

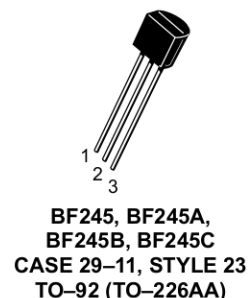
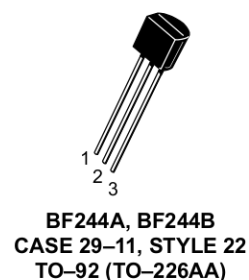
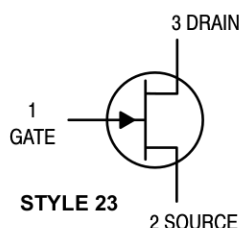
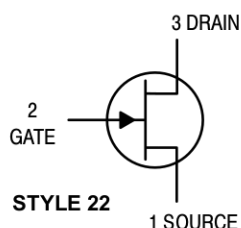
# JFET VHF/UHF Amplifiers

## N-Channel — Depletion

### BF245A BF245B

#### MAXIMUM RATINGS

| Rating                                                                                 | Symbol     | Value       | Unit                       |
|----------------------------------------------------------------------------------------|------------|-------------|----------------------------|
| Drain-Source Voltage                                                                   | $V_{DS}$   | $\pm 30$    | Vdc                        |
| Drain-Gate Voltage                                                                     | $V_{DG}$   | 30          | Vdc                        |
| Gate-Source Voltage                                                                    | $V_{GS}$   | 30          | Vdc                        |
| Drain Current                                                                          | $I_D$      | 100         | mAdc                       |
| Forward Gate Current                                                                   | $I_{G(f)}$ | 10          | mAdc                       |
| Total Device Dissipation @ $T_A = 25^\circ\text{C}$<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 | $^\circ\text{C}$           |



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

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

#### OFF CHARACTERISTICS

|                                                                                       |               |      |   |      |      |
|---------------------------------------------------------------------------------------|---------------|------|---|------|------|
| Gate-Source Breakdown Voltage<br>( $I_G = 1.0 \mu\text{Adc}$ , $V_{DS} = 0$ )         | $V_{(BR)GSS}$ | 30   | — | —    | Vdc  |
| Gate-Source<br>( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 200 \mu\text{Adc}$ )              | $V_{GS}$      | 0.4  | — | 7.5  | Vdc  |
| BF245(1)                                                                              |               | 0.4  | — | 2.2  |      |
| BF245A, BF244A(2)                                                                     |               | 1.6  | — | 3.8  |      |
| BF245B, BF244B                                                                        |               | 3.2  | — | 7.5  |      |
| BF245C                                                                                |               |      |   |      |      |
| Gate-Source Cutoff Voltage<br>( $V_{DS} = 15 \text{ Vdc}$ , $I_D = 10 \text{ nAdc}$ ) | $V_{GS(off)}$ | -0.5 | — | -8.0 | Vdc  |
| Gate Reverse Current<br>( $V_{GS} = 20 \text{ Vdc}$ , $V_{DS} = 0$ )                  | $I_{GSS}$     | —    | — | 5.0  | nAdc |

#### ON CHARACTERISTICS

|                                                                                 |           |     |   |     |      |
|---------------------------------------------------------------------------------|-----------|-----|---|-----|------|
| Zero-Gate-Voltage Drain Current<br>( $V_{DS} = 15 \text{ Vdc}$ , $V_{GS} = 0$ ) | $I_{DSS}$ | 2.0 | — | 25  | mAdc |
| BF245(1)                                                                        |           | 2.0 | — | 6.5 |      |
| BF245A, BF244A(2)                                                               |           | 6.0 | — | 15  |      |
| BF245B, BF244B                                                                  |           | 12  | — | 25  |      |
| BF245C                                                                          |           |     |   |     |      |

1. On orders against the BF245, any or all subgroups might be shipped.
2. On orders against the BF244A, any or all subgroups might be shipped.

# BF245A BF245B

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

| Characteristic                                                                                          | Symbol      | Min | Typ | Max | Unit             |
|---------------------------------------------------------------------------------------------------------|-------------|-----|-----|-----|------------------|
| <b>SMALL-SIGNAL CHARACTERISTICS</b>                                                                     |             |     |     |     |                  |
| Forward Transfer Admittance ( $V_{DS} = 15\text{ Vdc}, V_{GS} = 0, f = 1.0\text{ kHz}$ )                | $ Y_{fs} $  | 3.0 | —   | 6.5 | mmhos            |
| Output Admittance ( $V_{DS} = 15\text{ Vdc}, V_{GS} = 0, f = 1.0\text{ kHz}$ )                          | $ Y_{os} $  | —   | 40  | —   | $\mu\text{mhos}$ |
| Forward Transfer Admittance ( $V_{DS} = 15\text{ Vdc}, V_{GS} = 0, f = 200\text{ MHz}$ )                | $ Y_{fs} $  | —   | 5.6 | —   | mmhos            |
| Reverse Transfer Admittance ( $V_{DS} = 15\text{ Vdc}, V_{GS} = 0, f = 200\text{ MHz}$ )                | $ Y_{rs} $  | —   | 1.0 | —   | mmhos            |
| Input Capacitance ( $V_{DS} = 20\text{ Vdc}, -V_{GS} = 1.0\text{ Vdc}$ )                                | $C_{iss}$   | —   | 3.0 | —   | pF               |
| Reverse Transfer Capacitance ( $V_{DS} = 20\text{ Vdc}, -V_{GS} = 1.0\text{ Vdc}, f = 1.0\text{ MHz}$ ) | $C_{rss}$   | —   | 0.7 | —   | pF               |
| Output Capacitance ( $V_{DS} = 20\text{ Vdc}, -V_{GS} = 1.0\text{ Vdc}, f = 1.0\text{ MHz}$ )           | $C_{oss}$   | —   | 0.9 | —   | pF               |
| Cut-off Frequency <sup>(3)</sup> ( $V_{DS} = 15\text{ Vdc}, V_{GS} = 0$ )                               | $F(Y_{fs})$ | —   | 700 | —   | MHz              |

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

## COMMON SOURCE CHARACTERISTICS

### ADMITTANCE PARAMETERS

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

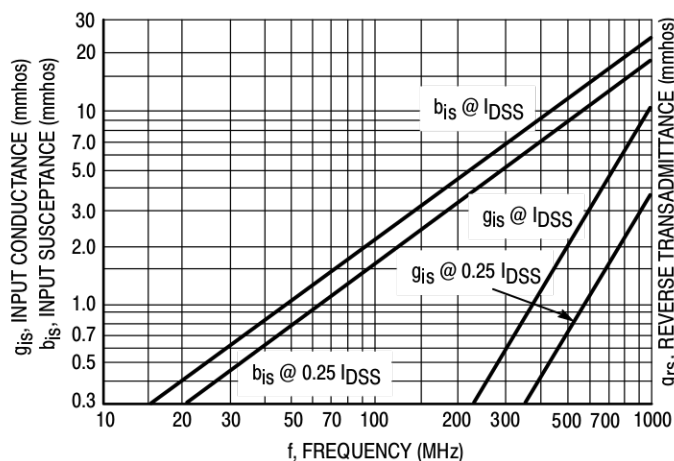


Figure 1. Input Admittance ( $y_{is}$ )

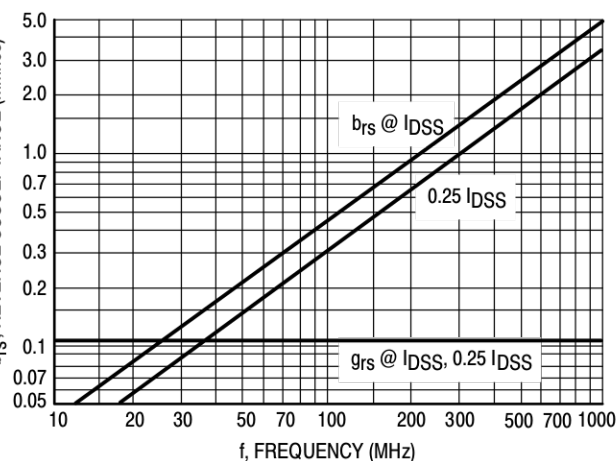


Figure 2. Reverse Transfer Admittance ( $y_{rs}$ )

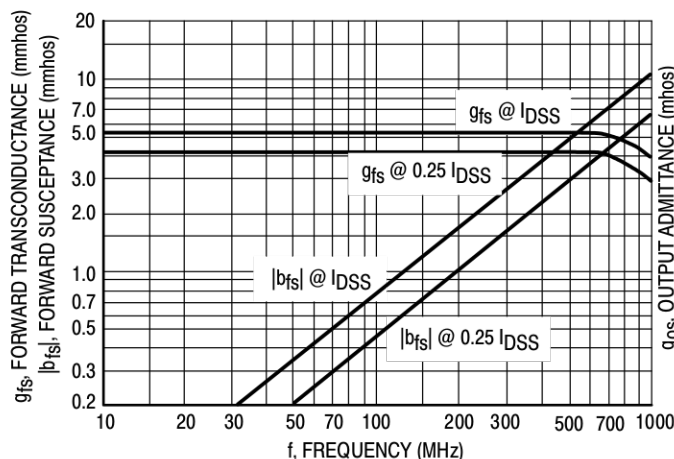


Figure 3. Forward Transadmittance ( $y_{fs}$ )

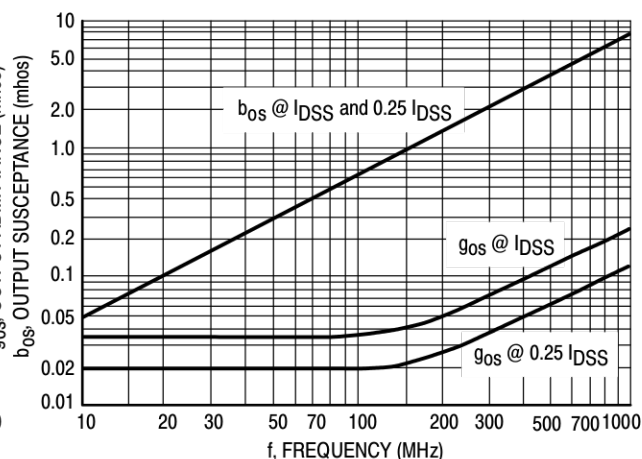


Figure 4. Output Admittance ( $y_{os}$ )

COMMON SOURCE CHARACTERISTICS  
S-PARAMETERS

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

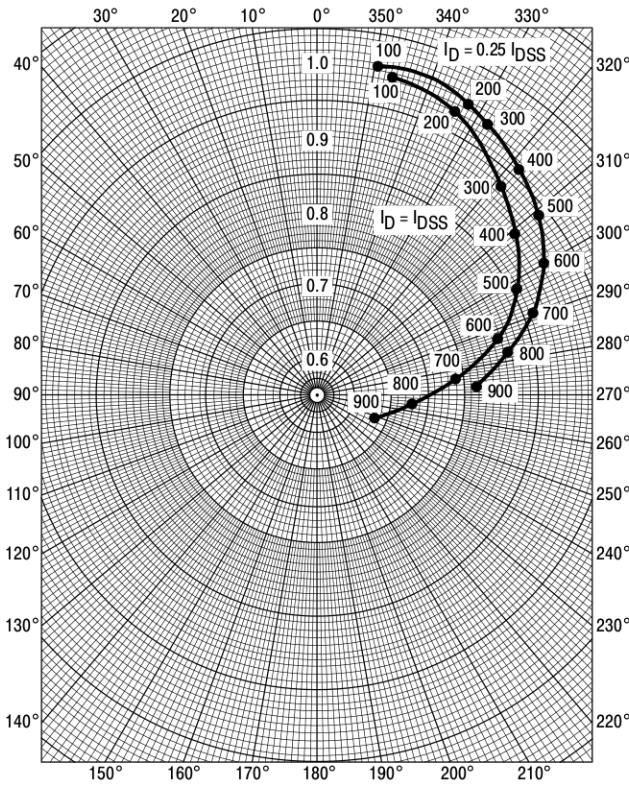


Figure 5.  $S_{11s}$

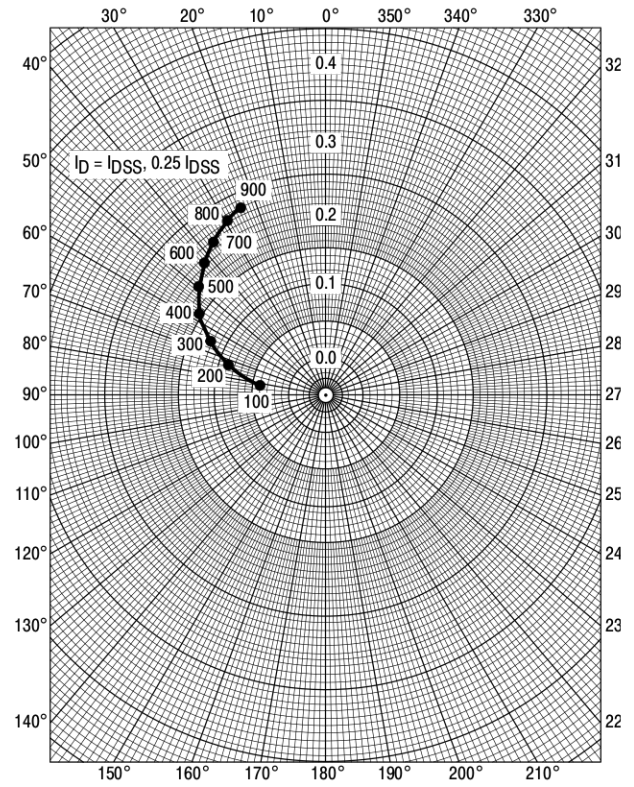


Figure 6.  $S_{12s}$

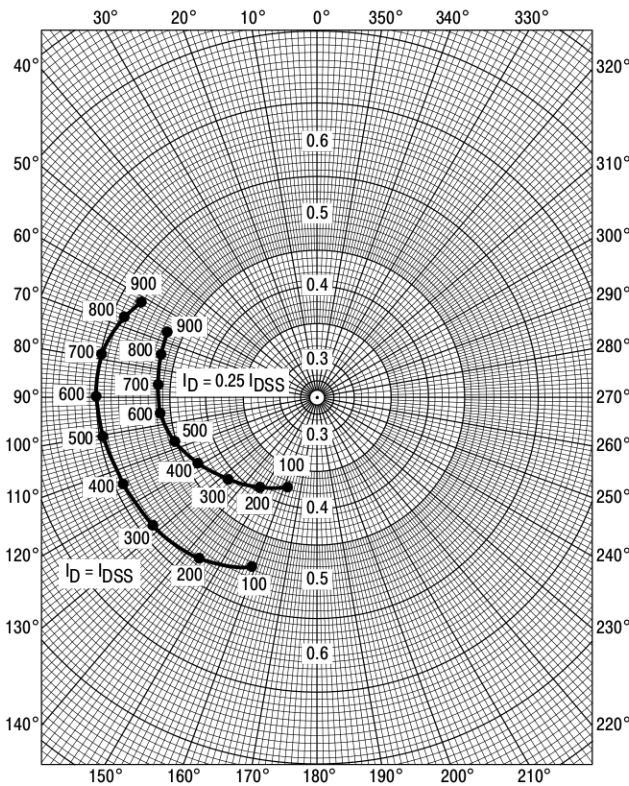


Figure 7.  $S_{21s}$

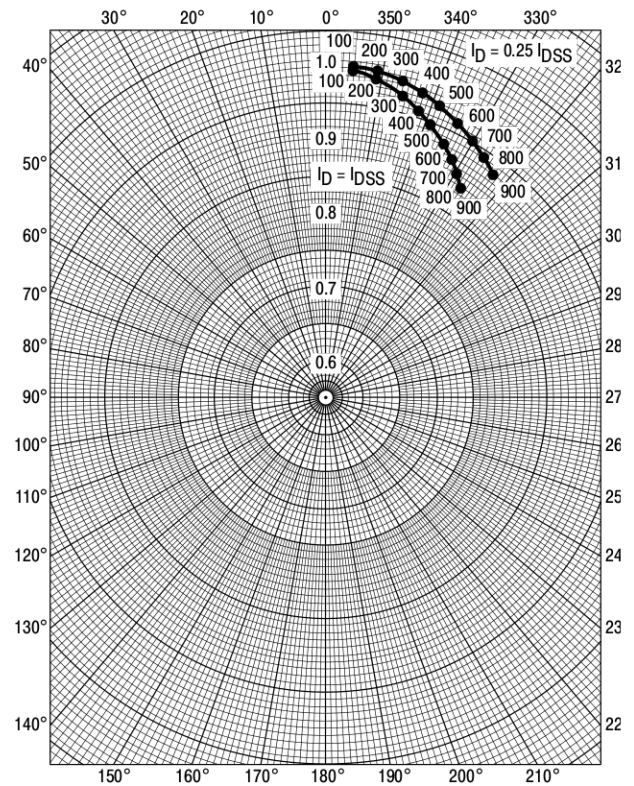


Figure 8.  $S_{22s}$

**COMMON GATE CHARACTERISTICS**  
**ADMITTANCE PARAMETERS**  
(V<sub>DG</sub> = 15 Vdc, T<sub>channel</sub> = 25°C)

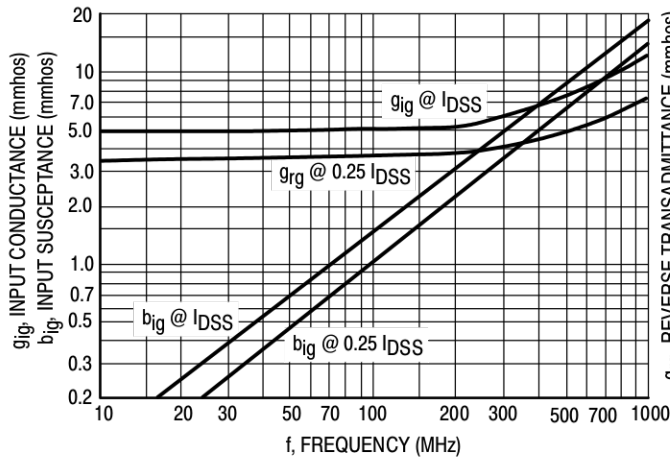


Figure 9. Input Admittance (y<sub>ig</sub>)

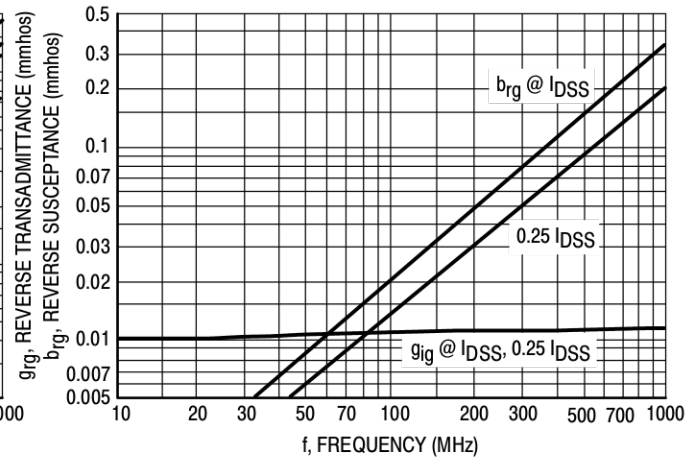


Figure 10. Reverse Transfer Admittance (y<sub>rg</sub>)

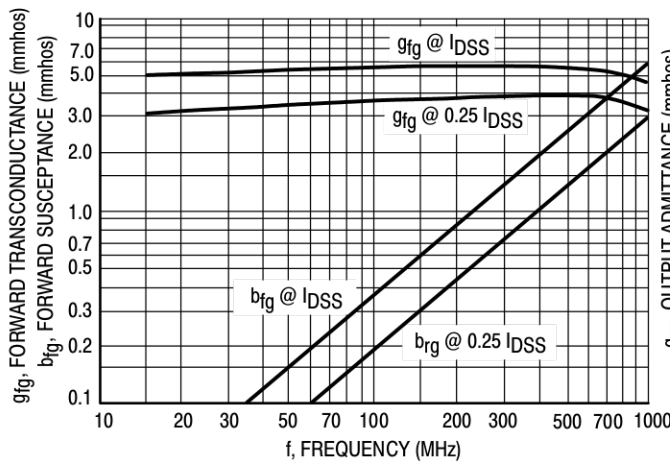


Figure 11. Forward Transfer Admittance (y<sub>fg</sub>)

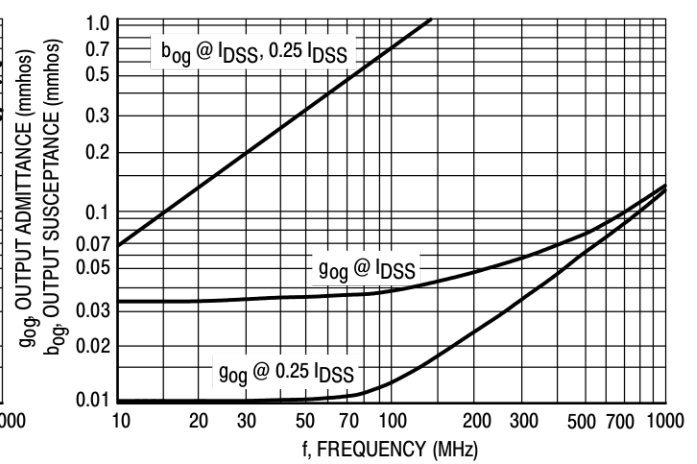


Figure 12. Output Admittance (y<sub>og</sub>)

**COMMON GATE CHARACTERISTICS**  
**S-PARAMETERS**  
(V<sub>DS</sub> = 15 Vdc, T<sub>channel</sub> = 25°C, Data Points in MHz)

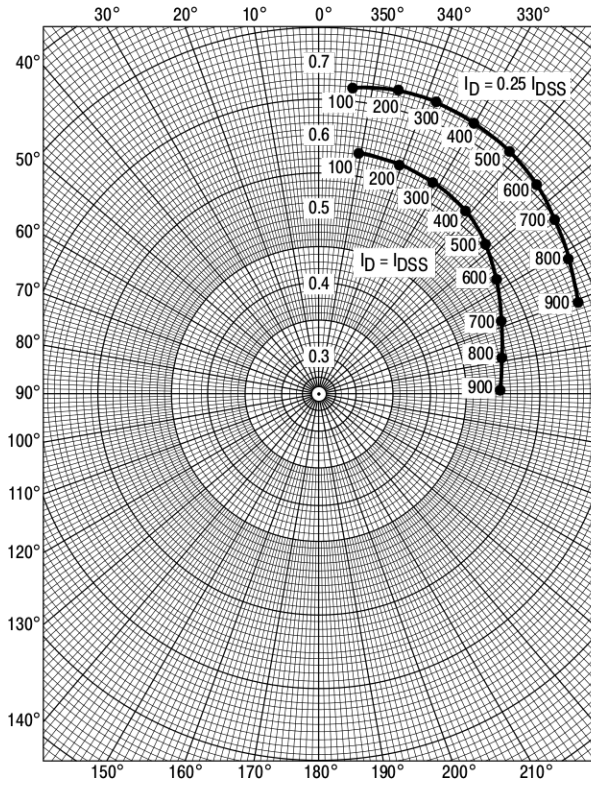


Figure 13.  $S_{11g}$

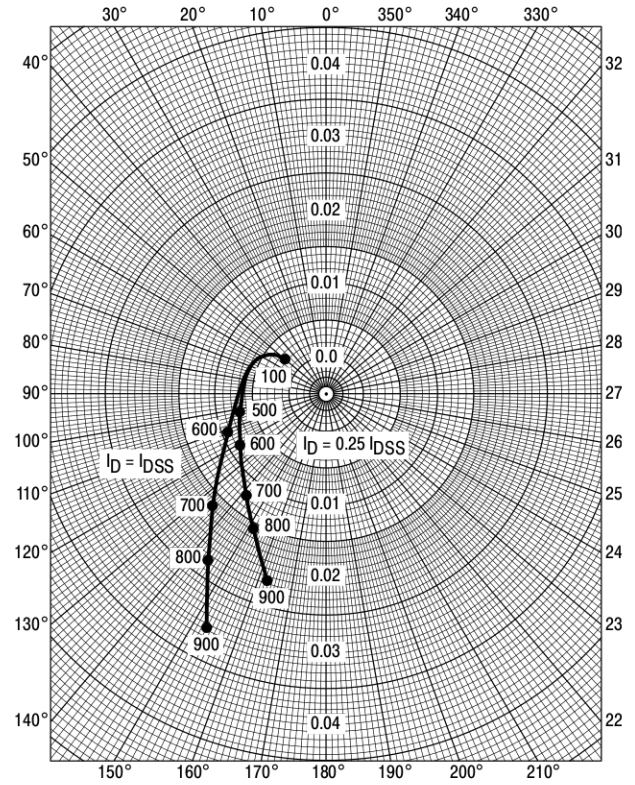


Figure 14.  $S_{12g}$

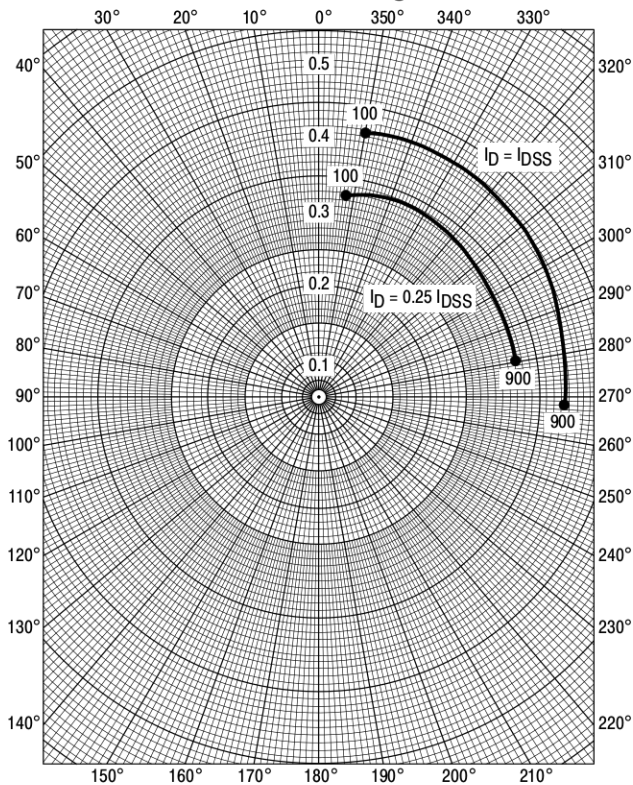


Figure 15.  $S_{21g}$

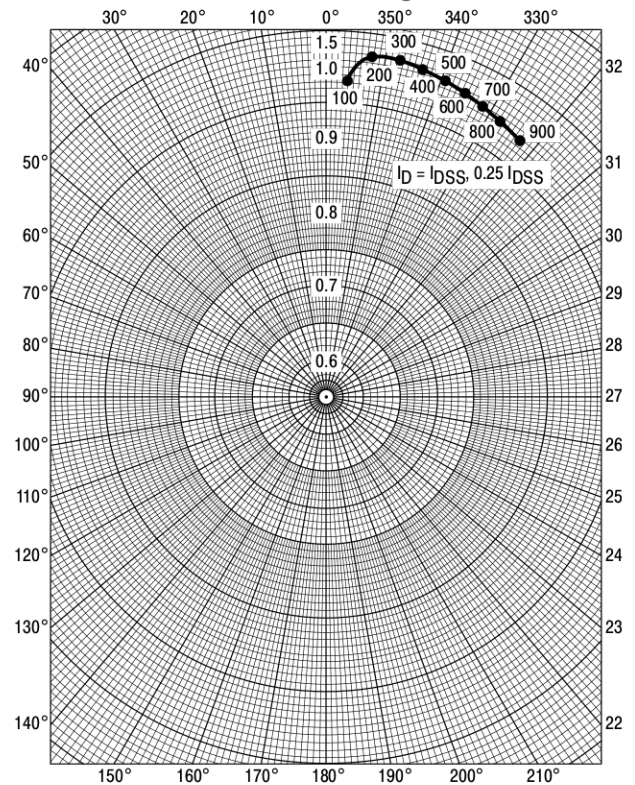
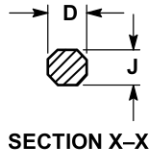
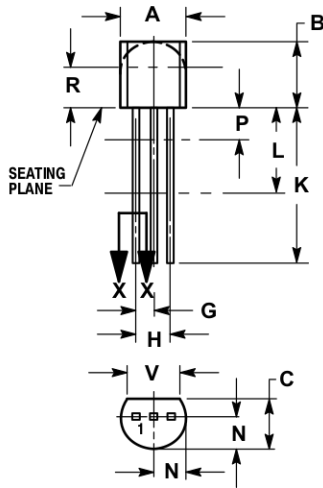


Figure 16.  $S_{22g}$

# BF245A BF245B

## 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

### STYLE 23:

- PIN 1. GATE  
2. SOURCE  
3. DRAIN

## **Notes**

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