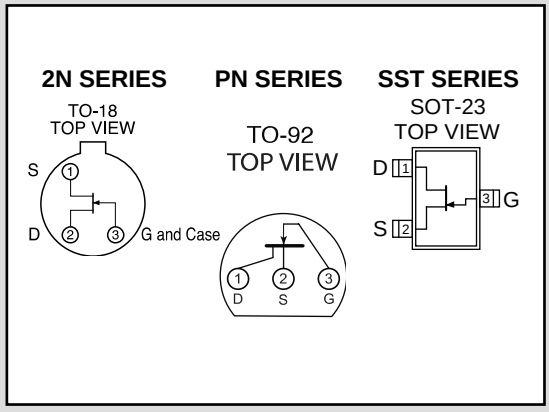
LINEAR SYSTEMS

Twenty-Five Years Of Quality Through Innovation

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 RATINGS[1] @ 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)@Tc=25°C	1800mW[3]
Continuous Power Dissipation (PN/SST)	350mW[4]
Maximum Currents	
Gate Current	50mA
Maximum Voltages	
Gate to Drain or Source (2N/PN)	-40V



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/SST		-40		-40		-40		V	I_G = -1µA, V_{DS} = 0V
$V_{GS(off)}$	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	165	25	150	5	125	mA	V_{DS} = 20V, V_{GS} = 0V
		PN		50	165	25	150	5	125		
		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

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} = -12V
$r_{DS(on)}$	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 *f* = 1kHz
g_{os}	Output Conductance		25							µS	
$r_{ds(on)}$	Drain to Source On Resistance				30		60		100	Ω	V_{GS} = 0V, I_D = 1mA
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/√Hz	V_{DS} = 10V, I_D = 10mA *f* = 1kHz

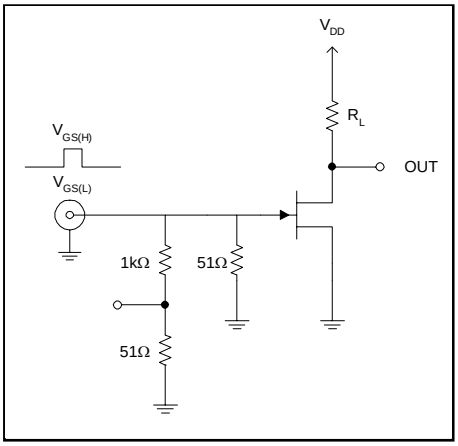
SWITCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

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								

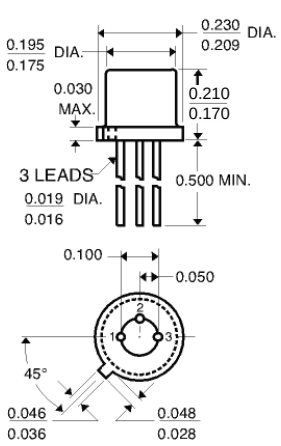
SWITCHING CIRCUIT CHARACTERISTICS

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

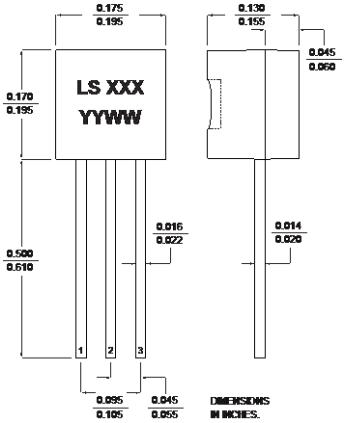
SWITCHING TEST CIRCUIT



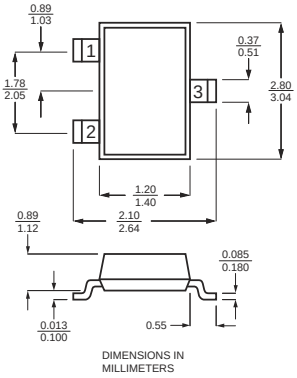
TO-18 *
Three Lead



TO-92 *



SOT-23



*Dimensions in inches

NOTES

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse test: PW ≤ 300μs, Duty Cycle ≤ 3%
3. Derate 10mW/°C above 25°C
4. Derate 2.8mW/°C above 25°C

Linear Integrated Systems (LIS) is a 25-year-old, third-generation precision semiconductor company providing high-quality discrete components. Expertise brought to LIS is based on processes and products developed at Amelco, Union Carbide, Intersil and Micro Power Systems by company President John H. Hall. Hall, a protégé of Silicon Valley legend Dr. Jean Hoerni, was the director of IC Development at Union Carbide, co-founder and vice president of R&D at Intersil, and founder/president of Micro Power Systems.

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Doc 201136 06/18/13 Rev#A5 ECN# LS/PN/SST4391

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