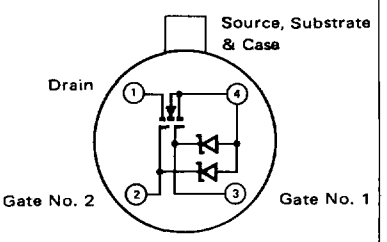
## GENERAL FEATURES

- **Lower cross-modulation and wider dynamic range than bipolar or single gate FETs**
- **Reverse AGC capability**
- **Linear mixing capability**
- **Diode protected gates**
- **High forward transconductance - gfs = 10,000umhos**
- **Ion-implanted**
- **Positive bias only**

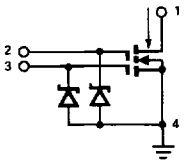
| PARAMETER | SD 300 | SD301 | SD 303 | SD304 | UNIT |
|---|---|---|---|---|---|
| High Gain Through UHF Range | 13 | 14 | 14 | | dB at 1GHz |
| High Gain Through VHF Range | | | | 16 | dB at 500MHz |
| Low Noise Through UHF Range | 8 | 6 | 5.5 | | dB at 1GHz |
| Low Noise Through VHF Range | | | | 5 | dB at 500MHz |
| Low Input Capacitance | 2.0 | 2.0 | 3.0 | 2.5 | pF |
| Low Feedback Capacitance | 0.02 | 0.02 | 0.02 | 0.03 | pF |
| Low Output Capacitance | 1.0 | 0.6 | 0.6 | 1.0 | pF |

## PIN CONFIGURATION

**PACKAGE**

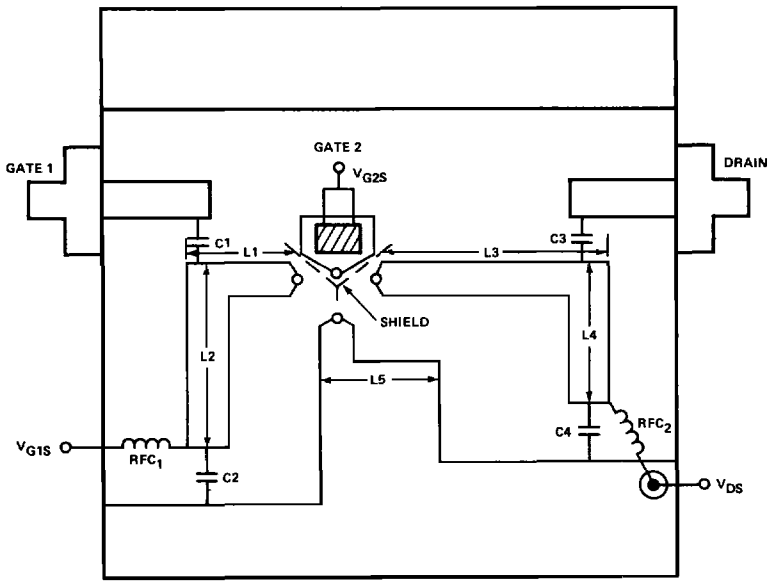



## DUAL GATE CASCODE BIAS SCHEME




$+V_{DS}$ = 0 → +20 Volts
$+V_{G1S}$ = 0 → +4 Volts
$+V_{G2S}$ = 0 → +10 Volts
$+I_{DS}$ = 0 → +20mA

## TEST FIXTURE (1GHz) (Used With SD300, 301, 303)




DIELECTRIC IS 1/16" TEFLON-FIBERGLASS (3M-K6098-11).
ALL MICROSTRIP WIDTH = 0.175 INCH.

$L_1$ = 0.42 INCH — $C_1$ = 0.8-10pF JOHANSON 5201
$L_2$ = 1.68 INCHES — $C_2$ = $C_4$ = 1.20pF JOHANSON 5501
$L_3$ = 0.64 INCH — $C_3$ = 0.4-6.0pF JOHANSON 4642
$L_4$ = 1.52 INCHES — $RFC_1$ = 0.22μH
$L_5$ = 0.30 INCH — $RFC_2$ = 18μH

NOTE: SHIELD AND ALL PASSIVE COMPONENTS ON GROUND PLANE SIDE OF AMPLIFIER.

1000pF BYPASSES ARE:

DRAIN: CORY FT4-01-2

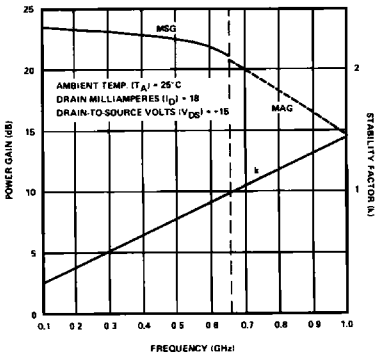
GATE 2: AMERICAN TECHNICAL CERAMICS ATC100B (CHIP CAPACITOR)

LAUNCHERS ARE OSM248-2

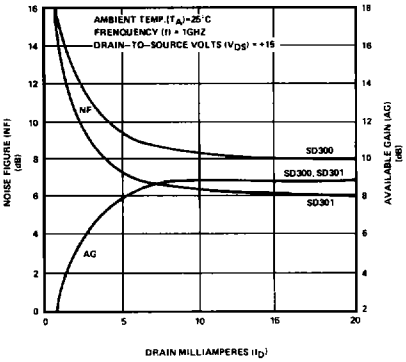
## CHARACTERISTIC CURVES

### SD300, 301

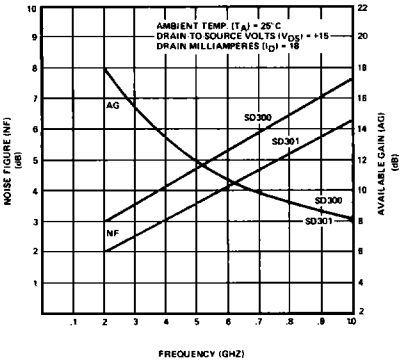
#### POWER GAIN VS FREQUENCY




#### NOISE FIGURE AND AVAILABLE GAIN VS DRAIN CURRENT

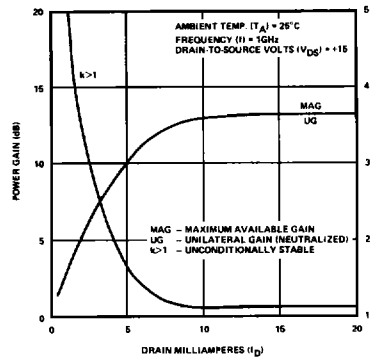



#### NOISE FIGURE AND AVAILABLE GAIN VS FREQUENCY

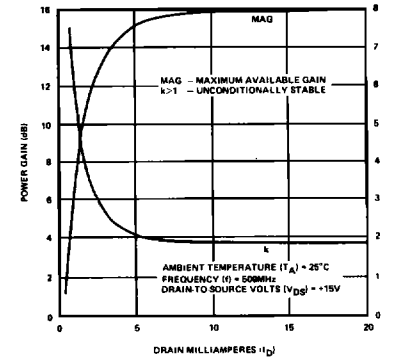



### SD304

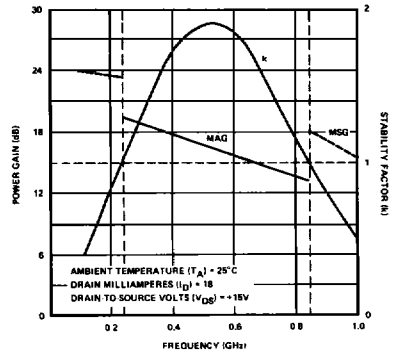
#### POWER GAIN VS DRAIN CURRENT




#### POWER GAIN VS DRAIN CURRENT

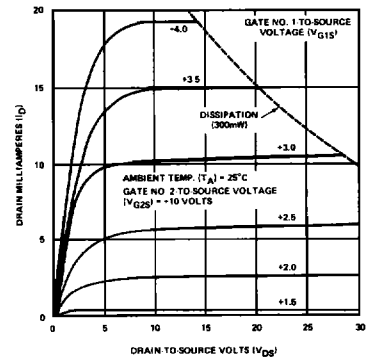



#### POWER GAIN VS FREQUENCY

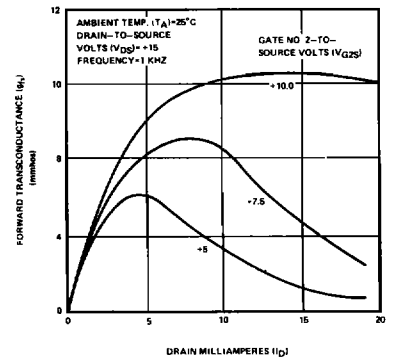



### SD300, 301, 304

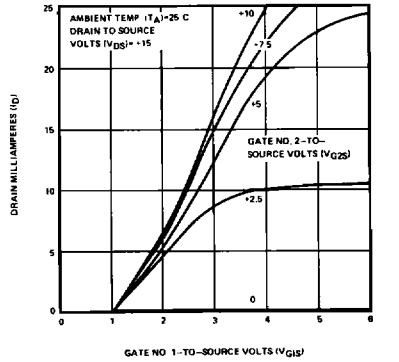
#### DRAIN CURRENT VS DRAIN-TO-SOURCE VOLTAGE




#### 1kHz FORWARD TRANSCONDUCTANCE VS DRAIN CURRENT



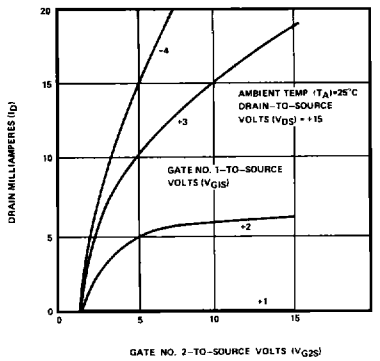

#### DRAIN CURRENT VS GATE NO. 1-TO-SOURCE VOLTAGE



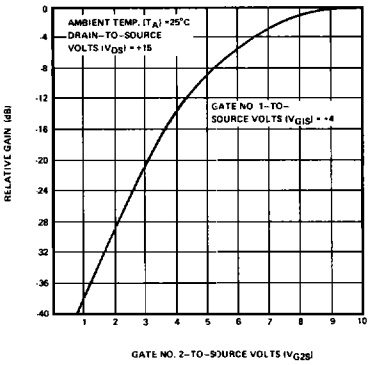
## CHARACTERISTIC CURVES (Continued)

### SD 300, 301, 304

**DRAIN CURRENT VS GATE NO. 2-TO-SOURCE VOLTAGE**

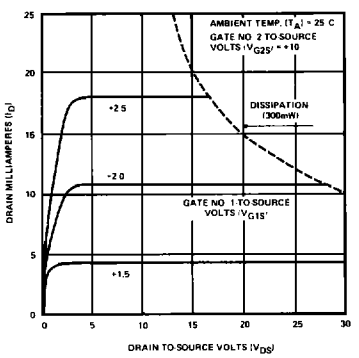



**AUTOMATIC GAIN CONTROL RANGE AT 500MHz**

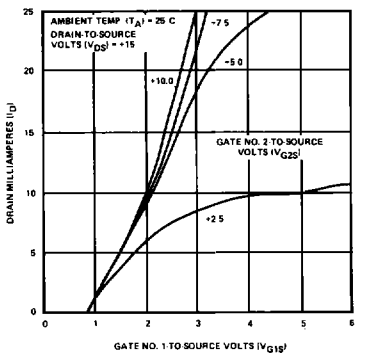



### SD303

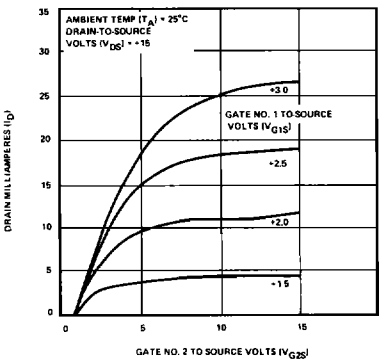
**DRAIN CURRENT VERSUS DRAIN-TO-SOURCE VOLTAGE**



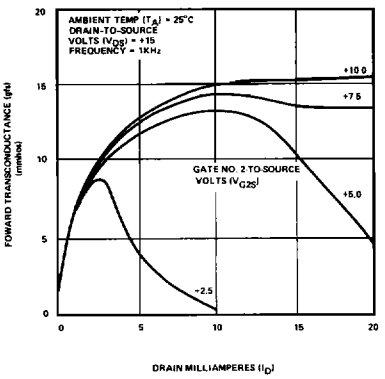

**DRAIN CURRENT VERSUS GATE NO. 1-TO-SOURCE VOLTAGE**



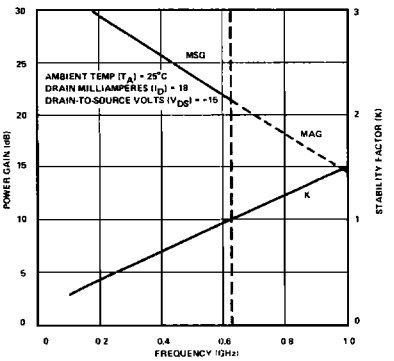

**DRAIN CURRENT VERSUS GATE NO. 2-TO-SOURCE VOLTAGE**



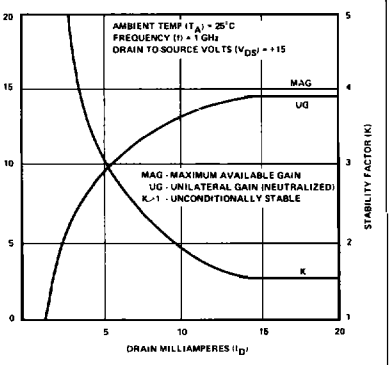

**1kHz FORWARD TRANSCONDUCTANCE VERSUS DRAIN CURRENT**




**POWER GAIN VERSUS FREQUENCY**




**POWER GAIN VERSUS DRAIN CURRENT**

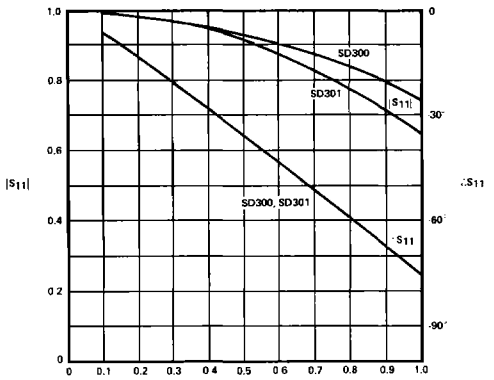


## CHARACTERISTIC CURVES (Continued)

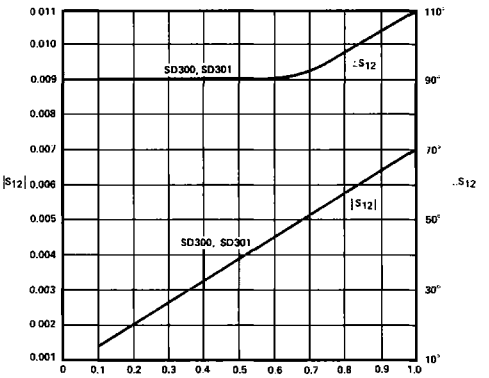
### SD300/301

**S PARAMETERS**
**AMBIENT TEMP. ($T_A$) = +25°C**
**DRAIN MILLIAMPERES ($I_D$) = 18**
**DRAIN-TO-SOURCE VOLTS ($V_{DS}$) = +15**

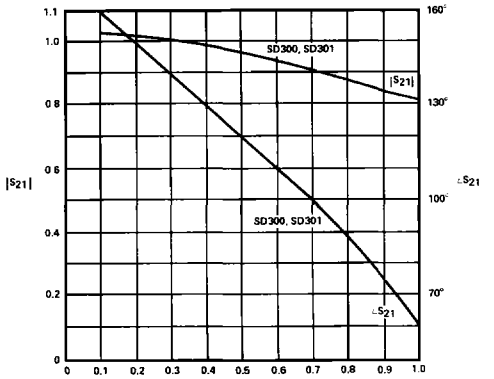
$S_{11}$



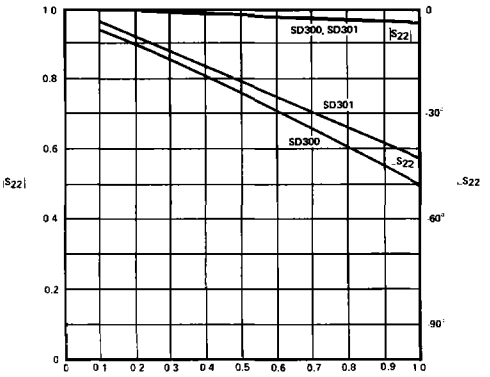

$S_{12}$




$S_{21}$




$S_{22}$



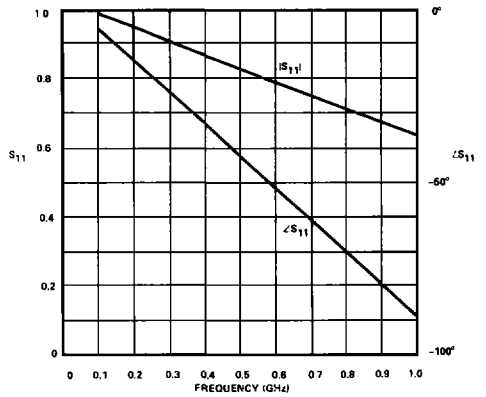
## CHARACTERISTIC CURVES (Continued)

### SD303

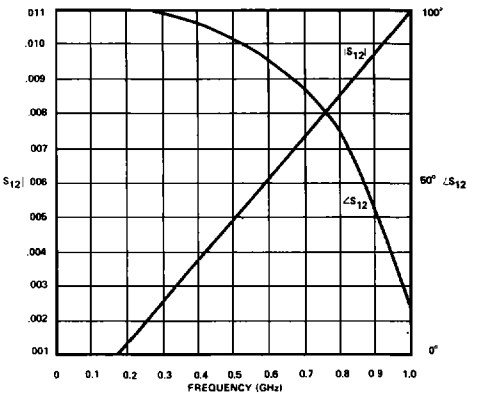
**S PARAMETERS**

**AMBIENT TEMP. ($T_A$) = 25°C**
**DRAIN MILLIAMPERES ($I_D$) = 18**
**DRAIN-TO-SOURCE VOLTS ($V_{DS}$) = +15**

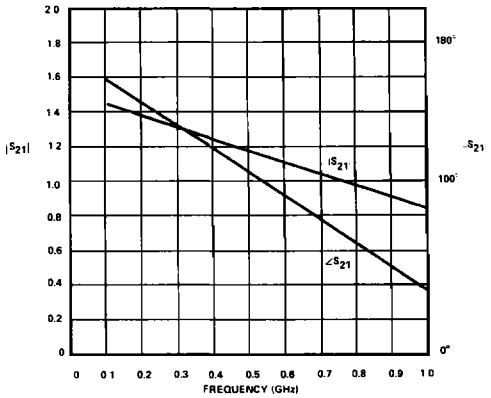
**$S_{11}$**



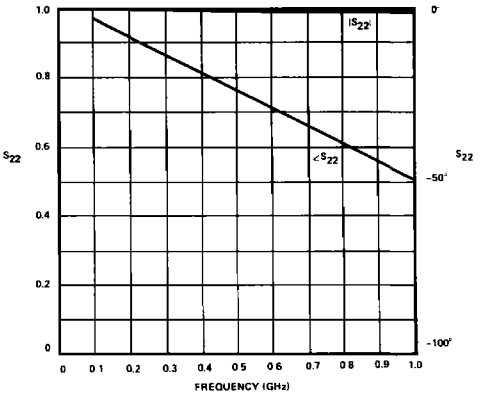

**$S_{12}$**




**$S_{21}$**




**$S_{22}$**



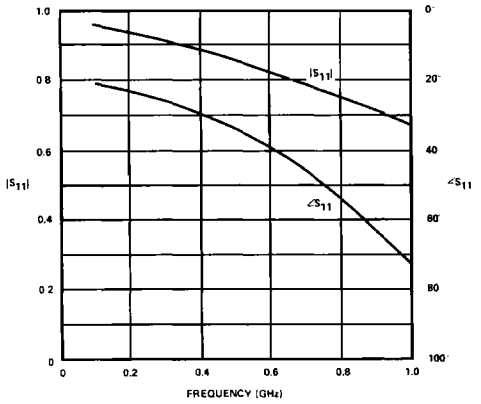
## CHARACTERISTIC CURVES (Continued)

### SD304

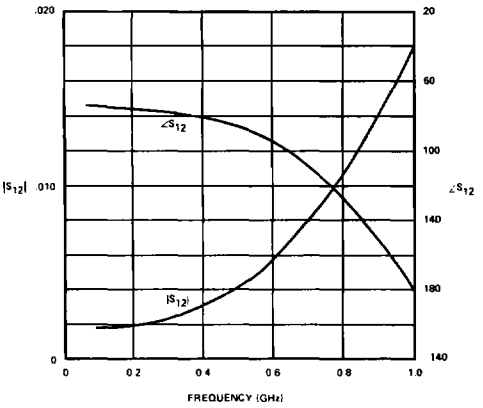
**S PARAMETERS**

**AMBIENT TEMP. ($T_A$) = +25°C**
**DRAIN MILLIAMPERES ($I_D$) = 18**
**DRAIN-TO-SOURCE VOLTS ($V_{DS}$) = +15**

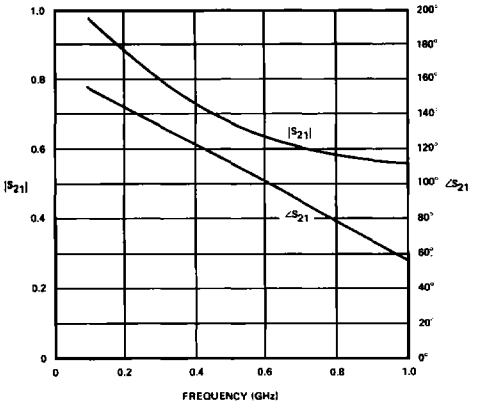
$S_{11}$




$S_{12}$




$S_{21}$




$S_{22}$