

## Linear Systems replaces discontinued Siliconix J109

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 hermetically sealed TO-18 package is well suited for hi-reliability and harsh environment applications.

(See Packaging Information).

### J109 Benefits:

- Low On Resistance
- Low insertion loss
- Low Noise

### J109 Applications:

- Analog Switches
- Commutators
- Choppers

### FEATURES

DIRECT REPLACEMENT FOR SILICONIX J109

LOW ON RESISTANCE  $r_{DS(on)} \leq 12\Omega$

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 +150°C

#### Maximum Power Dissipation

Continuous Power Dissipation 350mW

#### MAXIMUM CURRENT

Gate Current (Note 1) 50mA

#### MAXIMUM VOLTAGES

Gate to Drain Voltage  $V_{GDS} = -25V$

Gate to Source Voltage  $V_{GSS} = -25V$

### J109 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$BV_{GSS}$	Gate to Source Breakdown Voltage	-25	--	--	V	$I_G = 1\mu A, V_{DS} = 0V$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	-2	--	-6		$V_{DS} = 5V, I_D = 1\mu A$
$V_{GS(F)}$	Gate to Source Forward Voltage	--	0.7	--		$I_G = 1mA, V_{DS} = 0V$
$I_{DSS}$	Drain to Source Saturation Current (Note 2)	40	--	--	mA	$V_{DS} = 15V, V_{GS} = 0V$
$I_{GSS}$	Gate Reverse Current	--	-0.01	-3	nA	$V_{GS} = -15V, V_{DS} = 0V$
$I_G$	Gate Operating Current	--	-0.01	--		$V_{DG} = 10V, I_D = 10mA$
$I_{D(off)}$	Drain Cutoff Current	--	0.02	3		$V_{DS} = 5V, V_{GS} = -10V$
$r_{DS(on)}$	Drain to Source On Resistance	--	--	12		$V_{GS} = 0V, V_{DS} \leq 0.1V$

### J109 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$g_{fs}$	Forward Transconductance	--	17	--	mS	$V_{DS} = 5V, I_D = 10mA, f = 1kHz$
$g_{os}$	Output Conductance	--	0.6	--		
$r_{DS(on)}$	Drain to Source On Resistance	--	--	12	$\Omega$	$V_{GS} = 0V, I_D = 0A, f = 1kHz$
$C_{iss}$	Input Capacitance	--	60	85	pF	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$
$C_{rss}$	Reverse Transfer Capacitance	--	11	15		$V_{DS} = 0V, V_{GS} = -10V, f = 1MHz$
$e_n$	Equivalent Noise Voltage	--	3.5	--		nV/√Hz

### J109 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	3	$V_{DD} = 1.5V$ $V_{GS(H)} = 0V$  See Switching Circuit
$t_r$	Turn On Rise Time	1	
$t_{d(off)}$	Turn Off Time	4	
$t_f$	Turn Off Fall Time	18	

Note 1 - Absolute maximum ratings are limiting values above which J109 serviceability may be impaired. Note 2 – Pulse test:  $PW \leq 300 \mu s$ , Duty Cycle  $\leq 3\%$

### J109 SWITCHING CIRCUIT PARAMETERS

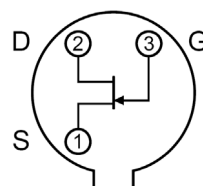
$V_{GS(L)}$	-7V
$R_L$	150 $\Omega$
$I_{D(on)}$	10mA

Available Packages:

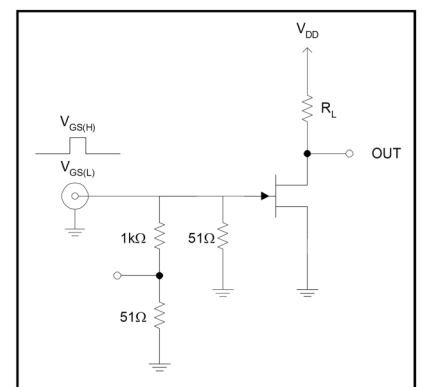
J109 in TO-18  
J109 in bare die.

Please contact Micross for full package and die dimensions

TO-18 (Bottom View)



### SWITCHING TEST CIRCUIT



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