N-CHANNEL SILICON FIELD-EFFECT TRANSISTORS

General purpose symmetrical N-channel planar epitaxial junction field-effect transistors in a plastic TO-92 variant; intended for applications in l.f. and d.c. amplifiers, and in h.f. amplifiers.

QUICK REFERENCE DATA

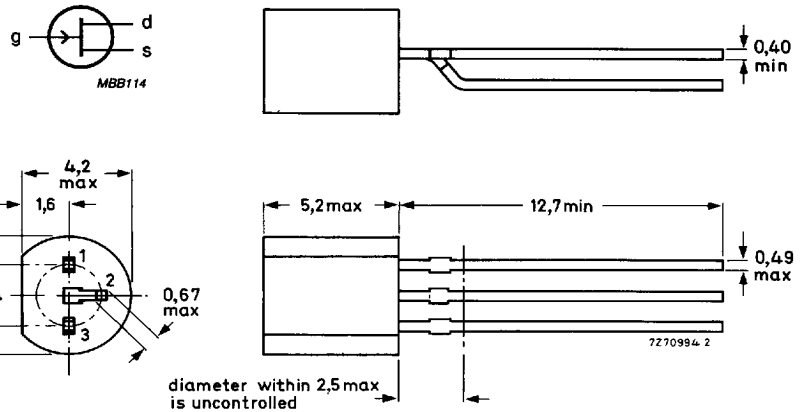
Drain-source voltage	$\pm V_{DS}$			max. 30		V
Gate-source voltage (open drain)	$-V_{GSO}$			max. 30		V
Total power dissipation up to T_{amb} = 75 °C	P_{tot}			max. 300		mW
		BF245A/0	A	B	C	
Drain current V_{DS} = 15 V; V_{GS} = 0	I_{DSS}	> 0,5	2,0	6	12	mA
		< 2,1	6,5	15	25	mA
Gate-source cut-off voltage I_D = 10 nA; V_{DS} = 15 V	$-V_{(P)GS}$			0,25 to 8,0		V
Feedback capacitance at f = 1 MHz V_{DS} = 20 V; $-V_{GS}$ = 1 V; T_{amb} = 25 °C	C_{rs}			typ. 1,1		pF
Transfer admittance (common source) V_{DS} = 15 V; V_{GS} = 0; f = 1 kHz; T_{amb} = 25 °C	$\|y_{fs}\|$			3,0 to 6,5		mS

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92 variant.

Pinning:
1 = drain
2 = source
3 = gate



Note: Drain and source are interchangeable

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

Drain-source voltage	$\pm V_{DS}$	max.	30 V
Drain-gate voltage (open source)	V_{DGO}	max.	30 V
Gate-source voltage (open drain)	$-V_{GSO}$	max.	30 V
Drain current	I_D	max.	25 mA
Gate current	I_G	max.	10 mA
Power dissipation			
up to T_{amb} = 75 °C	P_{tot}	max.	300 mW
up to T_{amb} = 90 °C	P_{tot}	max.	300 mW 1)
Storage temperature	T_{stg}	−65 to + 150	°C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	250 K/W
From junction to ambient	$R_{th\ j\text{-}a}$	=	200 K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

		BF245A	B	C
Gate cut-off current				
$-V_{GS}$ = 20 V; V_{DS} = 0	$-I_{GSS}$	< 5	5	5 nA
$-V_{GS}$ = 20 V; V_{DS} = 0; T_j = 125 °C	$-I_{GSS}$	< 0,5	0,5	0,5 μA
Drain current 2)				
V_{DS} = 15 V; V_{GS} = 0	I_{DSS} 3)	> 2	6,0	12 mA
		< 6,5	15,0	25 mA
Gate-source breakdown voltage				
$-I_G$ = 1 μA; V_{DS} = 0	$-V_{(BR)GSS}$	> 30	30	30 V
Gate-source voltage				
I_D = 200 μA; V_{DS} = 15 V	$-V_{GS}$ 3)	> 0,4	1,6	3,2 V
		< 2,2	3,8	7,5 V

1) Transistor mounted on printed-circuit board, maximum lead length 3 mm, mounting pad for drain lead minimum 10 mm x 10 mm.

2) Measured under pulse conditions: t_p = 300 μs; $\delta \leqslant 0{,}02$.

3) BF245A/0: I_{DSS} = 0,5 to 2,1 mA; $-V_{GS}$ = 0,2 to 1,0 V
BF245A/1: I_{DSS} = 1,9 to 3,0 mA; $-V_{GS}$ = 0,4 to 1,0 V
BF245A/2: I_{DSS} = 3,0 to 4,5 mA; $-V_{GS}$ = 0,7 to 1,4 V
BF245A/3: I_{DSS} = 4,5 to 6,5 mA; $-V_{GS}$ = 1,1 to 2,2 V.

Gate-source cut-off voltage					
I_D = 10 nA; V_{DS} = 15 V		$-V_{(P)GS}$	0,25 to 8,0		V
y-parameters at T_{amb} = 25 °C (common source)					
V_{DS} = 15 V; V_{GS} = 0					
f = 1 kHz	Transfer admittance	$\|y_{fs}\|$	3,0 to 6,5		mS
	Output admittance	$\|y_{os}\|$	typ.	25	μS
f = 200 MHz	Input conductance	g_{is}	typ.	250	μS
	Reverse transfer admittance	$\|y_{rs}\|$	typ.	1,4	mS
	Transfer admittance	$\|y_{fs}\|$	typ.	6	mS
	Output conductance	g_{os}	typ.	40	μS
V_{DS} = 20 V; $-V_{GS}$ = 1 V					
f = 1 MHz	Input capacitance	C_{is}	typ.	4,0	pF
	Feedback capacitance	C_{rs}	typ.	1,1	pF
	Output capacitance	C_{os}	typ.	1,6	pF
Cut-off frequency *					
V_{DS} = 15 V; V_{GS} = 0		f_{gfs}	typ.	700	MHz
Noise figure at f = 100 MHz; R_G = 1 kΩ (common source)					
V_{DS} = 15 V; V_{GS} = 0; T_{amb} = 25 °C input tuned to minimum noise		F	typ.	1,5	dB

* The frequency at which g_{fs} is 0,7 of its value at 1 kHz.

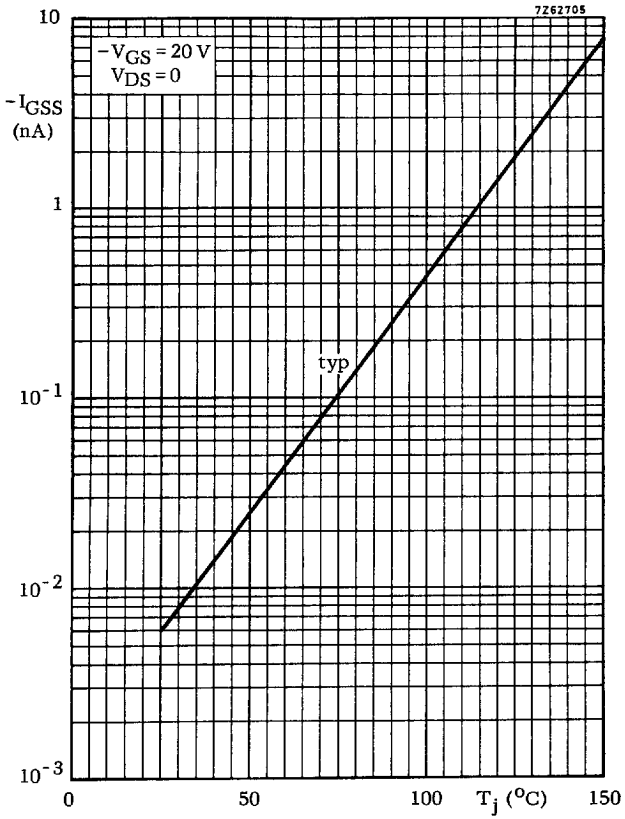


Fig. 2

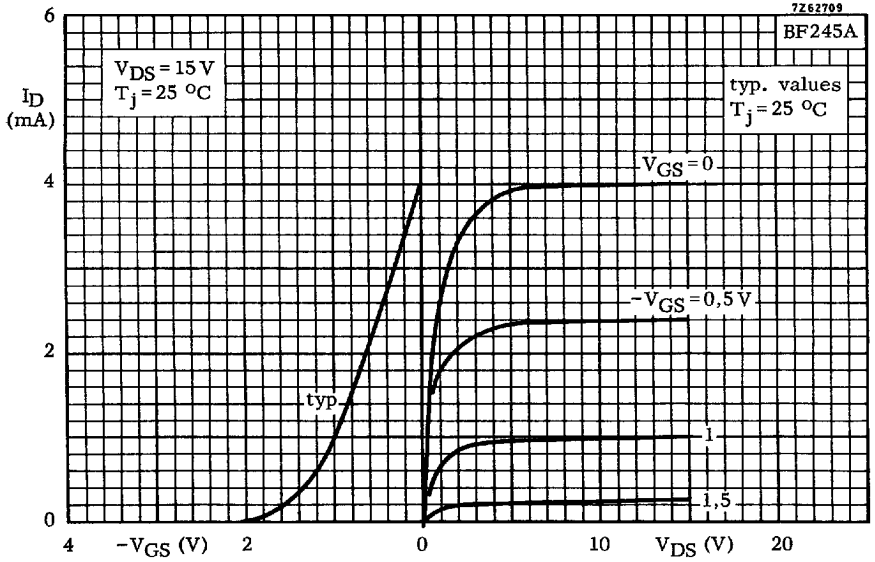


Fig. 3

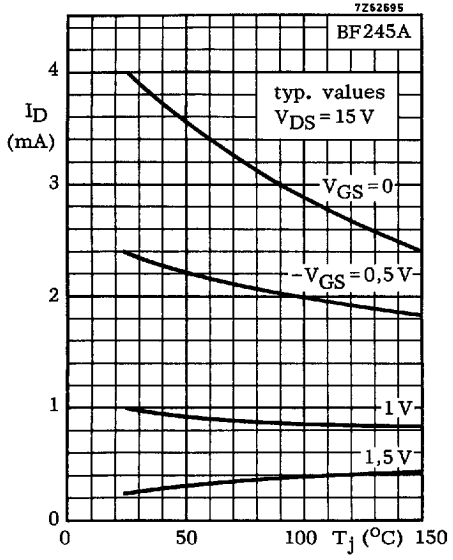
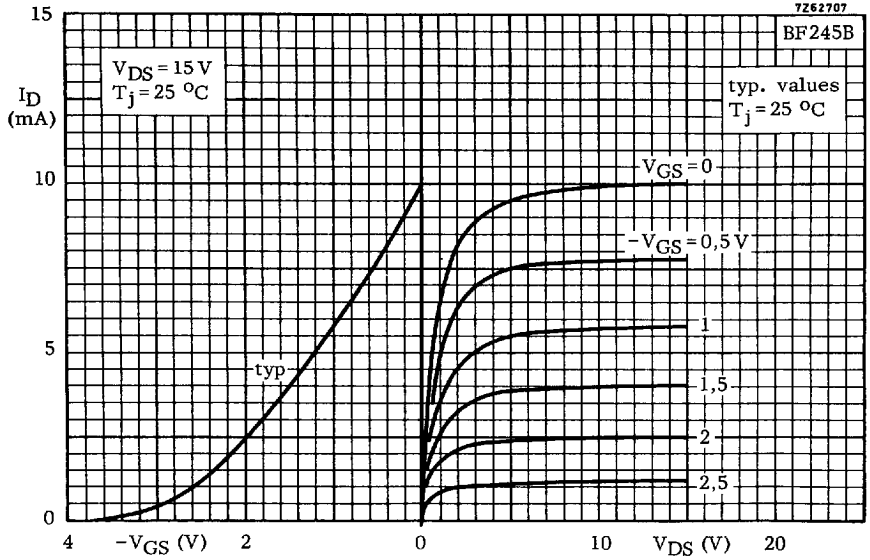


Fig. 4



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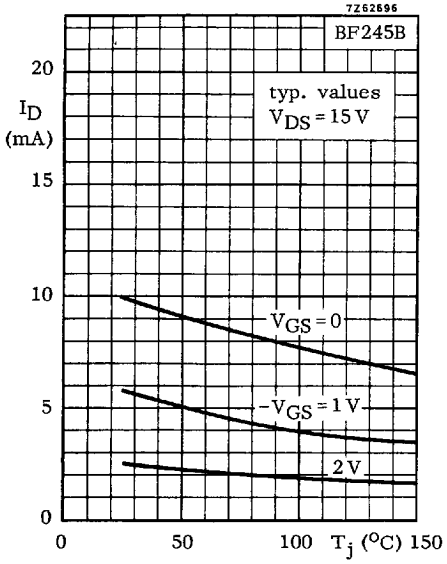

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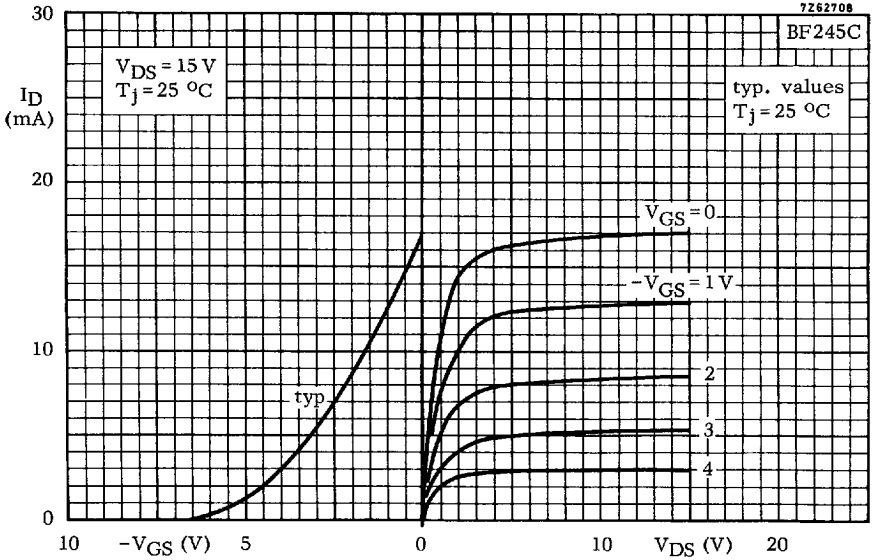

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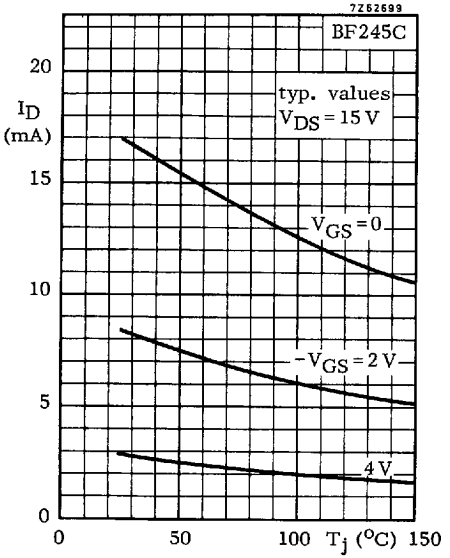


Fig. 8

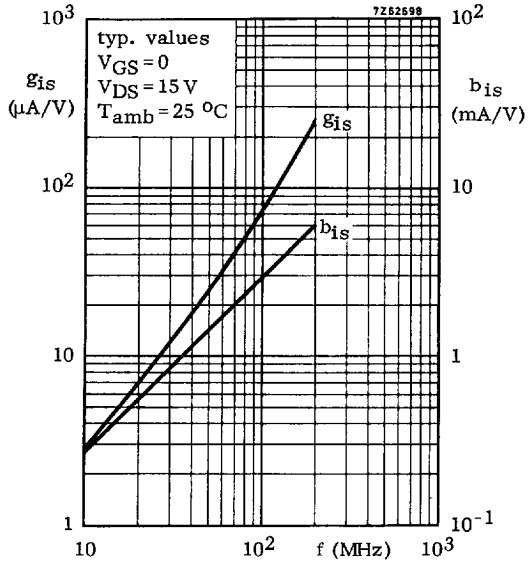


Fig. 9

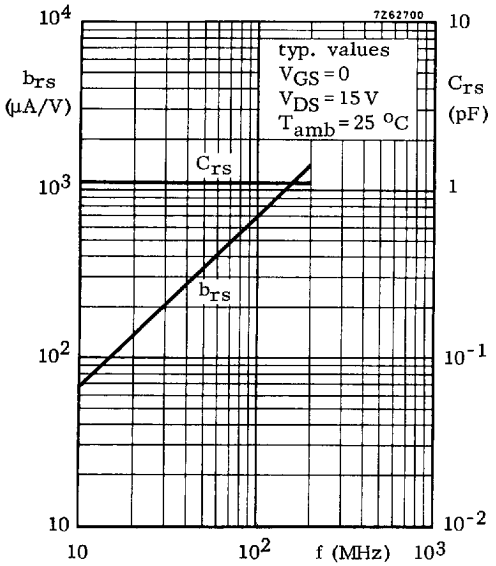
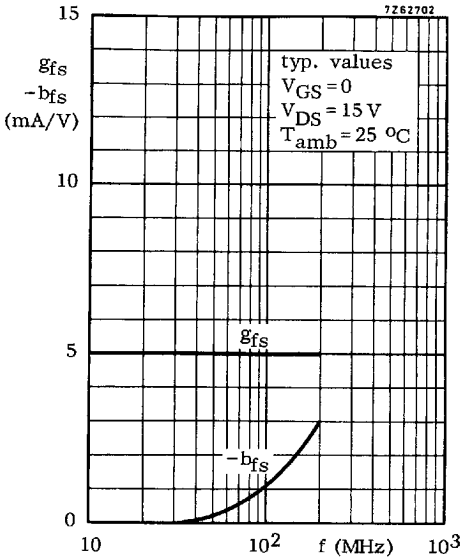


Fig. 10



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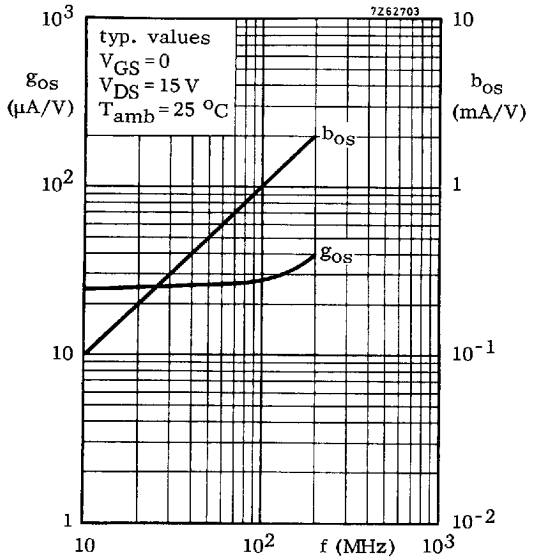

Fig. 12

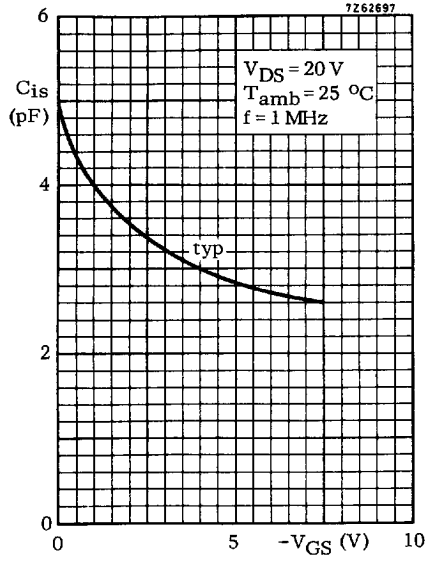

Fig. 13

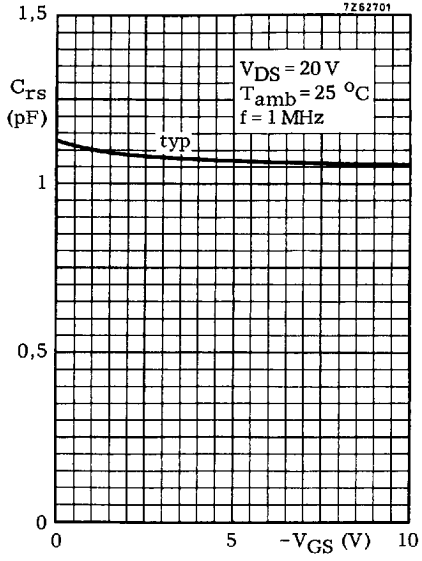

Fig. 14

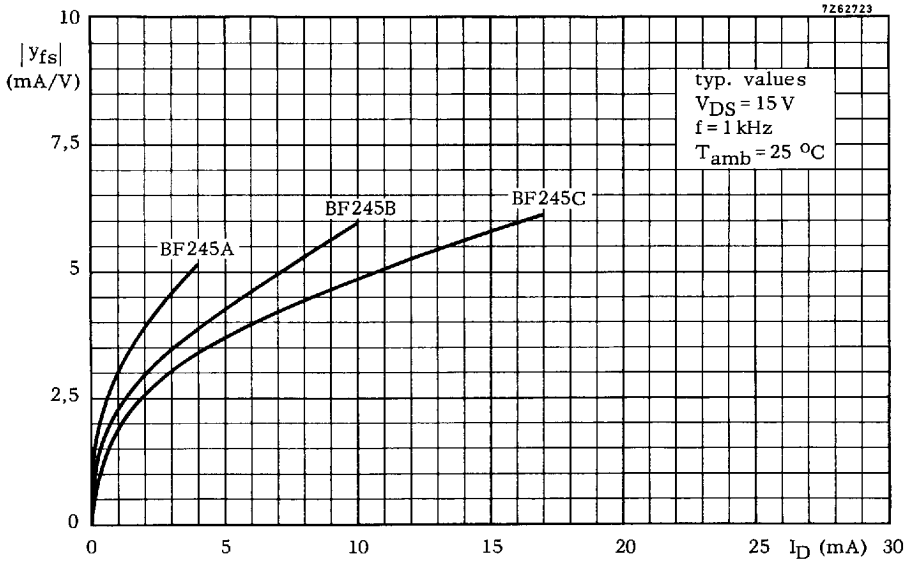

Fig. 15

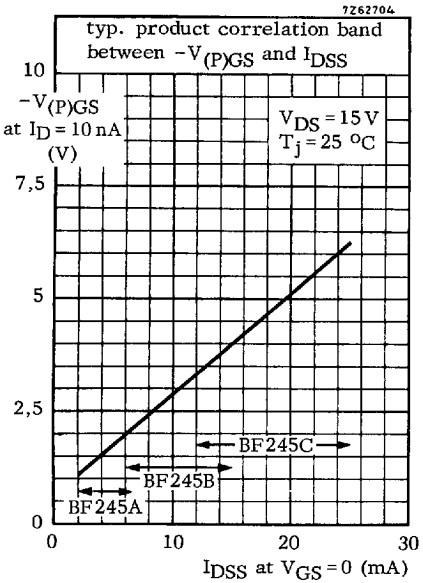

Fig. 16

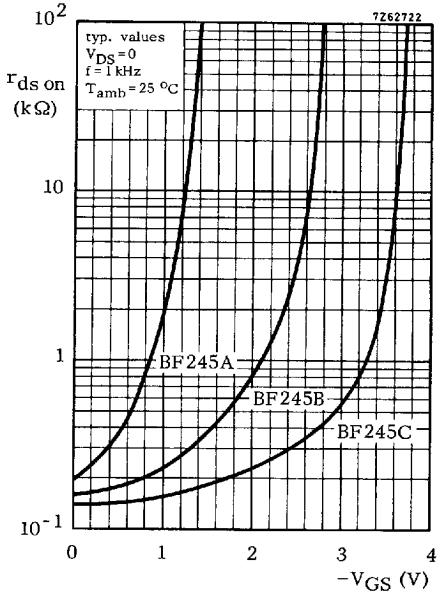

Fig. 17

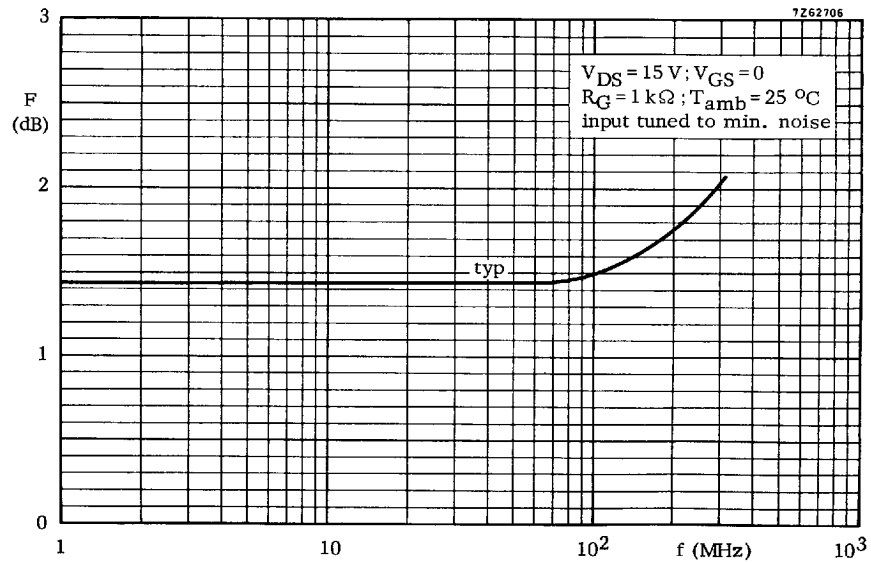

Fig. 18