2N5668
2N5669
2N5670

CASE 29-02, STYLE 5
TO-92 (TO-226AA)

JFET
VHF AMPLIFIER

N-CHANNEL — DEPLETION

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	25	Vdc
Drain-Gate Voltage	V_{DG}	25	Vdc
Reverse Gate-Source Voltage	V_{GSR}	25	Vdc
Drain Current	I_D	20	mAdc
Forward Gate Current	$I_{G(f)}$	10	mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	310 2.82	mW mW/°C
Storage Channel Temperature Range	T_{stg}	−65 to +150	°C

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

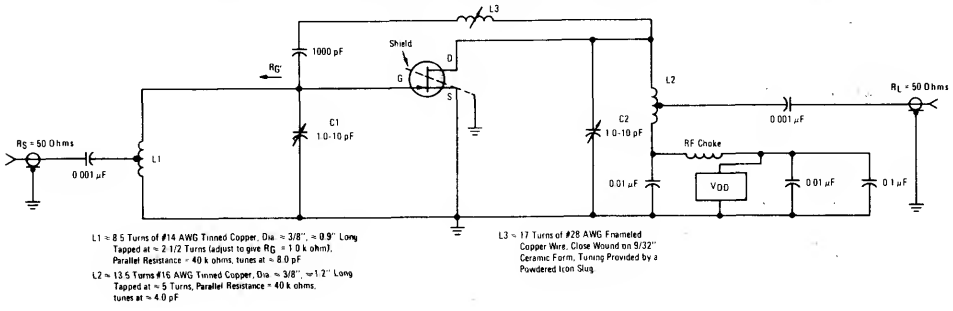
Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Gate-Source Breakdown Voltage (I_G = 10 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	25	—	—	Vdc
Gate Reverse Current		I_{GSS}				
(V_{GS} = −15 Vdc, V_{DS} = 0)			—	—	2.0	nAdc
(V_{GS} = −15 Vdc, V_{DS} = 0, T_A = 100°C)			—	—	2.0	μAdc
Gate Source Cutoff Voltage		$V_{GS(off)}$				Vdc
(V_{DS} = 15 Vdc, I_D = 10 nAdc)	2N5668		0.2	—	4.0	
	2N5669		1.0	—	6.0	
	2N5670		2.0	—	8.0	
ON CHARACTERISTICS						
Zero-Gate-Voltage Drain Current(1)		I_{DSS}				mAdc
(V_{DS} = 15 Vdc, V_{GS} = 0)	2N5668		1.0	—	5.0	
	2N5669		4.0	—	10	
	2N5670		8.0	—	20	
SMALL-SIGNAL CHARACTERISTICS						
Forward Transfer Admittance		$\|y_{fs}\|$				μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)	2N5668		1500	—	6500	
	2N5669		2000	—	6500	
	2N5670		3000	—	7500	
Input Admittance		$Re(y_{is})$	—	125	800	μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz)						
Output Admittance		$\|y_{os}\|$				μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 kHz)	2N5668		—	—	20	
	2N5669		—	—	50	
	2N5670		—	—	75	
Output Conductance		$Re(y_{os})$				μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz)	2N5668		—	10	50	
	2N5669		—	25	100	
	2N5670		—	35	150	
Forward Transconductance		$Re(y_{fs})$				μmhos
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz)	2N5668		1000	—	—	
	2N5669		1600	—	—	
	2N5670		2500	—	—	
Input Capacitance		C_{iss}	—	4.7	7.0	pF
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)						
Reverse Transfer Capacitance		C_{rss}	—	1.0	3.0	pF
(V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)						

ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Output Capacitance (V_{DS} = 15 Vdc, V_{GS} = 0, f = 1.0 MHz)	C_{oss}	—	1.4	4.0	pF
FUNCTIONAL CHARACTERISTICS					
Noise Figure (Figure 1) (V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz at R_G' = 1.0 k ohm)	NF	—	—	2.5	dB
Common Source Power Gain (Figure 1) (V_{DS} = 15 Vdc, V_{GS} = 0, f = 100 MHz)	G_{ps}	16	—	—	dB

(1) Pulse Test: Pulse Width = 100 ms, Duty Cycle ≤ 10%.

FIGURE 1 – 100 MHz, POWER GAIN AND NOISE FIGURE TEST CIRCUIT



L1 = 8.5 Turns of #14 AWG Tinned Copper, Dia. ≈ 3/8", ≈ 0.9" Long
Tapped at ≈ 2 1/2 Turns (adjust to give R_G = 1.0 k ohm),
Parallel Resistance = 40 k ohms, tunes at ≈ 8.0 pF

L2 = 13.5 Turns #16 AWG Tinned Copper, Dia. ≈ 3/8", ≈ 1.2" Long
Tapped at ≈ 5 Turns, Parallel Resistance = 40 k ohms,
tunes at ≈ 4.0 pF

L3 = 17 Turns of #28 AWG Enameled
Copper Wire, Close Wound on 9/32"
Ceramic Form, Tuning Provided by a
Powdered Iron Slug