LINEAR SYSTEMS

micross

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
- $I_{D(off)} \leq 500$ pA
- Switches directly from TTL logic

PN5114 Applications:
- Analog Switches
- Commutators
- Choppers

FEATURES	
DIRECT REPLACEMENT FOR SILICONIX PN5114	
LOW ON RESISTANCE	$r_{DS(on)} \leq 75\Omega$
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)	$I_G = -50$mA
MAXIMUM VOLTAGES	
Gate to Drain Voltage	$V_{GDS} = 30$V
Gate to Source Voltage	$V_{GSS} = 30$V

PN5114 ELECTRICAL CHARACTERISTICS @ 25°C (unless 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		$V_{DS} = -15V$, $I_D = -1nA$
$V_{GS(F)}$	Gate to Source Forward Voltage	--	-0.7	-1		$I_G = -1mA$, $V_{DS} = 0V$
$V_{DS(on)}$	Drain to Source On Voltage	--	-1.0	-1.3		$V_{GS} = 0V$, $I_D = -15mA$
		--	-0.7	--		$V_{GS} = 0V$, $I_D = -7mA$
		--	-0.5	--		$V_{GS} = 0V$, $I_D = -3mA$
I_{DSS}	Drain to Source Saturation Current (Note 2)	-30	--	-90	mA	$V_{DS} = -18V$, $V_{GS} = 0V$
I_{GSS}	Gate Reverse Current	--	5	500		$V_{GS} = 20V$, $V_{DS} = 0V$
I_G	Gate Operating Current	--	-5	--		$V_{DS} = -15V$, $I_D = -1mA$
$I_{D(off)}$	Drain Cutoff Current	--	-10	-500	pA	$V_{DS} = -15V$, $V_{GS} = 12V$
		--	-10	--		$V_{DS} = -15V$, $V_{GS} = 7V$
		--	-10	--		$V_{DS} = -15V$, $V_{GS} = 5V$
$r_{DS(on)}$	Drain to Source On Resistance	--	--	75	Ω	$I_D = -1mA$, $V_{GS} = 0V$

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

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
g_{fs}	Forward Transconductance	--	4.5	--	mS	$V_{DS} = -15V$, $I_D = 1mA$, f = 1kHz
g_{os}	Output Conductance	--	20	--	μS	
$r_{DS(on)}$	Drain to Source On Resistance	--	--	75	Ω	$I_D = 0A$, $V_{GS} = 0V$, f = 1kHz
C_{iss}	Input Capacitance	--	20	25	pF	$V_{DS} = -15V$, $V_{GS} = 0V$, f = 1MHz
C_{rss}	Reverse Transfer Capacitance	--	5	7		$V_{DS} = 0V$, $V_{GS} = 12V$, f = 1MHz
		--	6	--		$V_{DS} = 0V$, $V_{GS} = 7V$, f = 1MHz
		--	6	--		$V_{DS} = 0V$, $V_{GS} = 5V$, f = 1MHz
e_n	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
$t_{d(on)}$	Turn On Time	6		$V_{GS}(L) = -11V$
t_r	Turn On Rise Time	10	ns	$V_{GS}(H) = 0V$
$t_{d(off)}$	Turn Off Time	6		
t_f	Turn Off Fall Time	15		See Switching Circuit

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

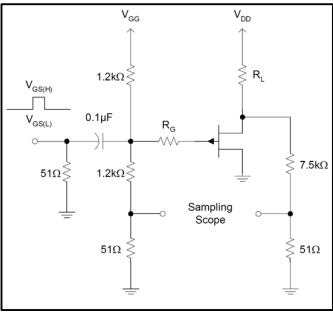| V_{DD}	-10V
V_{GG}	20V
R_L	430Ω
R_G	100Ω
$I_{D(on)}$	-15mA

Micross Components Europe

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Available Packages:

PN5114 in TO-92
PN5114 in bare die.
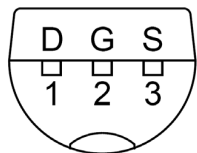
Please contact Micross for full package and die dimensions

TO-92 (Bottom View)

D G S
1 2 3

SWITCHING TEST CIRCUIT

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