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## 2N4221A N-Channel Silicon JFET General Purpose Amp, Switch TO72 Type Package

### **Description:**

The 2N4221A is an N-Channel junction silicon field-effect transistor in a TO72 type package designed for general purpose amplifier and switching applications.

### **Absolute Maximum Ratings:**

Drain-Source Voltage, $V_{DS}$ .....	30V
Drain-Gate Voltage, $V_{DG}$ .....	30V
Gate-Source Voltage, $V_{GS}$ .....	-30V
Drain Current, $I_D$ .....	15mA
Total Device Dissipation ( $T_A = +25^\circ\text{C}$ ), $P_D$ .....	300mW
Derate Above $25^\circ\text{C}$ .....	2mW/ $^\circ\text{C}$
Operating Junction Temperature, $T_J$ .....	+175 $^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	-65 $^\circ$ to +200 $^\circ\text{C}$

### **Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$V_{DS} = 0, I_G = -10\mu\text{A}$	-30	-	-	V
Gate Reverse Current	$I_{GSS}$	$V_{GS} = -15\text{V}, V_{DS} = 0$	-	-	-0.1	nA
		$V_{GS} = -15\text{V}, V_{DS} = 0, T_A = +150^\circ\text{C}$	-	-	-100	nA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 15\text{V}, I_D = 0.1\text{nA}$	-	-	-6	V
Gate-Source Voltage	$V_{GS}$	$V_{DS} = 15\text{V}, I_D = 200\mu\text{A}$	-1.0	-	-5.0	V
<b>ON Characteristics</b>						
Zero-Gate-Voltage Drain Current	$I_{DSS}$	$V_{DS} = 15\text{V}, V_{GS} = 0$ , Note 1	2.0	-	6.0	mA
Static Drain-Source On Resistance	$r_{DS(on)}$	$V_{DS} = 0, V_{GS} = 0$	-	400	-	$\Omega$

Note 1. Pulse test: Pulse Width = 630ms, Duty Cycle = 10%.

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Small-Signal Characteristics</b>						
Forward Transfer Admittance Common Source	$ y_{fs} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$ , Note 1	2000	-	5000	$\mu\text{mhos}$
Output Admittance Common Source	$ y_{os} $	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	-	20	$\mu\text{mhos}$
Input Capacitance	$C_{iss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	4.5	6.0	$\text{pF}$
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 1\text{kHz}$	-	1.2	2.0	$\text{pF}$
Common-Source Output Capacitance	$C_{osp}$	$V_{DS} = 15\text{V}, V_{GS} = 0, f = 30\text{MHz}$	-	1.5	-	$\text{pF}$
<b>Functional Characteristics</b>						
Noise Figure	NF	$V_{DS} = 15\text{V}, V_{GS} = 0, R_S = 1\text{M}\Omega, f = 100\text{Hz}$	-	-	2.5	$\text{dB}$

Note 1. Pulse test: Pulse Width = 630ms, Duty Cycle = 10%.

