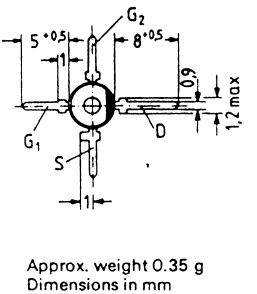
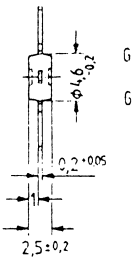
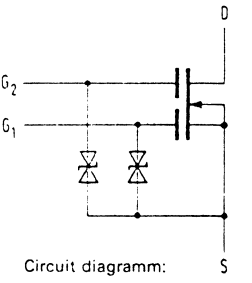
MOS Field Effect Transistor

BF 961 is an ion-implanted dual gate N channel MOS field effect transistor of the depletion type with integrated gate protection diodes in a plastic package similar to TO 120 (50 B 4 DIN 41867). The source terminal is internally connected with the substrate. The tetrode is especially suitable for use in TV VHF input stages and mixers.

Type	Ordering code
BF 961	Q62702-F518







Approx. weight 0.35 g
Dimensions in mm

Circuit diagramm:

Maximum ratings

Drain source voltage	V_{DS}	20	V
Drain current	I_D	30	mA
Gate 1/gate 2 source peak current	$\pm I_{G1/2SM}$	10	mA
Storage temperature range	T_{stg}	−55 to +150	°C
Channel temperature	T_{ch}	150	°C
Power dissipation	P_{tot}	200	mW

Thermal resistance

Channel to ambient	R_{thA}	≦ 450	K/W

Static characteristics (T_{amb} = 25 °C)

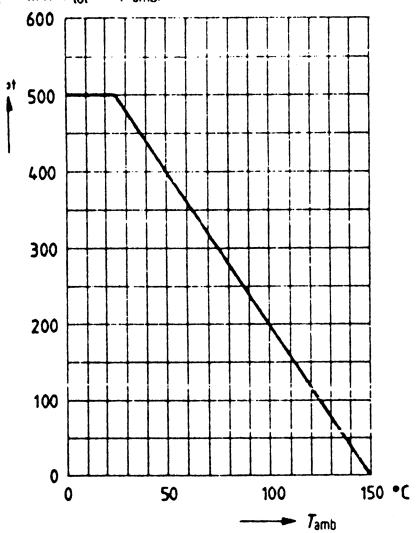
Drain-source breakdown voltage (I_D = 10 µA; $-V_{G1S}$ = $-V_{G2S}$ = 4 V)	$V_{(BR)DS}$	≧ 20	V
Gate 1 source breakdown voltage ($\pm I_{G1S}$ = 10 mA; V_{G2S} = V_{DS} = 0)	$\pm V_{(BR)G1SS}$	6 to 20	V
Gate 2 source breakdown voltage ($\pm I_{G2S}$ = 10 mA; V_{G1S} = V_{DS} = 0)	$\pm V_{(BR)G2SS}$	6 to 20	V
Gate 1 leakage current ($\pm V_{G1S}$ = 5 V; V_{G2S} = V_{DS} = 0)	I_{G1SS}	≦ 50	nA
Gate 2 leakage current ($\pm V_{G2S}$ = 5 V; V_{G1S} = V_{DS} = 0)	I_{G2SS}	≦ 50	nA
Drain current (V_{DS} = 15 V; V_{G1S} = 0; V_{G2S} = 4 V)	I_{DSS}	4 to 20	mA
Gate 1 source pinch-off voltage (V_{DS} = 15 V; V_{G2S} = 4 V; I_D = 20 µA)	$-V_{G1S(p)}$	0.2 to 3.5	V
Gate 2 source pinch-off voltage (V_{DS} = 15 V; V_{G1S} = 0; I_D = 20 µA)	$-V_{G2S(p)}$	0.2 to 3.5	V

Dynamic characteristics (T_{amb} = 25 °C)

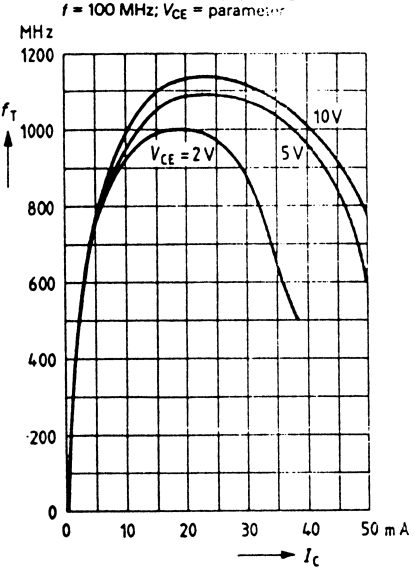
Forward transadmittance (V_{DS} = 15 V; I_D = 10 mA; V_{G2S} = 4 V; f = 1 kHz)	g_{fs}	15 (12 to 20)	mS
Gate 1 input capacitance (V_{DS} = 15 V; I_D = 10 mA; V_{G2S} = 4 V; f = 1 MHz)	C_{G1sS}	3.6 (3 to 4.5)	pF
Gate 2 input capacitance (V_{DS} = 15 V; I_D = 10 mA; V_{G2S} = 4 V; f = 1 MHz)	C_{G2sS}	1.6	pF
Reverse transfer capacitance *) (V_{DS} = 15 V; I_D = 10 mA; V_{G2S} = 4 V; f = 1 MHz)	C_{dg1}	25 (≤ 35)	fF
Output capacitance (V_{DS} = 15 V; I_D = 10 mA; V_{G2S} = 4 V; f = 1 MHz)	C_{dsS}	1.6 (1.2 to 2.2)	pF
Power gain (V_{DS} = 15 V; I_D = 10 mA; f = 200 MHz; 2 Δf = 12 MHz)	G_{ps}	23 (≥ 19)	dB
Noise figure (V_{DS} = 15 V; I_D = 10 mA; f = 200 MHz; g_G = 2 mS; test circuit[1])	NF	1.8 (≤ 2.8)	dB
Control range (V_{DS} = 15 V; V_{G2} = 4 to −2 V; f = 200 MHz; Test circuit 1)	ΔG_{ps}	50	dB
Mixer gain (additive) (V_D = 15 V; V_{G2} = 6 V, R_S = 220 Ω; f = 200 MHz; f_{IF} = 36 MHz; 2 Δf_{IF} = 5 MHz; V_{OSC} = 0.5 V; Test circuit 2)	G_{psC}	16	dB
Mixer gain (multiplicative) (V_D = 15 V; V_{G1} = 1.7 V, V_{G2} = 2.5 V R_S = 220 Ω; f = 200 MHz; f_{IF} = 36 MHz 2 Δf_{IF} = 5 MHz; V_{OSC} = 2 V Test circuit 3)	G_{FSC}	18	dB

*) G_2 S on screen potential

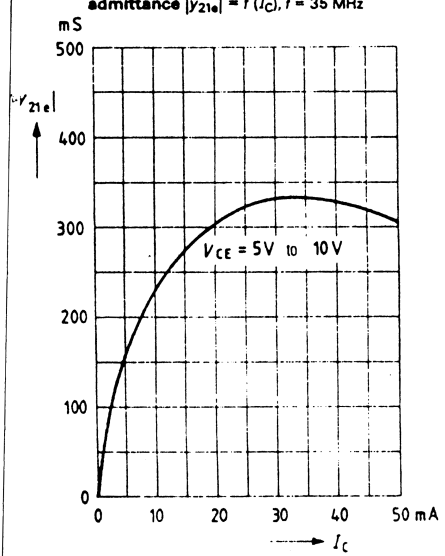
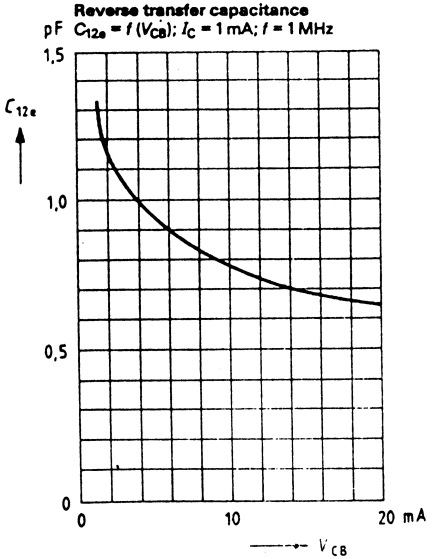
Total perm. power dissipation versus temperature
$P_{tot} = f(T_{amb})$



Transition frequency $f_T = f(I_C)$
f = 100 MHz; V_{CE} = parameter



Short-circuit forward transfer admittance $|y_{21e}| = f(I_C)$, f = 35 MHz



Reverse transfer capacitance
$C_{12e} = f(V_{CB})$; I_C = 1 mA; f = 1 MHz