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PN4393

Silicon N-Channel JFET Transistor Chopper, High Speed Switch TO92 Type Package

Applications:

- Low Level Analog Switches
- Chopper Stabilized Amplifiers
- Sample and Hold Circuits

Absolute Maximum Ratings: ($T_A = +25^\circ\text{C}$, Note 1 unless otherwise specified)

Drain-Gate Voltage, V_{DG}	30V
Gate-Source Voltage, V_{GS}	-30V
Forward Gate Current, I_{GF}	50mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	625mW
Derate Above 25°C	5mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_J	-55° to +150°C
Storage Temperature Range, T_{stg}	-55° to +150°C
Thermal Resistance, Junction-to-Case, R_{thJC}	125°C/W
Thermal Resistance, Junction-to-Ambient, R_{thJA}	357°C/W

Note 1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired and are based on a maximum junction temperature of +150°C.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Gate-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = 1\mu\text{A}, V_{DS} = 0$	-30	-	-	V
Gate Reverse Current	I_{GSS}	$V_{GS} = -15\text{V}, V_{DS} = 0$	-	-	-1.0	nA
		$V_{GS} = -15\text{V}, V_{DS} = 0, T_A = +150^\circ\text{C}$	-	-	-0.2	μA
Gate-Source Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 20\text{V}, I_D = 1\text{nA}$	-0.5	-	-3.0	V
Gate-Source Forward Voltage	$V_{GS(f)}$	$V_{DS} = 0, I_G = 1\text{mA}$	-	-	1.0	V
Drain Cutoff Leakage Current	$I_{D(off)}$	$V_{DS} = 20\text{V}, V_{GS} = -5\text{V}$	-	-	0.1	nA
		$V_{DS} = 20\text{V}, V_{GS} = -5\text{V}, T_A = +150^\circ\text{C}$	-	-	0.2	μA
ON Characteristics						
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\text{V}, V_{GS} = 0$, Note 2	5	-	30	mA
Drain-Source ON Voltage	$V_{DS(on)}$	$I_D = 3\text{mA}, V_{GS} = 0$	-	-	0.4	V
Drain-Source ON Resistance	$r_{DS(on)}$	$I_D = 1\text{mA}, V_{GS} = 0$	-	-	100	Ω

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 1\%$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Small-Signal Characteristics						
Drain-Source ON Resistance	$r_{ds(on)}$	$V_{DS} = V_{GS} = 0, f = 1\text{kHz}$	-	-	100	Ω
Input Capacitance	C_{iss}	$V_{DS} = 20\text{V}, V_{GS} = 0, f = 1\text{MHz}$	-	-	14	pF
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 5\text{V}, f = 1\text{MHz}$	-	-	3.5	pF
Switching Characteristics						
Rise Time	t_r	$I_{D(on)} = 3\text{mA}$	-	-	5	ns
Fall Time	t_f	$V_{GS(off)} = 3\text{V}$	-	-	30	ns
Turn-On Time	t_{on}	$I_{D(on)} = 3\text{mA}$	-	-	15	ns
Turn-Off Time	t_{off}	$V_{GS(off)} = 3\text{V}$	-	-	50	ns

