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# 2N5486

## JFET VHF/UHF Amplifiers

### N-Channel — Depletion

#### Features

- Pb-Free Packages are Available\*

#### MAXIMUM RATINGS ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

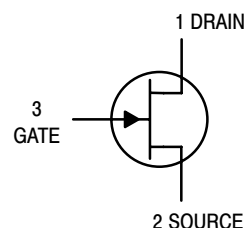
| Rating                                                                                 | Symbol         | Value       | Unit                       |
|----------------------------------------------------------------------------------------|----------------|-------------|----------------------------|
| 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 @ $T_C = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$          | 350<br>2.8  | mW<br>mW/ $^\circ\text{C}$ |
| Operating and Storage Junction<br>Temperature Range                                    | $T_J, T_{stg}$ | –65 to +150 | $^\circ\text{C}$           |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



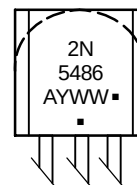
**ON Semiconductor®**

<http://onsemi.com>



**TO-92 (TO-226AA)  
CASE 29-11  
STYLE 5**

#### MARKING DIAGRAM



2N5486 = Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
■ = Pb-Free Package  
(Note: Microdot may be in either location)

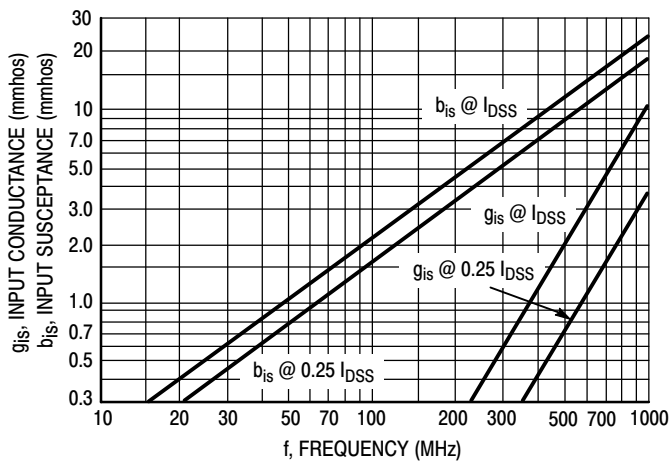
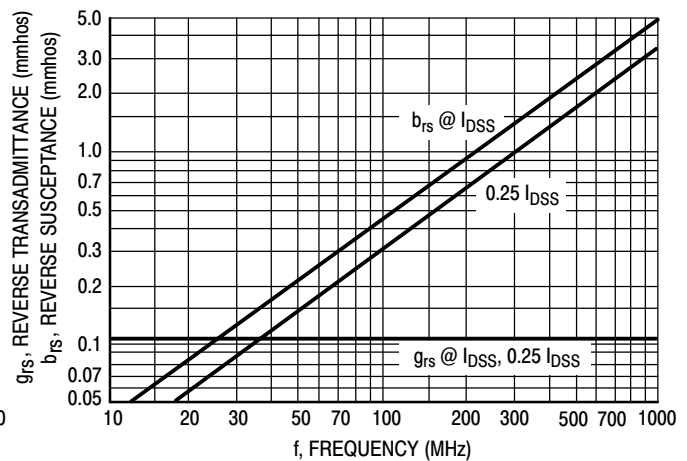
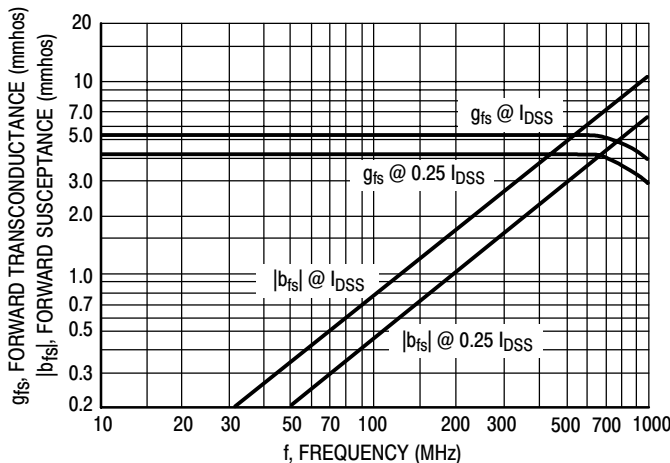
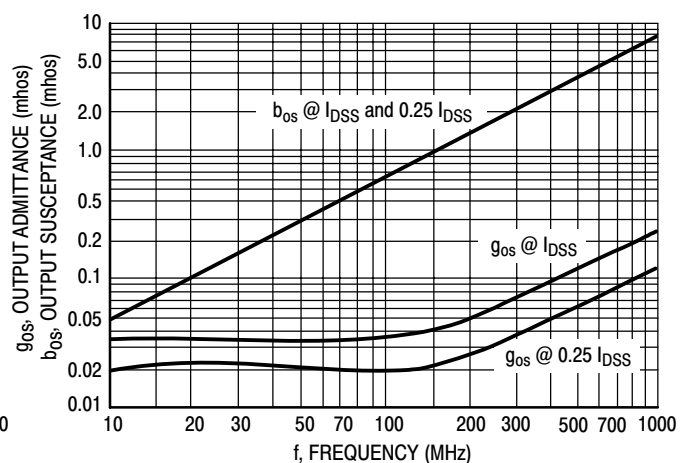
#### ORDERING INFORMATION

| Device  | Package            | Shipping          |
|---------|--------------------|-------------------|
| 2N5486  | TO-92              | 1000 Units / Bulk |
| 2N5486G | TO-92<br>(Pb-Free) | 1000 Units / Bulk |

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

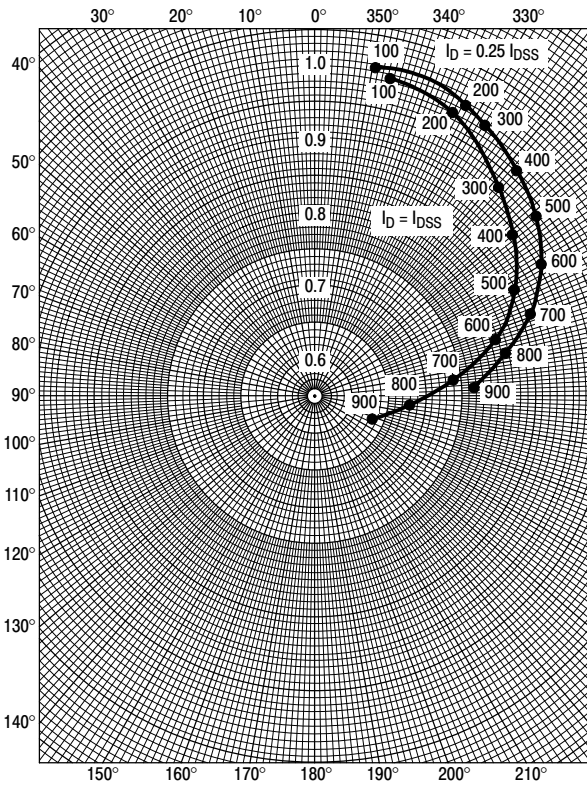
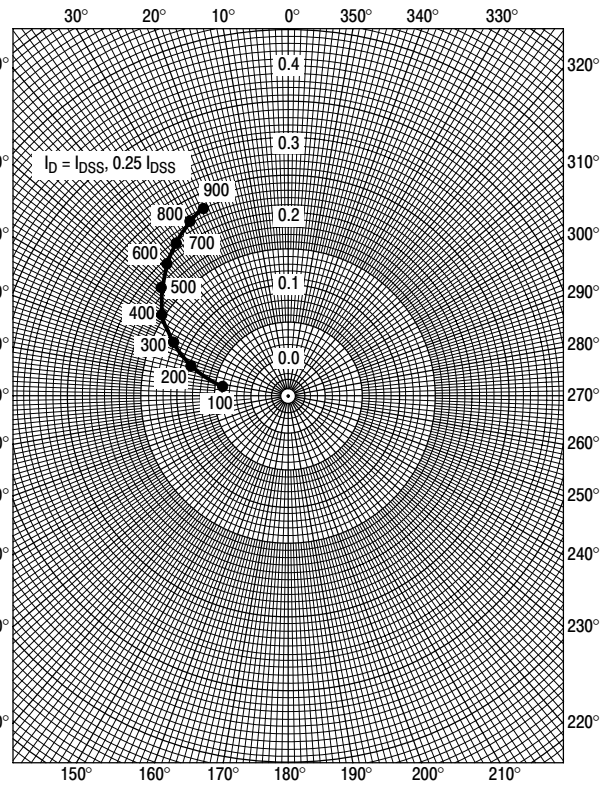
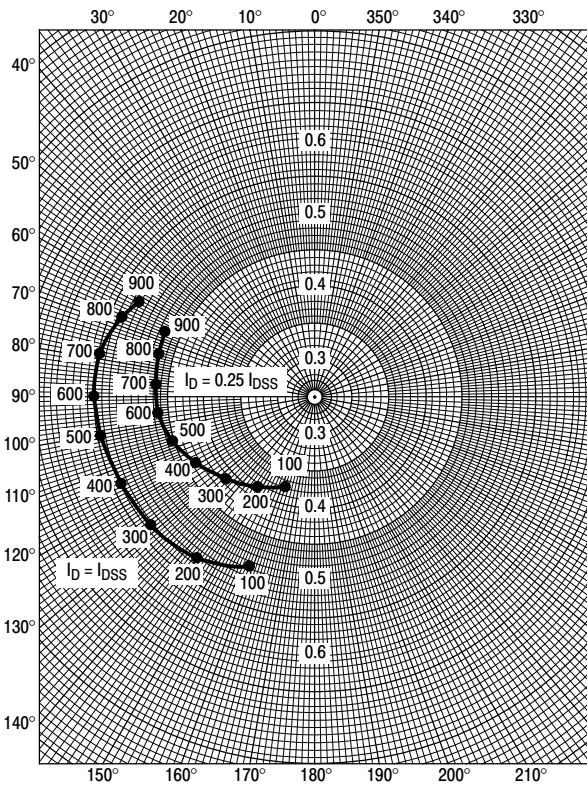
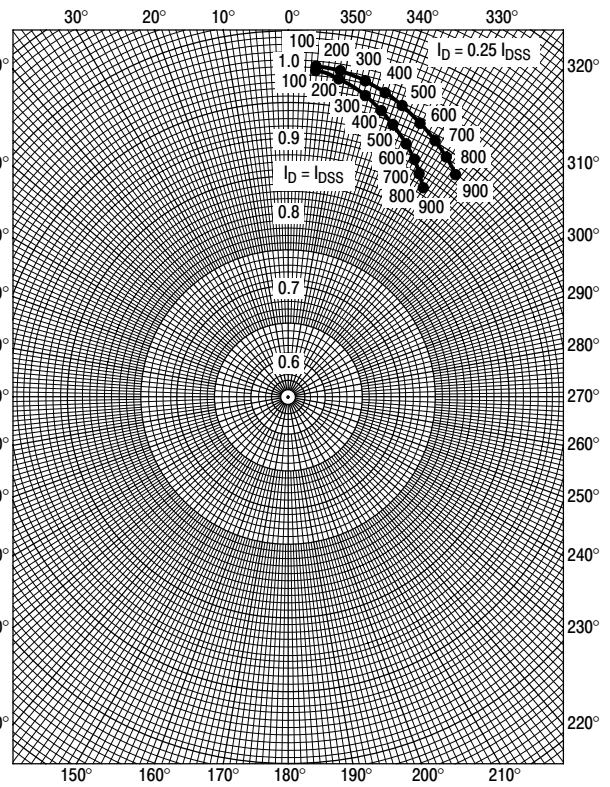
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Characteristic                                                                                                                                  | Symbol              | Min  | Typ | Max          | Unit                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------|-----|--------------|-------------------------|
| <b>OFF CHARACTERISTICS</b>                                                                                                                      |                     |      |     |              |                         |
| Gate-Source Breakdown Voltage ( $I_G = -1.0\ \mu\text{Adc}$ , $V_{DS} = 0$ )                                                                    | $V_{(BR)GSS}$       | -25  | -   | -            | Vdc                     |
| Gate Reverse Current ( $V_{GS} = -20\ \text{Vdc}$ , $V_{DS} = 0$ )<br>( $V_{GS} = -20\ \text{Vdc}$ , $V_{DS} = 0$ , $T_A = 100^\circ\text{C}$ ) | $I_{GSS}$           | -    | -   | -1.0<br>-0.2 | nAdc<br>$\mu\text{Adc}$ |
| Gate Source Cutoff Voltage ( $V_{DS} = 15\ \text{Vdc}$ , $I_D = 10\ \text{nAdc}$ )                                                              | $V_{GS(off)}$       | -2.0 | -   | -6.0         | Vdc                     |
| <b>ON CHARACTERISTICS</b>                                                                                                                       |                     |      |     |              |                         |
| Zero-Gate Voltage Drain Current ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ )                                                                    | $I_{DSS}$           | 8.0  | -   | 20           | mAdc                    |
| <b>SMALL-SIGNAL CHARACTERISTICS</b>                                                                                                             |                     |      |     |              |                         |
| Forward Transfer Admittance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 1.0\ \text{kHz}$ )                                                | $ y_{fs} $          | 4000 | -   | 8000         | $\mu\text{mhos}$        |
| Input Admittance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 400\ \text{MHz}$ )                                                           | $\text{Re}(y_{is})$ | -    | -   | 1000         | $\mu\text{mhos}$        |
| Output Admittance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 1.0\ \text{kHz}$ )                                                          | $ y_{os} $          | -    | -   | 75           | $\mu\text{mhos}$        |
| Output Conductance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 400\ \text{MHz}$ )                                                         | $\text{Re}(y_{os})$ | -    | -   | 100          | $\mu\text{mhos}$        |
| Forward Transconductance ( $V_{DS} = 15\ \text{Vdc}$ , $V_{GS} = 0$ , $f = 400\ \text{MHz}$ )                                                   | $\text{Re}(y_{fs})$ | 3500 | -   | -            | $\mu\text{mhos}$        |
| 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**( $V_{DS} = 15\ \text{Vdc}$ ,  $T_{\text{channel}} = 25^\circ\text{C}$ )Figure 1. Input Admittance ( $y_{is}$ )Figure 2. Reverse Transfer Admittance ( $y_{rs}$ )Figure 3. Forward Transadmittance ( $y_{fs}$ )Figure 4. Output Admittance ( $y_{os}$ )

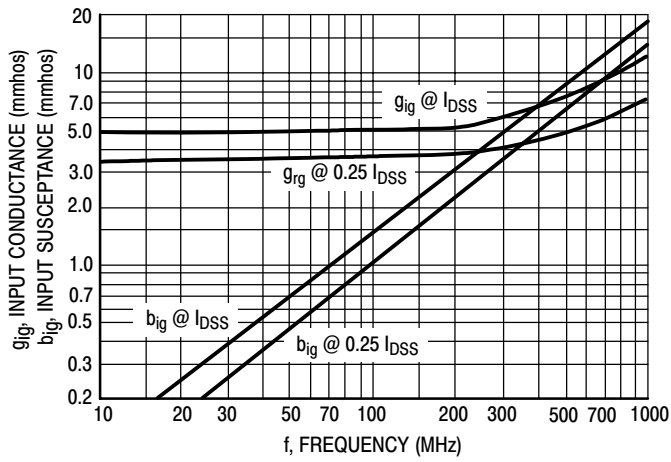
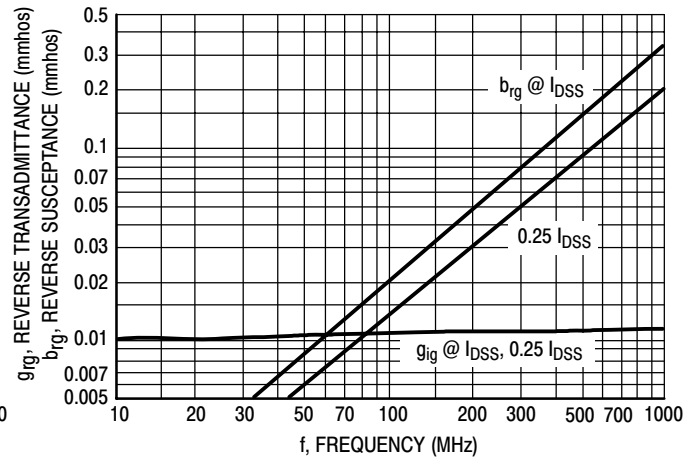
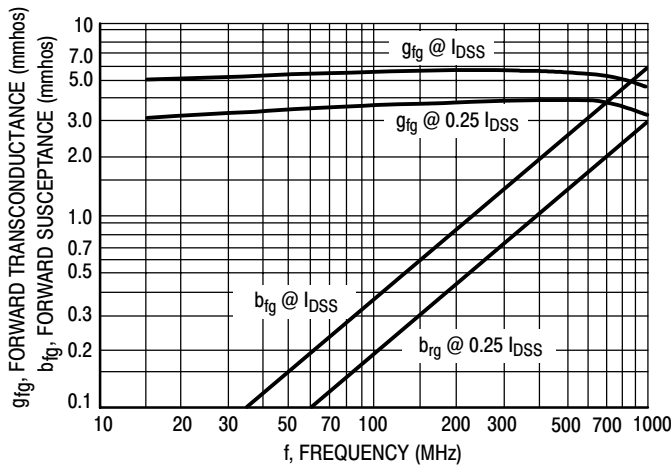
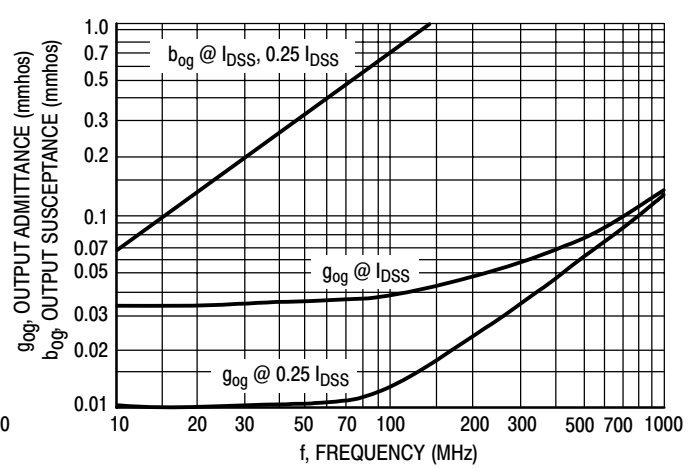
## COMMON SOURCE CHARACTERISTICS

## S-PARAMETERS

(V<sub>DS</sub> = 15 Vdc, T<sub>channel</sub> = 25°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 ( $y_{ig}$ )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

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

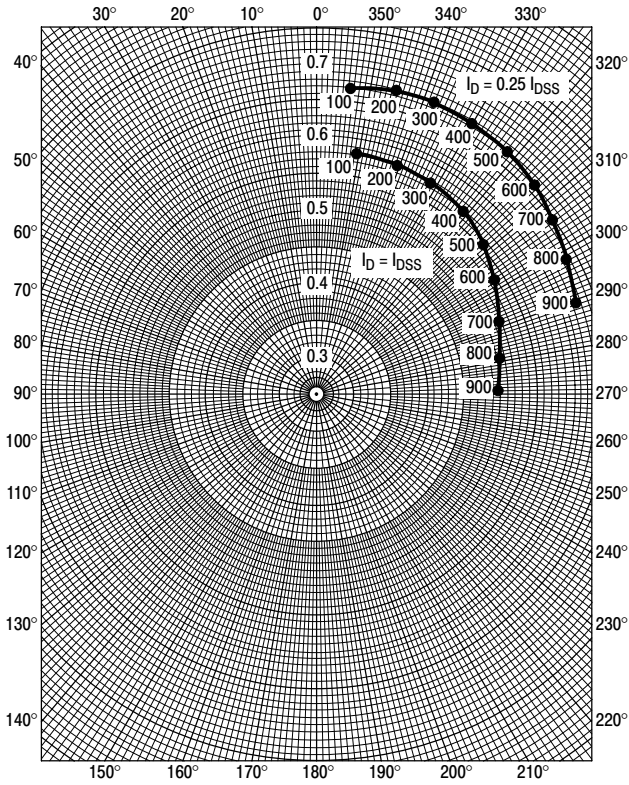


Figure 13.  $S_{11g}$

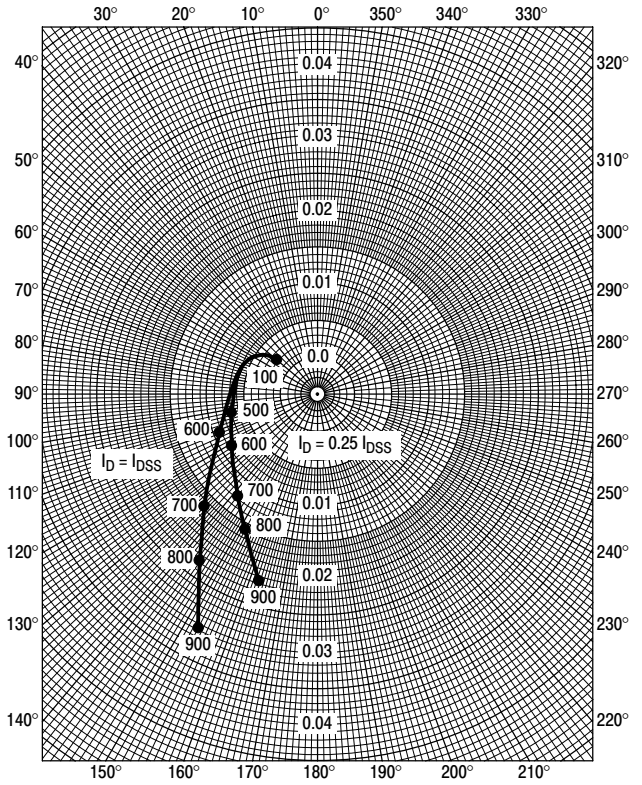


Figure 14.  $S_{12g}$

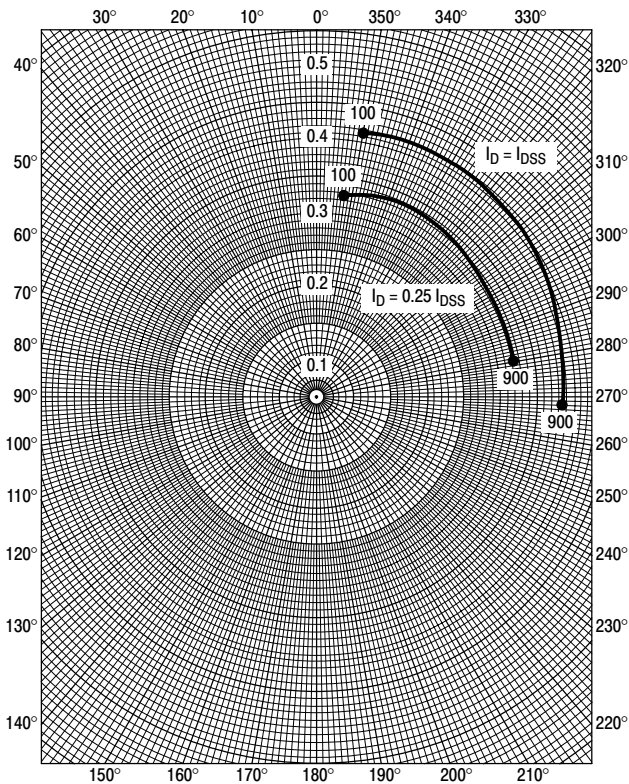


Figure 15.  $S_{21a}$

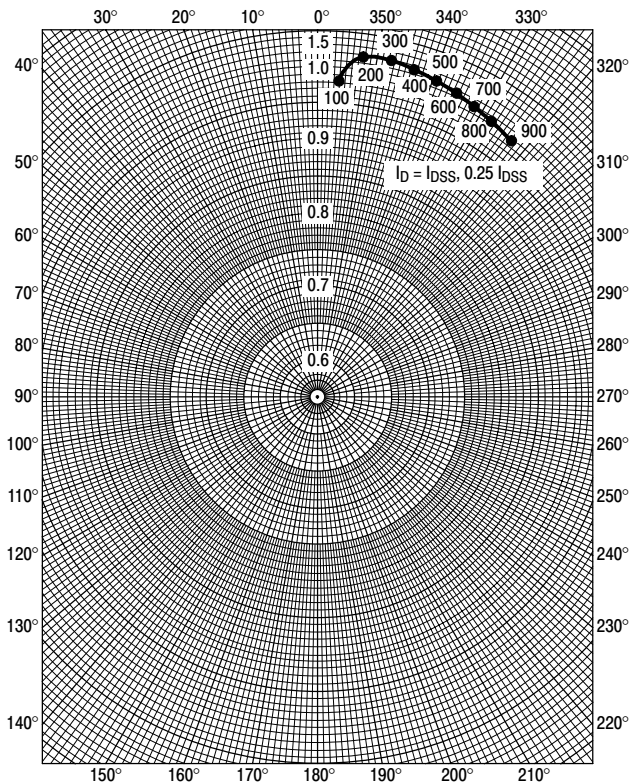
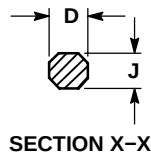
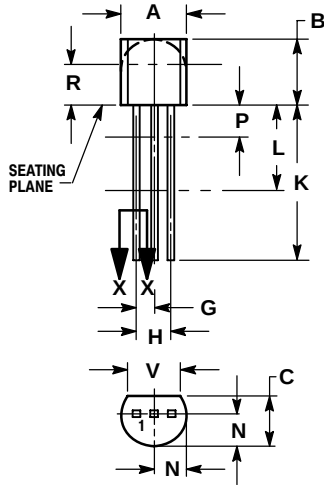


Figure 16.  $S_{22a}$

# 2N5486

## PACKAGE DIMENSIONS

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



### 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 5:

1. DRAIN
2. SOURCE
3. GATE

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