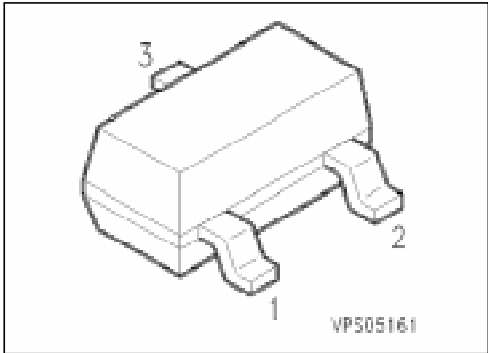


## Silicon N Channel MOSFET Triode

**BF 999**

- For high-frequency stages up to 300 MHz, preferably in FM applications



Type	Marking	Ordering Code (tape and reel)	Pin Configuration			Package <sup>1)</sup>
			1	2	3	
BF 999	LB	Q62702-F1132	G	D	S	SOT-23

### Maximum Ratings

Parameter	Symbol	Values	Unit
Drain-source voltage	$V_{DS}$	20	V
Drain current	$I_D$	30	mA
Gate-source peak current	$\pm I_{GSM}$	10	
Total power dissipation, $T_A \leq 60^\circ\text{C}$	$P_{tot}$	200	mW
Storage temperature range	$T_{stg}$	- 55 ... + 150	$^\circ\text{C}$
Channel temperature	$T_{ch}$	150	

### Thermal Resistance

Junction - ambient <sup>2)</sup>	$R_{th JA}$	$\leq 450$	K/W
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<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.

**Electrical Characteristics**

at  $T_A = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

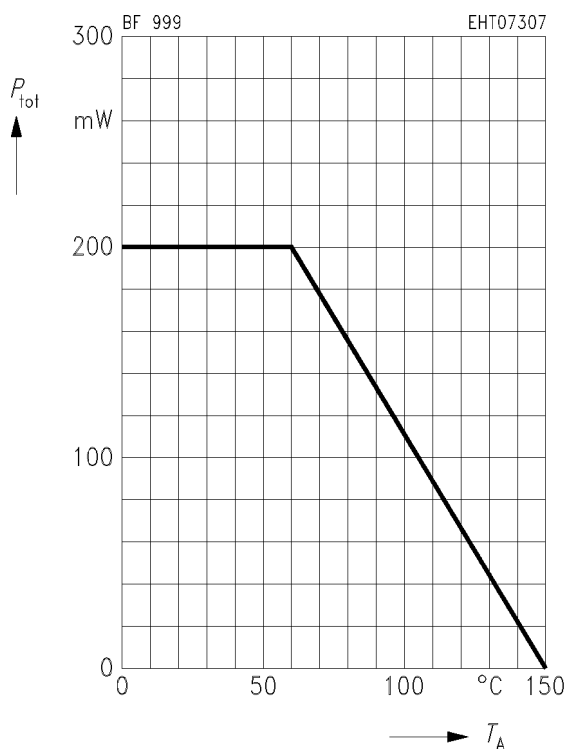
**DC Characteristics**

Drain-source breakdown voltage $I_D = 10\text{ }\mu\text{A}$ , $-V_{GS} = 4\text{ V}$	$V_{(BR)DS}$	20	—	—	V
Gate-source breakdown voltage $\pm I_{GS} = 10\text{ mA}$ , $V_{DS} = 0$	$\pm V_{(BR)GSS}$	6.5	—	12	
Gate-source leakage current $\pm V_{GS} = 5\text{ V}$ , $V_{DS} = 0$	$\pm I_{GSS}$	—	—	50	nA
Drain current $V_{DS} = 10\text{ V}$ , $V_{GS} = 0$	$I_{DSS}$	5	—	18	mA
Gate-source pinch-off voltage $V_{DS} = 10\text{ V}$ , $I_D = 20\text{ }\mu\text{A}$	$-V_{GS(p)}$	—	—	2.5	V

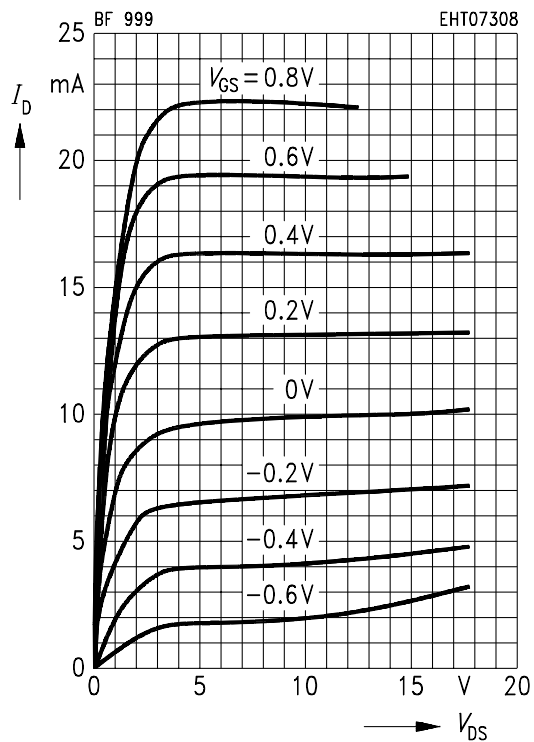
**AC Characteristics**

Forward transconductance $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 1\text{ kHz}$	$g_{fs}$	14	16	—	mS
Gate input capacitance $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 1\text{ MHz}$	$C_{gss}$	—	2.5	—	pF
Reverse transfer capacitance $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 1\text{ MHz}$	$C_{dg}$	—	25	—	fF
Output capacitance $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 1\text{ MHz}$	$C_{dss}$	—	1	—	pF
Power gain (test circuit) $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 200\text{ MHz}$ , $G_G = 2\text{ mS}$ , $G_L = 0.5\text{ mS}$	$G_p$	—	25	—	dB
Noise figure (test circuit) $V_{DS} = 10\text{ V}$ , $I_D = 10\text{ mA}$ , $f = 200\text{ MHz}$ , $G_G = 2\text{ mS}$ , $G_L = 0.5\text{ mS}$	$F$	—	1	—	

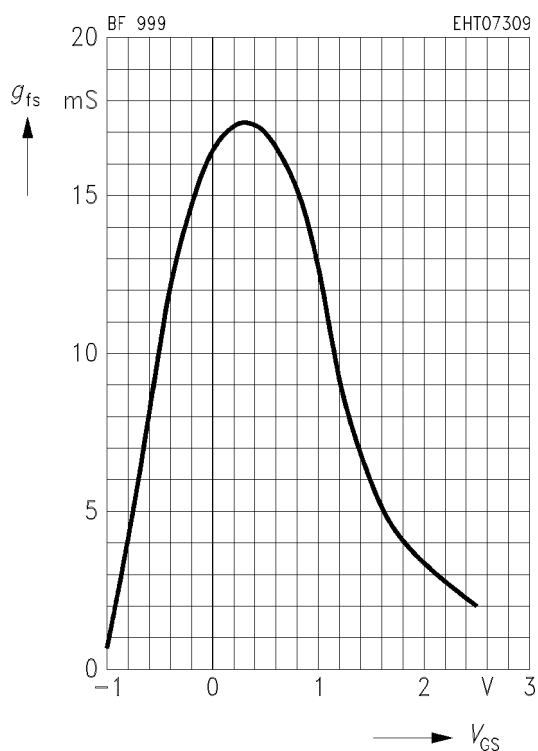
**Total power dissipation  $P_{\text{tot}} = f(T_A)$**



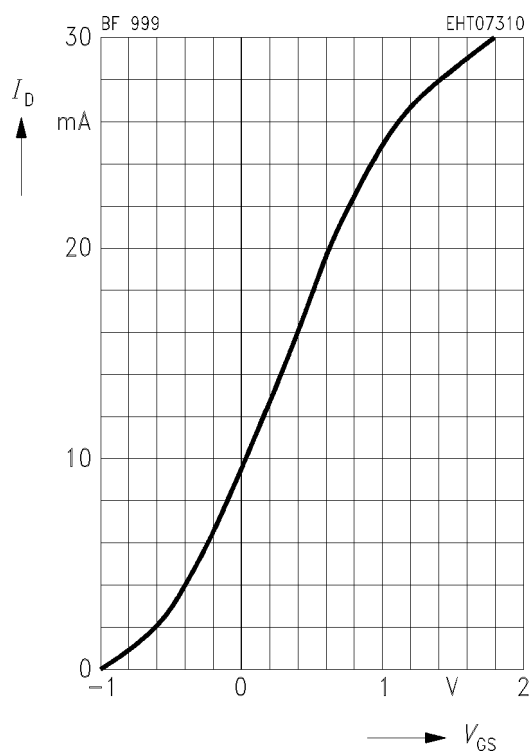
**Output characteristics  $I_D = f(V_{\text{DS}})$**



**Gate transconductance  $g_{\text{fs}} = f(V_{\text{GS}})$**   
 $V_{\text{DS}} = 10 \text{ V}$ ,  $I_{\text{DSS}} = 10 \text{ mA}$ ,  $f = 1 \text{ kHz}$

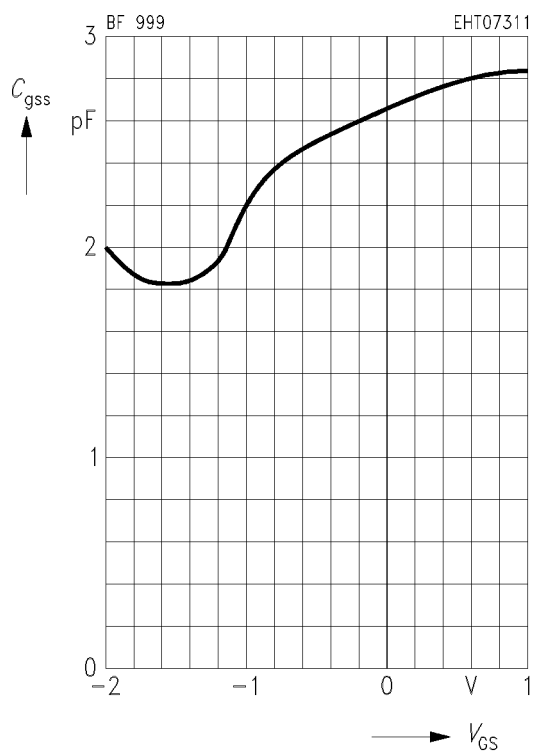


**Drain current  $I_D = f(V_{\text{GS}})$**   
 $V_{\text{DS}} = 10 \text{ V}$



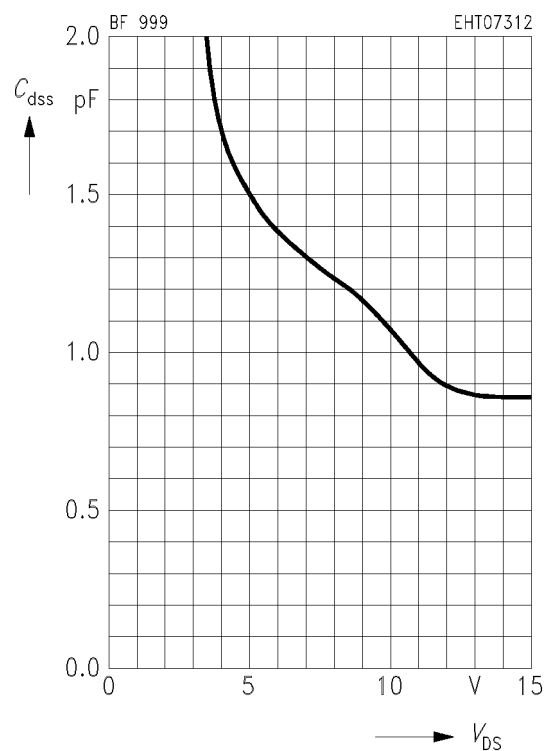
## Gate input capacitance $C_{gss} = f(V_{GS})$

$V_{DS} = 10 \text{ V}$ ,  $I_{DSS} = 10 \text{ mA}$ ,  $f = 1 \text{ MHz}$



## Output capacitance $C_{dss} = f(V_{DS})$

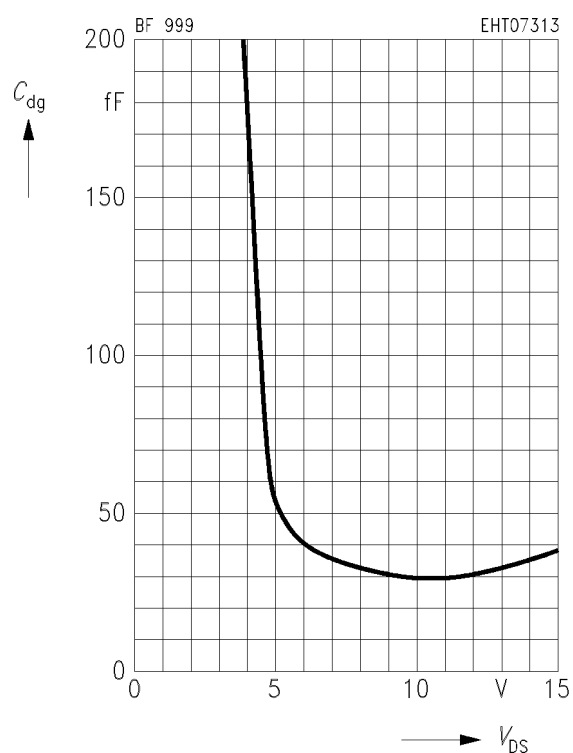
$V_{GS} = 0$ ,  $I_{DSS} = 10 \text{ mA}$ ,  $f = 1 \text{ MHz}$



## Reverse transfer capacitance

$C_{dg} = f(V_{DS})$

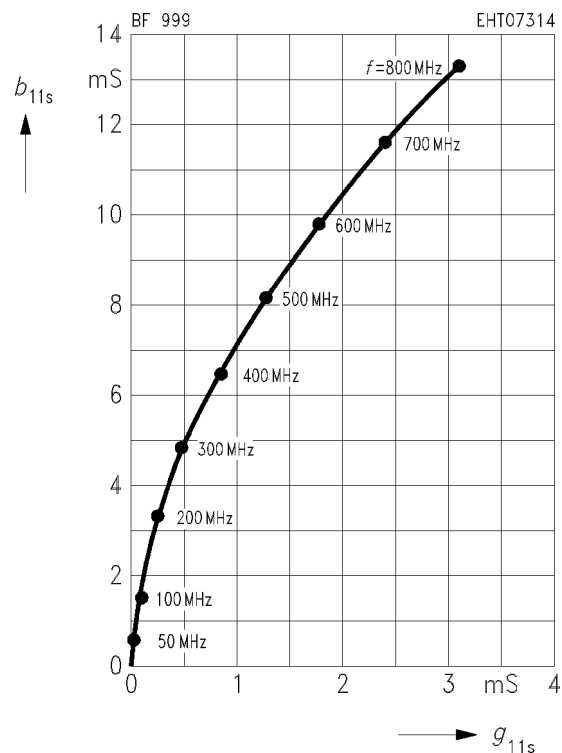
$I_{DSS} = 10 \text{ mA}$ ,  $f = 1 \text{ MHz}$ ,  $V_{GS} = 0$



## Gate input admittance $y_{11s}$

$V_{DS} = 10 \text{ V}$ ,  $V_{GS} = 0$ ,

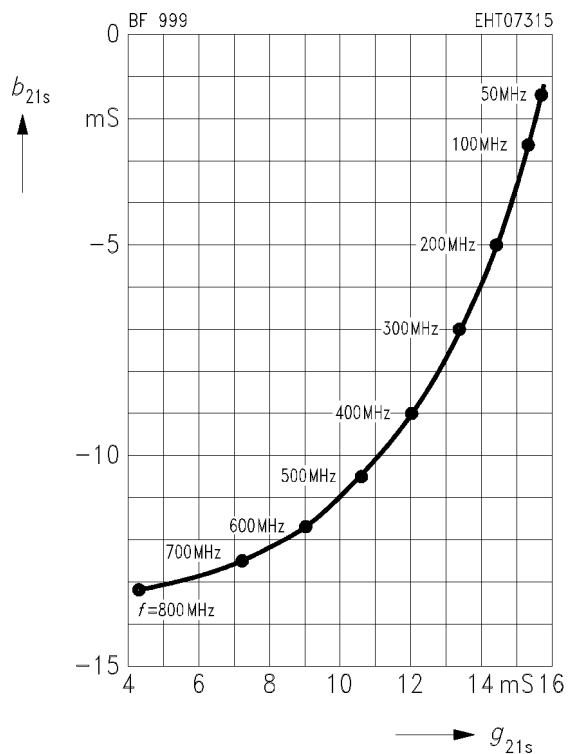
$I_{DSS} = 10 \text{ mA}$ , (common-source)



## Gate forward transfer admittance $y_{21s}$

$V_{DS} = 10 \text{ V}$ ,  $V_{GS} = 0$ ,

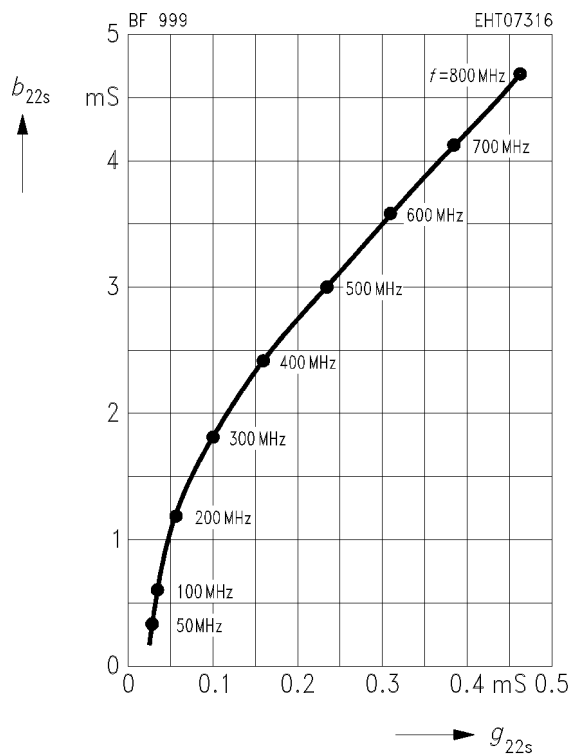
$I_{DSS} = 10 \text{ mA}$ , (common-source)



## Output admittance $y_{22s}$

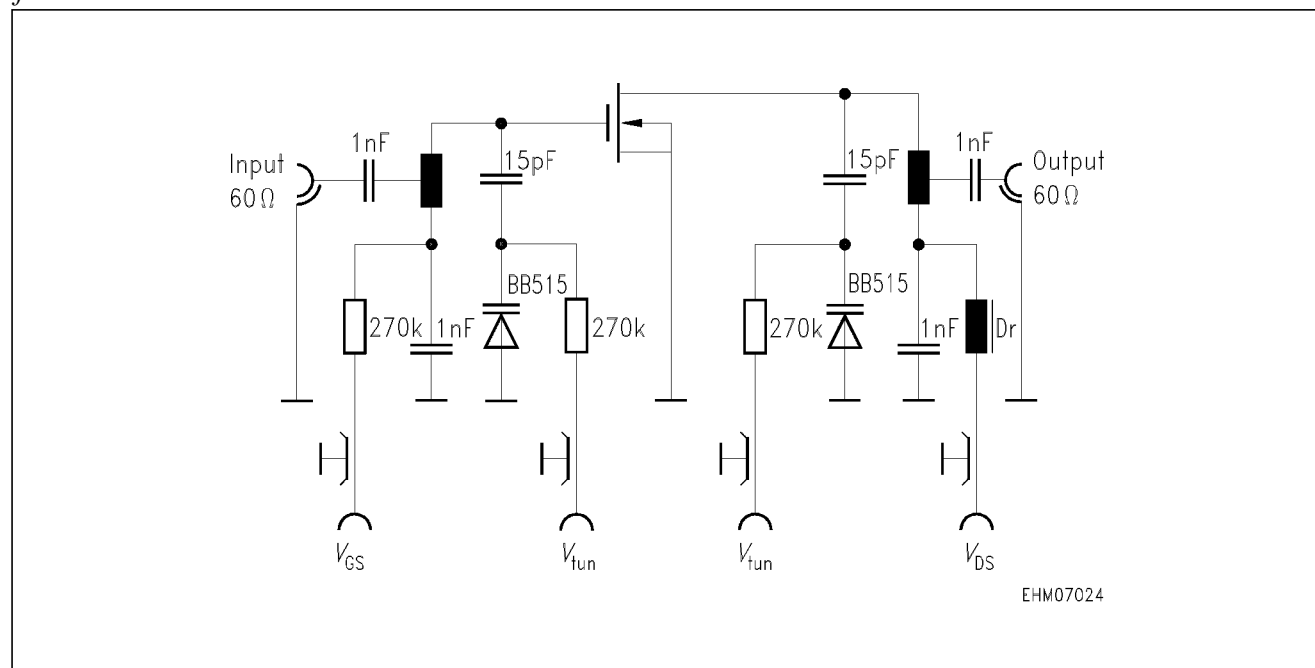
$V_{DS} = 10 \text{ V}$ ,  $V_{GS} = 0$ ,

$I_{DSS} = 10 \text{ mA}$ , (common-source)



## Test circuit for power gain and noise figure

$f = 200 \text{ MHz}$



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