N-Channel JFET Switch

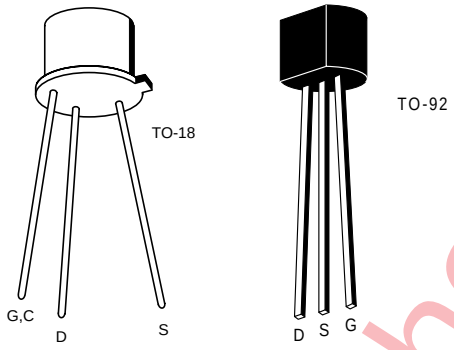
calogic
LLC

2N4391 – 2N4393 / PN4391 – PN4393 / SST4391 – SST4393

FEATURES

- $r_{ds(on)}$<300 Ohms (2N4391)
- $I_{D(OFF)}$<100pA
- Switches ±10VAC With ±15V Supplies (4392, 4393)

PIN CONFIGURATION



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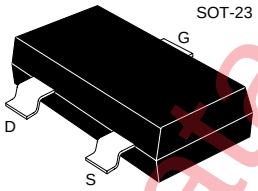

PRODUCT MARKING (SOT-23)	
SST4391	N01
SST4392	N02
SST4393	N03

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted)

Gate-Source or Gate-Drain Voltage . . . . . -40V
Gate Current 10mA
Storage Temperature Range . . . . . -65°C to +200°C
Operating Temperature Range . . . . . -55°C to +200°C
Lead Temperature (Soldering, 10sec) . . . . . +300°C

	TO-18	TO-92	SOT-23
Power Dissipation	1.8W	360mW	350mW
Derate above 25°C	10mW/°C	3.3mW/°C	2.8mW/°C

Plastic
Storage . . . . . -55°C to +150°C
Operating . . . . . -55°C to +135°C

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ORDERING INFORMATION

Part	Package	Temperature Range
2N4391/93	Hermetic TO-18	-55°C to +200°C
PN4391/93	Plastic TO-92	-55°C to +135°C
SST4391/93	Plastic SOT-23	-55°C to +135°C
X2N4391/93	Sorted Chips in Carriers	-55°C to +200°C

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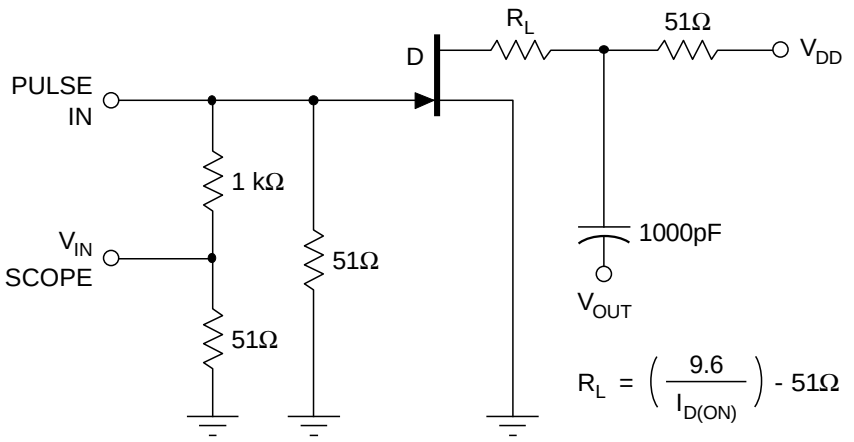
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

SYMBOL	PARAMETER	4391		4392		4393		UNITS	TEST CONDITIONS	
		MIN	MAX	MIN	MAX	MIN	MAX			
I_{GSS}	Gate Reverse Current		-100		-100		-100	pA	V_{GS} = -20V, V_{DS} = 0	
			-200		-200		-200	nA		T_A = 150°C
BV_{GSS}	Gate-Source Breakdown Voltage	-40		-40		-40		V	I_G = -1μA, V_{DS} = 0	
$I_{D(off)}$	Drain Cutoff Current		100		100		100	pA	V_{DS} = 20V	V_{GS} = -5V (4393) V_{GS} = -7V (4392) V_{GS} = -12V (4391)
			200		200		200	nA		T_A = 150°C
$V_{GS(f)}$	Gate-Source Forward Voltage		1		1		1	V	I_G = 1mA, V_{DS} = 0	
$V_{GS(off)}$	Gate-Source Cutoff Voltage	-4	-10	-2	-5	-0.5	-3		V_{DS} = 20V, I_D = 1nA	
I_{DSS}	Saturation Drain Current (Note 1)	50	150	25	75	5	30	mA	V_{DS} = 20V, V_{GS} = 0	
$V_{DS(on)}$	Drain-Source ON Voltage		0.4		0.4		0.4	V	V_{GS} = 0	I_D = 3mA (4393) I_D = 6mA (4392) I_D = 12mA (4391)
$r_{DS(on)}$	Static Drain-Source ON Resistance		30		60		100	Ω	V_{GS} = 0, I_D = 1mA	
$r_{ds(on)}$	Drain-Source ON Resistance		30		60		100		V_{GS} = 0, I_D = 0	f = 1kHz
C_{iss}	Common-Source Input Capacitance (Note 2)		14		14		14	pF	V_{DS} = 20V, V_{GS} = 0	f = 1MHz
C_{rss}	Common-Source Reverse Transfer Capacitance (Note 2)						3.5		V_{DS} = 0	V_{GS} = -5V, f = 1MHz
					3.5					V_{GS} = -7V, f = 1MHz
			3.5							V_{GS} = -12V, f = 1MHz
t_d	Turn-ON Delay Time (Note 2)		15		15		15	ns	V_{DD} = 10V, $V_{GS(on)}$ = 0	
t_r	Rise Time (Note 2)		5		5		5			
t_{off}	Turn-OFF Delay Time (Note 2)		20		35		50			
t_f	Fall Time (Note 2)		15		20		30			

	$I_{D(on)}$	$V_{GS(off)}$
4391	12mA	-12V
4392	6	-7
4393	3	-5

NOTES: **1.** Pulse test required, pulse width = 300μs, duty cycle ≤3%.
2. For design reference only, not 100% tested.

SWITCHING TIMES TEST CIRCUIT



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