

PJ99 Process**SILICON JUNCTION FIELD-EFFECT TRANSISTOR**

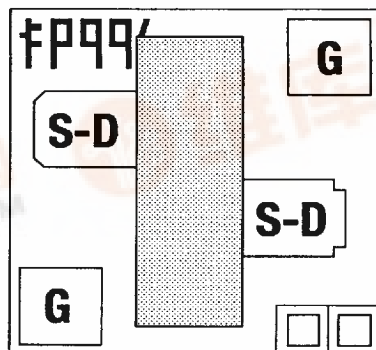
- GENERAL PURPOSE AMPLIFIER
- ANALOG SWITCH

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

Gate Current, I_g	10 mA
Operating Junction Temperature, T_j	+150°C
Storage Temperature, T_s	-65°C to +175°C

Devices in this Databook based on the PJ99 Process.

Datasheet	Datasheet
2N3993, 2N3993A	1P44
2N3994, 2N3994A	J174, J175
2N5114, 2N5115	J176, J177
2N5116	P1086, P1087
2SJ44	VCR3P
1FN5114, 1FN5115	
1FN5116	



Die Size = 0.021" X 0.021"
 All Bond Pads = 0.004" Sq.
 Substrate is also Gate.

At 25°C free air temperature:

Static Electrical Characteristics

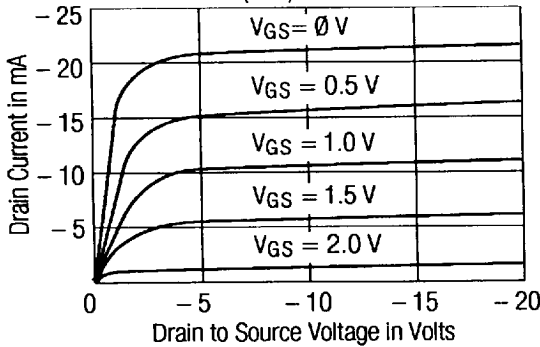
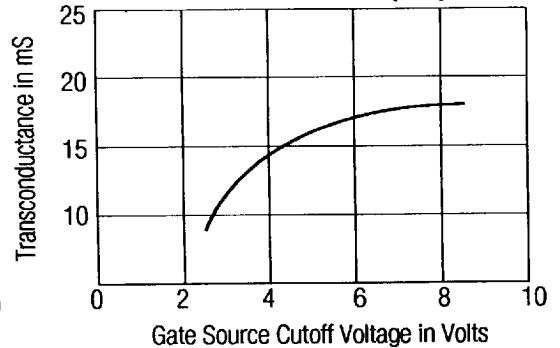
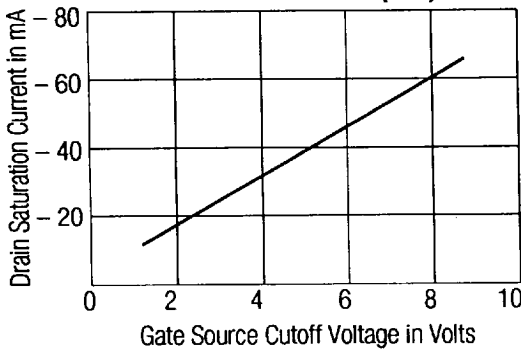
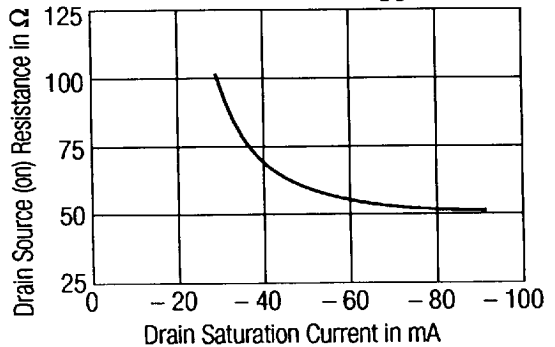
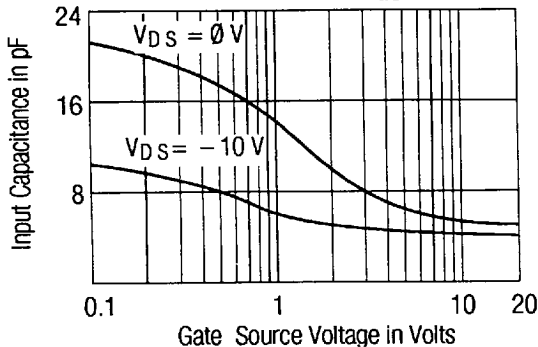
PJ99 Process						
	Min	Typ	Max	Unit	Test Conditions	
Gate Source Breakdown Voltage	$V_{(BR)GSS}$	30	40	V	$I_G = 1 \mu A, V_{DS} = 0 V$	
Reverse Gate Leakage Current	I_{GSS}		0.5	1	nA	$V_{GS} = 20 V, V_{DS} = 0 V$
Drain Saturation Current (Pulsed)	I_{DSS}	-5		-60	mA	$V_{DS} = -15 V, V_{GS} = 0 V$
Gate Source Cutoff Voltage	$V_{GS(Off)}$	1		8	V	$V_{DS} = -15 V, I_D = 1 nA$

Dynamic Electrical Characteristics

Drain Source ON Resistance	$r_{ds(on)}$		75		Ω	$I_D = 1 mA, V_{GS} = 0 V$	$f = 1 kHz$
Forward Transconductance	g_{fs}		15		mS	$V_{DS} = -15 V, V_{GS} = 0 V$	$f = 1 kHz$
Input Capacitance	C_{iss}		18		pF	$V_{DS} = 15 V, V_{GS} = 0 V$	$f = 1 MHz$
Feedback Capacitance	C_{rss}		4.5		pF	$V_{DS} = 0 V, V_{GS} = 10 V$	$f = 1 MHz$
Equivalent Noise Voltage	$\bar{e}_N$		8		nV/√Hz	$V_{DS} = -10 V, I_D = 0 V$	$f = 1 kHz$
Turn On Delay Time	$t_{d(on)}$		5		ns	$V_{DD} = -10 V, I_{D(on)} = -15 mA$ $R_L = 580 \Omega, V_{GS(on)} = 0 V$ $V_{GS(off)} = 12 V$	
Rise Time	t_r		10		ns		
Turn OFF Delay Time	$t_{d(off)}$		6		ns		
Fall Time	t_f		5		ns		

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Drain Current as a Function of V_{DS} $V_{GS(OFF)} = 2.4 \text{ V}$  G_{fs}
as a Function of $V_{GS(OFF)}$ Drain Saturation Current
as a Function of $V_{GS(OFF)}$  I_{DSS}
as a Function of R_{DS} Input Capacitance
as a Function of V_{GS} Feedback Capacitance
as a Function of V_{GS} 