BF246, BF247
N-CHANNEL EPITAXIAL PLANAR SILICON FIELD EFFECT TRANSISTOR

VLB nº 88 – June 1973

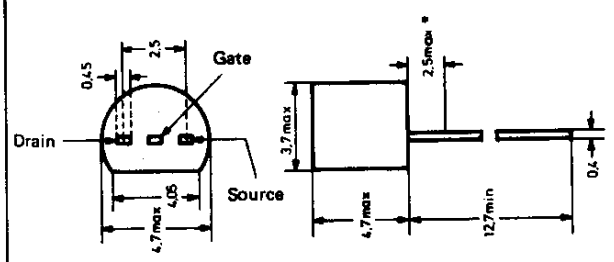
- **VHF-Amplifiers and Mixer**
- **Gate-Circuits for Wide-Band Amplifiers with Low Input Resistance and Small Feedback**
- **f_g = 450 MHz typ**
- **$|Y_{21s}|$ = 17 mS typ**
- **C_{12s} = 3.5 pF typ**

description

These components are tested according to the appropriate test method of MIL-STD-750. By special agreement, they can also be tested additionally to MIL or DIN specifications.

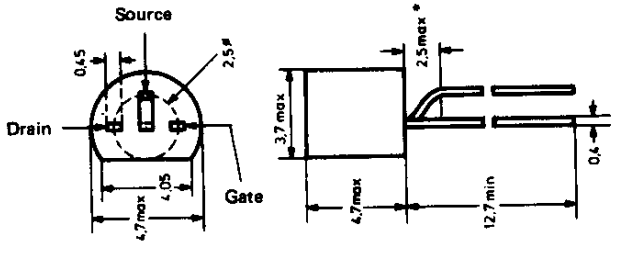
mechanical data

TO-92



All dimensions are in mm *Solderability not controlled in this area

X-55



All dimensions are in mm *Solderability not controlled in this area

absolute maximum ratings at 25°C free air temperature (unless otherwise noted)

Drain-Gate Voltage	25 V
Drain-Source Voltage	±25 V
Gate Current	10 mA
Continuous Device Dissipation at 25°C Free Air Temperature (See Note 1)	250 mW
Storage Temperature Range	−55°C to 150°C
Lead Temperature 1,6 mm from Case for 10 Seconds	260°C

NOTE: 1. Derate linearly to 150°C free air temperature at the rate of 2.0 mW/°C.

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electrical characteristics at 25°C free air temperature

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
$-V_{(BR)GSS}$	Gate Source Breakdown Voltage	$-I_G = 1\ \mu A$, $V_{DS} = 0$	25			V
$-I_{GSS}$	Gate Reverse Current	$-V_{GS} = 15$ V, $V_{DS} = 0$ V			5	nA
I_{DSS}	Zero-Gate-Voltage Drain Current	$V_{DS} = 15$ V, $-V_{GS} = 0$ V See Note 2	10		300	mA
$-V_{GS}$	Gate-Source Voltage	$V_{DS} = 15$ V, $I_D = 200\ \mu A$	0.5		14.0	V
$-V_{GS(off)}$	Gate-Source Cutoff Voltage	$V_{DS} = 15$ V, $I_D = 10$ nA	0.6		14.5	V
$\lvert Y_{21s} \rvert$	Small-Signal Common-Source Forward Tranfer Admittance	$V_{DS} = 15$ V, $-V_{GS} = 0$ V, f = 1 KHz	8	17		mS
f_g	Common-Source Bandwidth	$V_{DS} = 15$ V, $V_{GS} = 0$ V See Note 3		450		MHz
C_{12s}	Common-Source Short-Circuit Reverse Transfer Capacitance	$V_{DS} = 15$ V, $I_D = 10$ mA f = 1 MHz		3.5		pF
C_{11s}	Common-Source Short-Circuit Input Capacitance	$V_{DS} = 15$ V, $I_D = 10$ mA f = 1 MHz		11		pF
C_{22s}	Common-Source Short-Circuit Output Capacitance	$V_{DS} = 15$ V, $I_D = 10$ mA, f = 1 MHz		5		pF

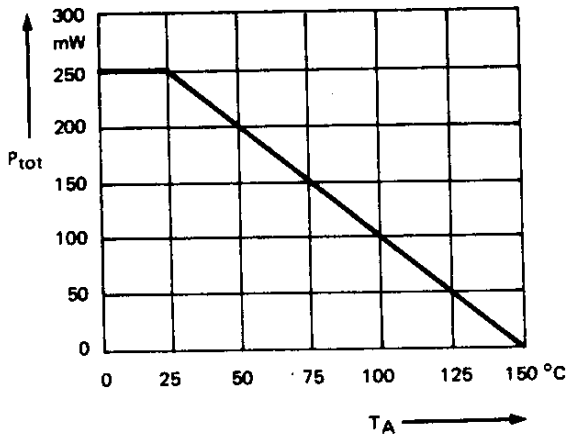
On request following I_{DSS}/V_{GS}-Groups can be delivered

PARAMETER		TEST CONDITIONS		MIN	MAX	UNIT
I_{DSS}	Zero-Gate-Voltage Drain Current	$V_{DS} = 15$ V, $V_{GS} = 0$ See Note 2	Group A	30	80	mA
			Group B	60	140	mA
			Group C	110	250	mA
V_{GS}	Gate Source Voltage	$V_{DS} = 15$ V, $I_D = 200\ \mu A$	Group A	1.5	4.0	V
			Group B	3.0	7.0	V
			Group C	5.5	12.0	V

NOTES : 2. This value must be measured using pulse techniques ; $t_p \leq 300\ \mu s$, duty cycle $\leq 2\ \%$.

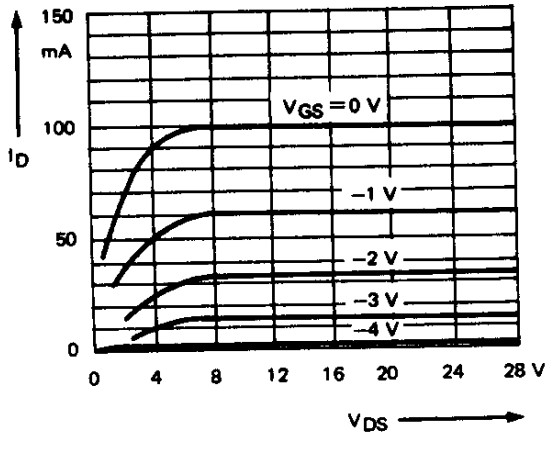
3. Frequency at which the real part of the Forward Transfer Admittance has fallen by 3 dB refered to the value at 1 KHz.

$P_{tot} = f(T_A)$



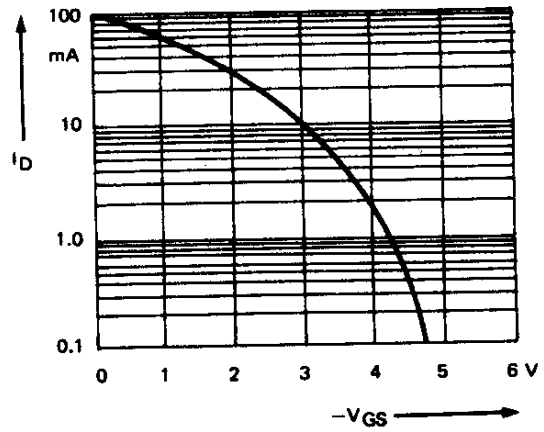
$I_D = f(V_{DS})$

V_{GS} = Parameter



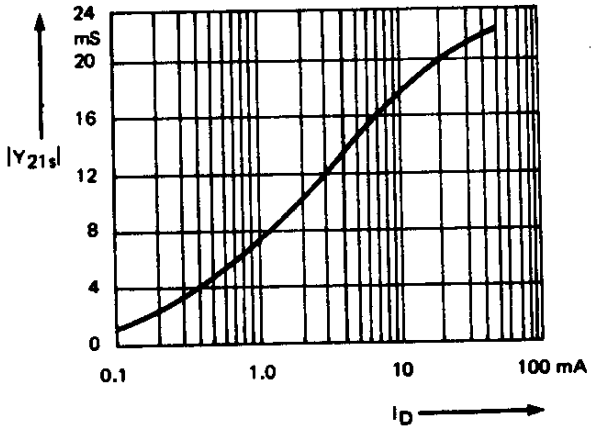
$I_D = f(V_{GS})$

V_{DS} = 15 V



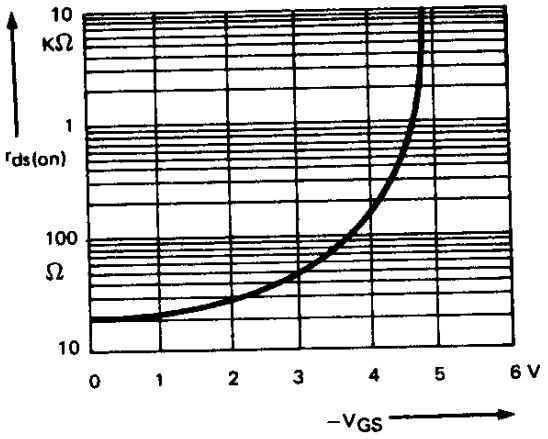
$|Y_{21s}| = f(I_D)$

V_{DS} = 15 V, f = 1 KHz



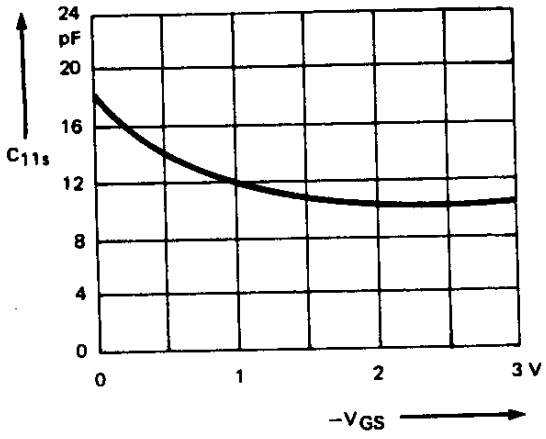
$r_{DS(on)} = f(V_{GS})$

$V_{DS} = 0$ V, $f = 1$ KHz



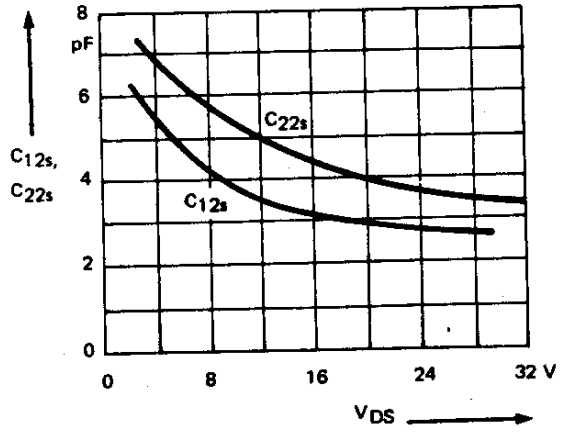
$C_{11s} = f(V_{GS})$

$f = 1$ MHz



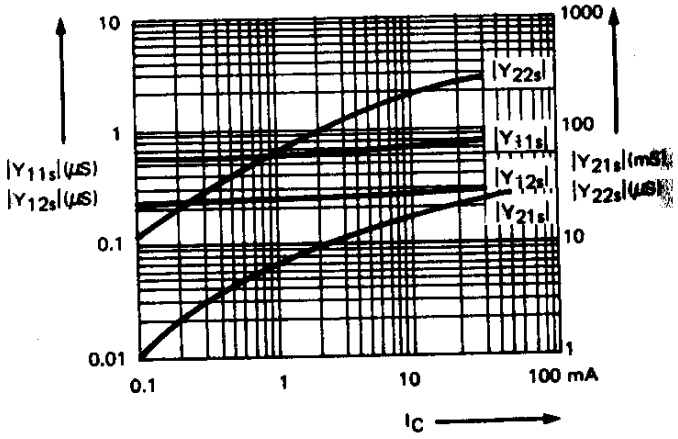
$C_{22s}, C_{12s} = f(V_{DS})$, $V_{GS} = -2.5$ V

$f = 1$ MHz

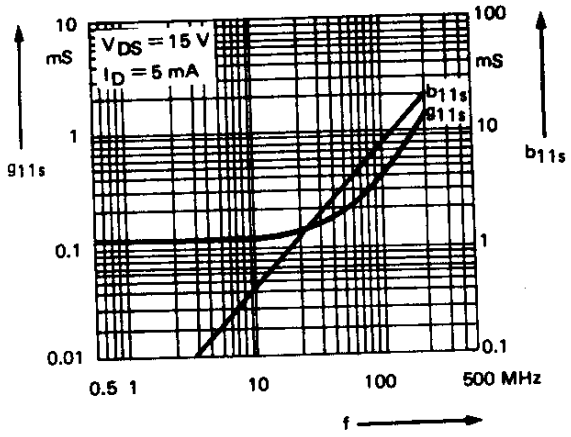


$|Y_S| = f(I_D)$

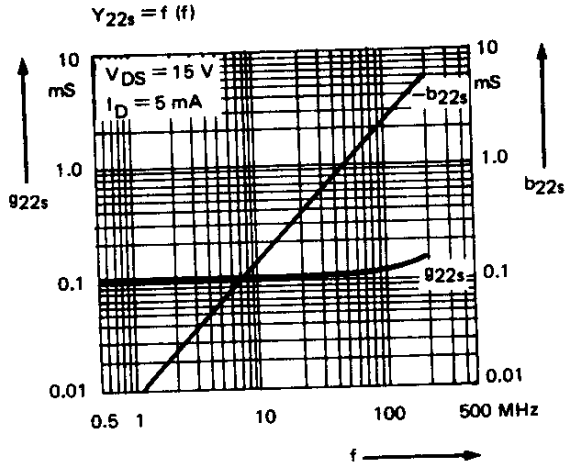
$V_{DS} = 15$ V, $f = 1$ KHz



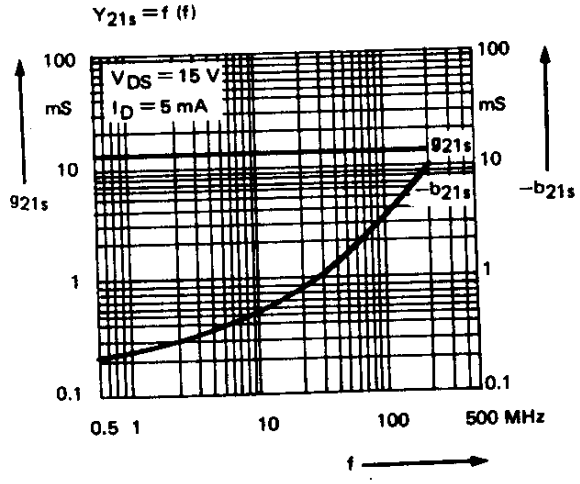
$Y_{11s} = f(f)$



$Y_{22s} = f(f)$

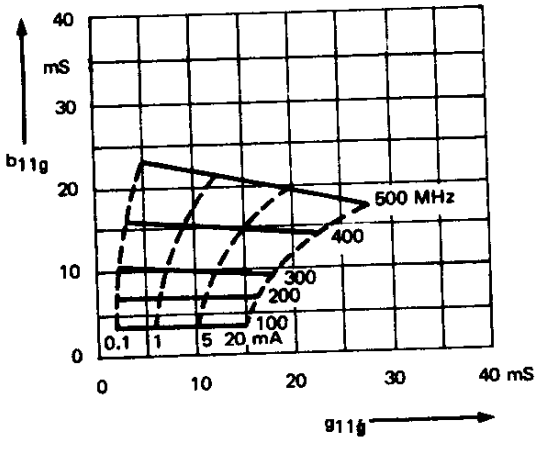


$Y_{21s} = f(f)$



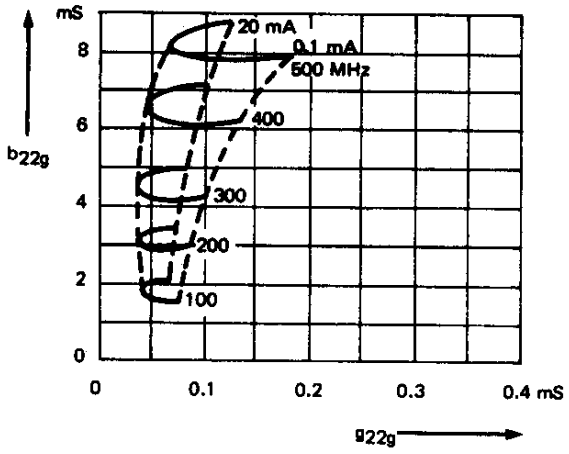
Y_{11g}

$V_{DS} = 15$ V, f, I_D = Parameter



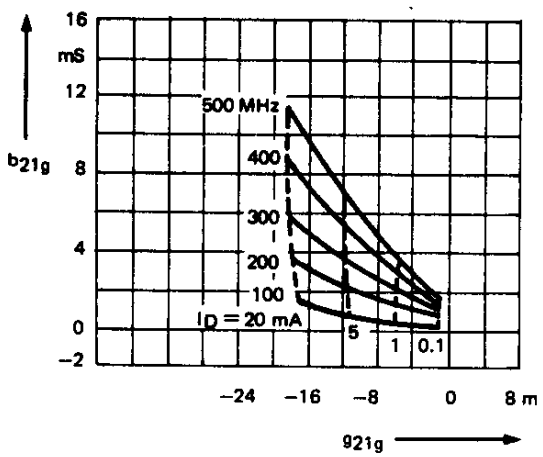
Y_{22g}

$V_{DS} = 15$ V, f, I_D = Parameter



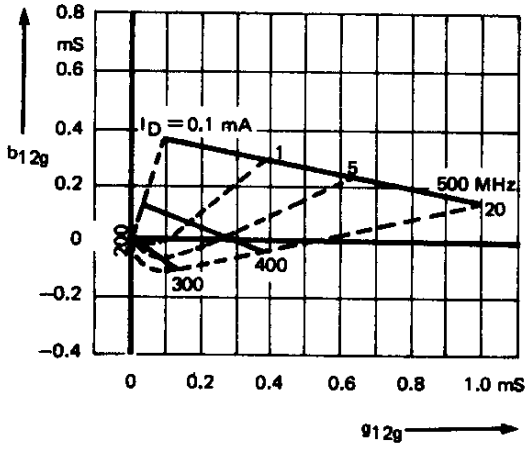
Y_{21g}

$V_{DS} = 15$ V, f, I_D = Parameter



Y_{12g}

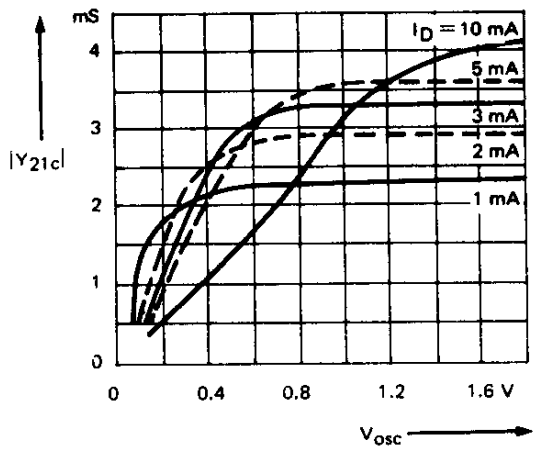
$V_{DS} = 15$ V, f, I_D = Parameter



CONVERSION CONDUCTANCE $|Y_{21c}|$ AS FUNCTION OF THE OSCILLATOR VOLTAGE

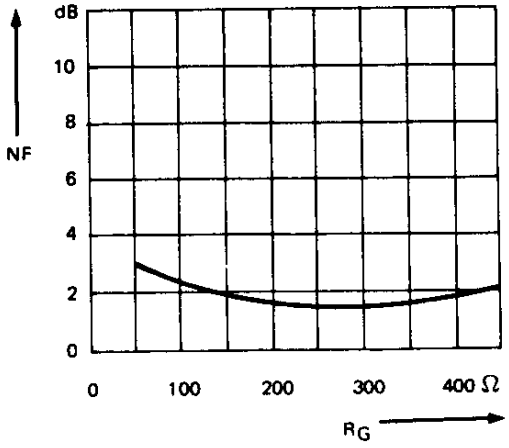
V_E = const. = 100 mV, f_e = 1 MHz

f_{OSC} = 1.5 MHz, I_D = Parameter, V_{DS} = 10 V

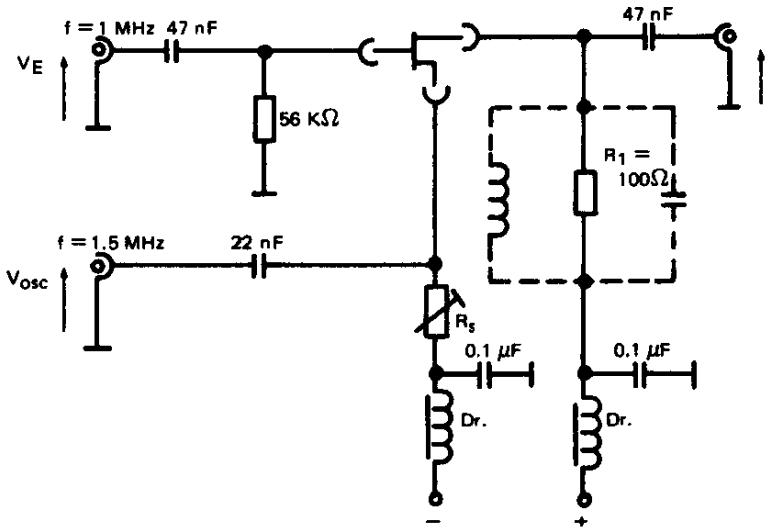


NF = f (R_G)

f = 100 MHz, V_{DS} = 15 V, I_D = 12 mA



CONVERSION CONDUCTANCE $|Y_{21c}|$



$$|Y_{21c}| = \frac{I_{ZF}}{V_E}$$

$$|Y_{21c}| = \frac{V_{ZF}}{R_1 \cdot V_E}$$

$$|Y_{21c}| = V_{ZF} \cdot 10^{-1} \text{(mS, mV)}$$

$$|Y_{21c}| = K \cdot V_{ZF}$$