

LINEAR SYSTEMS

Twenty-Five Years Of Quality Through Innovation

2N/PN/SST4391 SERIES

SINGLE N-CANNEL 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) @ Tc=25°C 1800mW³

Continuous Power Dissipation (PN/SST) 350mW⁴

Maximum Currents

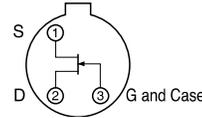
Gate Current 50mA

Maximum Voltages

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

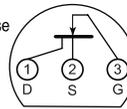
2N SERIES

TO-18
TOP VIEW



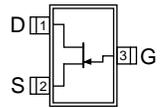
PN SERIES

TO-92
TOP 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/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	pF	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						
PN	3.0		5								
SST	3.1										
e _n	Equivalent Input Noise Voltage		3							nV/√Hz	V _{DS} = 10V, I _D = 10mA f = 1kHz

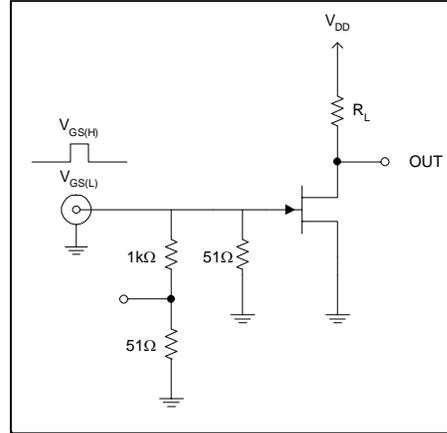
SWITCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

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	800 Ω	1600 Ω	3200 Ω
$I_{D(on)}$	12mA	6mA	3mA

SWITCHING TEST CIRCUIT



TO-18 *

Three Lead

TO-92 *

SOT-23

DIMENSIONS IN MILLIMETERS

*Dimensions in inches

NOTES

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

Information furnished by Linear Integrated Systems is believed to be accurate and reliable. However, no responsibility is assumed for its use; nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Linear Integrated Systems.

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.