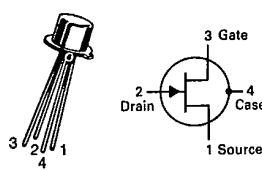


6367254 MOTOROLA SC (XSTRS/R F)

96D 82625 D  
T-31-25

## BFW10 BFW11

CASE 20-03, STYLE 1  
TO-72 (TO-206A)



**JFET**  
**VHF/UHF AMPLIFIER**  
**N-CHANNEL - DEPLETION**

Refer to 2N4416 for graphs.

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	30	Vdc
Drain-Gate Voltage	V <sub>DG</sub>	30	Vdc
Reverse Gate-Source Voltage	V <sub>GSR</sub>	-30	Vdc
Forward Gate Current	I <sub>GF</sub>	10	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	PD	300 1.71	mW mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Gate-Source Breakdown Voltage (I <sub>G</sub> = 10 μAdc, V <sub>DS</sub> = 0)	V(BR)GSS	30	—	—	Vdc
Gate-Source Cutoff Voltage (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 0.5 nAdc)	BFW10 BFW11 V <sub>GS(off)</sub>	—	—	8 6	Vdc
Gate Reverse Current (V <sub>GS</sub> = 20 Vdc, V <sub>DS</sub> = 0)	I <sub>GSS</sub>	—	—	0.1	nAdc
Gate-Source Voltage (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 400 μAdc)	BFW10 V <sub>GS</sub>	2	—	7.5	Vdc
Gate-Source Voltage (V <sub>DS</sub> = 15 Vdc, I <sub>D</sub> = 50 μAdc)	BFW11 V <sub>GS</sub>	1.25	—	4	Vdc
<b>ON CHARACTERISTICS</b>					
Zero-Gate Voltage Drain Current (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0)	BFW10 BFW11 I <sub>DSS</sub>	8 4	—	20 10	mAdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>					
Forward Transadmittance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 1 kHz)	BFW10 BFW11 Y <sub>fs</sub>	3.5 3.0	—	6.5 6.5	mmhos
Output Admittance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 1.0 kHz)	BFW10 BFW11 Y <sub>os</sub>	—	—	85 50	μmhos
Input Capacitance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0 Vdc, f = 1.0 MHz)	C <sub>iss</sub>	—	—	5.0	pF
Reverse Transfer Capacitance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0 Vdc, f = 1.0 MHz)	C <sub>rss</sub>	—	—	0.8	pF
Forward Transadmittance (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 200 MHz)	Y <sub>fs</sub>	3.2	—	—	mmhos
Equivalent Noise Voltage (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0, f = 25 Hz)	e <sub>n</sub>	—	—	75	nV/√Hz
Noise Figure (V <sub>DS</sub> = 15 Vdc, V <sub>GS</sub> = 0 V, see Figures 1, 2, 3)	NF	—	—	2.5	dB

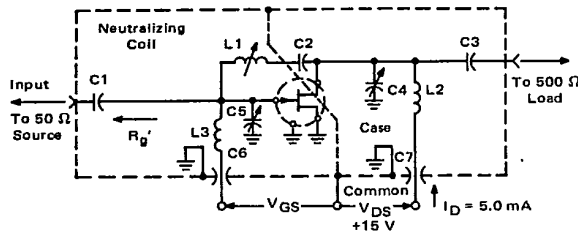
6367254 MOTOROLA SC (XSTRS/R F)

96D 82626 D

BFW10, BFW11

T-31-25

FIGURE 1 - 100 MHz and 400 MHz NEUTRALIZED TEST CIRCUIT



Reference Designation	VALUE	
	100 MHz	400 MHz
C1	7.0 pF	1.8 pF
C2	1000 pF	17 pF
C3	3.0 pF	1.0 pF
C4	1-12 pF	0.8-8.0 pF
C5	1-12 pF	0.8-8.0 pF
C6	0.0015 μF	0.001 μF
C7	0.0015 μF	0.001 μF
L1	3.0 μH*	0.2 μH**
L2	0.15 μH*	0.03 μH**
L3	0.14 μH*	0.022 μH**

Adjust  $V_{GS}$  for  $I_D = 50 \text{ mA}$   
 $V_{GS} < 0 \text{ Volts}$

NOTE: The noise source is a hot-cold body (A1L type 70 or equivalent) with a test receiver (A1L type 136 or equivalent).

- \*L1 17 turns, (approx. — depends upon circuit layout) AWG #28 enameled copper wire, close wound on 9/32" ceramic coil form. Tuning provided by a powdered iron slug.
- L2 4-1/2 turns, AWG #18 enameled copper wire, 5/16" long, 3/8" I.D. (AIR CORE).
- L3 3-1/2 turns, AWG #18 enameled copper wire, 1/4" long, 3/8" I.D. (AIR CORE).

- \*\*L1 6 turns, (approx. — depends upon circuit layout) AWG #24 enameled copper wire, close wound on 7/32" ceramic coil form. Tuning provided by an aluminum slug.
- L2 1 turn, AWG #16 enameled copper wire, 3/8" I.D. (AIR CORE).
- L3 1/2 turn, AWG #16 enameled copper wire, 1/4" I.D. (AIR CORE).

NOISE FIGURE

( $T_{\text{channel}} = 25^\circ\text{C}$ )

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FIGURE 2 - EFFECTS OF DRAIN-SOURCE VOLTAGE

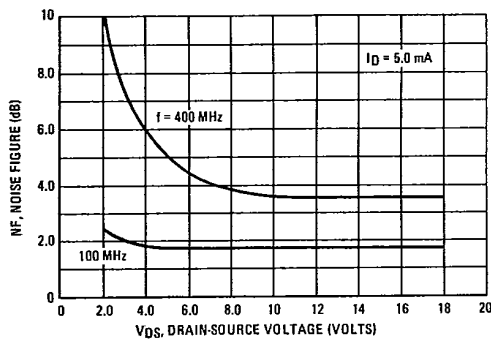


FIGURE 3 - EFFECTS OF DRAIN CURRENT

