

## Linear Systems replaces discontinued Siliconix J113

This n-channel JFET is optimised for low noise high performance switching. The part is particularly suitable for use in low noise audio amplifiers. The SOT-23 package is well suited for cost sensitive applications and mass production.

(See Packaging Information).

### LSJ113 Benefits:

- Short Sample & Hold Aperture Time
- Low insertion loss
- Low Noise

### LSJ113 Applications:

- Analog Switches
- Commutators
- Choppers

### FEATURES

DIRECT REPLACEMENT FOR SILICONIX J113

LOW GATE LEAKAGE CURRENT 5pA

FAST SWITCHING  $t_{(on)} \leq 4ns$

ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)

### Maximum Temperatures

Storage Temperature -55°C to +150°C

Operating Junction Temperature -55°C to +135°C

### Maximum Power Dissipation

Continuous Power Dissipation 350mW

### MAXIMUM CURRENT

Gate Current (Note 1) 50mA

### MAXIMUM VOLTAGES

Gate to Drain Voltage  $V_{GDS} = -35V$

Gate to Source Voltage  $V_{GSS} = -35V$

### LSJ113 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$BV_{GSS}$	Gate to Source Breakdown Voltage	-35	--	--	V	$I_G = 1\mu A, V_{DS} = 0V$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	--	--	-3		$V_{DS} = 5V, I_D = 1\mu A$
$V_{GS(F)}$	Gate to Source Forward Voltage	--	0.7	--		$I_G = 1mA, V_{DS} = 0V$
$I_{DSS}$	Drain to Source Saturation Current (Note 2)	2	--	--	mA	$V_{DS} = 15V, V_{GS} = 0V$
$I_{GSS}$	Gate Reverse Current	--	-0.005	-1	nA	$V_{GS} = -15V, V_{DS} = 0V$
$I_G$	Gate Operating Current	--	-0.5	--	pA	$V_{DG} = 15V, I_D = 10mA$
$I_{D(off)}$	Drain Cutoff Current	--	0.005	1	nA	$V_{DS} = 5V, V_{GS} = -10V$
$r_{DS(on)}$	Drain to Source On Resistance	--	--	100	$\Omega$	$I_G = 1mA, V_{DS} = 0V$

### LSJ113 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$g_{fs}$	Forward Transconductance	--	6	--	mS	$V_{DS} = 20V, I_D = 1mA, f = 1kHz$
$g_{os}$	Output Conductance	--	25	--	$\mu S$	
$r_{DS(on)}$	Drain to Source On Resistance	--	--	100	$\Omega$	$V_{GS} = 0V, I_D = 0mA, f = 1kHz$
$C_{iss}$	Input Capacitance	--	7	12	pF	$V_{DS} = 0V, V_{GS} = -10V, f = 1MHz$
$C_{rss}$	Reverse Transfer Capacitance	--	3	5	pF	
$e_n$	Equivalent Noise Voltage	--	3	--	nV/VHz	$V_{DG} = 10V, I_D = 1mA, f = 1kHz$

### LSJ113 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	2	$V_{DD} = 10V$ $V_{GS(H)} = 0V$  See Switching Circuit
$t_r$	Turn On Rise Time	2	
$t_{d(off)}$	Turn Off Time	6	
$t_f$	Turn Off Fall Time	15	

Note 1 - Absolute maximum ratings are limiting values above which LSJ113 serviceability may be impaired. Note 2 - Pulse test:  $PW \leq 300 \mu s$ , Duty Cycle  $\leq 3\%$

### LSJ113 SWITCHING CIRCUIT PARAMETERS

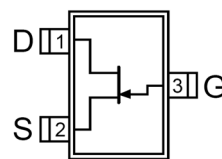
$V_{GS(L)}$	-5V
$R_L$	3200 $\Omega$
$I_{D(on)}$	3mA

Available Packages:

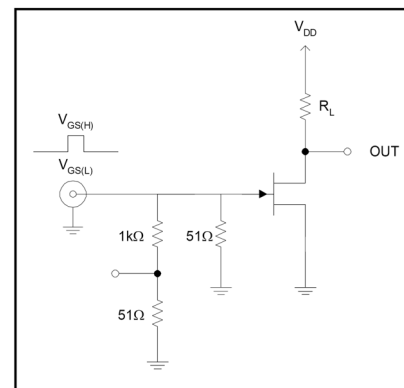
LSJ113 in SOT-23  
LSJ113 in bare die.

Please contact Micross for full package and die dimensions

SOT-23 (Top View)



### SWITCHING TEST CIRCUIT



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