

## Linear Systems replaces discontinued Siliconix 2N5019

### The 2N5019 is a single P-Channel JFET switch

This p-channel analog switch is designed to provide low on-resistance and fast switching.

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

(See Packaging Information).

#### 2N5019 Benefits:

- Low Insertion Loss
- No offset or error voltage generated by closed switch
- Purely resistive

#### 2N5019 Applications:

- Analog Switches
- Commutators
- Choppers

#### FEATURES

DIRECT REPLACEMENT FOR SILICONIX 2N5019

ZERO OFFSET VOLTAGE

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

#### 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)  $I_G = -50\text{mA}$

#### MAXIMUM VOLTAGES

Gate to Drain Voltage  $V_{GDS} = 30\text{V}$

Gate to Source Voltage  $V_{GSS} = 30\text{V}$

#### 2N5019 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$BV_{GSS}$	Gate to Source Breakdown Voltage	30	--	--	V	$I_G = 1\mu\text{A}$ , $V_{DS} = 0\text{V}$
$V_{GS(off)}$	Gate to Source Cutoff Voltage	--	--	5	V	$V_{DS} = -15\text{V}$ , $I_D = -1\mu\text{A}$
$V_{DS(on)}$	Drain to Source On Voltage	--	--	-0.5	V	$V_{GS} = 0\text{V}$ , $I_D = -3\text{mA}$
$I_{DSS}$	Drain to Source Saturation Current (Note 2)	-5	--	--	mA	$V_{DS} = -20\text{V}$ , $V_{GS} = 0\text{V}$
$I_{GSS}$	Gate Reverse Current	--	--	2	nA	$V_{GS} = 15\text{V}$ , $V_{DS} = 0\text{V}$
$I_{D(off)}$	Drain Cutoff Current	--	--	-10	$\mu\text{A}$	$V_{DS} = -15\text{V}$ , $V_{GS} = 12\text{V}$
$I_{DGO}$	Drain Reverse Current	--	--	-2	nA	$V_{DG} = -15\text{V}$ , $I_S = 0\text{A}$
$r_{DS(on)}$	Drain to Source On Resistance	--	--	150	$\Omega$	$I_D = -1\text{mA}$ , $V_{GS} = 0\text{V}$

#### 2N5019 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$r_{DS(on)}$	Drain to Source On Resistance	--	--	150	$\Omega$	$I_D = 0\text{A}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{kHz}$
$C_{iss}$	Input Capacitance	--	--	45	pF	$V_{DS} = -15\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$
$C_{rss}$	Reverse Transfer Capacitance	--	--	10	pF	$V_{DS} = 0\text{V}$ , $V_{GS} = 7\text{V}$ , $f = 1\text{MHz}$

#### 2N5019 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)

SYMBOL	CHARACTERISTIC	MIN	TYP.	MAX	UNITS	CONDITIONS
$t_{d(on)}$	Turn On Time	15	--	--	ns	$V_{GS(L)} = 7\text{V}$ $V_{GS(H)} = 0\text{V}$
$t_r$	Turn On Rise Time	75	--	--	ns	See Switching Circuit
$t_{d(off)}$	Turn Off Time	25	--	--	ns	
$t_f$	Turn Off Fall Time	100	--	--	ns	

Note 1 - Absolute maximum ratings are limiting values above which 2N5019 serviceability may be impaired.

Note 2 - Pulse test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 3\%$

#### 2N5019 SWITCHING CIRCUIT PARAMETERS

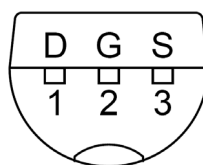
$V_{DD}$	-6V
$V_{GG}$	8V
$R_L$	1.8k $\Omega$
$R_G$	390 $\Omega$
$I_{D(on)}$	-3mA

Available Packages:

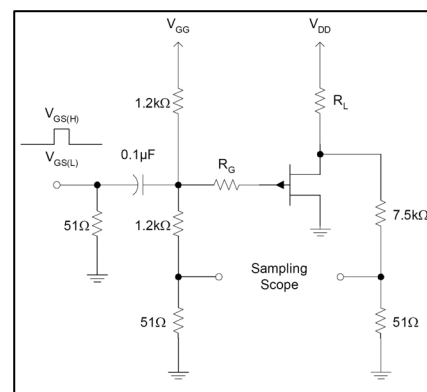
2N5019 in TO-92  
2N5019 in bare die.

Please contact Micross for full package and die dimensions

TO-92 (Bottom View)



#### SWITCHING TEST CIRCUIT



Micross Components Europe