

LINEAR SYSTEMS

Linear Integrated Systems

2N/PN/SST4391 SERIES

SINGLE N-CHANNEL JFET SWITCH

FEATURES

Replacement for Siliconix 2N/PN/SST4391, 4292, & 4393

LOW ON RESISTANCE $r_{DS(on)} \leq 30\Omega$

FAST SWITCHING $t_{ON} \leq 15ns$

ABSOLUTE MAXIMUM RATINGS¹

@ 25 °C (unless otherwise stated)

Maximum Temperatures

Storage Temperature (2N) -65 to 200°C

Storage Temperature (PN/SST) -55 to 150°C

Junction Operating Temperature (2N) -55 to 200°C

Junction Operating Temperature (PN/SST) -55 to 150°C

Maximum Power Dissipation

Continuous Power Dissipation (2N) 1800mW

Continuous Power Dissipation (PN/SST) 350mW

Maximum Currents

Gate Current 50mA

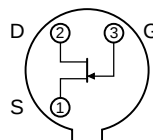
Maximum Voltages

Gate to Drain or Source (2N/PN) -40V

Gate to Drain or Source (SST) -35V

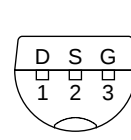
2N SERIES

TO-18
BOTTOM VIEW



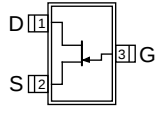
PN SERIES

TO-92
BOTTOM VIEW



SST SERIES

SOT-23
TOP VIEW



STATIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC	TYP	4391		4392		4393		UNIT	CONDITIONS
			MIN	MAX	MIN	MAX	MIN	MAX		
BV _{GSS}	Gate to Source Breakdown Voltage	2N/PN	-40		-40		-40		V	I _G = -1μA, V _{DS} = 0V
		SST	-35		-35		-35			
V _{GS(off)}	Gate to Source Cutoff Voltage	2N/PN	-4	-10	-2	-5	-0.5	-3		V _{DS} = 20V, I _D = 1nA
		SST	-4	-10	-2	-5	-0.5	-3		V _{DS} = 15V, I _D = 10nA
V _{GS(F)}	Gate to Source Forward Voltage	0.7		1		1		1		I _G = 1mA, V _{DS} = 0V
V _{DS(on)}	Drain to Source On Voltage	0.25						0.4		V _{GS} = 0V, I _D = 3mA
		0.3				0.4				V _{GS} = 0V, I _D = 6mA
		0.35		0.4						V _{GS} = 0V, I _D = 12mA
I _{DSS}	Drain to Source Saturation Current ²	2N	50	150	25	75	5	30	mA	V _{DS} = 20V, V _{GS} = 0V
		PN	50	100	25	100	5	60		
		SST	50		25		5			
I _{GSS}	Gate Leakage Current	2N/SST	-5	-100		-100		-100	pA	V _{GS} = -20V, V _{DS} = 0V
		PN	-5	-1000		-1000		-1000		
I _G	Gate Operating Current	-5								V _{DG} = 15V, I _D = 10mA

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STATIC ELECTRICAL CHARACTERISTICS CONT. @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC		TYP	4391		4392		4393		UNIT	CONDITIONS			
				MIN	MAX	MIN	MAX	MIN	MAX					
I _{D(off)}	Drain Cutoff Current	2N	5						100	pA	V _{DS} = 20V, V _{GS} = -5V			
			5				100				V _{DS} = 20V, V _{GS} = -7V			
			5		100						V _{DS} = 20V, V _{GS} = -12V			
		PN	5						1000		V _{DS} = 20V, V _{GS} = -5V			
			5				1000				V _{DS} = 20V, V _{GS} = -7V			
			5		1000						V _{DS} = 20V, V _{GS} = -12V			
		SST	5		100		100		100		V _{DS} = 10V, V _{GS} = -10V			
		r _{DS(on)}	Drain to Source On Resistance				30		60			100	Ω	V _{GS} = 0V, I _D = 1mA

DYNAMIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC		TYP	4391		4392		4393		UNIT	CONDITIONS
				MIN	MAX	MIN	MAX	MIN	MAX		
g_{fs}	Forward Transconductance		6							mS	$V_{DS} = 20V, I_D = 1mA$
g_{os}	Output Conductance		25							μS	$f = 1kHz$
$r_{ds(on)}$	Drain to Source On Resistance				30		60		100	Ω	$V_{GS} = 0V, I_D = 0A$ $f = 1kHz$
C_{iss}	Input Capacitance	2N	12		14		14		14	pF	$V_{DS} = 20V, V_{GS} = 0V$ $f = 1MHz$
		PN	12		16		16		16		
		SST	13								
C_{rss}	Reverse Transfer Capacitance	2N	3.3						3.5		$V_{DS} = 0V, V_{GS} = -5V$ $f = 1MHz$
		PN	3.5						5		
		SST	3.6								
		2N	3.2				3.5				$V_{DS} = 0V, V_{GS} = -7V$ $f = 1MHz$
		PN	3.4				5				
		SST	3.5								
		2N	2.8		3.5						$V_{DS} = 0V, V_{GS} = -12V$ $f = 1MHz$
		PN	3.0		5						
		SST	3.1								
e_n	Equivalent Input Noise Voltage		3							nV/ $\sqrt{Hz}$	$V_{DS} = 10V, I_D = 10mA$ $f = 1kHz$

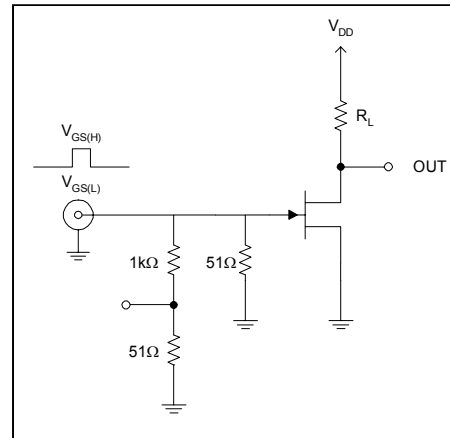
SWITCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

SYM.	CHARACTERISTIC		TYP	4391		4392		4393		UNIT	CONDITIONS
				MIN	MAX	MIN	MAX	MIN	MAX		
t _{d(on)}	Turn On Time	2N/PN	2		15		15		15	ns	V _{DD} = 10V, V _{GS(H)} = 0V
		SST	2								
t _r		2N/PN	2		5		5		5		
		SST	2								
t _{d(off)}	Turn Off Time	2N/PN	6		20		35		50		
		SST	6								
t _f		2N/PN	13		15		20		30		
		SST	13								

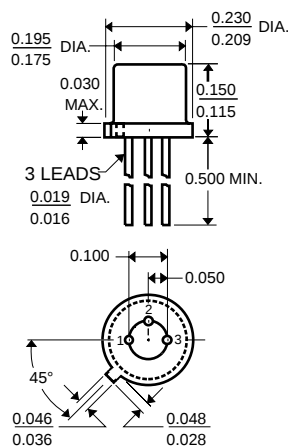
SWITCHING CIRCUIT CHARACTERISTICS

SYM.	4391	4392	4393
$V_{GS(L)}$	-12V	-7V	-5V
R_L	800 Ω	1600 Ω	3200 Ω
$I_{D(on)}$	12mA	6mA	3mA

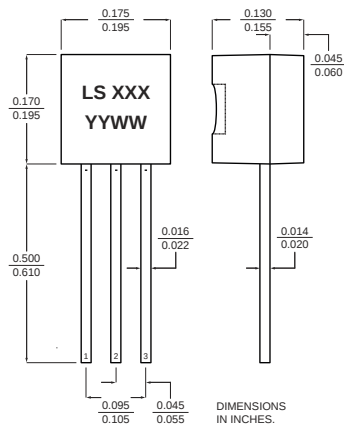
SWITCHING TEST CIRCUIT



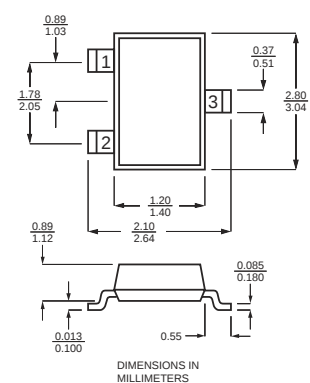
TO-18 Three Lead



TO-92



SOT-23



NOTES

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse test: $PW \leq 300\mu s$, Duty Cycle $\leq 3\%$

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