

Linear Systems replaces discontinued Siliconix 2N5116

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

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

(See Packaging Information).

2N5116 Benefits:

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

2N5116 Applications:

- Analog Switches
- Commutators
- Choppers

FEATURES

DIRECT REPLACEMENT FOR SILICONIX 2N5116

LOW ON RESISTANCE $r_{DS(on)} \leq 150\Omega$

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

2N5116 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
BV_{GSS}	Gate to Source Breakdown Voltage	30	--	--	V	$I_G = 1\mu A, V_{DS} = 0$ V
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1	--	4		$V_{DS} = -15$ V, $I_D = -1$ nA
$V_{GS(F)}$	Gate to Source Forward Voltage	--	-0.7	-1		$I_G = -1$ mA, $V_{DS} = 0$ V
$V_{DS(on)}$	Drain to Source On Voltage	--	-1.0	--	mV	$V_{GS} = 0$ V, $I_D = -15$ mA
		--	-0.7	--		$V_{GS} = 0$ V, $I_D = -7$ mA
		--	-0.5	-0.6		$V_{GS} = 0$ V, $I_D = -3$ mA
I_{DSS}	Drain to Source Saturation Current (Note 2)	-5	--	-25	mA	$V_{DS} = -15$ V, $V_{GS} = 0$ V
I_{GSS}	Gate Reverse Current	--	5	500	pA	$V_{GS} = 20$ V, $V_{DS} = 0$ V
I_G	Gate Operating Current	--	-5	--		$V_{DS} = -15$ V, $I_D = -1$ mA
$I_{D(off)}$	Drain Cutoff Current	--	-10	--		$V_{DS} = -15$ V, $V_{GS} = 12$ V
		--	-10	--	$V_{DS} = -15$ V, $V_{GS} = 7$ V	
		--	-10	-500	$V_{DS} = -15$ V, $V_{GS} = 5$ V	
$r_{DS(on)}$	Drain to Source On Resistance	--	--	150	Ω	$I_D = -1$ mA, $V_{GS} = 0$ V

2N5116 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
g_{fs}	Forward Transconductance	--	4.5	--	mS	$V_{DS} = -15$ V, $I_D = 1$ mA, $f = 1$ kHz
g_{os}	Output Conductance	--	20	--	μ S	
$r_{DS(on)}$	Drain to Source On Resistance	--	--	150	Ω	$I_D = 0$ A, $V_{GS} = 0$ V, $f = 1$ kHz
C_{iss}	Input Capacitance	--	20	25	pF	$V_{DS} = -15$ V, $V_{GS} = 0$ V, $f = 1$ MHz
C_{rss}	Reverse Transfer Capacitance	--	5	--		$V_{DS} = 0$ V, $V_{GS} = 12$ V, $f = 1$ MHz
		--	6	--		$V_{DS} = 0$ V, $V_{GS} = 7$ V, $f = 1$ MHz
e_n	Equivalent Noise Voltage	--	20	--	nV/√Hz	$V_{DG} = 10$ V, $I_D = 10$ mA, $f = 1$ kHz

2N5116 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	12	$V_{GS(L)} = -5$ V $V_{GS(H)} = 0$ V See Switching Circuit
t_r	Turn On Rise Time	30	
$t_{d(off)}$	Turn Off Time	10	
t_f	Turn Off Fall Time	50	

Note 1 - Absolute maximum ratings are limiting values above which 2N5116 serviceability may be impaired. Note 2 - Pulse test: $PW \leq 300$ μ s, Duty Cycle $\leq 3\%$

2N5116 SWITCHING CIRCUIT PARAMETERS

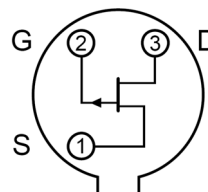
V_{DD}	-6V
V_{GG}	8V
R_L	2k Ω
R_G	390 Ω
$I_{D(on)}$	-3mA

Available Packages:

2N5116 in TO-18
2N5116 in bare die.

Please contact Micross for full package and die dimensions

TO-18 (Bottom View)



SWITCHING TEST CIRCUIT

