

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

Electrostatic sensitive device.
Observe precautions for handling.

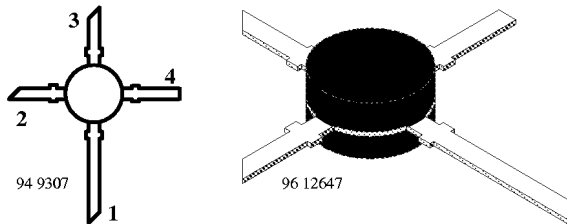


Applications

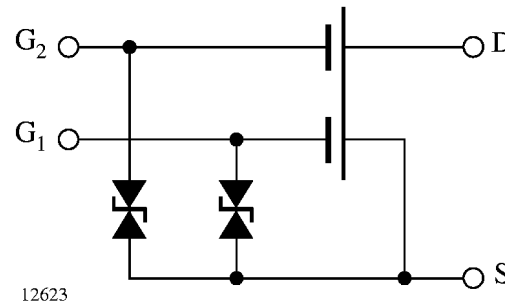
Input- and mixer stages especially VHF TV-tuners.

Features

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



BF964S Marking: BF964S
Plastic case (TO 50)
1=Drain, 2=Source, 3=Gate 1, 4=Gate 2



Absolute Maximum Ratings

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

Parameter	Test Conditions	Type	Symbol	Value	Unit
Drain - source voltage			V_{DS}	20	V
Drain current			I_D	30	mA
Gate 1/Gate 2 - source peak current			$\pm I_{G1/G2SM}$	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

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

Parameter	Test Conditions	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

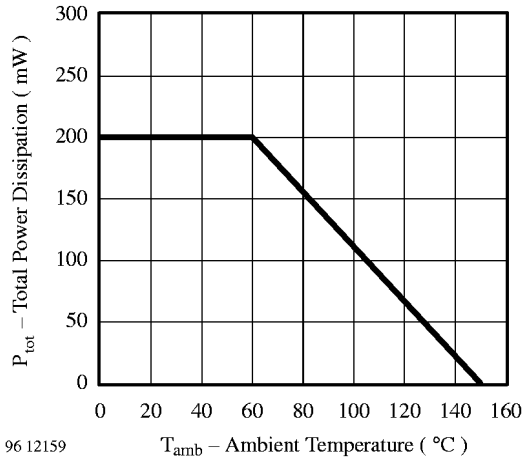
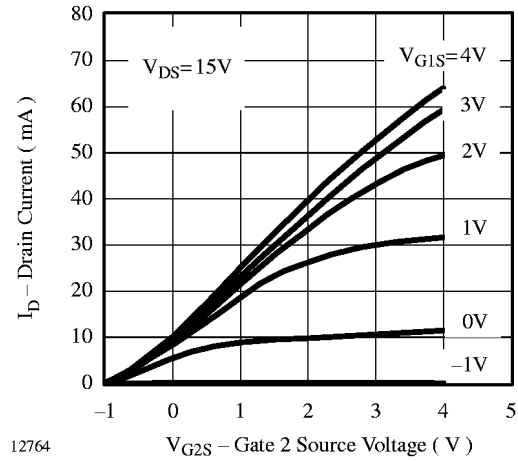
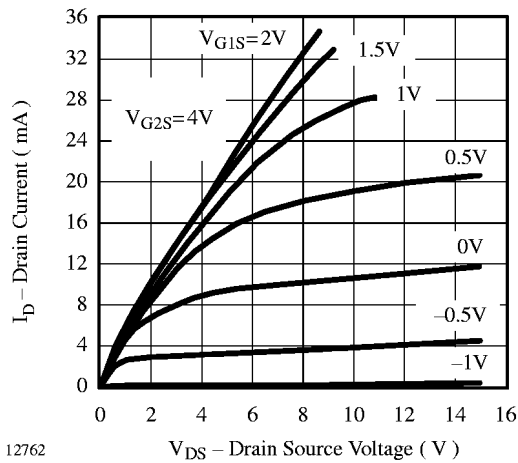
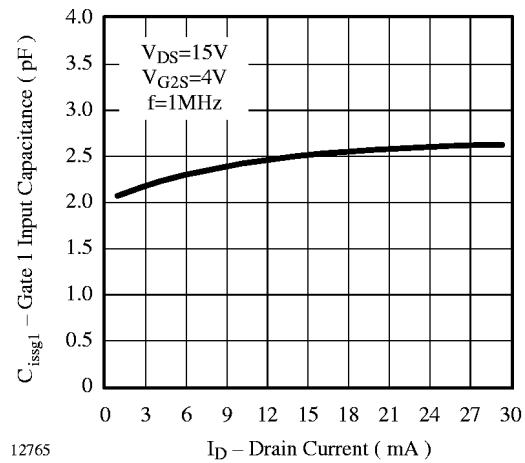
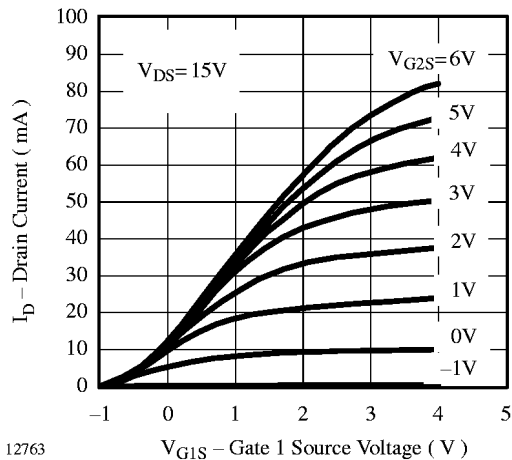
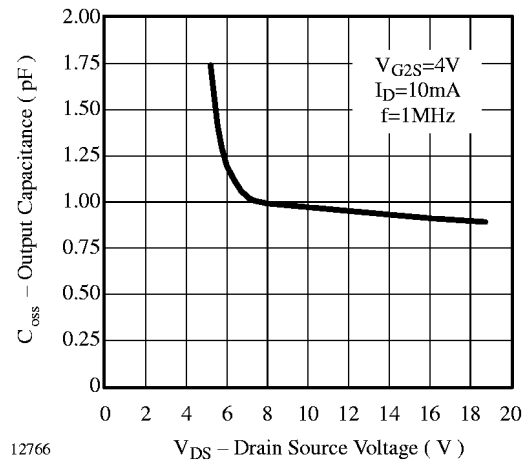
$T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

Parameter	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	$\pm V_{G1S} = 5 \text{ V}$, $V_{G2S} = V_{DS} = 0$		$\pm I_{G1SS}$			50	nA
Gate 2 - source leakage current	$\pm V_{G2S} = 5 \text{ V}$, $V_{G1S} = V_{DS} = 0$		$\pm I_{G2SS}$			50	nA
Drain current	$V_{DS} = 15 \text{ V}$, $V_{G1S} = 0$, $V_{G2S} = 4 \text{ V}$	BF964S	I_{DSS}	4		18	mA
		BF964SA	I_{DSS}	4		10.5	mA
		BF964SB	I_{DSS}	9.5		18	mA
Gate 1 - source cut-off voltage	$V_{DS} = 15 \text{ V}$, $V_{G2S} = 4 \text{ V}$, $I_D = 20 \mu\text{A}$		$-V_{G1S(OFF)}$			2.5	V
Gate 2 - source cut-off voltage	$V_{DS} = 15 \text{ V}$, $V_{G1S} = 0$, $I_D = 20 \mu\text{A}$		$-V_{G2S(OFF)}$			2.0	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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Forward transadmittance		$ y_{21s} $	15	18.5		mS
Gate 1 input capacitance		C_{issg1}		2.5	3.0	pF
Gate 2 input capacitance	$V_{G1S} = 0$, $V_{G2S} = 4 \text{ V}$	C_{issg2}		1.2		pF
Feedback capacitance		C_{rss}		25	35	fF
Output capacitance		C_{oss}		1.0	1.3	pF
Power gain	$G_S = 2 \text{ mS}$, $G_L = 0.5 \text{ mS}$, $f = 200 \text{ MHz}$	G_{ps}		25		dB
AGC range	$V_{G2S} = 4 \text{ to } -2 \text{ V}$, $f = 200 \text{ MHz}$	ΔG_{ps}	50			dB
Noise figure	$G_S = 2 \text{ mS}$, $G_L = 0.5 \text{ mS}$, $f = 200 \text{ MHz}$	F		1.0		dB

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

Figure 1. Total Power Dissipation vs. Ambient Temperature

Figure 4. Drain Current vs. Gate 2 Source Voltage

Figure 2. Drain Current vs. Drain Source Voltage

Figure 5. Gate 1 Input Capacitance vs. Drain Current

Figure 3. Drain Current vs. Gate 1 Source Voltage

Figure 6. Output Capacitance vs. Drain Source Voltage

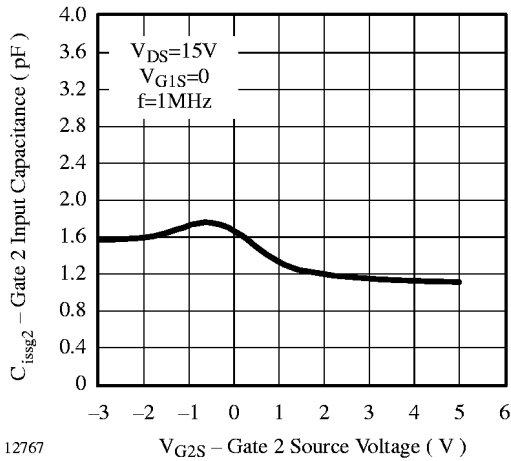


Figure 7. Gate 2 Input Capacitance vs. Gate 2 Source Voltage

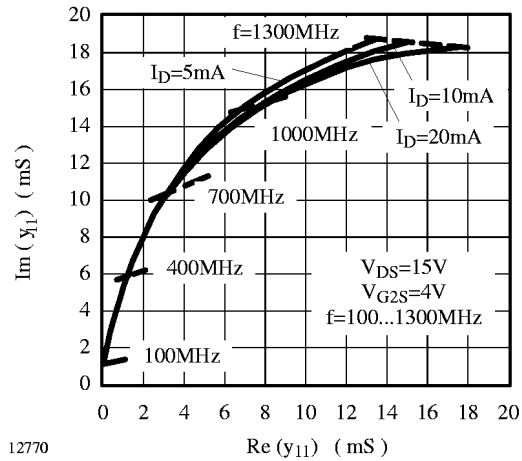


Figure 10. Short Circuit Input Admittance

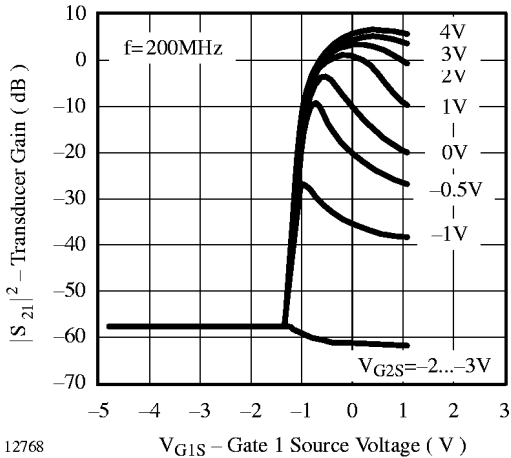


Figure 8. Transducer Gain vs. Gate 1 Source Voltage

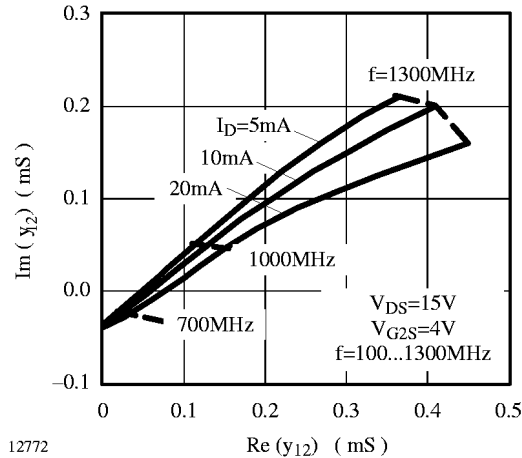


Figure 11. Short Circuit Reverse Transfer Admittance

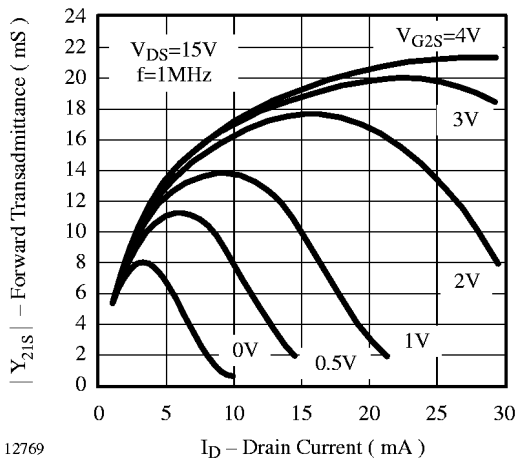


Figure 9. Forward Transadmittance vs. Drain Current

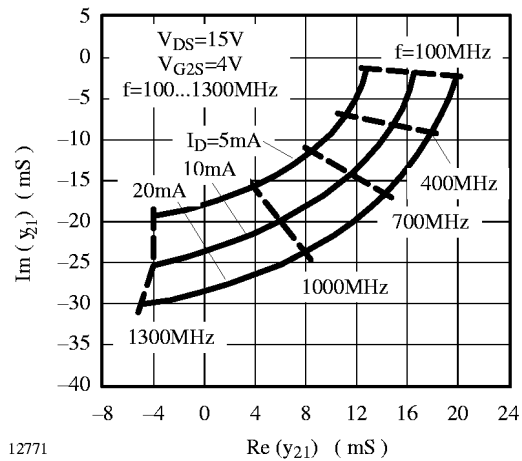


Figure 12. Short Circuit Forward Transfer Admittance

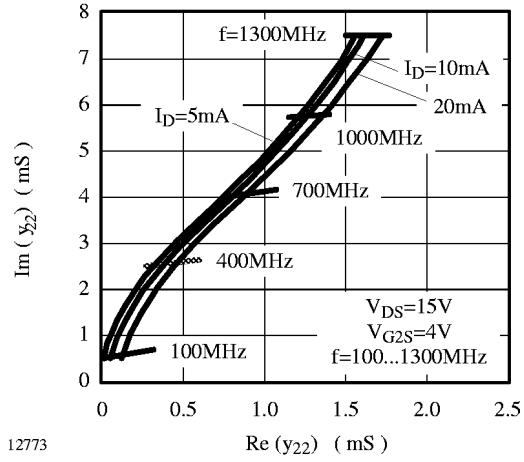


Figure 13. Short Circuit Output Admittance



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

S_{11}

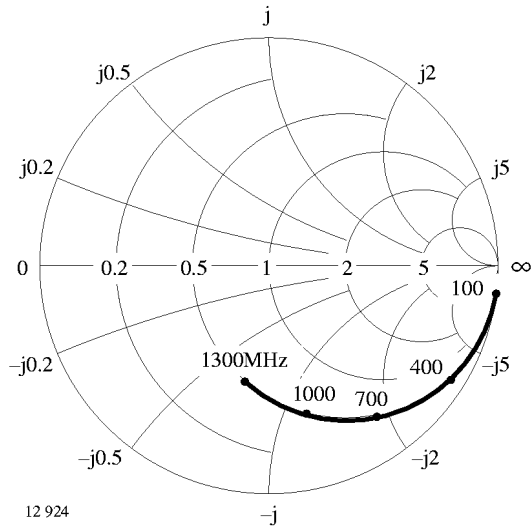


Figure 14. Input reflection coefficient

S_{12}

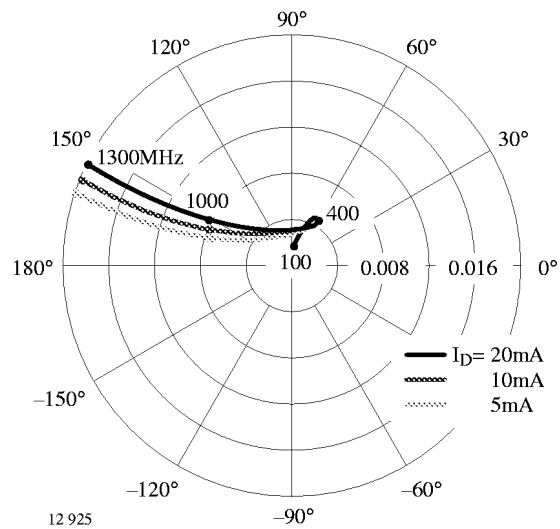


Figure 16. Reverse transmission coefficient

S_{21}

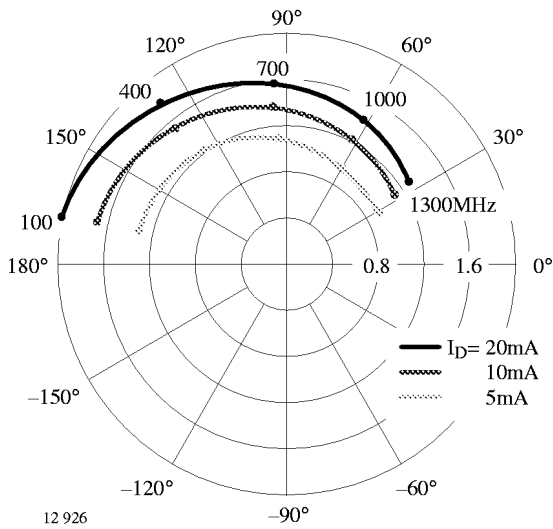


Figure 15. Forward transmission coefficient

S_{22}

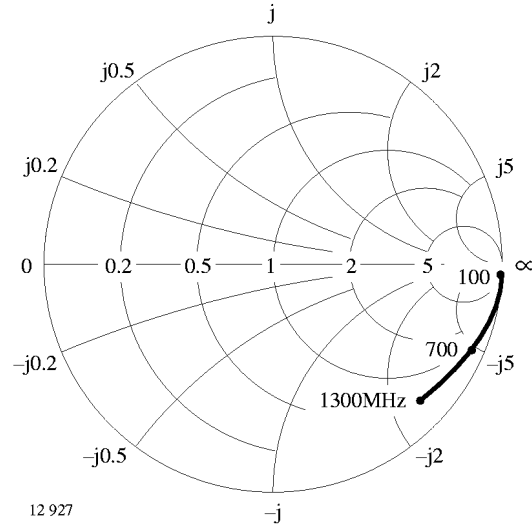
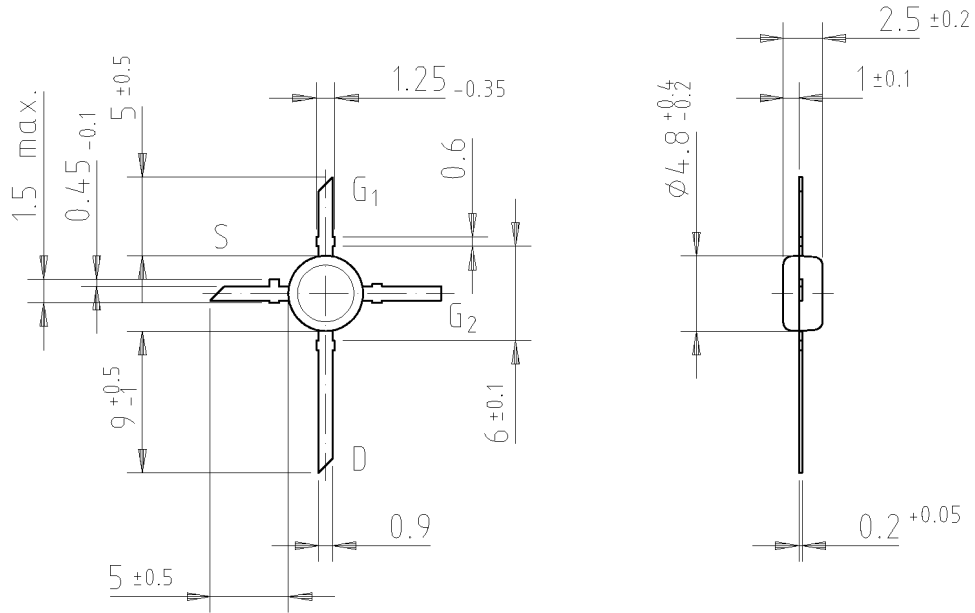
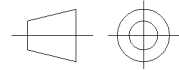


Figure 17. Output reflection coefficient

Dimensions in mm



96 12242



technical drawings
according to DIN
specifications