LINEAR SYSTEMS

LS4393
Single N-Channel JFET switch

micross

Linear Systems replaces discontinued Siliconix 2N4393

The LS4393 features many of the superior characteristics of JFETs which make it a good choice for demanding analog switching applications and for specialized amplifier circuits.

LS4393 Benefits:
- Low Error Voltage
- High-Speed Analog Circuit Performance
- Negligible "Off-Error," Excellent Accuracy
- Good Frequency Response, Low Glitches
- Eliminates Additional Buffering

LS4393 Applications:
- Analog Switches
- Choppers, Sample-and-Hold
- Normally "On" Switches, Current Limiters

FEATURES	
DIRECT REPLACEMENT FOR SILICONIX 2N4393	
LOW ON RESISTANCE	$r_{DS(on)} \leq 100\Omega$
LOW GATE OPERATING CURRENT	$I_{D(off)}$ = 5pA
FAST SWITCHING	$t_{(ON)} \leq$ = 15ns

ABSOLUTE MAXIMUM RATINGS[1] @ 25°C (unless otherwise noted)	
Maximum Temperatures	
Storage Temperature	-65°C to +200°C
Operating Junction Temperature	-55°C to +200°C
Maximum Power Dissipation	
Continuous Power Dissipation	350mW
MAXIMUM CURRENT	
Gate Current (Note 1)	I_G = 50mA
MAXIMUM VOLTAGES	
Gate to Drain Voltage / Gate to Source Voltage	-35V

LS4393 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 = -1μA, V_{DS} = 0V
$V_{GS(off)}$	Gate to Source Cutoff Voltage	-0.5	--	-3		V_{DS} = 15V, I_D = 10nA
$V_{GS(F)}$	Gate to Source Forward Voltage	--	0.7	1		I_G = 1mA, V_{DS} = 0V
$V_{DS(on)}$	Drain to Source On Voltage	--	0.25	--		V_{GS} = 0V, I_D = 3mA
$V_{DS(on)}$	Drain to Source On Voltage	--	0.3	0.4		V_{GS} = 0V, I_D = 6mA
$V_{DS(on)}$	Drain to Source On Voltage	--	0.35	--		V_{GS} = 0V, I_D = 12mA
I_{DSS}	Drain to Source Saturation Current[2]	5	--	--	mA	V_{DS} = 20V, V_{GS} = 0V
I_{GSS}	Gate Reverse Current	--	-5	-100		V_{GS} = -20V, V_{DS} = 0V
I_G	Gate Operating Current	--	-5	--	pA	V_{DG} = 15V, I_D = 10mA
$I_{D(off)}$	Drain Cutoff Current	--	5	100		V_{DS} = 10V, V_{GS} = -10V
$r_{DS(on)}$	Drain to Source On Resistance	--	--	100	Ω	V_{GS} = 0V, I_D = 1mA

LS4393 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	TYP	MIN	MAX	UNITS	CONDITIONS
g_{fs}	Forward Transconductance	6	--	--	mS	V_{DS} = 20V, I_D = 1mA, f = 1kHz
g_{os}	Output Conductance	25	--	--	μS	V_{DS} = 20V, I_D = 1mA, f = 1kHz
$r_{ds(on)}$	Drain to Source On Resistance	--	--	100	Ω	V_{GS} = 0V, I_D = 0A, f = 1kHz
C_{iss}	Input Capacitance	13	--	--		V_{DS} = 20V, V_{GS} = 0V, f = 1MHz
C_{rss}	Reverse Transfer Capacitance	3.6	--	--	pF	V_{DS} = 0V, V_{GS} = -5V, f = 1MHz
C_{rss}		3.5	--	--		V_{DS} = 0V, V_{GS} = -7V, f = 1MHz
C_{rss}		3.1	--	--		V_{DS} = 0V, V_{GS} = -12V, f = 1MHz
e_n	Equivalent Input Noise Voltage	3	--	--	nV/√Hz	V_{DS} = 10V, I_D = 10mA, f = 1kHz

LS4393 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} = 10V, $V_{GS(H)}$ = 0V
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 ≤ 300μs, Duty Cycle ≤ 3%

LS4393 SWITCHING CIRCUIT PARAMETERS

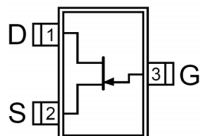| $V_{GS(L)}$	-5V
R_L	3200Ω
$I_{D(on)}$	3mA

SOT-23 (Top View)

Available Packages:

LS4393 in SOT-23
LS4393 in bare die.

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SWITCHING CIRCUIT

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