

### 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  | --    | --  | V        | $I_G = 1\mu A, V_{DS} = 0V$     |
| $V_{GS(off)}$ | Gate to Source Cutoff Voltage               | -0.5 | --    | -4  |          | $V_{DS} = 5V, I_D = 1\mu A$     |
| $V_{GS(F)}$   | Gate to Source Forward Voltage              | --   | 0.7   | --  |          | $I_G = 1mA, V_{DS} = 0V$        |
| $I_{DSS}$     | Drain to Source Saturation Current (Note 2) | 10   | --    | --  | mA       | $V_{DS} = 15V, V_{GS} = 0V$     |
| $I_{GSS}$     | Gate Reverse Current                        | --   | -0.01 | -3  | nA       | $V_{GS} = -15V, V_{DS} = 0V$    |
| $I_G$         | Gate Operating Current                      | --   | -0.01 | --  |          | $V_{DG} = 10V, I_D = 10mA$      |
| $I_{D(off)}$  | Drain Cutoff Current                        | --   | 0.02  | 3   |          | $V_{DS} = 5V, V_{GS} = -10V$    |
| $r_{DS(on)}$  | Drain to Source On Resistance               | --   | --    | 18  | $\Omega$ | $V_{GS} = 0V, V_{DS} \leq 0.1V$ |

#### 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  | --  | $\Omega$ | $V_{GS} = 0V, I_D = 0A, f = 1kHz$      |
| $r_{DS(on)}$ | Drain to Source On Resistance | --  | --   | 18  |          | $V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$   |
| $C_{iss}$    | Input Capacitance             | --  | 60   | --  |          | $V_{DS} = 0V, V_{GS} = -10V, f = 1MHz$ |
| $C_{rss}$    | Reverse Transfer Capacitance  | --  | 11   | --  | pF       | $V_{DS} = 5V, I_D = 10mA, f = 1kHz$    |
| $e_n$        | Equivalent Noise Voltage      | --  | 3.5  | --  | nV/VHz   |                                        |

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

| SYMBOL       | CHARACTERISTIC     | UNITS | CONDITIONS                                                   |
|--------------|--------------------|-------|--------------------------------------------------------------|
| $t_{d(on)}$  | Turn On Time       | 3     | $V_{DD} = 1.5V$<br>$V_{GS(H)} = 0V$<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:  $PW \leq 300\mu s$ , Duty Cycle  $\leq 3\%$

#### J110 SWITCHING CIRCUIT PARAMETERS

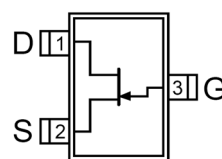
|             |              |
|-------------|--------------|
| $V_{GS(L)}$ | -5V          |
| $R_L$       | 150 $\Omega$ |
| $I_{D(on)}$ | 10mA         |

Available Packages:

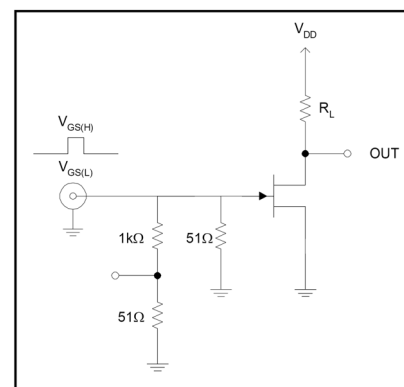
J110 in SOT-23  
J110 in bare die.

Please contact Micross for full package and die dimensions

SOT-23 (Top View)



#### SWITCHING TEST CIRCUIT



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