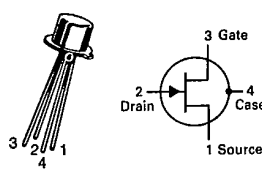


6367254 MOTOROLA SC (XSTRS/R F)

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_{DS}	30	Vdc
Drain-Gate Voltage	V_{DG}	30	Vdc
Reverse Gate-Source Voltage	V_{GSR}	-30	Vdc
Forward Gate Current	IGF	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	PD	300 1.71	mW mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{Adc}, V_{DS} = 0$)	$V_{(BR)GSS}$	30	—	—	Vdc
Gate-Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}, I_D = 0.5 \text{ nAdc}$)	BFW10 BFW11	$V_{GS(off)}$	—	8 6	Vdc
Gate Reverse Current ($V_{GS} = 20 \text{ Vdc}, V_{DS} = 0$)	IGSS	—	—	0.1	nAdc
Gate-Source Voltage ($V_{DS} = 15 \text{ Vdc}, I_D = 400 \mu\text{Adc}$)	BFW10	VGS	2	—	Vdc
Gate-Source Voltage ($V_{DS} = 15 \text{ Vdc}, I_D = 50 \mu\text{Adc}$)	BFW11	VGS	1.25	—	Vdc
ON CHARACTERISTICS					
Zero-Gate Voltage Drain Current ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0$)	BFW10 BFW11	I_{DSS}	8 4	—	mAdc
SMALL-SIGNAL CHARACTERISTICS					
Forward Transadmittance ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 1 \text{ kHz}$)	BFW10 BFW11	Y_{fs}	3.5 3.0	—	6.5 6.5 mmhos
Output Admittance ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ kHz}$)	BFW10 BFW11	Y_{os}	—	—	85 50 μmhos
Input Capacitance ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0 \text{ Vdc}, f = 1.0 \text{ MHz}$)	Ciss	—	—	5.0	pF
Reverse Transfer Capacitance ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0 \text{ Vdc}, f = 1.0 \text{ MHz}$)	Crss	—	—	0.8	pF
Forward Transadmittance ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 200 \text{ MHz}$)	Y_{fs}	3.2	—	—	mmhos
Equivalent Noise Voltage ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0, f = 25 \text{ Hz}$)	e_n	—	—	75	nV/ $\sqrt{\text{Hz}}$
Noise Figure ($V_{DS} = 15 \text{ Vdc}, V_{GS} = 0 \text{ V}$, see Figures 1, 2, 3)	NF	—	—	2.5	dB

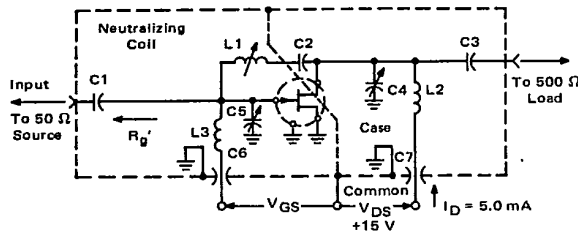
6367254 MOTOROLA SC (XSTRS/R F)

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 $I_D = 5.0 \text{ mA}$
 $V_{GS} < 0 \text{ Volts}$

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

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

6

FIGURE 2 - EFFECTS OF DRAIN-SOURCE VOLTAGE

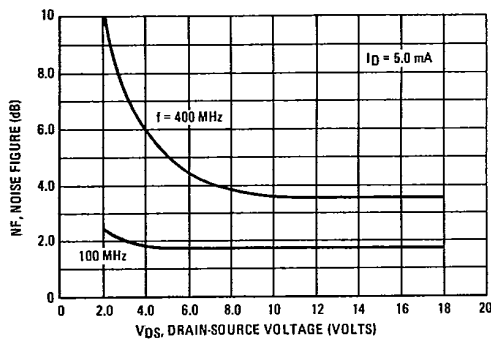
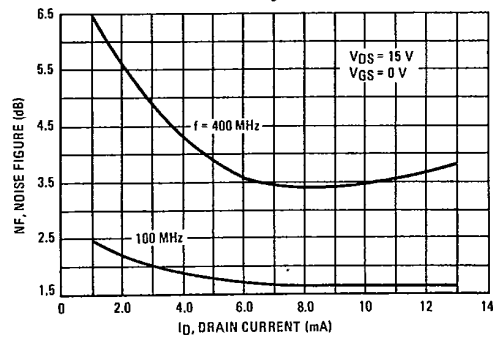


FIGURE 3 - EFFECTS OF DRAIN CURRENT



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