LINEAR SYSTEMS

J110
N-CHANNEL JFET

micross

# Linear Systems replaces discontinued Siliconix J110

This n-channel JFET is optimised for low noise high performance switching. The part is particularly suitable for use in low noise audio amplifiers. The SOT-23 package is well suited for cost sensitive applications and mass production.

(See Packaging Information).

**J110 Benefits:**

- Low On Resistance
- Low insertion loss
- Low Noise

**J110 Applications:**

- Analog Switches
- Commutators
- Choppers

| **FEATURES** | |
|---|---|
| DIRECT REPLACEMENT FOR SILICONIX J110 | |
| LOW ON RESISTANCE | $r_{DS(on)} \leq 18\Omega$ |
| FAST SWITCHING | $t_{(on)} \leq 4ns$ |
| **ABSOLUTE MAXIMUM RATINGS** @ 25°C (unless otherwise noted) | |
| **Maximum Temperatures** | |
| Storage Temperature | -55°C to +150°C |
| Operating Junction Temperature | -55°C to +150°C |
| **Maximum Power Dissipation** | |
| Continuous Power Dissipation | 350mW |
| **MAXIMUM CURRENT** | |
| Gate Current (Note 1) | 50mA |
| **MAXIMUM VOLTAGES** | |
| Gate to Drain Voltage | $V_{GDS}$ = -25V |
| Gate to Source Voltage | $V_{GSS}$ = -25V |

**J110 ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

| SYMBOL | CHARACTERISTIC | MIN | TYP. | MAX | UNITS | CONDITIONS |
|---|---|---|---|---|---|---|
| $BV_{GSS}$ | Gate to Source Breakdown Voltage | -25 | -- | -- | | $I_G$ = 1µA, $V_{DS}$ = 0V |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage | -0.5 | -- | -4 | | $V_{DS}$ = 5V, $I_D$ = 1µA |
| $V_{GS(F)}$ | Gate to Source Forward Voltage | -- | 0.7 | -- | V | $I_G$ = 1mA, $V_{DS}$ = 0V |
| $I_{DSS}$ | Drain to Source Saturation Current (Note 2) | 10 | -- | -- | mA | $V_{DS}$ = 15V, $V_{GS}$ = 0V |
| $I_{GSS}$ | Gate Reverse Current | -- | -0.01 | -3 | | $V_{GS}$ = -15V, $V_{DS}$ = 0V |
| $I_G$ | Gate Operating Current | -- | -0.01 | -- | nA | $V_{DG}$ = 10V, $I_D$ = 10mA |
| $I_{D(off)}$ | Drain Cutoff Current | -- | 0.02 | 3 | | $V_{DS}$ = 5V, $V_{GS}$ = -10V |
| $r_{DS(on)}$ | Drain to Source On Resistance | -- | -- | 18 | Ω | $V_{GS}$ = 0V, $V_{DS} \leq$ 0.1V |



**J110 DYNAMIC ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)**

| SYMBOL | CHARACTERISTIC | MIN | TYP. | MAX | UNITS | CONDITIONS |
|---|---|---|---|---|---|---|
| $g_{fs}$ | Forward Transconductance | -- | 17 | -- | mS | $V_{DS}$ = 5V, $I_D$ = 10mA , f = 1kHz |
| $g_{os}$ | Output Conductance | -- | 0.6 | -- | | |
| $r_{DS(on)}$ | Drain to Source On Resistance | -- | -- | 18 | Ω | $V_{GS}$ = 0V, $I_D$ = 0A, f = 1kHz |
| $C_{iss}$ | Input Capacitance | -- | 60 | -- | | $V_{DS}$ = 0V, $V_{GS}$ = 0V, f = 1MHz |
| $C_{rss}$ | Reverse Transfer Capacitance | -- | 11 | -- | pF | $V_{DS}$ = 0V, $V_{GS}$ = -10V, f = 1MHz |
| $e_n$ | Equivalent Noise Voltage | -- | 3.5 | -- | nV/√Hz | $V_{DS}$ = 5V, $I_D$ = 10mA , f = 1kHz |

**J110 SWITCHING CHARACTERISTICS @ 25°C (unless otherwise noted)**

| SYMBOL | CHARACTERISTIC | | UNITS | CONDITIONS |
|---|---|---|---|---|
| $t_{d(on)}$ | Turn On Time | 3 | ns | $V_{DD}$ = 1.5V<br>$V_{GS}$(H) = 0V<br><br>See Switching Circuit |
| $t_r$ | Turn On Rise Time | 1 | | |
| $t_{d(off)}$ | Turn Off Time | 4 | | |
| $t_f$ | Turn Off Fall Time | 18 | | |

Note 1 - Absolute maximum ratings are limiting values above which J110 serviceability may be impaired. Note 2 – Pulse test: PW≤ 300 µs, Duty Cycle ≤ 3%

**J110 SWITCHING CIRCUIT PARAMETERS**

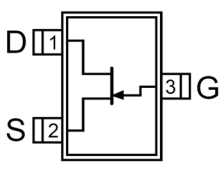
| | |
|---|---|
| $V_{GS(L)}$ | -5V |
| $R_L$ | 150Ω |
| $I_{D(on)}$ | 10mA |

Available Packages:

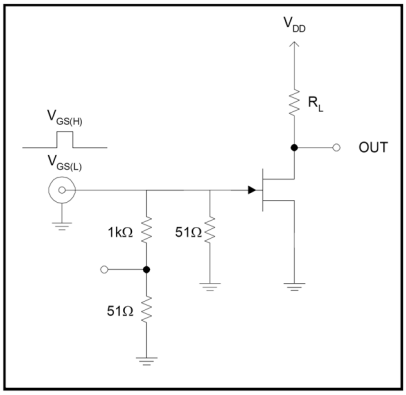
J110 in SOT-23
J110 in bare die.

Please contact Micross for full package and die dimensions

SOT-23 (Top View)




**SWITCHING TEST CIRCUIT**




Micross Components Europe

micross

Tel: +44 1603 788967
Email: chipcomponents@micross.com
Web: http://www.micross.com/distribution