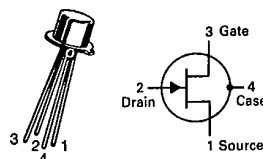


6367254 MOTOROLA SC (XSTRS/R F)

96D 82625^D
T-31-25**BFW10**
BFW11CASE 20-03, STYLE 1
TO-72 (TO-206A)**JFET**
VHF/UHF AMPLIFIER
N-CHANNEL - DEPLETION**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	I_{GF}	10	mA _{dc}
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	$^\circ\text{C}$

Refer to 2N4416 for graphs.

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage ($I_G = 10 \mu\text{A}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	30	—	—	Vdc
Gate-Source Cutoff Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 0.5 \text{ nA}$)	$V_{GS(off)}$	—	—	8 6	Vdc
Gate Reverse Current ($V_{GS} = 20 \text{ Vdc}$, $V_{DS} = 0$)	I_{GSS}	—	—	0.1	nA _{dc}
Gate-Source Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 400 \mu\text{A}$)	V_{GS}	2	—	7.5	Vdc
Gate-Source Voltage ($V_{DS} = 15 \text{ Vdc}$, $I_D = 50 \mu\text{A}$)	V_{GS}	1.25	—	4	Vdc
ON CHARACTERISTICS					
Zero-Gate Voltage Drain Current ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$)	I_{DSS}	8 4	—	20 10	mA _{dc}
SMALL-SIGNAL CHARACTERISTICS					
Forward Transadmittance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 1 \text{ kHz}$)	Y_{fs}	3.5 3.0	—	6.5 6.5	mmhos
Output Admittance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$)	Y_{os}	—	—	85 50	μmhos
Input Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{iss}	—	—	5.0	pF
Reverse Transfer Capacitance ($V_{DS} = 15 \text{ Vdc}$, $V_{GS} = 0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{rss}	—	—	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

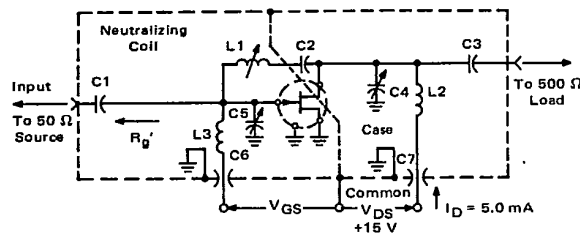
6367254 MOTOROLA SC (XSTRS/R F)

96D 82626 D

BFW10, BFW11

FIGURE 1 — 100 MHz and 400 MHz NEUTRALIZED TEST CIRCUIT

T-31-25



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

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

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^{**}

- *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°C)

FIGURE 2 — EFFECTS OF DRAIN-SOURCE VOLTAGE

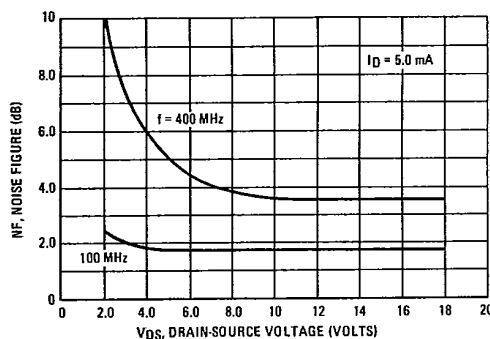


FIGURE 3 — EFFECTS OF DRAIN CURRENT

