

N-Channel JFET Switch



J108 – J110 / SST108 – SST110

FEATURES

- Low Cost
- Automated Insertion Package
- Low Insertion Loss
- No Offset or Error Voltages Generated by Closed Switch
Purely Resistive
High Isolation Resistance from Driver
- Fast Switching
- Low Noise

APPLICATIONS

- Analog Switches
- Choppers
- Commutators
- Low-Noise Audio Amplifiers

ABSOLUTE MAXIMUM RATINGS

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

| | |
|-------------------------------------|---|
| Gate-Drain or Gate-Source Voltage | -25V |
| Gate Current | 50mA |
| Storage Temperature Range | -55°C to $+150^\circ\text{C}$ |
| Operating Temperature Range | -55°C to $+135^\circ\text{C}$ |
| Lead Temperature (Soldering, 10sec) | $+300^\circ\text{C}$ |
| Power Dissipation | 360mW |
| Derate above 25°C | 3.3mW/ $^\circ\text{C}$ |

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.

PIN CONFIGURATION

| PRODUCT MARKING (SOT-23) | |
|--------------------------|-----|
| SST108 | 108 |
| SST109 | 109 |
| SST110 | 110 |

5018

ORDERING INFORMATION

| Part | Package | Temperature Range |
|------------|--------------------------|---|
| J108-110 | Plastic TO-92 | -55°C to $+135^\circ\text{C}$ |
| XJ108-110 | Sorted Chips in Carriers | -55°C to $+135^\circ\text{C}$ |
| SST109-110 | Plastic SOT-23 | -55°C to $+135^\circ\text{C}$ |

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

| SYMBOL | PARAMETER | 108 | | | 109 | | | 110 | | | UNITS | TEST CONDITIONS | | | | | | | | | | | | |
|----------------------------|--|--------------|--------------|-----|-----|-----|-----|------|-----|-----|----------|---|----------|------|------|------|---------------|------|-----|-----|-------|--------------|--------------|--------------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | MIN | TYP | MAX | | | | | | | | | | | | | | |
| I_{GSS} | Gate Reverse Current (Note 1) | | | -3 | | | -3 | | | -3 | nA | $V_{DS} = 0V, V_{GS} = -15V$ | | | | | | | | | | | | |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage | -3 | | -10 | -2 | | -6 | -0.5 | | -4 | V | $V_{DS} = 5V, I_D = 1\mu A$ | | | | | | | | | | | | |
| BV_{GSS} | Gate-Source Breakdown Voltage | -25 | | | -25 | | | -25 | | | | $V_{DS} = 0V, I_G = -1\mu A$ | | | | | | | | | | | | |
| I_{DSS} | Drain Saturation Current (Note 2) | 80 | | | 40 | | | 10 | | | mA | $V_{DS} = 15V, V_{GS} = 0V$ | | | | | | | | | | | | |
| $I_{D(off)}$ | Drain Cutoff Current (Note 1) | | | 3 | | | 3 | | | 3 | nA | $V_{DS} = 5V, V_{GS} = -10V$ | | | | | | | | | | | | |
| $r_{DS(on)}$ | Drain-Source ON Resistance | | | 8 | | | 12 | | | 18 | Ω | $V_{DS} \leq 0.1V, V_{GS} = 0V$ | | | | | | | | | | | | |
| $C_{dg(off)}$ | Drain-Gate OFF Capacitance | | | 15 | | | 15 | | | 15 | pF | $V_{DS} = 0, V_{GS} = -10V$ (Note 3) $f = 1\text{MHz}$ | | | | | | | | | | | | |
| $C_{sg(off)}$ | Source-Gate OFF Capacitance | | | 15 | | | 15 | | | 15 | | | | | | | | | | | | | | |
| $C_{dgs(on)} + C_{sg(on)}$ | Drain-Gate Plus Source-Gate ON Capacitance | | | 85 | | | 85 | | | 85 | | | | | | | | | | | | | | |
| $t_{d(on)}$ | Turn ON Delay Time | | 4 | | | 4 | | | 4 | | ns | Switching Time Test Conditions (Note 3) | | | | | | | | | | | | |
| t_r | Rise Time | | 1 | | | 1 | | | 1 | | | | | | | | | | | | | | | |
| $t_{d(off)}$ | Turn OFF Delay Time | | 6 | | | 6 | | | 6 | | | | | | | | | | | | | | | |
| t_f | Fall Time | | 30 | | | 30 | | | 30 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | <table border="0"> <tr> <td>V_{DD}</td> <td>1.5V</td> <td>1.5V</td> <td>1.5V</td> </tr> <tr> <td>$V_{GS(off)}$</td> <td>-12V</td> <td>-7V</td> <td>-5V</td> </tr> <tr> <td>R_L</td> <td>150Ω</td> <td>150Ω</td> <td>150Ω</td> </tr> </table> | V_{DD} | 1.5V | 1.5V | 1.5V | $V_{GS(off)}$ | -12V | -7V | -5V | R_L | 150 Ω | 150 Ω | 150 Ω |
| V_{DD} | 1.5V | 1.5V | 1.5V | | | | | | | | | | | | | | | | | | | | | |
| $V_{GS(off)}$ | -12V | -7V | -5V | | | | | | | | | | | | | | | | | | | | | |
| R_L | 150 Ω | 150 Ω | 150 Ω | | | | | | | | | | | | | | | | | | | | | |

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