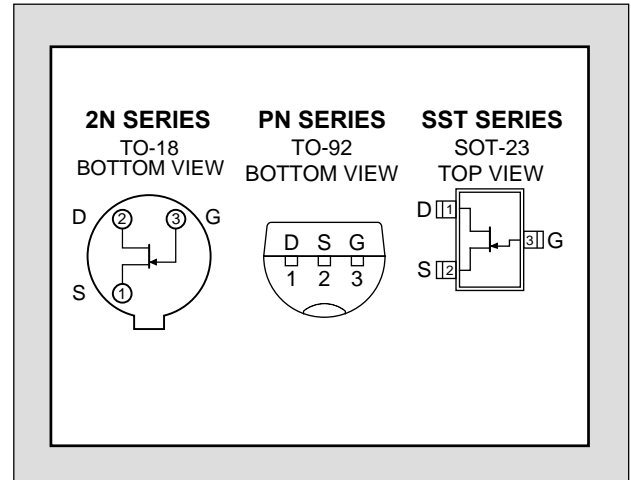


2N/PN/SST4391 SERIES

SINGLE N-CANNEL JFET SWITCH

| FEATURES | |
|---|----------------------------|
| Replacement for Siliconix 2N/PN/SST4391, 4292, & 4393 | |
| LOW ON RESISTANCE | $r_{DS(on)} \leq 30\Omega$ |
| FAST SWITCHING | $t_{ON} \leq 15ns$ |
| ABSOLUTE MAXIMUM RATINGS ¹ | |
| @ 25 °C (unless otherwise stated) | |
| Maximum Temperatures | |
| Storage Temperature (2N) | -65 to 200°C |
| Storage Temperature (PN/SST) | -55 to 150°C |
| Junction Operating Temperature (2N) | -55 to 200°C |
| Junction Operating Temperature (PN/SST) | -55 to 150°C |
| Maximum Power Dissipation | |
| Continuous Power Dissipation (2N) | 1800mW |
| Continuous Power Dissipation (PN/SST) | 350mW |
| Maximum Currents | |
| Gate Current | 50mA |
| Maximum Voltages | |
| Gate to Drain or Source (2N/PN) | -40V |
| Gate to Drain or Source (SST) | -35V |



STATIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

| SYM. | CHARACTERISTIC | TYP | 4391 | | 4392 | | 4393 | | UNIT | CONDITIONS | | | | |
|----------------------|---|--------|------|-------|------|-------|------|-------|------|---|----|--|----|--|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | | | | | |
| BV _{GSS} | Gate to Source Breakdown Voltage | 2N/PN | -40 | | -40 | | -40 | | V | I _G = -1μA, V _{DS} = 0V | | | | |
| | | SST | -35 | | -35 | | -35 | | | | | | | |
| V _{GS(off)} | Gate to Source Cutoff Voltage | 2N/PN | -4 | -10 | -2 | -5 | -0.5 | -3 | | | V | V _{DS} = 20V, I _D = 1nA | | |
| | | SST | -4 | -10 | -2 | -5 | -0.5 | -3 | | | | | | |
| V _{GS(F)} | Gate to Source Forward Voltage | 0.7 | | 1 | | 1 | | 1 | | | | | V | I _G = 1mA, V _{DS} = 0V |
| V _{DS(on)} | Drain to Source On Voltage | 0.25 | | | | | | 0.4 | | | | | | |
| | | 0.3 | | | | 0.4 | | | | | | | | |
| | | 0.35 | | 0.4 | | | | | | | | | | |
| I _{DSS} | Drain to Source Saturation Current ² | 2N | 50 | 150 | 25 | 75 | 5 | 30 | mA | V _{DS} = 20V, V _{GS} = 0V | | | | |
| | | PN | 50 | 100 | 25 | 100 | 5 | 60 | | | | | | |
| | | SST | 50 | | 25 | | 5 | | | | | | | |
| I _{GSS} | Gate Leakage Current | 2N/SST | -5 | -100 | | -100 | | -100 | | | pA | V _{GS} = -20V, V _{DS} = 0V | | |
| | | PN | -5 | -1000 | | -1000 | | -1000 | | | | | | |
| I _G | Gate Operating Current | -5 | | | | | | | | | | | pA | V _{DG} = 15V, I _D = 10mA |

STATIC ELECTRICAL CHARACTERISTICS CONT. @25 °C (unless otherwise stated)

| SYM. | CHARACTERISTIC | TYP | 4391 | | 4392 | | 4393 | | UNIT | CONDITIONS | |
|---------------------|-------------------------------|-----|------|------|------|------|------|------|--|---|---|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | | |
| I _{D(off)} | Drain Cutoff Current | 2N | 5 | | | | | 100 | pA | V _{DS} = 20V, V _{GS} = -5V | |
| | | | 5 | | | 100 | | | | V _{DS} = 20V, V _{GS} = -7V | |
| | | | 5 | 100 | | | | | | V _{DS} = 20V, V _{GS} = -12V | |
| | | PN | 5 | | | | | 1000 | | | V _{DS} = 20V, V _{GS} = -5V |
| | | | 5 | | | 1000 | | | | | V _{DS} = 20V, V _{GS} = -7V |
| | | | 5 | 1000 | | | | | | | V _{DS} = 20V, V _{GS} = -12V |
| | | SST | 5 | | 100 | 100 | | 100 | | | V _{DS} = 10V, V _{GS} = -10V |
| r _{DS(on)} | Drain to Source On Resistance | | | 30 | 60 | | 100 | Ω | V _{GS} = 0V, I _D = 1mA | | |

DYNAMIC ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

| SYM. | CHARACTERISTIC | TYP | 4391 | | 4392 | | 4393 | | UNIT | CONDITIONS |
|---------------------|--------------------------------|-----|------|-----|------|-----|------|--------|--|--|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| g _{fs} | Forward Transconductance | 6 | | | | | | | mS | V _{DS} = 20V, I _D = 1mA |
| g _{os} | Output Conductance | 25 | | | | | | | μS | f = 1kHz |
| r _{ds(on)} | Drain to Source On Resistance | | | 30 | 60 | | 100 | | Ω | V _{GS} = 0V, I _D = 0A f = 1kHz |
| C _{iss} | Input Capacitance | 2N | 12 | 14 | 14 | 14 | | | pF | V _{DS} = 20V, V _{GS} = 0V f = 1MHz |
| | | PN | 12 | 16 | 16 | | | | | |
| | | SST | 13 | | | | | | | |
| C _{rss} | Reverse Transfer Capacitance | 2N | 3.3 | | | | 3.5 | | pF | V _{DS} = 0V, V _{GS} = -5V f = 1MHz |
| | | PN | 3.5 | | | | 5 | | | |
| | | SST | 3.6 | | | | | | | V _{DS} = 0V, V _{GS} = -7V f = 1MHz |
| | | 2N | 3.2 | | | 3.5 | | | | |
| | | PN | 3.4 | | | 5 | | | | V _{DS} = 0V, V _{GS} = -12V f = 1MHz |
| | | SST | 3.5 | | | | | | | |
| | | 2N | 2.8 | 3.5 | | | | | | |
| | | PN | 3.0 | 5 | | | | | | |
| SST | 3.1 | | | | | | | | | |
| e _n | Equivalent Input Noise Voltage | 3 | | | | | | nV/√Hz | V _{DS} = 10V, I _D = 10mA f = 1kHz | |

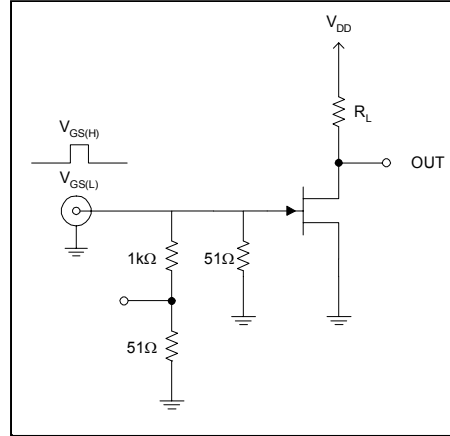
SWITCHING ELECTRICAL CHARACTERISTICS @25 °C (unless otherwise stated)

| SYM. | CHARACTERISTIC | TYP | 4391 | | 4392 | | 4393 | | UNIT | CONDITIONS |
|---------------------|----------------|-------|------|-----|------|-----|------|-----|------|--|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| t _{d(on)} | Turn On Time | 2N/PN | 2 | 15 | 15 | 15 | | | ns | V _{DD} = 10V, V _{GS(H)} = 0V |
| | | SST | 2 | | | | | | | |
| t _r | | 2N/PN | 2 | 5 | 5 | 5 | | | | |
| | | SST | 2 | | | | | | | |
| t _{d(off)} | Turn Off Time | 2N/PN | 6 | 20 | 35 | 50 | | | | |
| | | SST | 6 | | | | | | | |
| t _f | | 2N/PN | 13 | 15 | 20 | 30 | | | | |
| | | SST | 13 | | | | | | | |

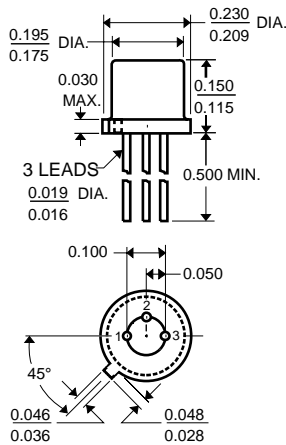
SWITCHING CIRCUIT CHARACTERISTICS

| SYM. | 4391 | 4392 | 4393 |
|-------------|--------------|---------------|---------------|
| $V_{GS(L)}$ | -12V | -7V | -5V |
| R_L | 800 Ω | 1600 Ω | 3200 Ω |
| $I_{D(on)}$ | 12mA | 6mA | 3mA |

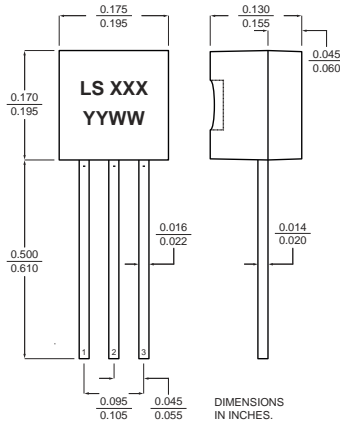
SWITCHING TEST CIRCUIT



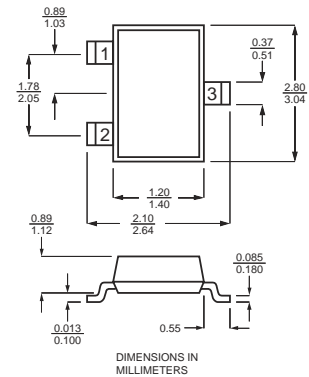
TO-18 Three Lead



TO-92



SOT-23



NOTES

1. Absolute maximum ratings are limiting values above which serviceability may be impaired.
2. Pulse test: $PW \leq 300\mu s$, Duty Cycle $\leq 3\%$

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