

## PN5114 P-CHANNEL JFET



# Linear Systems replaces discontinued Siliconix PN5114

This analog switch is designed for inverting switching into inverting input of an Operational Amplifier.

The TO-92 provides a low cost option and ease of manufacturing.

(See Packaging Information).

#### PN5114 Benefits:

- Low On Resistance
- I<sub>D(off)</sub> ≤ 500 pA
- Switches directly from TTL logic

## **PN5114 Applications:**

- Analog Switches
- Commutators
- Choppers

FEATURES					
DIRECT REPLACEMENT FOR SILICONIX PN5114					
LOW ON RESISTANCE	r <sub>DS(on)</sub> ≤ 75Ω				
LOW CAPACITANCE	6pF				
ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)					
Maximum Temperatures					
Storage Temperature	-55°C to +200°C				
Operating Junction Temperature	-55°C to +200°C				
Maximum Power Dissipation					
Continuous Power Dissipation	500mW				
MAXIMUM CURRENT					
Gate Current (Note 1)	$I_G = -50mA$				
MAXIMUM VOLTAGES					
Gate to Drain Voltage	V <sub>GDS</sub> = 30V				
Gate to Source Voltage	V <sub>GSS</sub> = 30V				

PN5114 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

PNST14 ELECTRICAL CHARACTERISTICS @ 25 C (utiliess otherwise noted)						
SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$BV_GSS$	Gate to Source Breakdown Voltage	30			V	$I_{G} = 1\mu A$ , $V_{DS} = 0V$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	4		10		$V_{DS} = -15V, I_{D} = -1nA$
V <sub>GS(F)</sub>	Gate to Source Forward Voltage		-0.7	-1		$I_G = -1 \text{mA}, V_{DS} = 0 \text{V}$
V <sub>DS(on)</sub>			-1.0	-1.3		$V_{GS} = 0V, I_D = -15mA$
	Drain to Source On Voltage		-0.7			$V_{GS} = 0V$ , $I_D = -7mA$
			-0.5			$V_{GS} = 0V$ , $I_D = -3mA$
I <sub>DSS</sub>	Drain to Source Saturation Current (Note 2)	-30		-90	mA	$V_{DS} = -18V, V_{GS} = 0V$
I <sub>GSS</sub>	Gate Reverse Current		5	500		$V_{GS} = 20V, \ V_{DS} = 0V$
I <sub>G</sub>	Gate Operating Current		-5			$V_{DS} = -15V, I_{D} = -1mA$
I <sub>D(off)</sub>	Drain Cutoff Current		-10	-500	pA	$V_{DS} = -15V, V_{GS} = 12V$
			-10			$V_{DS} = -15V, V_{GS} = 7V$
			-10			$V_{DS} = -15V, V_{GS} = 5V$
r <sub>DS(on)</sub>	Drain to Source On Resistance			75	Ω	$I_{D} = -1 \text{mA}, V_{GS} = 0 \text{V}$

PN5114 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
<b>g</b> fs	Forward Transconductance		4.5	-	mS	$V_{DS} = -15V, I_{D} = 1mA, f = 1kHz$
g <sub>os</sub>	Output Conductance		20	-	μS	
r <sub>DS(on)</sub>	Drain to Source On Resistance		1	75	Ω	$I_D = 0A$ , $V_{GS} = 0V$ , $f = 1kHz$
C <sub>iss</sub>	Input Capacitance		20	25		$V_{DS} = -15V$ , $V_{GS} = 0V$ , $f = 1MHz$
			5	7	pF	$V_{DS} = 0V, V_{GS} = 12V, f = 1MHz$
$C_{rss}$	Reverse Transfer Capacitance		6			$V_{DS} = 0V$ , $V_{GS} = 7V$ , $f = 1MHz$
			6			$V_{DS} = 0V$ , $V_{GS} = 5V$ , $f = 1MHz$
e <sub>n</sub>	Equivalent Noise Voltage		20		nV/√Hz	$V_{DG} = 10V, I_D = 10mA, f = 1kHz$

PN5114 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC		UNITS	CONDITIONS
t <sub>d(on)</sub>	Turn On Time	6		V <sub>GS</sub> (L) = -11V
t <sub>r</sub>	Turn On Rise Time	10	ns	$V_{GS}(H) = 0V$
t <sub>d(off)</sub>	Turn Off Time	6	115	See Switching Circuit
t <sub>f</sub>	Turn Off Fall Time	15		· ·

Note 1 - Absolute maximum ratings are limiting values above which PN5114 serviceability may be impaired. Note 2 − Pulse test: PW≤ 300 µs, Duty Cycle ≤ 3%

#### **PN5114 SWITCHING CIRCUIT PARAMETERS**

$V_{DD}$	-10V
$V_{GG}$	20V
R <sub>L</sub>	430Ω
R <sub>G</sub>	100Ω
I <sub>D(on)</sub>	-15mA

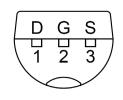
Micross Components Europe

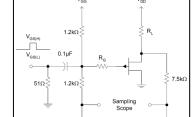
Available Packages:

PN5114 in TO-92 PN5114 in bare die.

Please contact Micross for full package and die dimensions

### TO-92 (Bottom View)





51Ω

51Ω

SWITCHING TEST CIRCUIT

Micross Components Europe

Otto CC Freils et la 1603 788967

Email: <a href="mailto:chipcomponents@micross.com">chipcomponents@micross.com</a> Web: <a href="http://www.micross.com/distribution">http://www.micross.com/distribution</a>