

2N3821, 2N3822

N-Channel Silicon Junction Field-Effect Transistor

- VHF Amplifiers
- Small Signal Amplifiers

Absolute maximum ratings at $T_A = 25^\circ\text{C}$

Reverse Gate Source & Reverse Gate Drain Voltage	- 50 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	300 mW
Power Derating	2mW/°C

At 25°C free air temperature:

Static Electrical Characteristics

		2N3821		2N3822		Process NJ32	
		Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	- 50		- 50		V	$I_G = -1\ \mu\text{A}$, $V_{DS} = \emptyset\text{V}$
Gate Reverse Current	I_{GSS}		- 0.1		- 0.1	nA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$
			- 0.1		- 0.1	μA	$V_{GS} = -30\text{V}$, $V_{DS} = \emptyset\text{V}$ $T_A = 150^\circ\text{C}$
Gate Source Voltage	V_{GS}	- 0.5	- 2			V	$V_{DS} = 15\text{V}$, $I_D = 50\ \mu\text{A}$
				- 1	- 4	V	$V_{DS} = 15\text{V}$, $I_D = 200\ \mu\text{A}$
						V	$V_{DS} = 15\text{V}$, $I_D = 400\ \mu\text{A}$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$		- 4		- 6	V	$V_{DS} = 15\text{V}$, $I_D = 0.5\ \text{nA}$
Drain Saturation Current (Pulsed)	I_{DSS}	0.5	2.5	2	10	mA	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$
Drain Cutoff Current	$I_{D(OFF)}$					nA	$V_{DS} = 15\text{V}$, $V_{GS} = -8\text{V}$
						μA	$V_{DS} = 15\text{V}$, $V_{GS} = -8\text{V}$ $T_A = 150^\circ\text{C}$

Dynamic Electrical Characteristics

Drain Source ON Resistance	$r_{ds(on)}$					Ω	$V_{GS} = \emptyset\text{V}$, $I_D = \emptyset\text{V}$	$f = 1\ \text{kHz}$
Common Source Forward Transconductance	g_{fs}	1500	4500	3000	6500	μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\ \text{kHz}$
Common Source Forward Transmittance	$ Y_{fs} $	1500		3000		μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 100\ \text{MHz}$
Common Source Output Conductance	g_{os}		10		20	μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\ \text{kHz}$
Common Source Input Capacitance	C_{iss}		6		6	pF	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\ \text{MHz}$
Common Source Reverse Transfer Capacitance	C_{rss}		2		2	pF	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\ \text{MHz}$
Equivalent Short Circuit Input Noise Voltage	\bar{e}_N		200		200	nV/ $\sqrt{\text{Hz}}$	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 10\ \text{Hz}$
Noise Figure	NF		5		5	dB	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$ $R_G = 1\ \text{M}\Omega$	$f = 10\ \text{Hz}$

TO-72 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Drain, 3 Gate, 4 Case