

# P-Channel JFET Switch



## J174 – J177 / SST174 – SST177

### FEATURES

- Low Insertion Loss
- No Offset or Error Generated By Closed Switch
  - Purely Resistive
  - High Isolation Resistance From Driver
- Short Sample and Hold Aperture Time
- Fast Switching

### APPLICATIONS

- Analog Switches
- Choppers
- Commutators

### ABSOLUTE MAXIMUM RATINGS

(T<sub>A</sub> = 25°C unless otherwise specified)

Gate-Drain or Gate-Source Voltage . . . . . 30V  
 Gate Current . . . . . 50mA  
 Storage Temperature Range . . . . . -55°C to +150°C  
 Operating Temperature Range . . . . . -55°C to +135°C  
 Lead Temperature (Soldering, 10sec) . . . . . 300°C  
 Power Dissipation . . . . . 350mW  
 Derate above 25°C . . . . . 3.3mW/°C


**NOTE:** Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### ORDERING INFORMATION

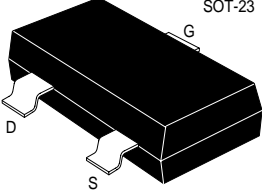
Part	Package	Temperature Range
J174-J177	Plastic TO-92	-55°C to +135°C
SST174-SST177	Plastic SOT-23	-55°C to +135°C

For Sorted Chips in Carriers see 2N5114 series.

**PIN CONFIGURATION**



TO-92



SOT-23

**5508**

PRODUCT MARKING (SOT-23)	
SST174	P04
SST175	P05
SST176	P06
SST177	P07



**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^{\circ}\text{C}$  unless otherwise specified)

SYMBOL	PARAMETER	J174			J175			J176			J177			UNITS	TEST CONDITIONS	
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX			
$I_{GSS}$	Gate Reverse Current (Note 1)			1			1			1			1	nA	$V_{DS} = 0, V_{GS} = 20V$	
$V_{GS(off)}$	Gate Source Cutoff Voltage	5		10	3		6	1		4	0.8		2.25	V	$V_{DS} = -15V, I_D = -10nA$	
$BV_{GSS}$	Gate Source Breakdown Voltage	30			30			30					30		$V_{DS} = 0, I_G = 1\mu A$	
$I_{DSS}$	Drain Saturation Current (Note 2)	-20		-135	-7		-70	-2		-35	-1.5		-20	mA	$V_{DS} = -15V, V_{GS} = 0$	
$I_{D(off)}$	Drain Cutoff Current (Note 1)			-1			-1			-1			-1	nA	$V_{DS} = -15V, V_{GS} = 10V$	
$r_{DS(on)}$	Drain-Source ON Resistance			85			125			250			300	$\Omega$	$V_{GS} = 0, V_{DS} = -0.1V$	
$C_{dg(off)}$	Drain-Gate OFF Capacitance		5.5			5.5			5.5			5.5		pF	$f = 1\text{MHz (Note 3)}$	
$C_{sg(off)}$	Source-Gate OFF Capacitance		5.5			5.5			5.5			5.5				$V_{DS} = 0, V_{GS} = 10V$
$C_{dg(on)} + C_{sg(on)}$	Drain-Gate Plus Source Gate ON Capacitance		32			32			32			32				$V_{DS} = V_{GS} = 0$
$t_{d(on)}$	Turn On Delay Time		2			5			15			20		ns	Switching Time Test Conditions (Note 3)	
$t_r$	Rise Time		5			10			20			25				$V_{DD} \quad J174 \quad J175 \quad J176 \quad J177$
$t_{d(off)}$	Turn Off Delay Time		5			10			15			20				$V_{GS(off)} \quad 12V \quad 8V \quad 3V \quad 3V$
$t_f$	Fall Time		10			20			20			25				$R_L \quad 560\Omega \quad 12k\Omega \quad 5.6k\Omega \quad 10k\Omega$
															$V_{GS(on)} \quad 0V \quad 0V \quad 0V \quad 0V$	

- NOTES:** 1. Approximately doubles for every  $10^{\circ}\text{C}$  increase in  $T_A$ .  
 2. Pulse test duration  $\sim 300\mu\text{s}$ ; duty cycle  $\leq 3\%$ .  
 3. For design reference only, not 100% tested.