LINEAR SYSTEMS

LS5116
P-CHANNEL JFET

micross

Linear Systems replaces discontinued Siliconix 2N5116

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

The SOT-23 provides a low cost option and ease of manufacturing.

(See Packaging Information).

LS5116 Benefits:
- Low On Resistance
- $I_{D(off)} \leq 500$ pA
- Switches directly from TTL logic

LS5116 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 = -50mA
MAXIMUM VOLTAGES	
Gate to Drain Voltage	V_{GDS} = 30V
Gate to Source Voltage	V_{GSS} = 30V

LS5116 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 = 1µA, V_{DS} = 0V
$V_{GS(off)}$	Gate to Source Cutoff Voltage	1	--	4		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	--		V_{GS} = 0V, I_D = -15mA
		--	-0.7	--		V_{GS} = 0V, I_D = -7mA
		--	-0.5	-0.6		V_{GS} = 0V, I_D = -3mA
I_{DSS}	Drain to Source Saturation Current (Note 2)	-5	--	-25	mA	V_{DS} = -15V, V_{GS} = 0V
I_{GSS}	Gate Reverse Current	--	5	500	pA	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	--		V_{DS} = -15V, V_{GS} = 12V
		--	-10	--		V_{DS} = -15V, V_{GS} = 7V
		--	-10	-500		V_{DS} = -15V, V_{GS} = 5V
$r_{DS(on)}$	Drain to Source On Resistance	--	--	150	Ω	I_D = -1mA, V_{GS} = 0V

LS5116 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	--	--	150	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	--		V_{DS} = 0V, V_{GS} = 12V, f = 1MHz
		--	6	--		V_{DS} = 0V, V_{GS} = 7V, f = 1MHz
		--	6	7		V_{DS} = 0V, V_{GS} = 5V, f = 1MHz
e_n	Equivalent Noise Voltage	--	20	--	nV/√Hz	V_{DG} = 10V, I_D = 10mA , f = 1kHz

LS5116 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC		UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	12	ns	V_{GS}(L) = -5V V_{GS}(H) = 0V 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 LS5116 serviceability may be impaired. Note 2 – Pulse test: PW≤ 300 µs, Duty Cycle ≤ 3%

LS5116 SWITCHING CIRCUIT PARAMETERS

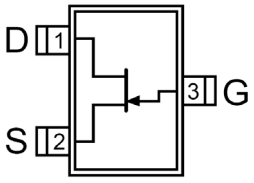
V_{DD}	-6V
V_{GG}	8V
R_L	2kΩ
R_G	390Ω
$I_{D(on)}$	-3mA

Available Packages:

LS5116 in SOT-23
LS5116 in bare die.

Please contact Micross for full package and die dimensions

SOT-23 (Top View)



SWITCHING TEST CIRCUIT