

ON Semiconductor

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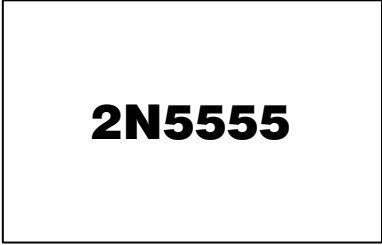
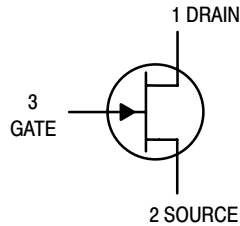
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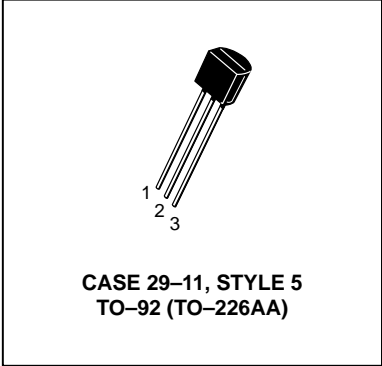
JFET Switching

N-Channel — Depletion



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
Forward Gate Current	I_{GF}	10	mAdc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Junction Temperature Range	T_J	-65 to +150	$^\circ\text{C}$
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
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OFF CHARACTERISTICS

Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	25	—	Vdc
Gate Reverse Current ($V_{GS} = 15 \text{Vdc}$, $V_{DS} = 0$)	I_{GSS}	—	1.0	nAdc
Drain Cutoff Current ($V_{DS} = 12 \text{Vdc}$, $V_{GS} = -10 \text{V}$) ($V_{DS} = 12 \text{Vdc}$, $V_{GS} = -10 \text{V}$, $T_A = 100^\circ\text{C}$)	$I_{D(off)}$	—	10 2.0	nAdc μAdc

ON CHARACTERISTICS

Zero-Gate-Voltage Drain Current ⁽¹⁾ ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$)	I_{DSS}	15	—	mAdc
Gate-Source Forward Voltage ($I_{G(f)} = 1.0 \text{mAdc}$, $V_{DS} = 0$)	$V_{GS(f)}$	—	1.0	Vdc
Drain-Source On-Voltage ($I_D = 7.0 \text{mAdc}$, $V_{GS} = 0$)	$V_{DS(on)}$	—	1.5	Vdc
Static Drain-Source On Resistance ($I_D = 0.1 \text{mAdc}$, $V_{GS} = 0$)	$r_{DS(on)}$	—	150	Ohms

1. Pulse Test: Pulse Width < 300 μs , Duty Cycle < 3.0%.

SMALL-SIGNAL CHARACTERISTICS

Small-Signal Drain-Source "ON" Resistance ($V_{GS} = 0$, $I_D = 0$, $f = 1.0 \text{kHz}$)	$r_{ds(on)}$	—	150	Ohms
Input Capacitance ($V_{DS} = 15 \text{Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{MHz}$)	C_{iss}	—	5.0	pF
Reverse Transfer Capacitance ($V_{DS} = 0$, $V_{GS} = 10 \text{Vdc}$, $f = 1.0 \text{MHz}$)	C_{rss}	—	1.2	pF

SWITCHING CHARACTERISTICS

Turn-On Delay Time	$(V_{DD} = 10 \text{Vdc}$, $I_{D(on)} = 7.0 \text{mAdc}$, $V_{GS(on)} = 0$, $V_{GS(off)} = -10 \text{Vdc}$) (See Figure 1)	$t_{d(on)}$	—	5.0	ns
Rise Time		t_r	—	5.0	ns
Turn-Off Delay Time	$(V_{DD} = 10 \text{Vdc}$, $I_{D(on)} = 7.0 \text{mAdc}$, $V_{GS(on)} = 0$, $V_{GS(off)} = -10 \text{Vdc}$) (See Figure 1)	$t_{d(off)}$	—	15	ns
Fall Time		t_f	—	10	ns

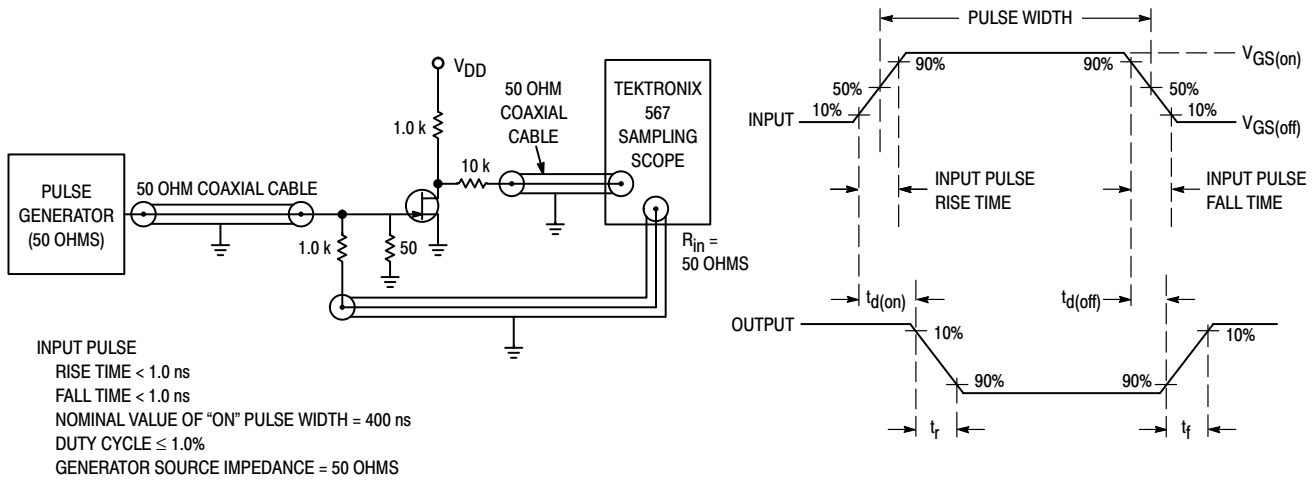


Figure 1. Switching Times Test Circuit

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

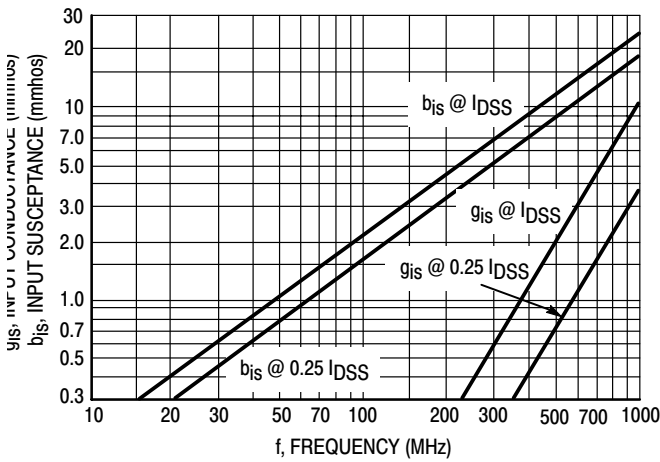


Figure 2. Input Admittance (y_{is})

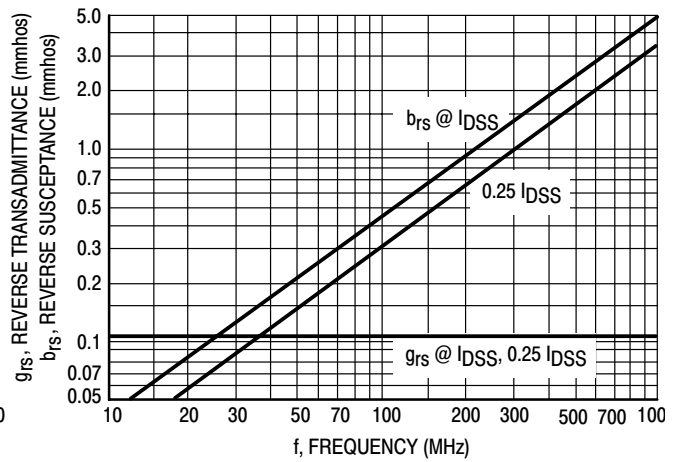


Figure 3. Reverse Transfer Admittance (y_{rs})

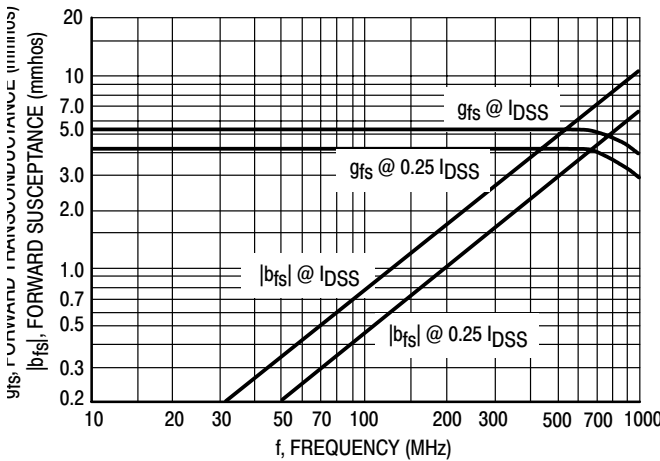


Figure 4. Forward Transadmittance (y_{fs})

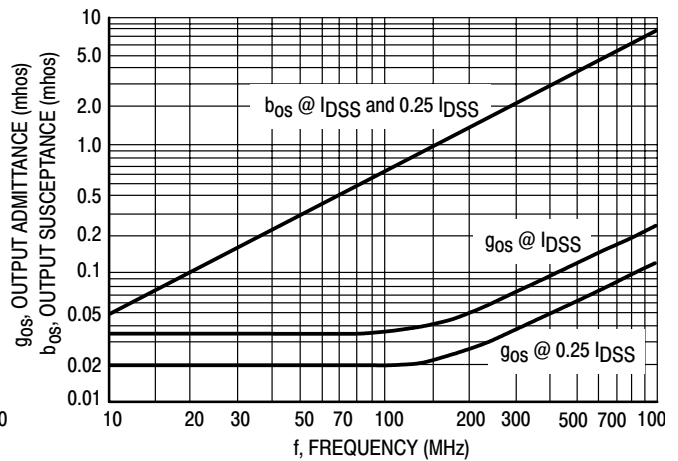


Figure 5. Output Admittance (y_{os})

COMMON SOURCE CHARACTERISTICS
S-PARAMETERS

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

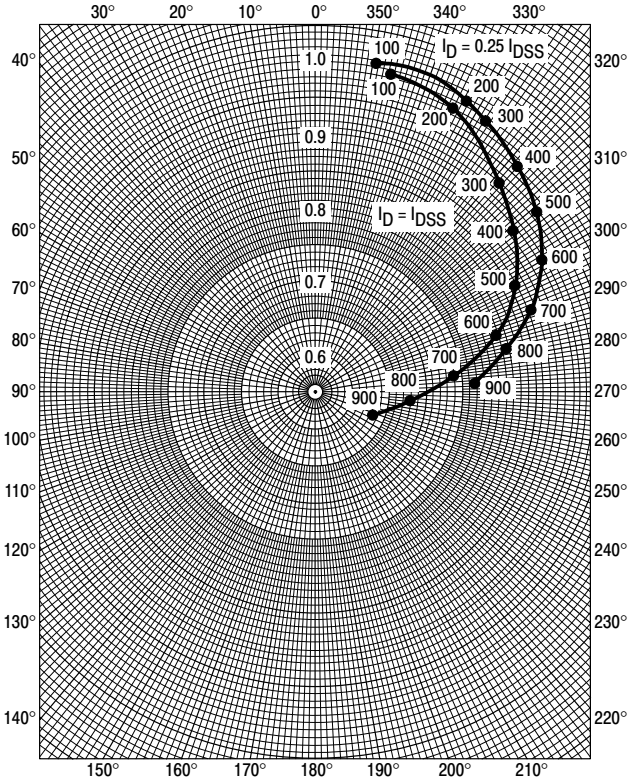


Figure 6. S_{11s}

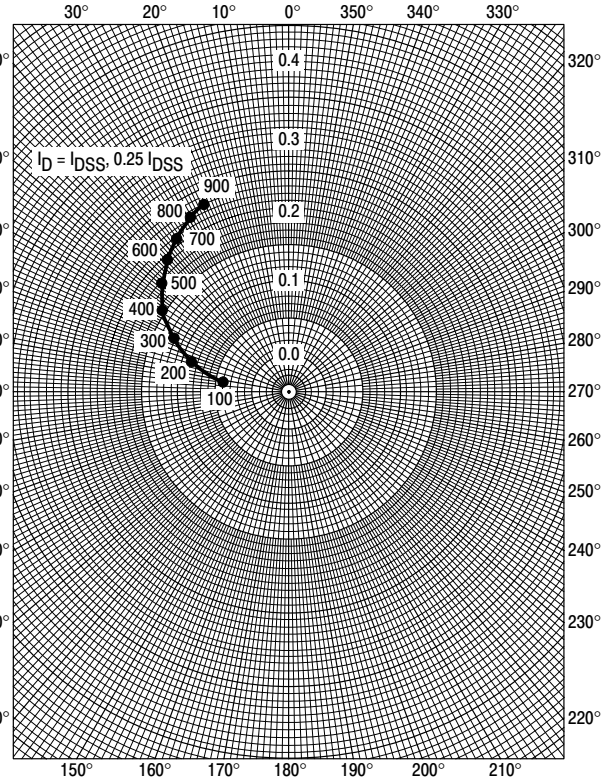


Figure 7. S_{12s}

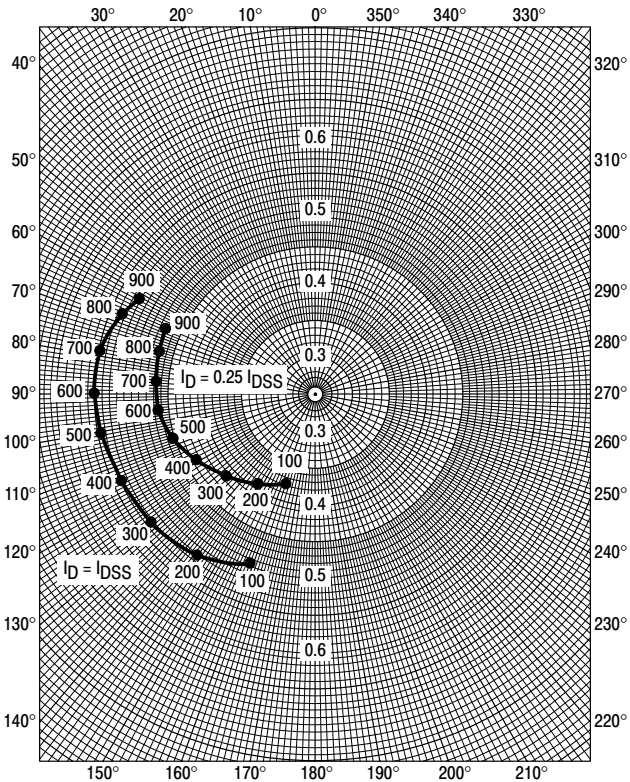


Figure 8. S_{21s}

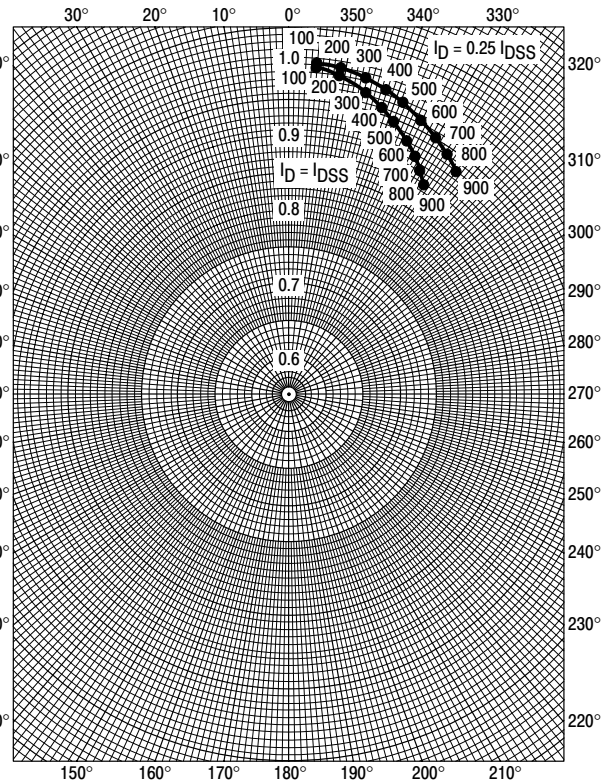


Figure 9. S_{22s}

COMMON GATE CHARACTERISTICS

ADMITTANCE PARAMETERS

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

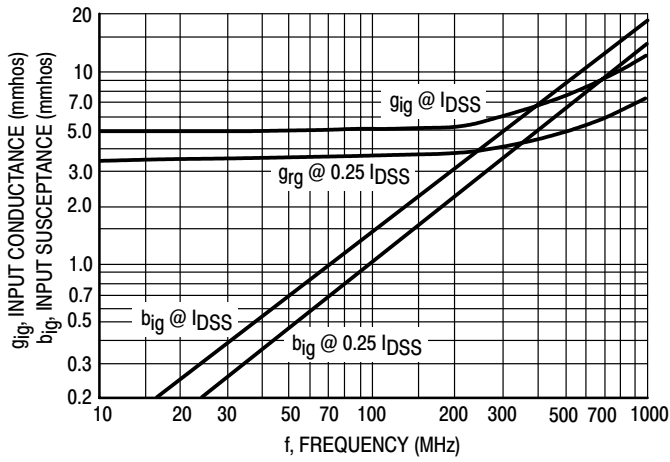


Figure 10. Input Admittance (y_{ig})

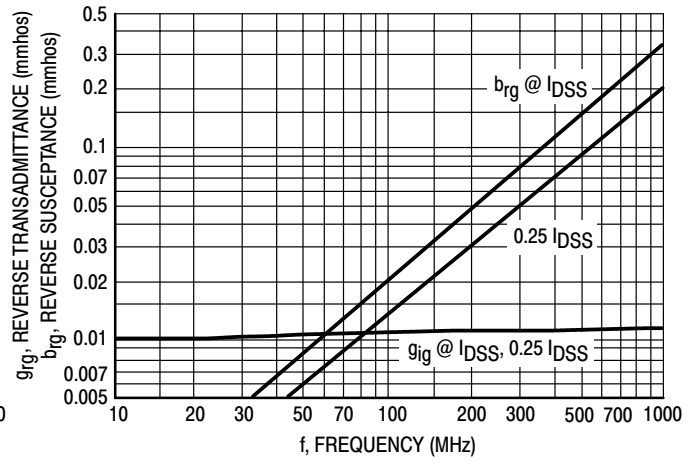


Figure 11. Reverse Transfer Admittance (y_{rg})

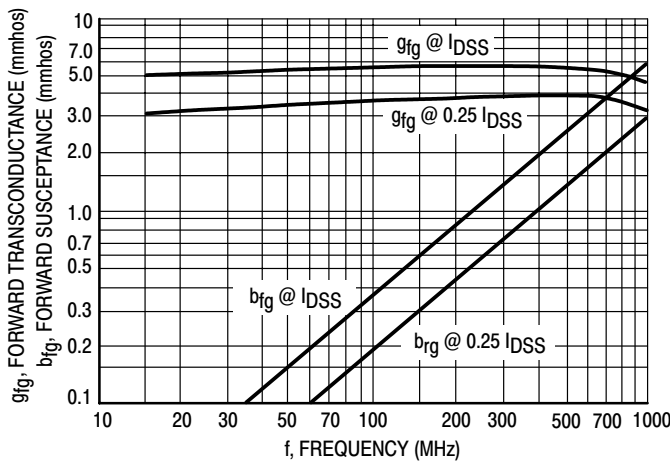


Figure 12. Forward Transfer Admittance (y_{fg})

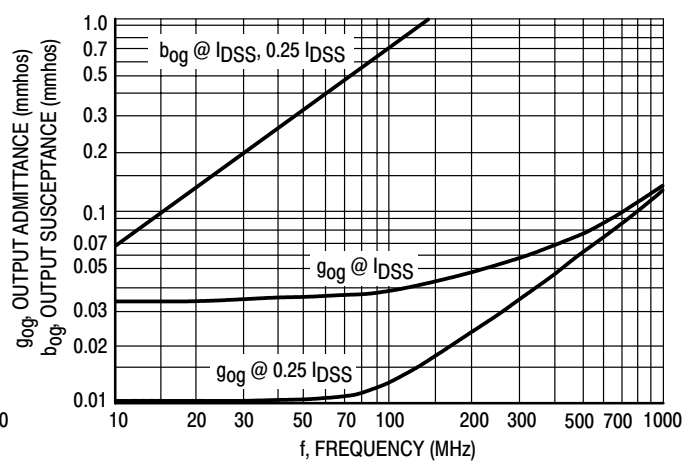


Figure 13. Output Admittance (y_{og})

**COMMON GATE CHARACTERISTICS
S-PARAMETERS**

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

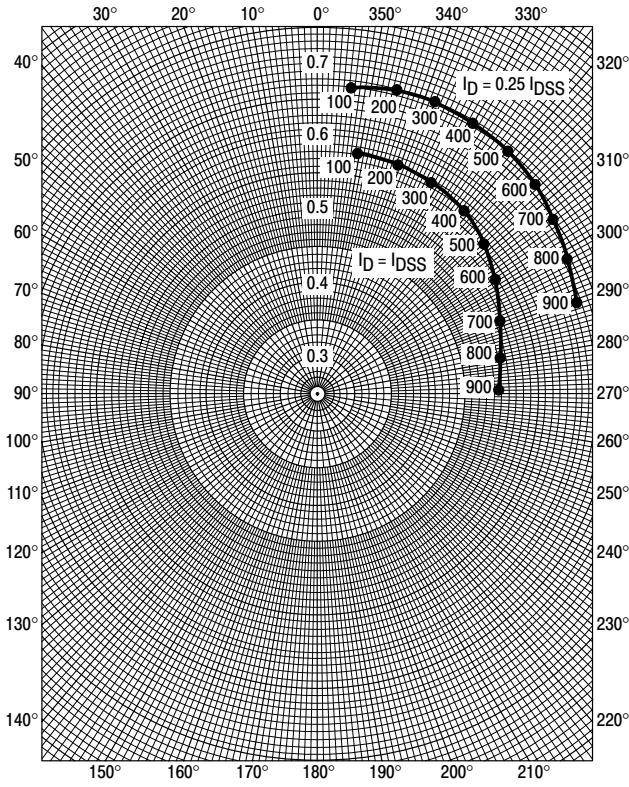


Figure 14. S_{11g}

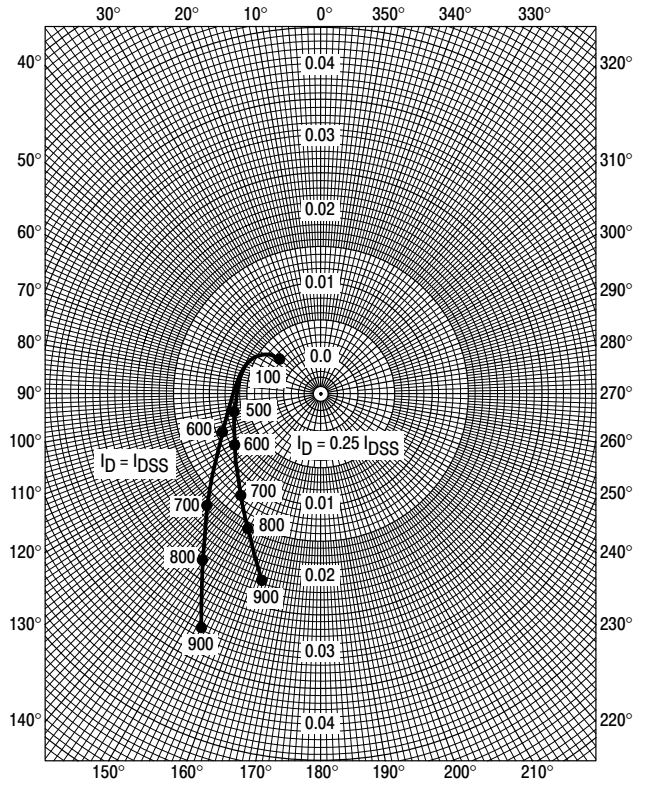


Figure 15. S_{12g}

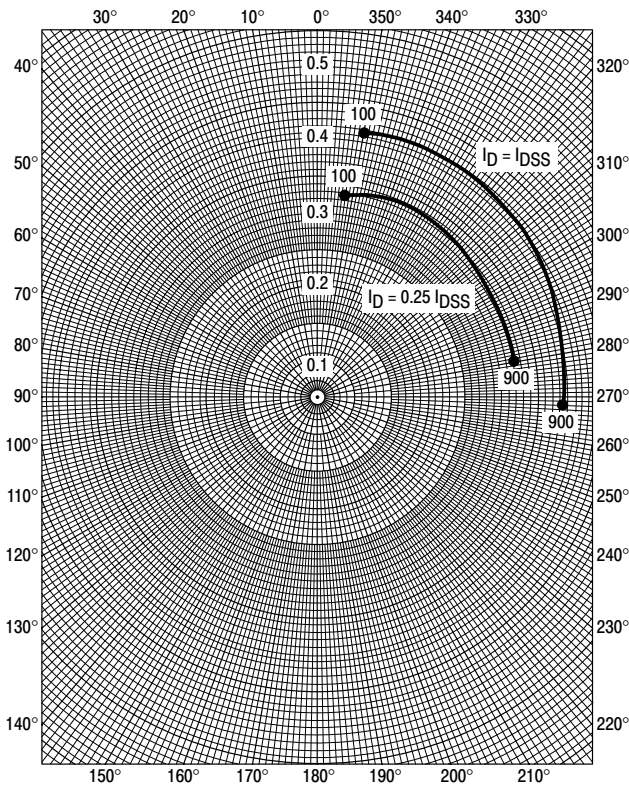


Figure 16. S_{21g}

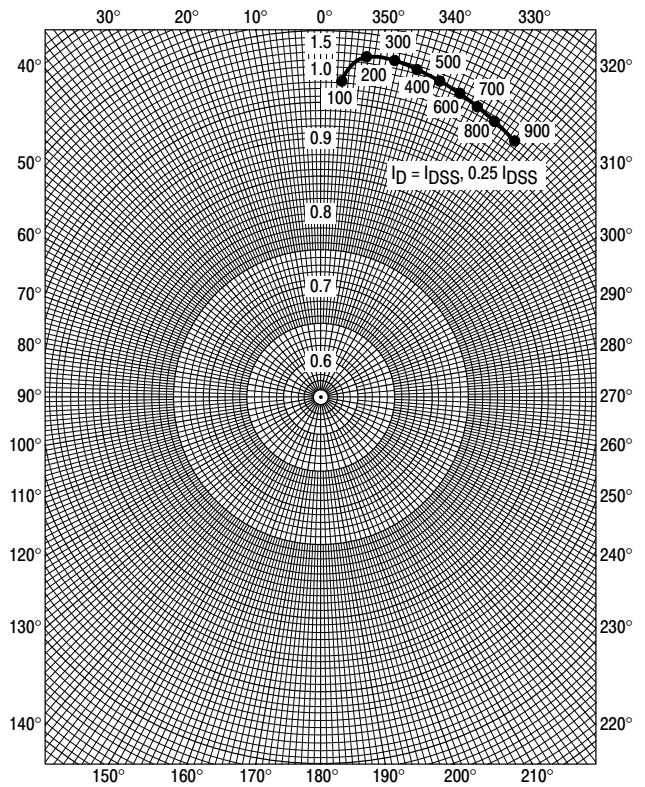
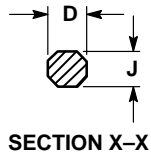
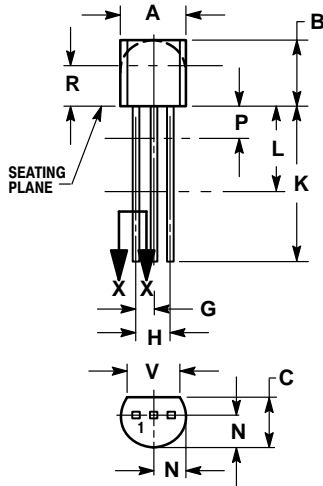


Figure 17. S_{22g}

2N5555

PACKAGE DIMENSIONS

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




STYLE 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	---

Notes

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