

## Linear Systems replaces discontinued Siliconix 2N4391

The LS4391 features many of the superior characteristics of JFETs which make it a good choice for demanding analog switching applications and for specialized amplifier circuits.

**LS4391 Benefits:**

- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible "Off-Error," Excellent Accuracy
- Good Frequency Response, Low Glitches
- Eliminates Additional Buffering

**LS4391 Applications:**

- Analog Switches
- Choppers, Sample-and-Hold
- Normally "On" Switches, Current Limiters

FEATURES	
DIRECT REPLACEMENT FOR SILICONIX 2N4391	
LOW ON RESISTANCE	$r_{DS(on)} \leq 30\Omega$
LOW GATE OPERATING CURRENT	$I_{D(off)} = 5\text{pA}$
FAST SWITCHING	$t_{(ON)} \leq 15\text{ns}$
ABSOLUTE MAXIMUM RATINGS <sup>1</sup> @ 25°C (unless otherwise noted)	
<b>Maximum Temperatures</b>	
Storage Temperature	-65°C to +200°C
Operating Junction Temperature	-55°C to +200°C
<b>Maximum Power Dissipation</b>	
Continuous Power Dissipation	350mW
<b>MAXIMUM CURRENT</b>	
Gate Current (Note 1)	$I_G = 50\text{mA}$
<b>MAXIMUM VOLTAGES</b>	
Gate to Drain Voltage / Gate to Source Voltage	-35V

**LS4391 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$BV_{GSS}$	Gate to Source Breakdown Voltage	-35	--	--	V	$I_G = -1\mu\text{A}, V_{DS} = 0\text{V}$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	-4	--	-10		$V_{DS} = 15\text{V}, I_D = 10\text{nA}$
$V_{GS(F)}$	Gate to Source Forward Voltage	--	0.7	1		$I_G = 1\text{mA}, V_{DS} = 0\text{V}$
$V_{DS(on)}$	Drain to Source On Voltage	--	0.25	--	mA	$V_{GS} = 0\text{V}, I_D = 3\text{mA}$
$V_{DS(on)}$	Drain to Source On Voltage	--	0.3	--		$V_{GS} = 0\text{V}, I_D = 6\text{mA}$
$V_{DS(on)}$	Drain to Source On Voltage	--	0.35	0.4	mA	$V_{GS} = 0\text{V}, I_D = 12\text{mA}$
$I_{DSS}$	Drain to Source Saturation Current <sup>2</sup>	50	--	--		$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$
$I_{GSS}$	Gate Reverse Current	--	-5	-100	pA	$V_{GS} = -20\text{V}, V_{DS} = 0\text{V}$
$I_G$	Gate Operating Current	--	-5	--		$V_{DG} = 15\text{V}, I_D = 10\text{mA}$
$I_{D(off)}$	Drain Cutoff Current	--	5	100		$V_{DS} = 10\text{V}, V_{GS} = -10\text{V}$
$r_{DS(on)}$	Drain to Source On Resistance	--	--	30	$\Omega$	$V_{GS} = 0\text{V}, I_D = 1\text{mA}$

**LS4391 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

SYMBOL	CHARACTERISTIC	TYP	MIN	MAX	UNITS	CONDITIONS
$g_{fs}$	Forward Transconductance	6	--	--	mS	$V_{DS} = 20\text{V}, I_D = 1\text{mA}, f = 1\text{kHz}$
$g_{os}$	Output Conductance	25	--	--	$\mu\text{S}$	$V_{DS} = 20\text{V}, I_D = 1\text{mA}, f = 1\text{kHz}$
$r_{ds(on)}$	Drain to Source On Resistance	--	--	30	$\Omega$	$V_{GS} = 0\text{V}, I_D = 0\text{A}, f = 1\text{kHz}$
$C_{iss}$	Input Capacitance	13	--	--	pF	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
$C_{rss}$	Reverse Transfer Capacitance	3.6	--	--		$V_{DS} = 0\text{V}, V_{GS} = -5\text{V}, f = 1\text{MHz}$
$C_{rss}$		3.5	--	--		$V_{DS} = 0\text{V}, V_{GS} = -7\text{V}, f = 1\text{MHz}$
$C_{rss}$		3.1	--	--		$V_{DS} = 0\text{V}, V_{GS} = -12\text{V}, f = 1\text{MHz}$
$e_n$	Equivalent Input Noise Voltage	3	--	--	nV/VHz	$V_{DS} = 10\text{V}, I_D = 10\text{mA}, f = 1\text{kHz}$

**LS4391 SWITCHING ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

SYMBOL	CHARACTERISTIC	TYP	MIN	MAX	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	2	--	--	ns	$V_{DD} = 10\text{V}, V_{GS(H)} = 0\text{V}$
$t_r$		2	--	--		
$t_{d(off)}$	Turn Off Time	6	--	--		
$t_f$		13	--	--		

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

**LS4391 SWITCHING CIRCUIT PARAMETERS**

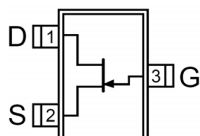
$V_{GS(L)}$	-12V
$R_L$	800 $\Omega$
$I_{D(on)}$	12mA

Available Packages:

LS4391 in SOT-23  
LS4391 in bare die.

Contact Micross for full package and die dimensions

SOT-23 (Top View)



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**SWITCHING CIRCUIT**

