

2N4220, 2N4220A, 2N4221, 2N4221A, 2N4222, 2N4222A

N-Channel Silicon Junction Field-Effect Transistor

- Mixers
- Oscillators
- VHF Amplifiers
- Small Signal Amplifiers

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

Reverse Gate Source & Reverse Gate Drain Voltage	– 30 V
Continuous Forward Gate Current	10 mA
Continuous Device Power Dissipation	300 mW
Power Derating (to 150 °C)	2 mW/°C

At 25°C free air temperature:

Static Electrical Characteristics

		2N4220 2N4220A		2N4221 2N4221A		2N4222 2N4222A			
		NJ16		NJ16		NJ32		Process	
		Min	Max	Min	Max	Min	Max	Unit	Test Conditions
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	– 30		– 30		– 30		V	$I_G = -1\mu\text{A}$, $V_{DS} = \emptyset\text{V}$
Gate Reverse Current	I_{GSS}		– 0.1		– 0.1		– 0.1	nA	$V_{GS} = -15\text{V}$, $V_{DS} = \emptyset\text{V}$
			– 0.1		– 0.1		– 0.1	μA	$V_{GS} = -15\text{V}$, $V_{DS} = \emptyset\text{V}$, $T_A = 150^\circ\text{C}$
Gate Source Voltage	V_{GS}	– 0.5 (50)	– 2.5 (50)	– 1 (200)	– 5 (200)	– 2 (500)	– 6 (500)	V μA	$V_{DS} = 15\text{V}$, $I_D = ()$
Gate Source Cutoff Voltage	$V_{GS(OFF)}$		– 4		– 6		– 8	V	$V_{DS} = 15\text{V}$, $I_D = 0.1\text{ nA}$
Drain Saturation Current (Pulsed)	I_{DSS}	0.5	3	2	6	5	15	mA	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$

Dynamic Electrical Characteristics

Common Source Forward Transconductance	g_{fs}	1000	4000	2000	5000	2500	6000	μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ kHz}$
Common Source Forward Transmittance	$ Y_{fs} $	750		750		750		μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 100\text{ MHz}$
Common Source Output Conductance	g_{os}		10		20		40	μS	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ kHz}$
Common Source Input Capacitance	C_{iss}		6		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		2	pF	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$	$f = 1\text{ MHz}$
Noise Figure 2N4220A, 2N4221A, 2N4222A	NF		2.5		2.5		2.5	dB	$V_{DS} = 15\text{V}$, $V_{GS} = \emptyset\text{V}$ $R_G = 1\text{ M}\Omega$	$f = 100\text{ MHz}$

TO-72 Package

Dimensions in Inches (mm)

Pin Configuration

1 Source, 2 Drain, 3 Gate, 4 Case