2N3993, 2N3994
P-Channel JFET

FEATURES

- Low $r_{DS(on)}$
- High Y_{fs}/C_{iss} Ratio (High-Frequency Figure-of-Merit)

APPLICATIONS

Used in high-speed commutator and chopper applications. Also ideal for "Virtual Gnd" switching; needs no ext. translator circuit to switch ±10 VAC. Can be driven direct from T^2L or CMOS logic.

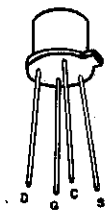
ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

Drain-Gate Voltage	-25V
Drain-Source Voltage	-25V
Continuous Forward Gate Current	-10 mA
Storage Temperature Range	-65°C to +200°C
Operating Temperature Range	-55°C to +150°C
Lead Temperature (Soldering, 10 sec.)	+300°C
Power Dissipation	300 mW
Derate above 25°C	1.7 mW/°C

PIN CONFIGURATION

TO-72



CHIP TOPOGRAPHY

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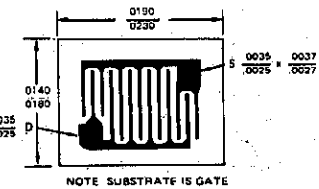

ORDERING INFORMATION*

TO-72	WAFER	DICE
2N3993	2N3993/W	2N3993/D
2N3994	2N3994/W	2N3994/D

*When ordering wafer/dice refer to Appendix B-23.

ELECTRICAL CHARACTERISTICS @ 25°C free-air temperature (unless otherwise noted)

SYMBOL	PARAMETER	2N3993		2N3994		UNIT	TEST CONDITIONS (Note 3)
		MIN	MAX	MIN	MAX		
BV_{GSS}	Gate-Source Breakdown Voltage	25		25		V	I_G = 1 μA, V_{DS} = 0
I_{DGO}	Drain Reverse Current		-1.2		-1.2	nA	V_{DG} = -15 V, I_S = 0
			-1.2		-1.2	μA	V_{DG} = -15 V, I_S = 0, T_A = 150°C
I_{DSS}	Zero-Gate-Voltage Drain Current	-10		-2		mA	V_{DS} = -10 V, V_{GS} = 0, (See Note 1)
$I_{D(off)}$	Drain Cutoff Current				-1.2	nA	V_{DS} = -10 V, V_{GS} = 6 V
					-1	μA	V_{DS} = -10 V, V_{GS} = 6 V, T_A = 150°C
			-1.2			nA	V_{DS} = -10 V, V_{GS} = 10 V
			-1			μA	V_{DS} = -10 V, V_{GS} = 10 V, T_A = 150°C
$V_{GS(off)}$	Gate-Source Voltage	4	9.5	1	5.5	V	V_{DS} = -10 V, I_D = -1 μA
$r_{ds(on)}$	Small-Signal Drain-Source On-State Resistance		150		300	Ω	V_{GS} = 0, I_D = 0, f = 1 kHz
$\|y_{fs}\|$	Small-Signal Common-Source Forward Transfer Admittance	6	12	4	10	mmho	V_{DS} = -10 V, V_{GS} = 0, f = 1 kHz, (See Note 1)
C_{iss}	Common-Source Short-Circuit Input Capacitance		16		16	pF	V_{DS} = -10 V, V_{GS} = 0, f = 1 MHz, (See Note 2)
C_{rss}	Common-Source Short-Circuit Reverse Transfer Capacitance				5	pF	V_{DS} = 0, V_{GS} = 6 V, f = 1 MHz
			4.5			pF	V_{DS} = 0, V_{GS} = 10 V, f = 1 MHz

NOTES: 1. These parameters must be measured using pulse techniques. t_p = 100 ms, duty cycle ≤ 10%.
2. This parameter must be measured with bias voltage applied for less than 5 seconds to avoid overheating.
3. The case should be connected to the source for all measurements.