New Jersey Semi-Conductor Products, Inc.

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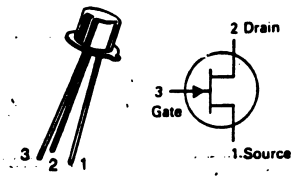
2N4391 thru 2N4393

TO-18



JFETs
SWITCHING

N-CHANNEL — DEPLETION

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	Vdc
Drain-Gate Voltage	V_{DG}	40	Vdc
Gate-Source Voltage	V_{GS}	40	Vdc
Forward Gate Current	I_{GF}	50	mAdc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.8 10	Watts mW/°C
Operating Junction Temperature Range	T_J	−65 to +175	°C
Storage Temperature Range	T_{stg}	−65 to +175	°C

***ELECTRICAL CHARACTERISTICS** (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Gate-Source Breakdown Voltage (I_G = 1.0 μAdc, V_{DS} = 0)		$V_{(BR)GSS}$	40	—	Vdc
Gate Reverse Current		I_{GSS}			nAdc
(V_{GS} = 20 Vdc, V_{DS} = 0)			—	0.1	
(V_{GS} = 20 Vdc, V_{DS} = 0, T_A = 150°C)			—	0.2	μAdc
Gate Source Voltage		V_{GS}			Vdc
(V_{DS} = 20 Vdc, I_D = 1.0 nAdc)	2N4391		−4.0	−10	
	2N4392		−2.0	−5.0	
	2N4393		−0.5	−3.0	
Gate-Source Forward Voltage (I_G = 1.0 mAdc, V_{DS} = 0)		$V_{GS(f)}$	—	1.0	Vdc
Drain-Cutoff Current		$I_{D(off)}$			nAdc
(V_{DS} = 20 Vdc, V_{GS} = 12 Vdc)	2N4391		—	0.1	
(V_{DS} = 20 Vdc, V_{GS} = 7.0 Vdc)	2N4392		—	0.1	
(V_{DS} = 20 Vdc, V_{GS} = 5.0 Vdc)	2N4393		—	0.1	
(V_{DS} = 20 Vdc, V_{GS} = 12 Vdc, T_A = 150°C)	2N4391		—	0.2	μAdc
(V_{DS} = 20 Vdc, V_{GS} = 7.0 Vdc, T_A = 150°C)	2N4392		—	0.2	
(V_{DS} = 20 Vdc, V_{GS} = 5.0 Vdc, T_A = 150°C)	2N4393		—	0.2	
ON CHARACTERISTICS					
Zero-Gate-Voltage Drain Current(1)		I_{DSS}			mAdc
(V_{DS} = 20 Vdc, V_{GS} = 0)	2N4391		50	150	
	2N4392		25	75	
	2N4393		5.0	30	
Drain-Source On-Voltage		$V_{DS(on)}$			Vdc
(I_D = 12 mAdc, V_{GS} = 0)	2N4391		—	0.4	
(I_D = 6.0 mAdc, V_{GS} = 0)	2N4392		—	0.4	
(I_D = 3.0 mAdc, V_{GS} = 0)	2N4393		—	0.4	
Static Drain-Source On Resistance		$r_{DS(on)}$			Ohms
(I_D = 1.0 mAdc, V_{GS} = 0)	2N4391		—	30	
	2N4392		—	60	
	2N4393		—	100	
SMALL-SIGNAL CHARACTERISTICS					
Drain-Source "ON" Resistance		$r_{ds(on)}$			Ohms
(V_{GS} = 0, I_D = 0, f = 1.0 kHz)	2N4391		—	30	
	2N4392		—	60	
	2N4393		—	100	

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*ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
Input Capacitance (V_{DS} = 20 Vdc, V_{GS} = 0, f = 1.0 MHz)		C_{iss}	—	14	pF
Reverse Transfer Capacitance		C_{rss}			pF
(V_{DS} = 0, V_{GS} = 12 Vdc, f = 1.0 MHz)	2N4391		—	3.5	
(V_{DS} = 0, V_{GS} = 7.0 Vdc, f = 1.0 MHz)	2N4392		—	3.5	
(V_{DS} = 0, V_{GS} = 5.0 Vdc, f = 1.0 MHz)	2N4393		—	3.5	
SWITCHING CHARACTERISTICS					
Rise Time		t_r			ns
($I_{D(on)}$ = 12 mAdc)	2N4391		—	5.0	
($I_{D(on)}$ = 6.0 mAdc)	2N4392		—	5.0	
($I_{D(on)}$ = 3.0 mAdc)	2N4393		—	5.0	
Fall Time		t_f			ns
($V_{GS(off)}$ = 12 Vdc)	2N4391		—	15	
($V_{GS(off)}$ = 7.0 Vdc)	2N4392		—	20	
($V_{GS(off)}$ = 5.0 Vdc)	2N4393		—	30	
Turn-On Time		t_{on}			ns
($I_{D(on)}$ = 12 mAdc)	2N4391		—	15	
($I_{D(on)}$ = 6.0 mAdc)	2N4392		—	15	
($I_{D(on)}$ = 3.0 mAdc)	2N4393		—	15	
Turn-Off Time		t_{off}			ns
($V_{GS(off)}$ = 12 Vdc)	2N4391		—	20	
($V_{GS(off)}$ = 7.0 Vdc)	2N4392		—	35	
($V_{GS(off)}$ = 5.0 Vdc)	2N4393		—	50	

(1) Pulse Test: Pulse Width ≤ 100 μs, Duty Cycle ≤ 1.0%.
*In addition to JEDEC Registered Data.