

New Jersey Semi-Conductor Products, Inc.

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P-CHANNEL JUNCTION FIELD-EFFECT TRANSISTORS



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2N3993, (SILICON)

2N3994

2N3994A

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
Forward Gate Current	I_{GF}	10	mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	300 2.0	mW mW/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +200	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Gate-Source Breakdown Voltage ($I_G = 1.0 \mu\text{Adc}$, $V_{DS} = 0$)	$V_{(BR)GSS}$	25	-	Vdc
Drain Reverse Current ($V_{DG} = -15 \text{ Vdc}$, $I_S = 0$) ($V_{DG} = -15 \text{ Vdc}$, $I_S = 0$, $T_A = 150^\circ\text{C}$)	I_{DGO}	-	1.2 1.2	nAdc μAdc
Drain Cutoff Current ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 10 \text{ Vdc}$) ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 6.0 \text{ Vdc}$) ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 10 \text{ Vdc}$, $T_A = 150^\circ$) ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 6.0 \text{ Vdc}$, $T_A = 150^\circ$)	$I_{D(off)}$	-	1.2 1.2 1.0 1.0	nAdc μAdc

ON CHARACTERISTICS

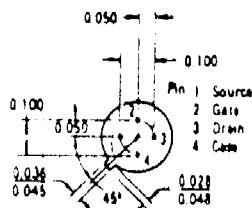
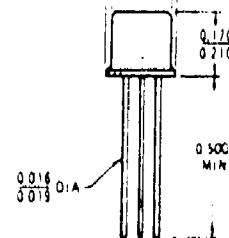
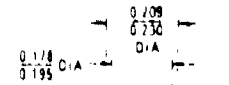
Zero-Gate Voltage Drain Current (Note 1) ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 0$)	I_{DSS}	10 2.0	-	mAdc
Gate-Source Voltage ($V_{DS} = -10 \text{ Vdc}$, $I_D = -1.0 \mu\text{Adc}$)	V_{GS}	4.0 1.0	9.5 5.5	Vdc

SMALL SIGNAL CHARACTERISTICS

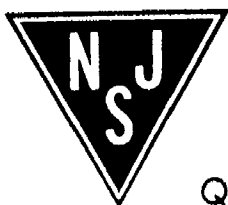
Drain-Source "ON" Resistance ($V_{GS} = 0$, $I_D = 0$, $f = 1.0 \text{ kHz}$)	$r_{ds(on)}$	-	150 300	Ohms
Forward Transadmittance (Note 1) ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ kHz}$)	Y_{fsj}	6.0 4.0 5.0	12 10 10	mmhos
Input Capacitance ($V_{DS} = -10 \text{ Vdc}$, $V_{GS} = 0$, $f = 1.0 \text{ MHz}$)	C_{iss}	-	16 12	pF
Reverse Transfer Capacitance ($V_{DS} = 0$, $V_{GS} = 10 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)	C_{rss}	-	4.5	pF
($V_{DS} = 0$, $V_{GS} = 6.0 \text{ Vdc}$, $f = 1.0 \text{ MHz}$)		-	5.0 3.5	

*Indicates JEDEC Registered Data.

Note 1: Pulse Test Pulse Width = 100 ms, Duty Cycle $\leq 10\%$



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Quality Semi-Conductors