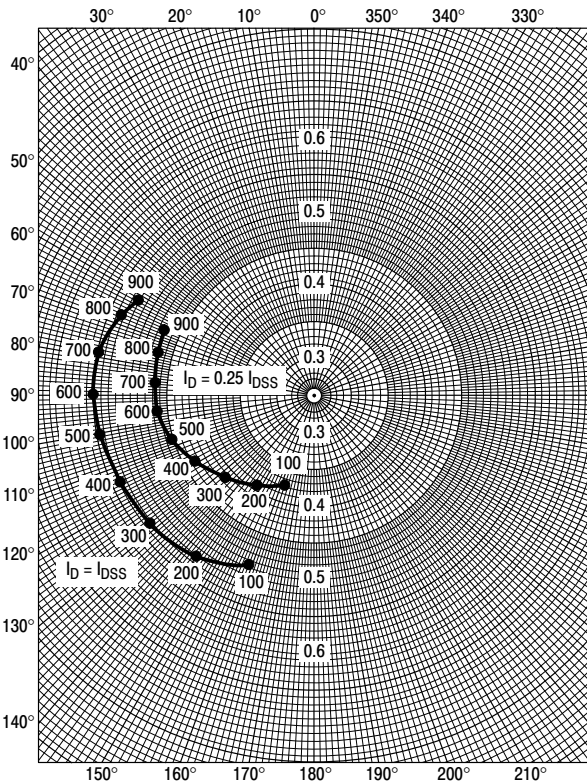


Figure 7. S_{21s}

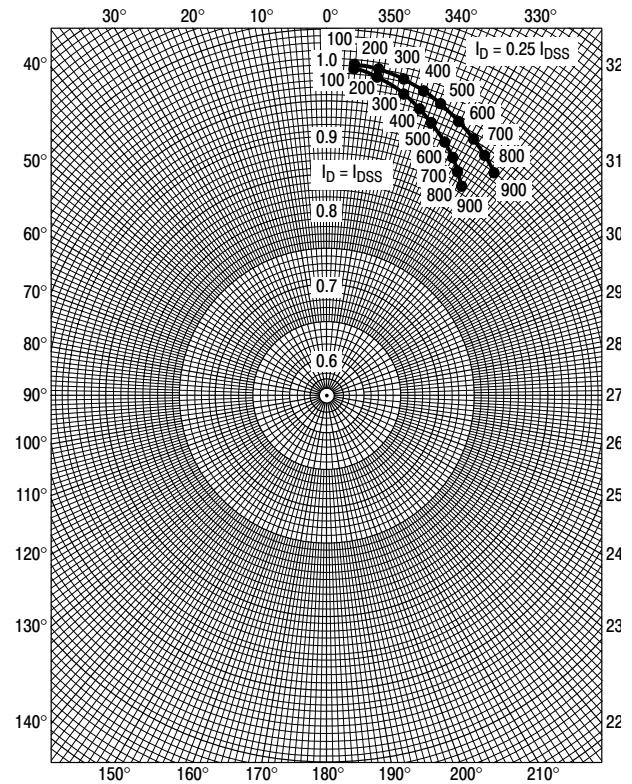


Figure 8. S_{22s}

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

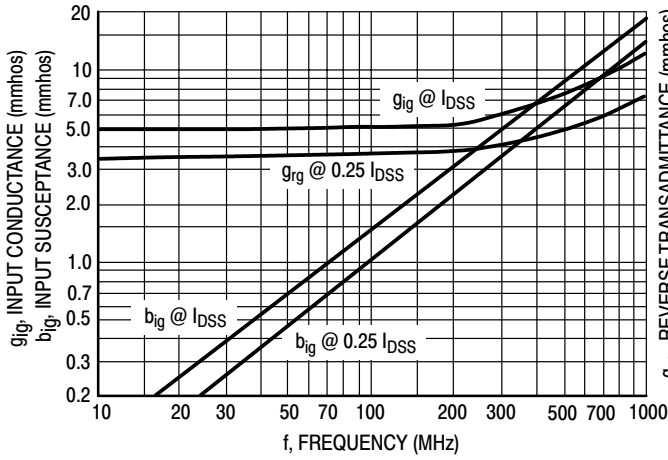


Figure 9. Input Admittance (y_{ig})

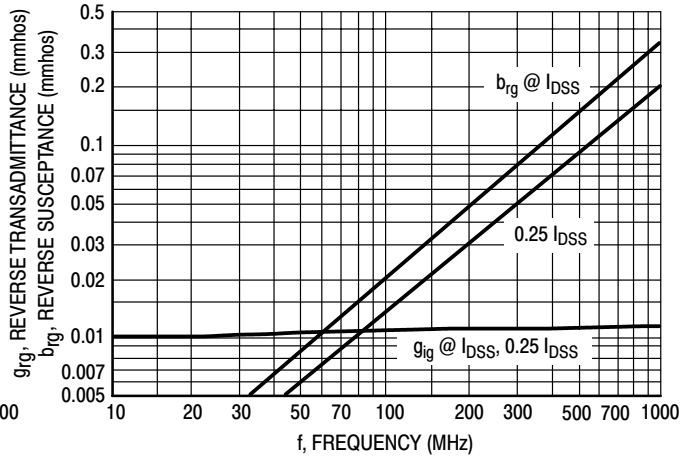


Figure 10. Reverse Transfer Admittance (y_{rg})

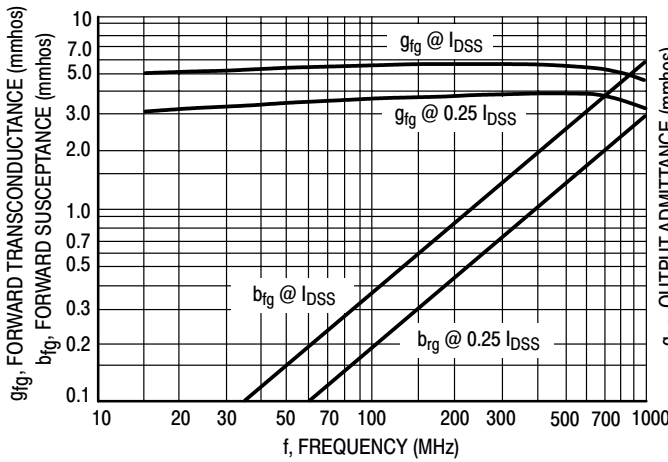


Figure 11. Forward Transfer Admittance (y_{fg})

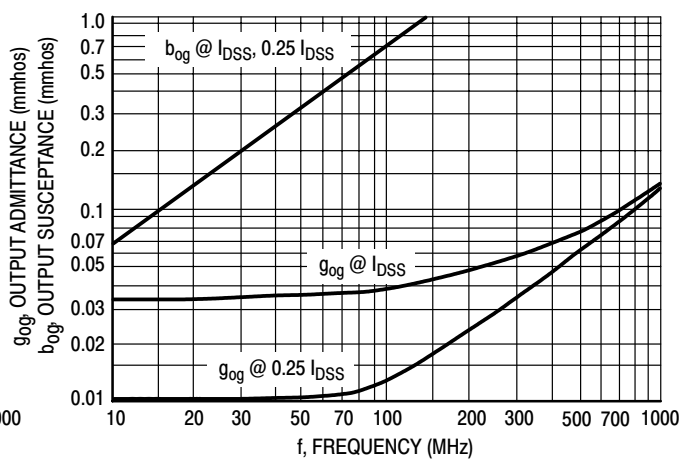


Figure 12. Output Admittance (y_{og})

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

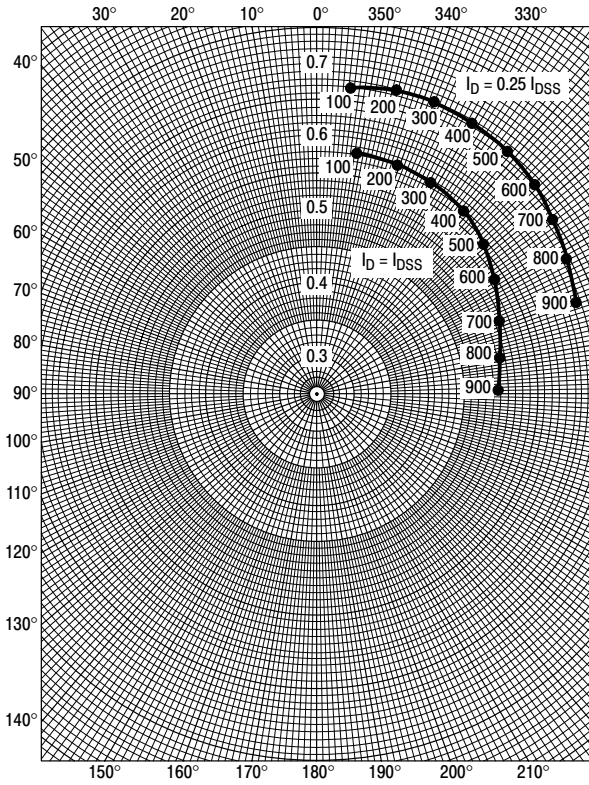


Figure 13. S_{11g}

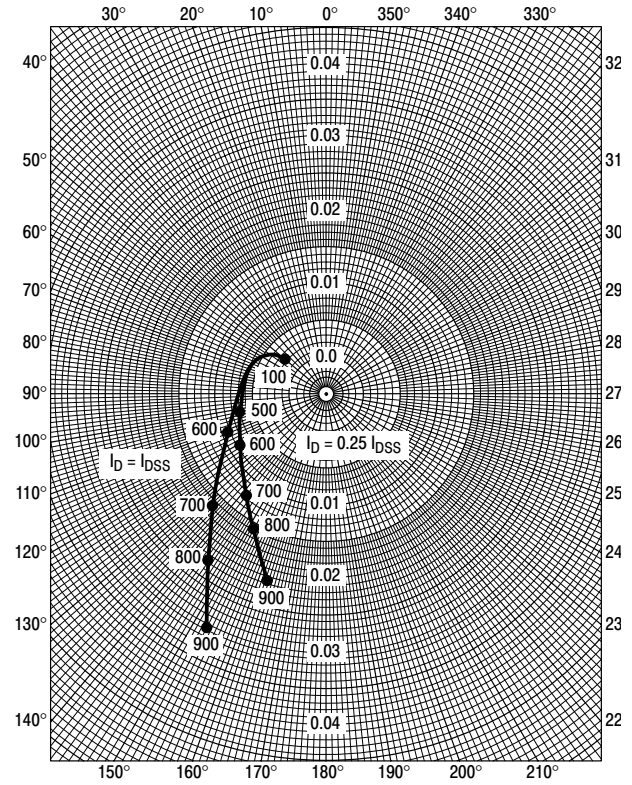


Figure 14. S_{12g}

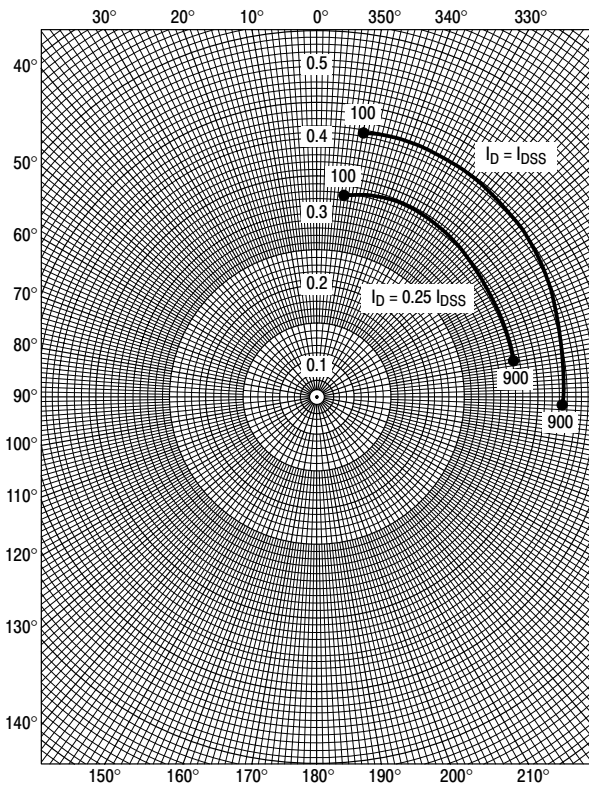


Figure 15. S_{21g}

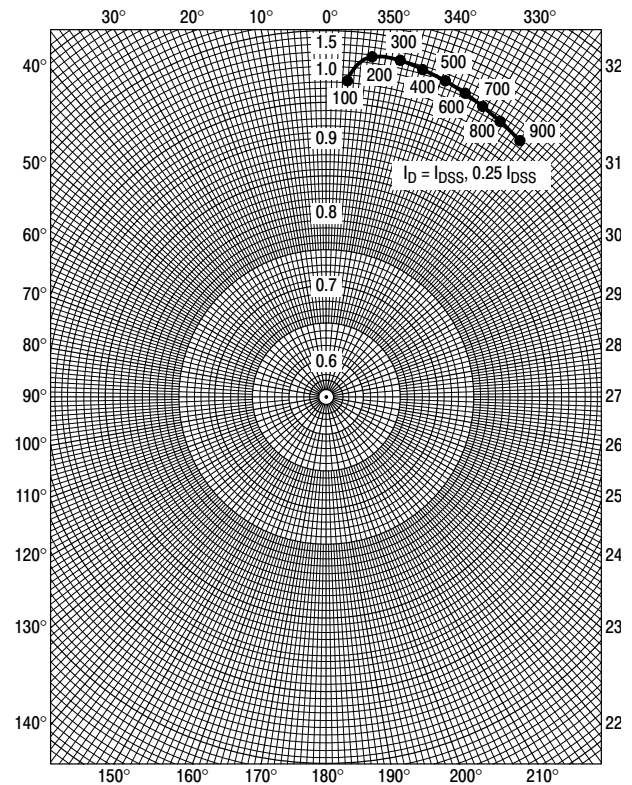
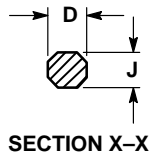
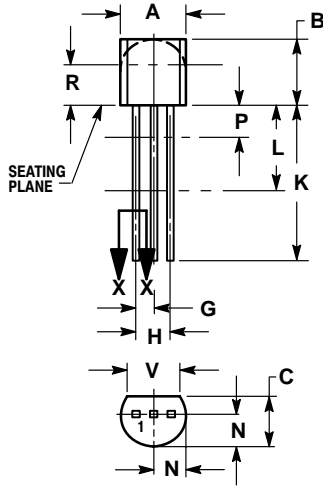


Figure 16. S_{22g}

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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