

N-CHANNEL SILICON FIELD-EFFECT TRANSISTORS

Symmetrical N-channel planar epitaxial junction field-effect transistors in a plastic TO-92 variant; intended for v.h.f. and u.h.f. applications.

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 $T_{amb} = 75\text{ }^{\circ}\text{C}$	P_{tot}	max.	300 mW	
Drain current $V_{DS} = 15\text{ V}; V_{GS} = 0$	I_{DSS}	BF256A	B	C
		> 3 < 7	6 13	11 mA 18 mA
Feedback capacitance at $f = 1\text{ MHz}$ $V_{DS} = 20\text{ V}; -V_{GS} = 1\text{ V}; T_{amb} = 25\text{ }^{\circ}\text{C}$	C_{rs}	typ.	0,7 pF	
Transfer admittance (common source) $V_{DS} = 15\text{ V}; V_{GS} = 0; f = 1\text{ kHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$	$ Y_{fs} $	>	4,5 mS	
Power gain at $f = 800\text{ MHz}$ $V_{DS} = 15\text{ V}; R_S = 47\text{ }\Omega$	G_p	typ.	11 dB	

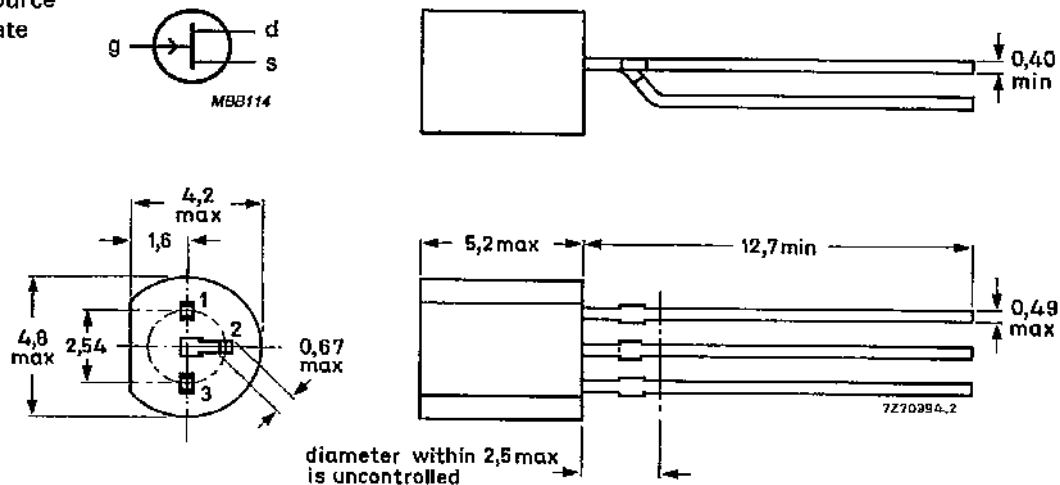
MECHANICAL DATA

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
Gate current	I_G	max.	10 mA
Total power dissipation			
up to $T_{amb} = 75\text{ }^\circ\text{C}$	P_{tot}	max.	300 mW
up to $T_{amb} = 90\text{ }^\circ\text{C}$	P_{tot}	max.	300 mW 1)
Storage temperature	T_{stg}		-65 to $+150\text{ }^\circ\text{C}$
Junction temperature	T_j	max.	$150\text{ }^\circ\text{C}$

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j-a}$	=	250 K/W
From junction to ambient	$R_{th\ j-a}$	=	200 K/W 1)

CHARACTERISTICS

$T_{amb} = 25\text{ }^\circ\text{C}$ unless otherwise specified

Gate cut-off current																
$-V_{GS} = 20\text{ V}; V_{DS} = 0$	$-I_{GSS}$	<	5 nA													
Drain current 2)																
$V_{DS} = 15\text{ V}; V_{GS} = 0$	$I_{DSS\ 3)}$															
			<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <th></th> <th>BF256A</th> <th>B</th> <th>C</th> </tr> <tr> <td>></td> <td>3</td> <td>6</td> <td>11 mA</td> </tr> <tr> <td><</td> <td>7</td> <td>13</td> <td>18 mA</td> </tr> </table>		BF256A	B	C	>	3	6	11 mA	<	7	13	18 mA	
	BF256A	B	C													
>	3	6	11 mA													
<	7	13	18 mA													
Gate-source breakdown voltage																
$-I_G = 1\text{ }\mu\text{A}; V_{DS} = 0$	$-V_{(BR)GSS}$	>	30 V													
Gate-source voltage																
$I_D = 200\text{ }\mu\text{A}; V_{DS} = 15\text{ V}$	$-V_{GS\ 3)}$		0,5 to 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: $t_p = 300\text{ }\mu\text{s}; \delta \leq 0,02$.

3) BF256B/1: $I_{DSS} = 6$ to $8\text{ mA}; -V_{GS} = 1,4$ to $2,6\text{ V}$.

y-parameters (common source)

Transistor admittance at $f = 1 \text{ kHz}$
 $V_{DS} = 15 \text{ V}; V_{GS} = 0$

$|y_{fs}|$ > 4,5 mS 1)
 typ. 5 mS 1)

Output capacitance at $f = 1 \text{ MHz}$
 $V_{DS} = 20 \text{ V}; V_{GS} = 0$

C_{os} typ. 1,2 pF

Feedback capacitance at $f = 1 \text{ MHz}$
 $V_{DS} = 20 \text{ V}; -V_{GS} = 1 \text{ V}$

C_{rs} typ. 0,7 pF

Cut-off frequency

$V_{DS} = 15 \text{ V}; V_{GS} = 0$

f_{gfs} typ. 1 GHz 2)

Noise figure at $f = 800 \text{ MHz}$

$V_{DS} = 10 \text{ V}; R_S = 47 \Omega$

F typ. 7,5 dB

Power gain at $f = 800 \text{ MHz}$

$V_{DS} = 15 \text{ V}; R_S = 47 \Omega$

G_p typ. 11 dB

1) Measured under pulse conditions: $t_p = 300 \mu\text{s}; \delta \leq 0,02$.

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

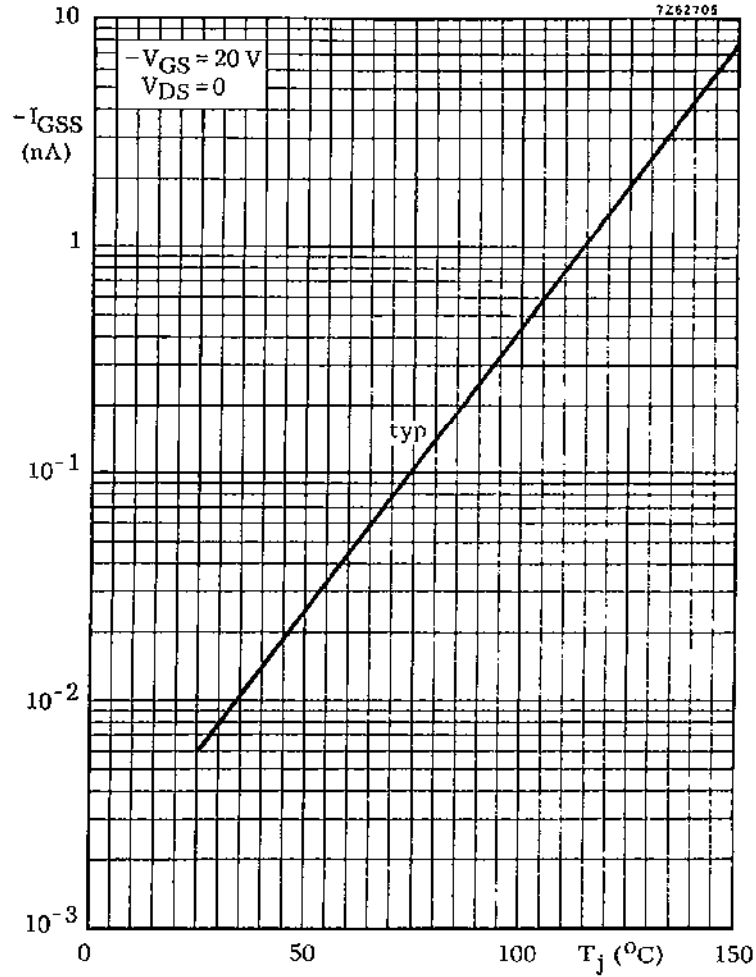


Fig. 2

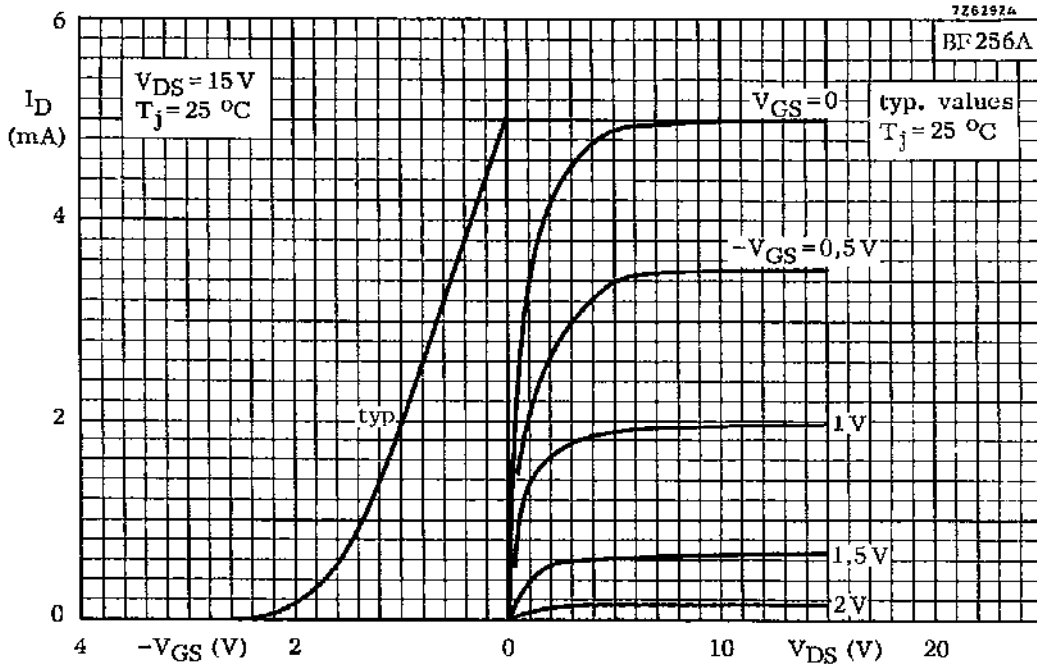


Fig. 3

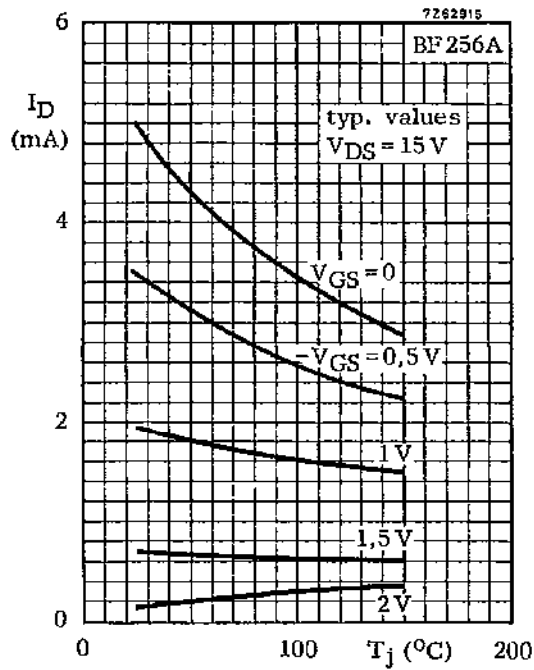


Fig. 4

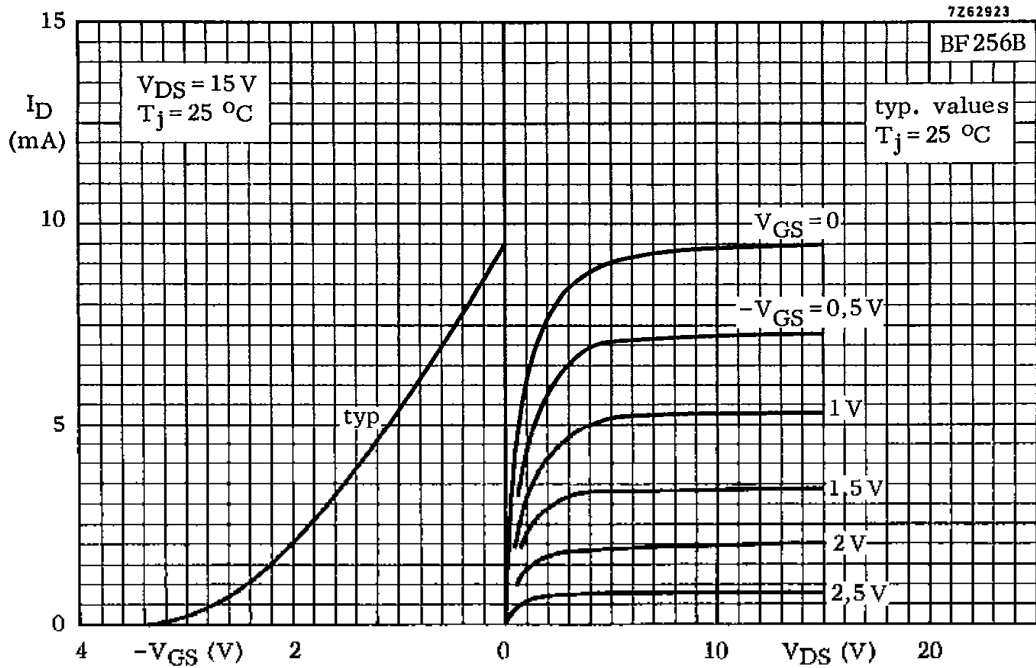


Fig. 5

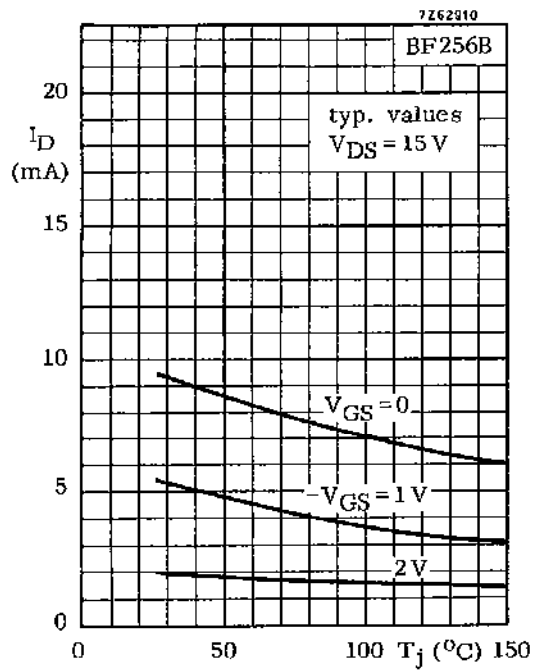


Fig. 6

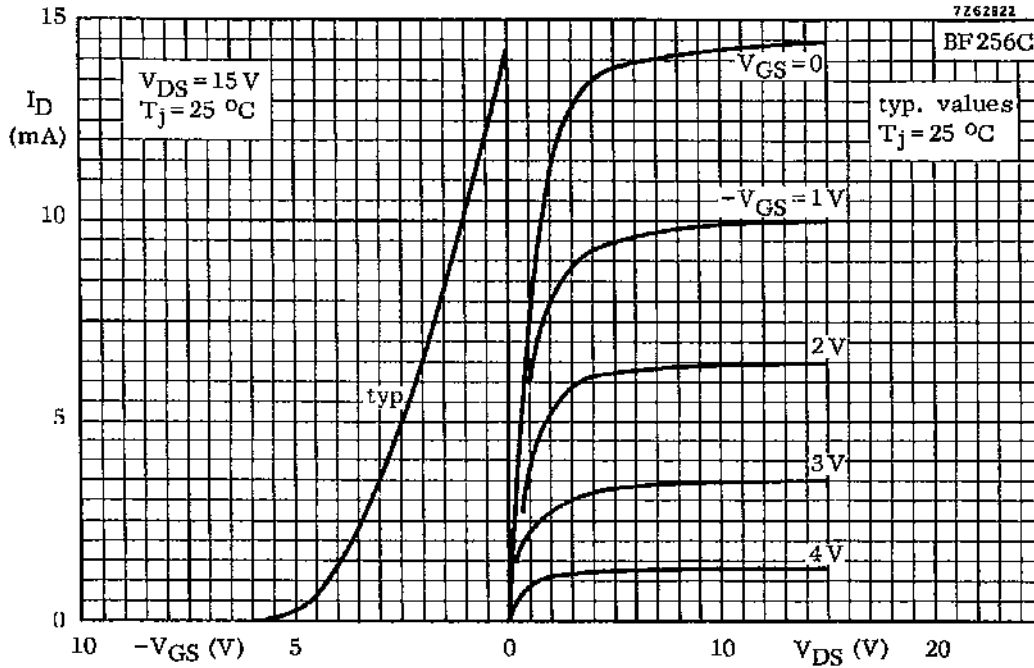


Fig. 7

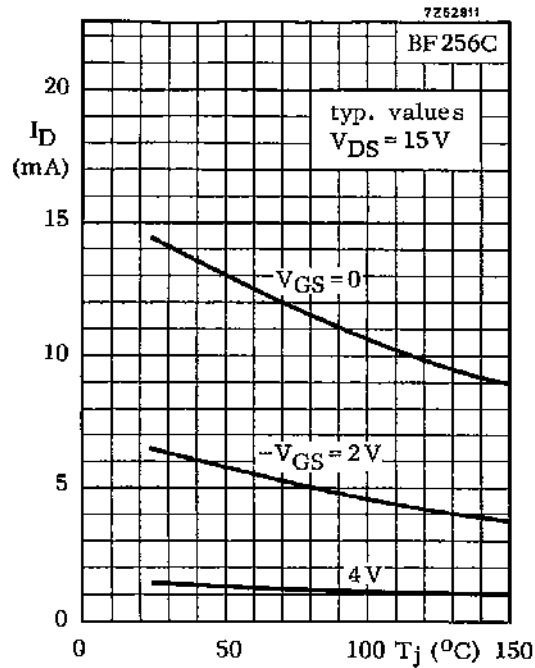


Fig. 8

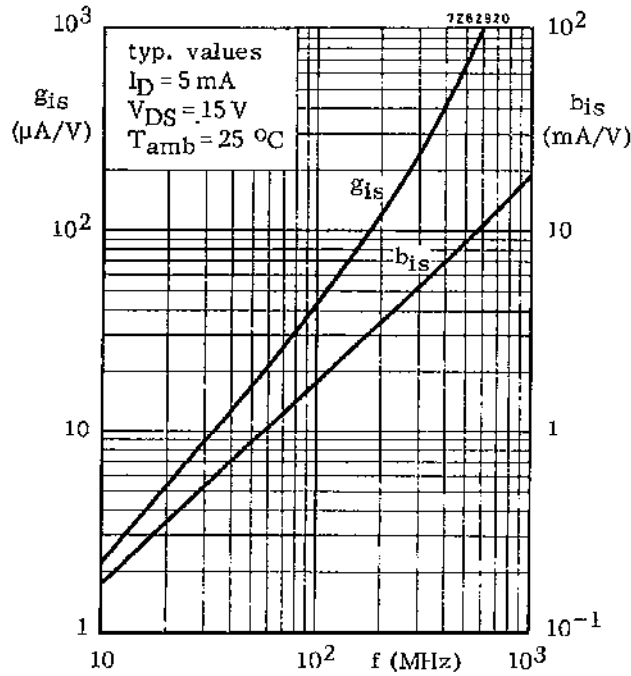


Fig. 9

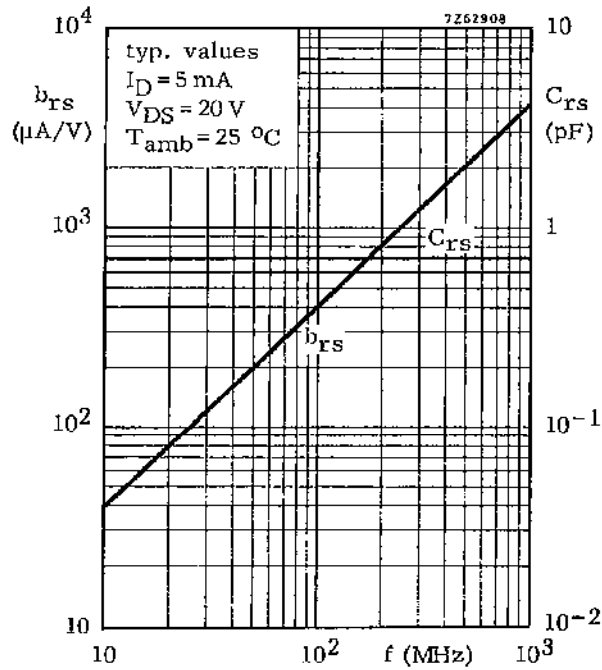


Fig. 10

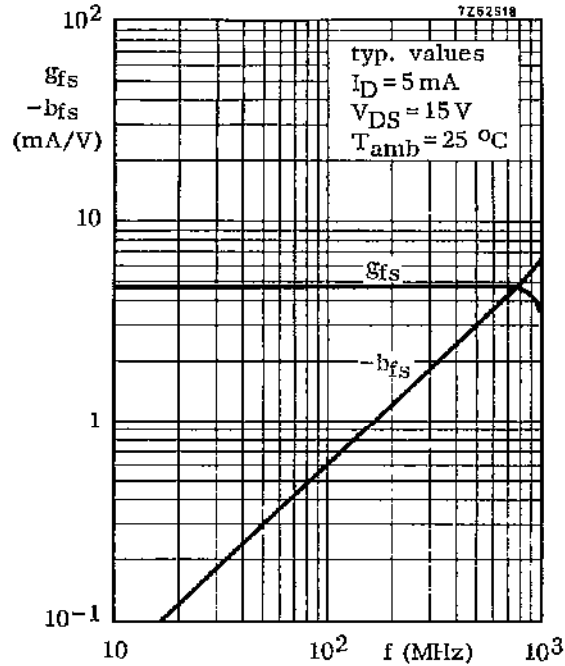


Fig. 11

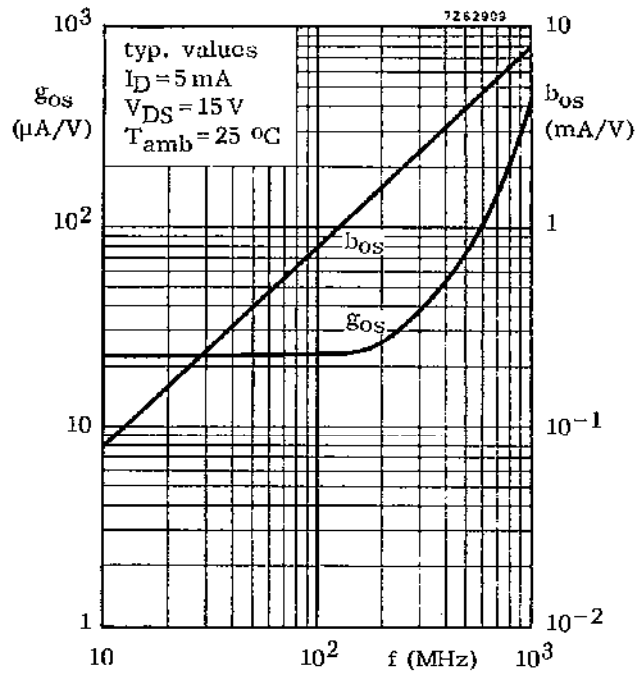


Fig. 12

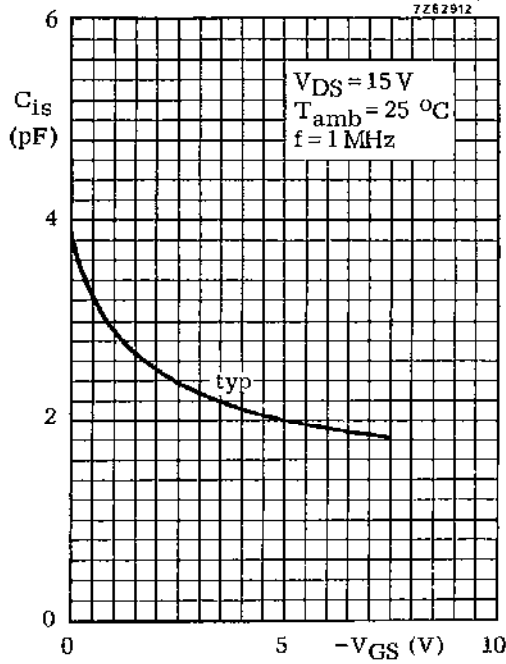


Fig. 13

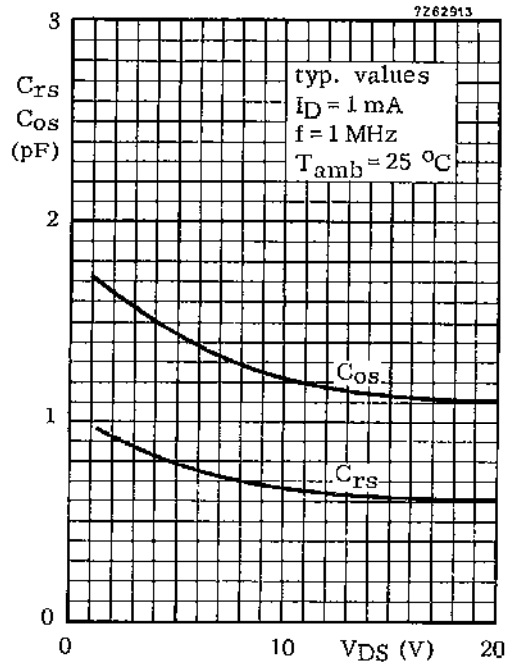


Fig. 14

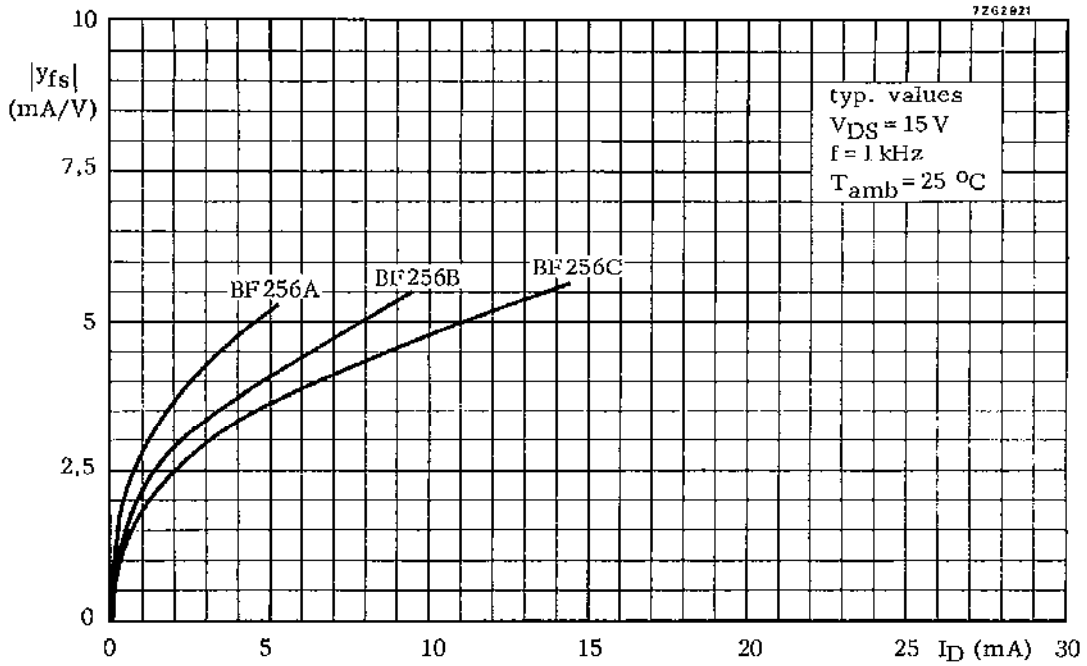


Fig. 15

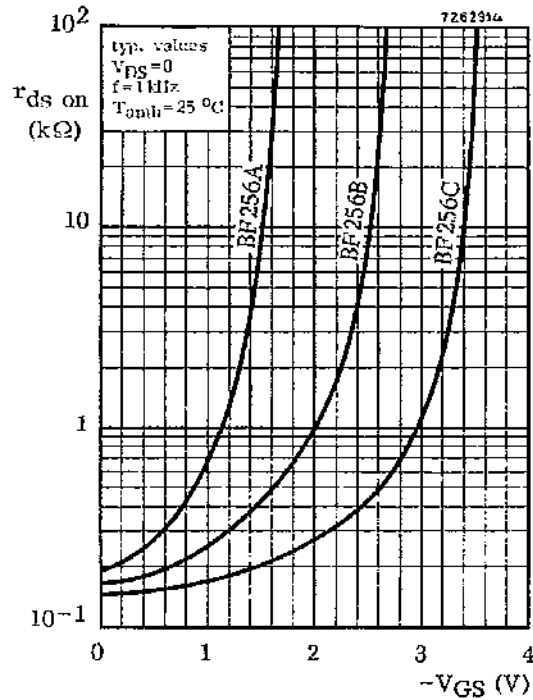


Fig. 16

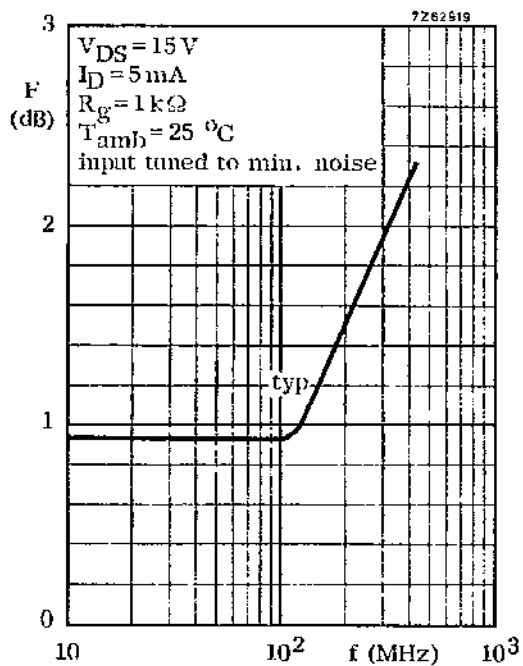


Fig. 17

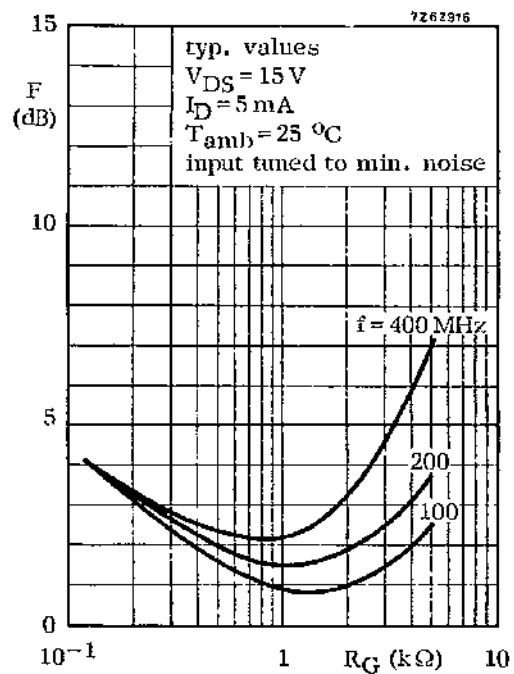


Fig. 18