

N-Channel Dual Gate MOS-Fieldeffect Tetrode, Depletion Mode

Electrostatic sensitive device.
Observe precautions for handling.

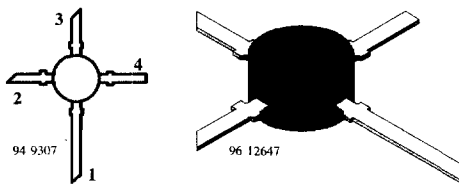


Applications

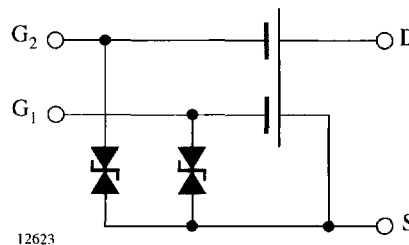
Input- and mixerstages especially for FM- and VHF TV-tuners up to 300 MHz.

Features

- Integrated gate protection diodes
- High cross modulation performance
- Low noise figure
- High AGC-range
- Low feedback capacitance
- Low input capacitance



BF961 Marking: BF961
Plastic case (TO 50)
1 = Drain, 2 = Source, 3 = Gate 1, 4 = Gate 2



Absolute Maximum Ratings

Parameters	Symbol	Value	Unit
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
Total power dissipation $T_{amb} \leq 60^\circ\text{C}$	P_{tot}	200	mW
Channel temperature	T_{Ch}	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

Maximum Thermal Resistance

Parameters	Symbol	Value	Unit
Channel ambient on glass fibre printed board (40 x 25 x 1.5) mm ³ plated with 35 μm Cu	R_{thChA}	450	K/W

Electrical DC Characteristics

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

Parameters / Test Conditions	Type	Symbol	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage $I_D = 10 \mu\text{A}$, $-V_{G1S} = -V_{G2S} = 4 \text{ V}$		$V_{(BR)DS}$	20			V
Gate 1-source breakdown voltage $\pm I_{G1S} = 10 \text{ mA}$, $V_{G2S} = V_{DS} = 0$		$\pm V_{(BR)G1SS}$	8		14	V
Gate 2-source breakdown voltage $\pm I_{G2S} = 10 \text{ mA}$, $V_{G1S} = V_{DS} = 0$		$\pm V_{(BR)G2SS}$	8		14	V
Gate 1-source leakage current $\pm V_{G1S} = 5 \text{ V}$, $V_{G2S} = V_{DS} = 0$		$\pm I_{G1SS}$			100	nA
Gate 2-source leakage current $\pm V_{G2S} = 5 \text{ V}$, $V_{G1S} = V_{DS} = 0$		$\pm I_{G2SS}$			100	nA
Drain current $V_{DS} = 15 \text{ V}$, $V_{G1S} = 0$, $V_{G2S} = 4 \text{ V}$	BF961 BF961A BF961B	I_{DSS} I_{DSS} I_{DSS}	4 4 9.5		20 10.5 20	mA mA mA
Gate 1-source cut-off voltage $V_{DS} = 15 \text{ V}$, $V_{G2S} = 4 \text{ V}$, $I_D = 20 \mu\text{A}$		$-V_{G1S(OFF)}$			3.5	V
Gate 2-source cut-off voltage $V_{DS} = 15 \text{ V}$, $V_{G1S} = 0$, $I_D = 20 \mu\text{A}$		$-V_{G2S(OFF)}$			3.5	V

Electrical AC Characteristics

$V_{DS} = 15 \text{ V}$, $I_D = 10 \text{ mA}$, $V_{G2S} = 4 \text{ V}$, $f = 1 \text{ MHz}$, $T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

Parameters / Test Conditions	Type	Symbol	Min.	Typ.	Max.	Unit
Forward transadmittance		$ y_{21s} $	12	15		mS
Gate 1-input capacitance		C_{issg1}		3.7		pF
Gate 2-input capacitance $V_{G1S} = 0$, $V_{G2S} = 4 \text{ V}$		C_{issg2}		1.6		pF
Feedback capacitance		C_{rss}		25		fF
Output capacitance		C_{oss}		1.6		pF
Power gain $g_S = 2 \text{ mS}$, $g_L = 0.5 \text{ mS}$, $f = 200 \text{ MHz}$		G_{ps}		20		dB
AGC range $V_{G2S} = 4 \dots 2 \text{ V}$, $f = 200 \text{ MHz}$		ΔG_{ps}		50		dB
Noise figure $g_S = 2 \text{ mS}$, $g_L = 0.5 \text{ mS}$, $f = 200 \text{ MHz}$		F		1.8	2.5	dB

Typical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

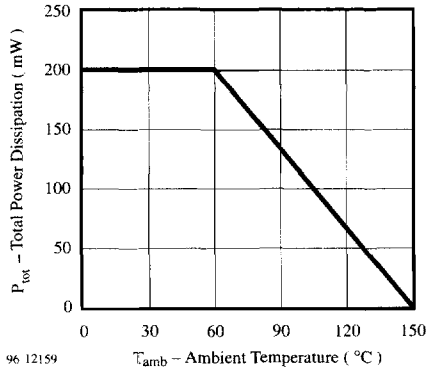


Figure 1. Total Power Dissipation vs. Ambient Temperature

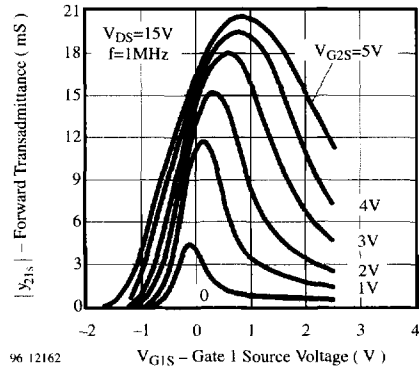


Figure 4. Forward Transadmittance vs. Gate 1 Source Voltage

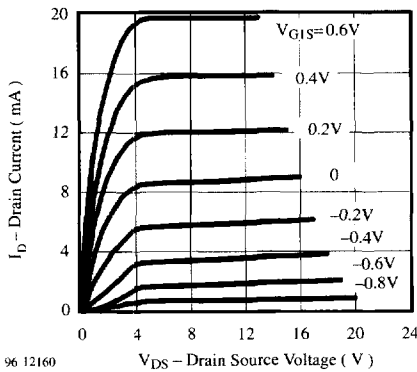


Figure 2. Drain Current vs. Drain Source Voltage

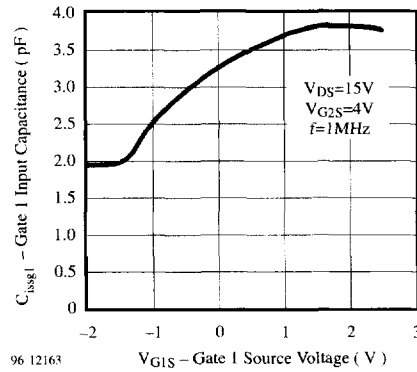


Figure 5. Gate 1 Input Capacitance vs. Gate 1 Source Voltage

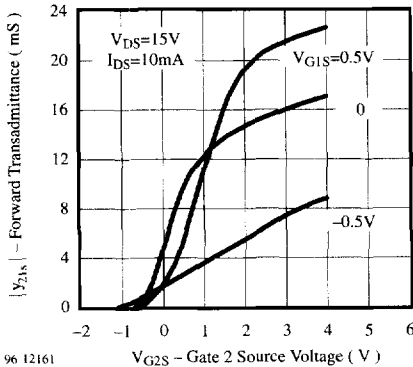


Figure 3. Forward Transadmittance vs. Gate 2 Source Voltage

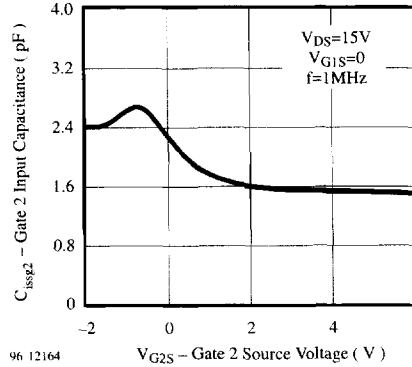


Figure 6. Gate 2 Input Capacitance vs. Gate 2 Source Voltage

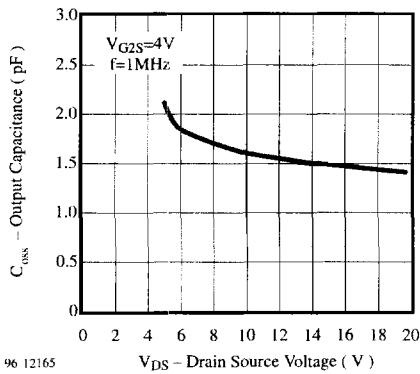


Figure 7. Output Capacitance vs. Drain Source Voltage

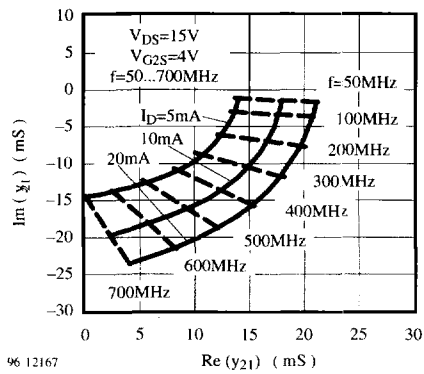


Figure 9. Short Circuit Forward Transfer Admittance

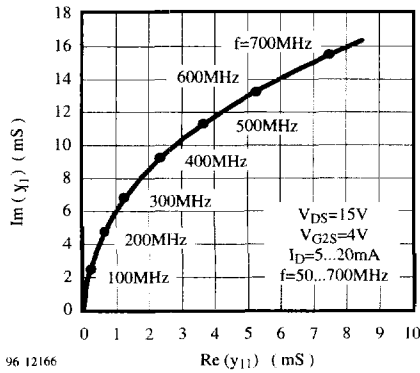


Figure 8. Short Circuit Input Admittance

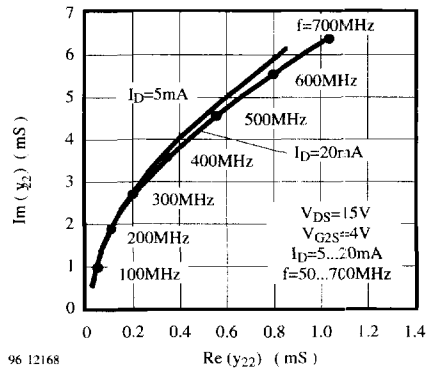


Figure 10. Short Circuit Output Admittance

$V_{DS} = 15 \text{ V}; I_D = 5 \text{ to } 20 \text{ mA}; V_{G2S} = 4 \text{ V}; Z_0 = 50 \Omega$

S_{11}

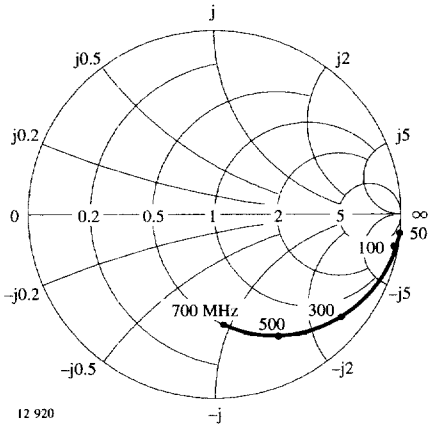


Figure 11. Input reflection coefficient

S_{12}

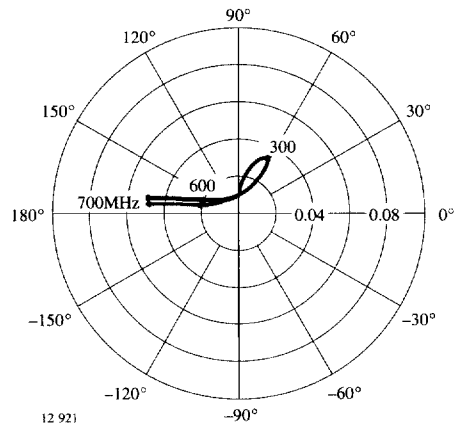


Figure 13. Reverse transmission coefficient

S_{21}

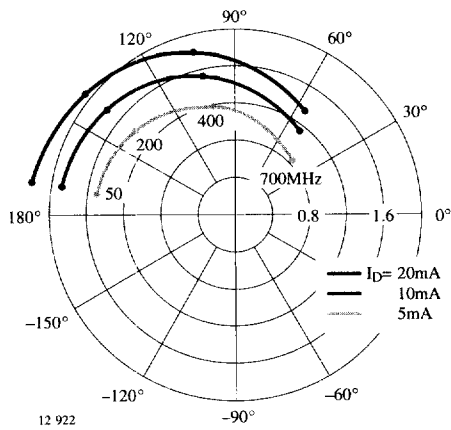


Figure 12. Forward transmission coefficient

S_{22}

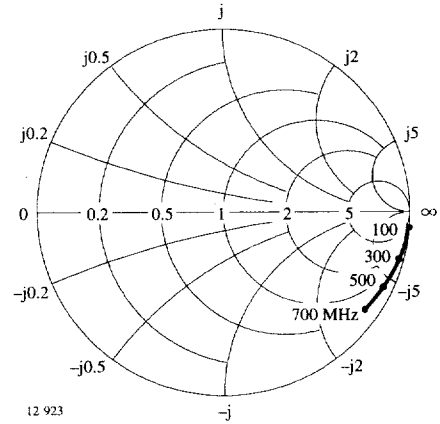
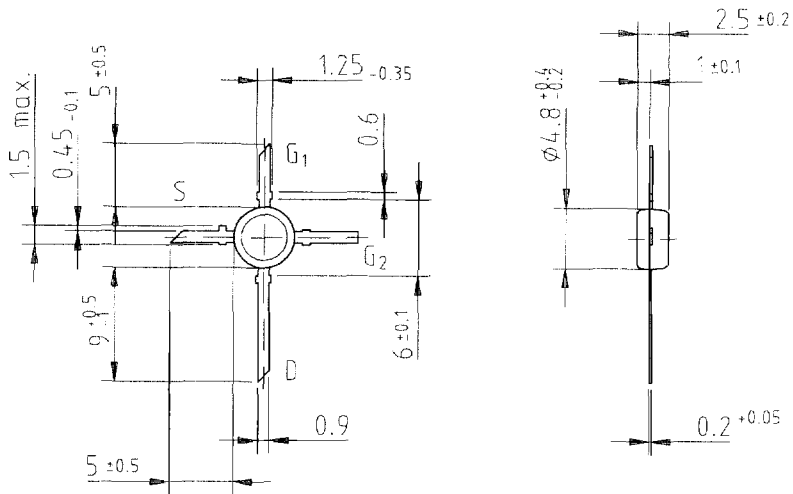
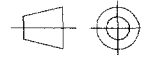


Figure 14. Output reflection coefficient

Dimensions in mm



96 12242



technical drawings
according to DIN
specifications