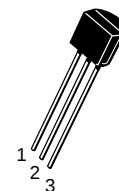


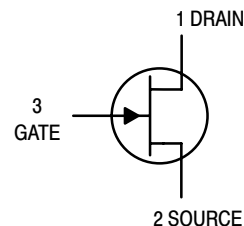
JFET VHF Amplifier

N-Channel – Depletion

MPF102



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



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
Gate Current	I_G	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Junction Temperature Range	T_J	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	–65 to +150	$^\circ\text{C}$

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Gate–Source Breakdown Voltage ($I_G = -10 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	–25	–	Vdc
Gate Reverse Current ($V_{GS} = -15 \text{ Vdc}$, $V_{DS} = 0$) ($V_{GS} = -15 \text{ Vdc}$, $V_{DS} = 0$, $T_A = 100^\circ\text{C}$)	I_{GSS}	– –	–2.0 –2.0	nAdc μAdc
Gate–Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 2.0 \text{ nAdc}$)	$V_{GS(off)}$	–	–8.0	Vdc
Gate–Source Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 0.2 \text{ mAdc}$)	V_{GS}	–0.5	–7.5	Vdc

ON CHARACTERISTICS

Zero–Gate–Voltage Drain Current ⁽¹⁾ ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$)	I_{DSS}	2.0	20	mAdc
--	-----------	-----	----	------

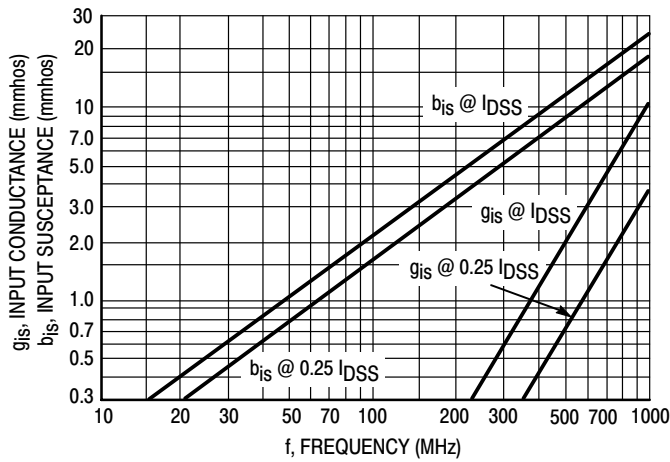
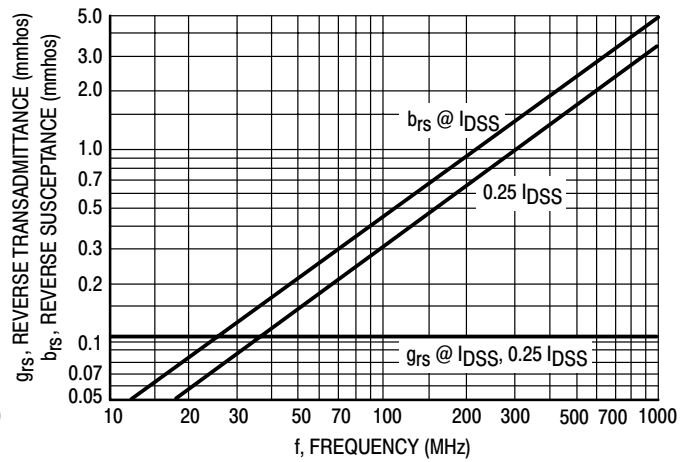
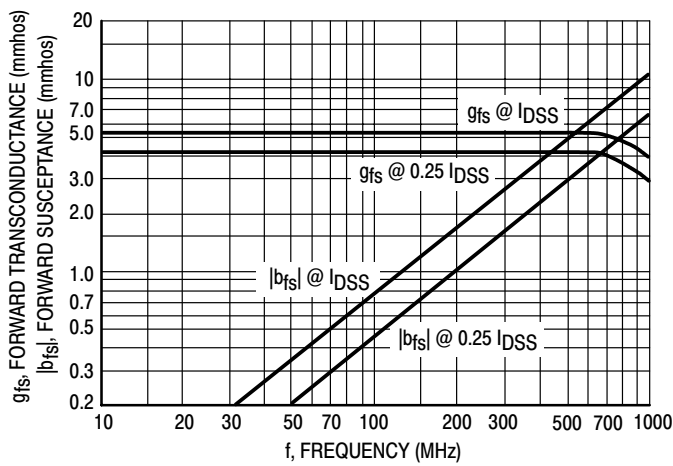
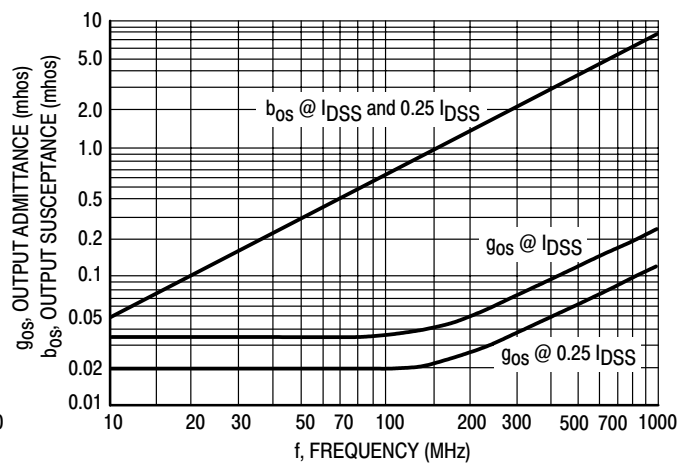
SMALL–SIGNAL CHARACTERISTICS

Forward Transfer Admittance ⁽¹⁾ ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$) ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 100 \text{ MHz}$)	$ y_{fs} $	2000 1600	7500 –	μmhos
Input Admittance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 100 \text{ MHz}$)	$\text{Re}(y_{is})$	–	800	μmhos
Output Conductance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 100 \text{ MHz}$)	$\text{Re}(y_{os})$	–	200	μmhos
Input Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ MHz}$)	C_{iss}	–	7.0	pF
Reverse Transfer Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ MHz}$)	C_{rss}	–	3.0	pF

1. Pulse Test; Pulse Width $\leq 630 \text{ ms}$, Duty Cycle $\leq 10\%$.

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

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

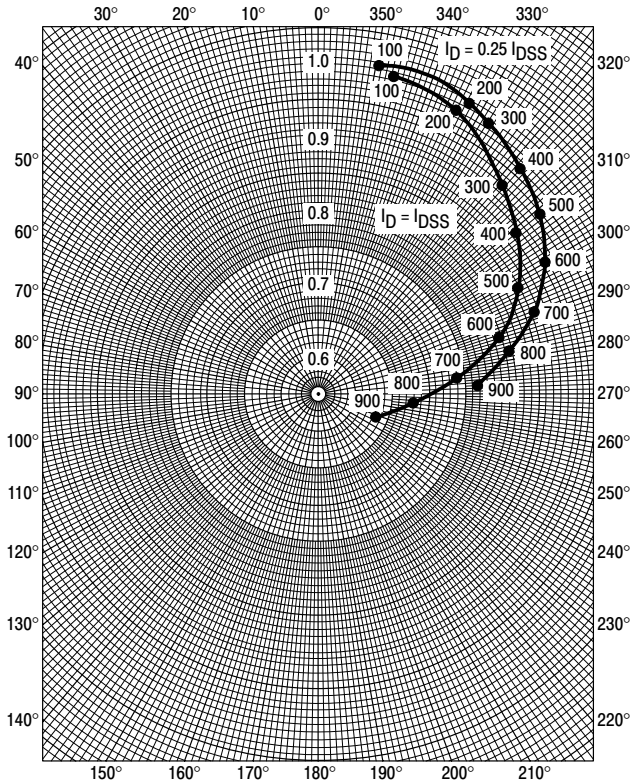


Figure 5. S_{11s}

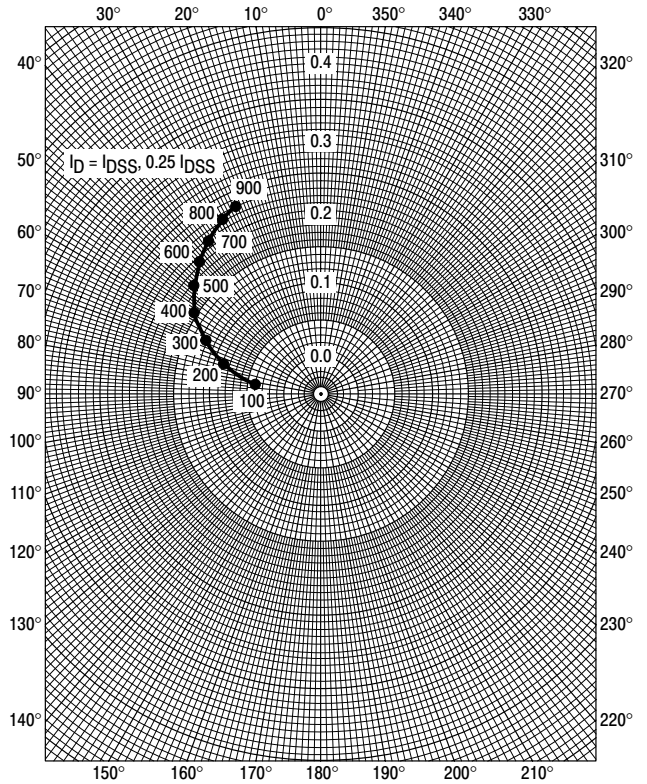


Figure 6. S_{12s}

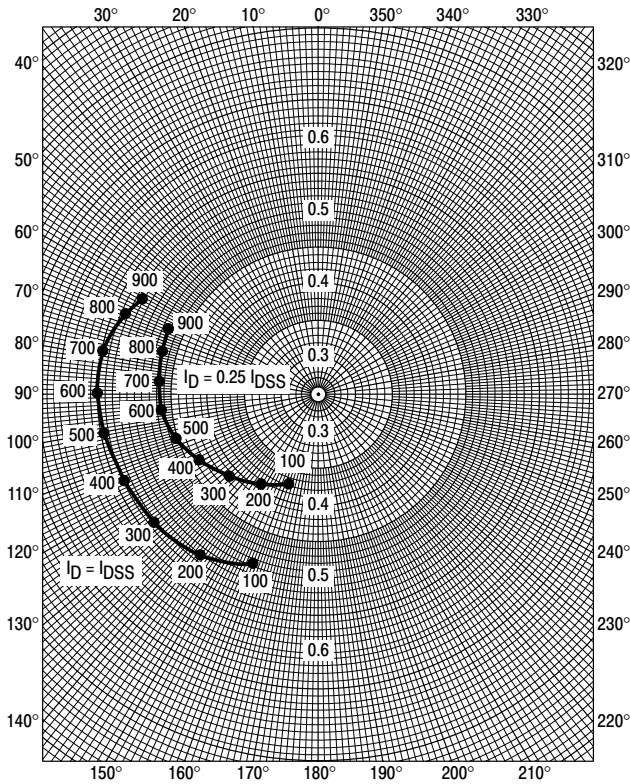


Figure 7. S_{21s}

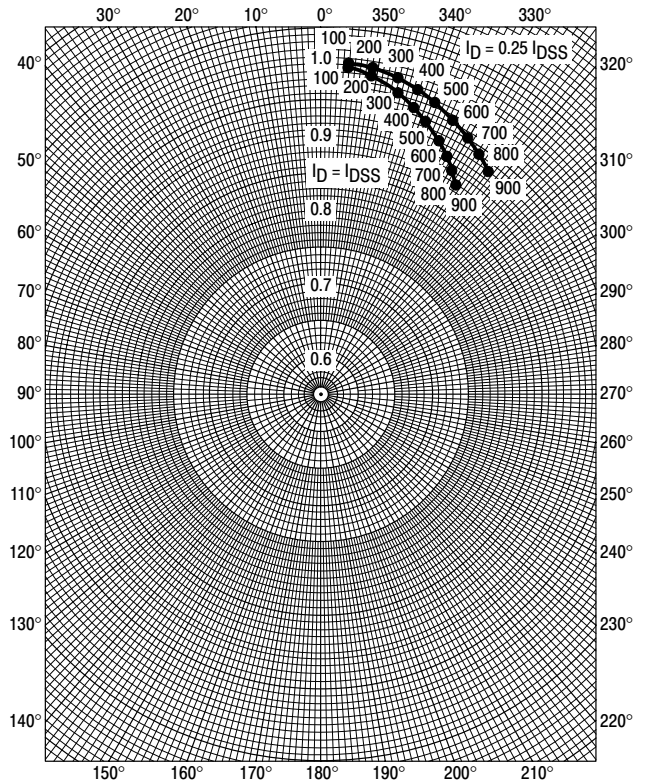
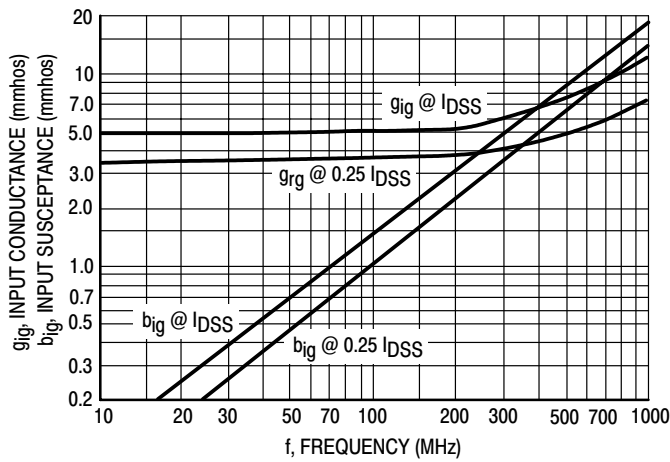
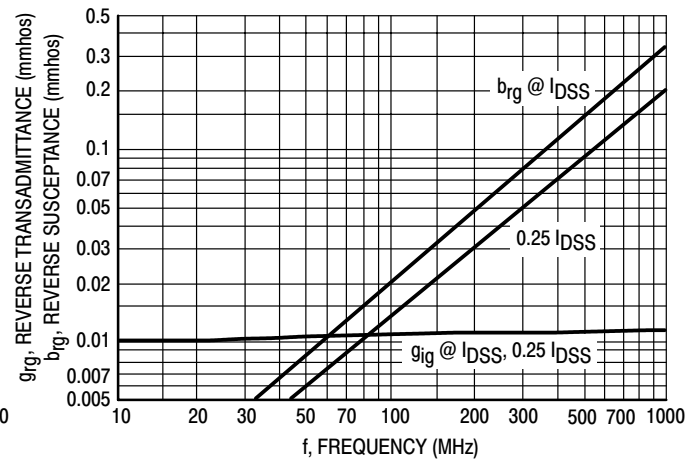
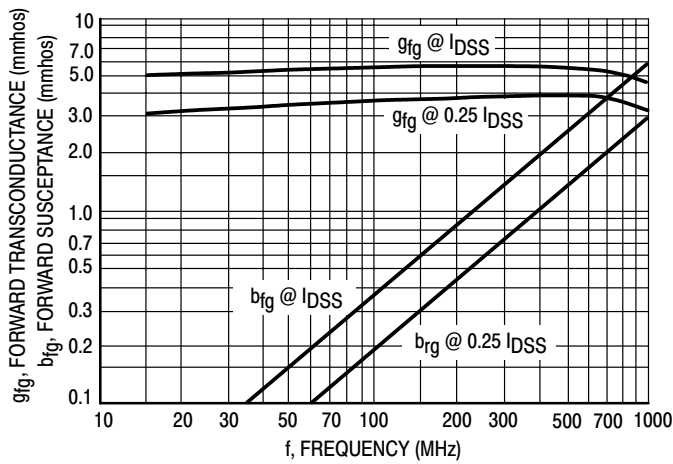
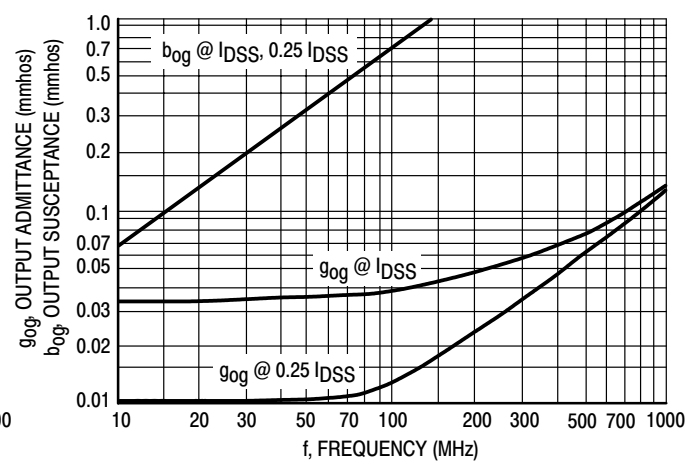


Figure 8. S_{22s}

COMMON GATE CHARACTERISTICS

ADMITTANCE PARAMETERS

(V_{DG} = 15 Vdc, T_{channel} = 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)

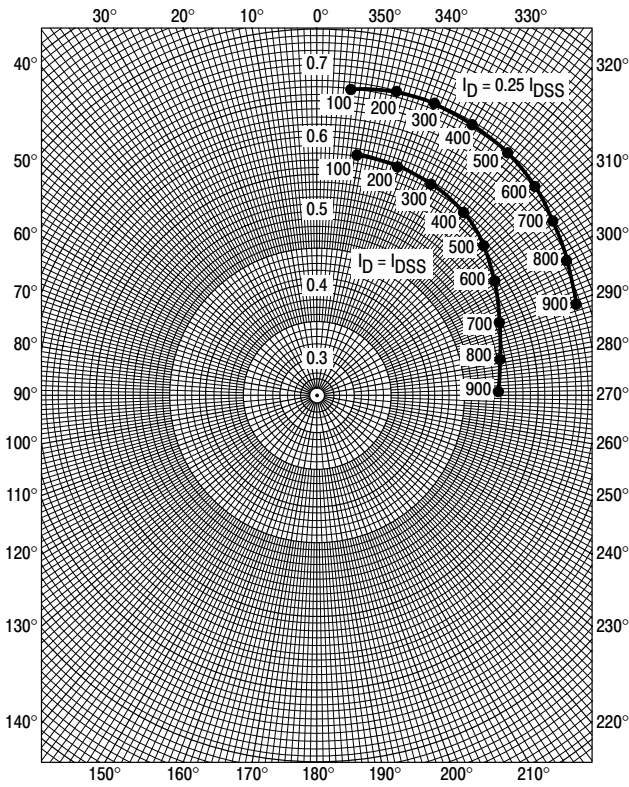


Figure 13. S_{11g}

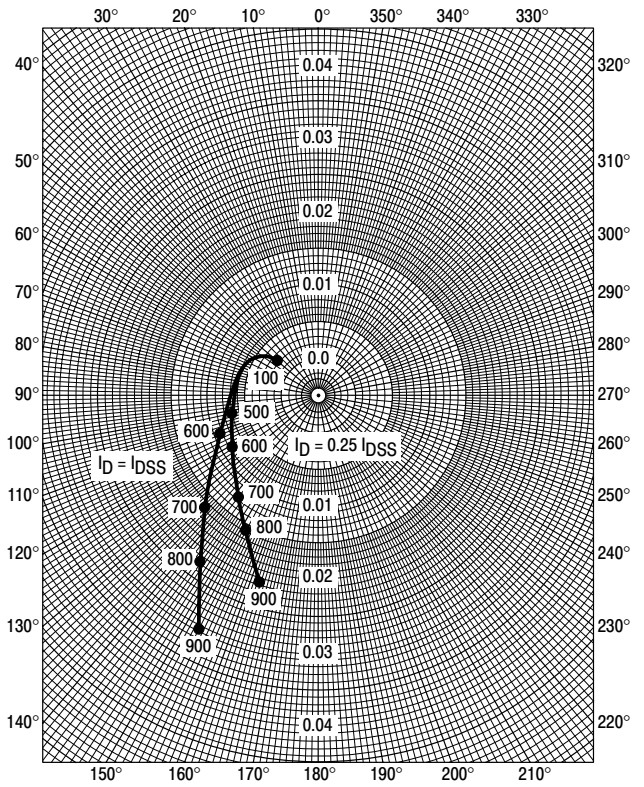


Figure 14. S_{12g}

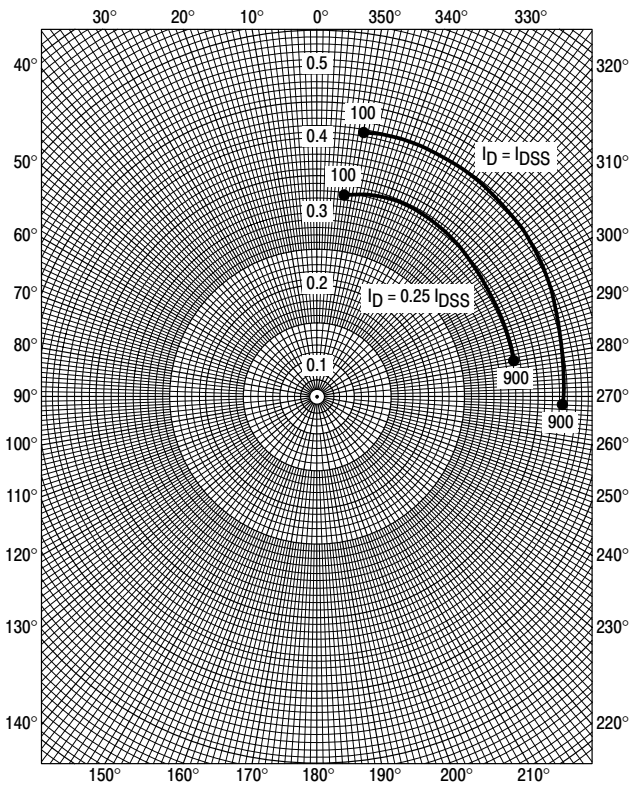


Figure 15. S_{21a}

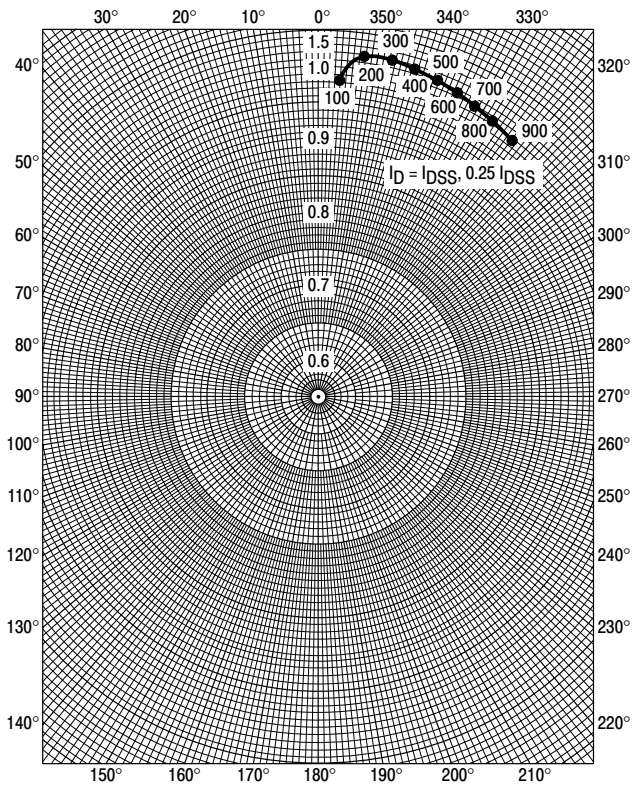
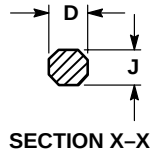
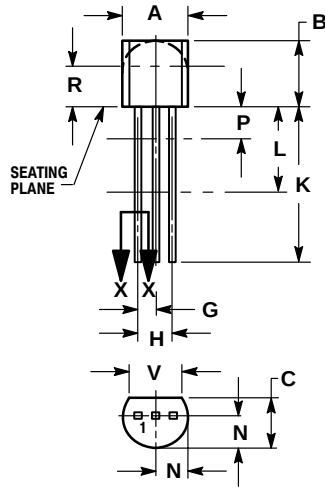


Figure 16. S_{22a}

MPF102

PACKAGE DIMENSIONS

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



YLE 5:
PIN 1. DRAIN
2. SOURCE
3. GATE

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	---