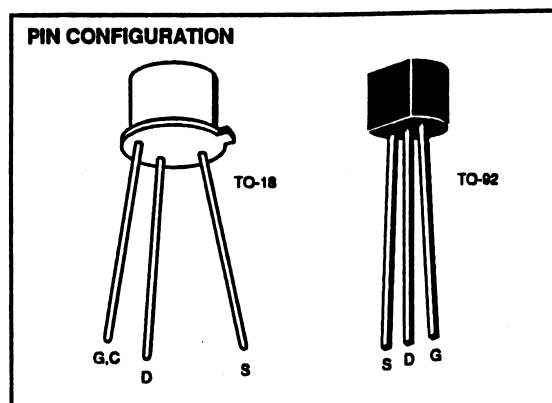


2N4091 – 2N4093 / ITE4091 – ITE4093**N-Channel JFET Switch****FEATURES**

- Low $r_{DS(on)}$
- $I_{D(off)} < 200\text{pA}$
- Fast Switching

**ABSOLUTE MAXIMUM RATINGS**

(TA = 25°C unless otherwise noted)

| | |
|-------------------------------------|-----------------------|
| Gate-Source or Gate-Drain Voltage | -40V |
| Gate Current | 10mA |
| Storage Temperature Range | -55°C to +200°C |
| Operating Temperature Range | -55°C to +200°C |
| Lead Temperature (Soldering, 10sec) | +300°C |

| | TO-18 | TO-92 |
|-------------------|-----------------------|-----------------------|
| Power Dissipation | 1.8W | 360mW |
| Derate above 25°C | 10mW/°C | 3.3mW/°C |
| Plastic Storage | -55°C to +150°C | -55°C to +150°C |
| Operating | -55°C to +135°C | -55°C to +135°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 |
|---------|--------------------------|-------------------|
| 2N4091 | Hermetic TO-18 | -55°C to +200°C |
| X2N4091 | Sorted Chips in Carriers | -55°C to +200°C |
| 2N4092 | Hermetic TO-18 | -55°C to +200°C |
| X2N4092 | Sorted Chips in Carriers | -55°C to +200°C |
| 2N4093 | Hermetic TO-18 | -55°C to +200°C |
| X2N4093 | Sorted Chips in Carriers | -55°C to +150°C |
| ITE4091 | Plastic TO-92 Package | -55°C to +150°C |
| ITE4092 | Plastic TO-92 Package | -55°C to +150°C |
| ITE4093 | Plastic TO-92 Package | -55°C to +150°C |

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise specified)

| SYMBOL | PARAMETER | 2NITE 4091 | | 2NITE 4092 | | 2NITE 4093 | | UNIT | TEST CONDITIONS |
|------------------|-------------------------------|------------|------|------------|------|------------|------|------|---|
| | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| BV _{GS} | Gate-Source Breakdown Voltage | -40 | | -40 | | -40 | | V | I _G = -1μA, V _{DS} = 0 |
| I _{DSS} | Drain Reverse Current | | 200 | | 200 | | 200 | pA | V _{DS} = 20V, I _S = 0 |
| | | | 400 | | 400 | | 400 | nA | TA = 150°C |
| I _{GSS} | Gate Reverse Current | | -100 | | -100 | | -100 | pA | V _{GS} = -20V, V _{DS} = 0 |
| | (ITE devices only) | | -200 | | -200 | | -200 | nA | TA = 150°C |

| SYMBOL | PARAMETER | 2NITE 4091 | | 2NITE 4092 | | 2NITE 4093 | | UNITS | TEST CONDITIONS |
|---------------------|---|------------|-----|------------|-----|------------|-----|-------|--|
| | | MIN | MAX | MIN | MAX | MIN | MAX | | |
| V _P | Gate-Source Pinch-Off Voltage | -5 | -10 | -2 | -7 | -1 | -5 | V | V _{DS} = 20V, I _D = 1nA |
| I _{DSS} | Saturation Drain Current (Pulse width 300ms, duty cycle ≤3%) | 30 | | 15 | | 8 | | mA | V _{DS} = 20V, V _{GS} = 0 Pulse Test Duration = 2ms |
| V _{DS(ON)} | Drain-Source ON Voltage | | | | 0.2 | | 0.2 | V | V _{GS} = 0 |
| | | | 0.2 | | | | | | I _D = 2.5mA |
| | | | | | | | | | I _D = 4mA |
| | | | | | | | | | I _D = 6.6mA |
| r _{DS(on)} | Static Drain-Source ON Resistance | | 30 | | 50 | | 80 | Ω | V _{GS} = 0, I _D = 1mA |
| r _{ds(on)} | Static Drain-Source ON Resistance | | 30 | | 50 | | 80 | | V _{GS} = 0, I _D = 0, f = 1kHz |
| C _{iss} | Common-Source Input Capacitance | | 16 | | 16 | | 16 | pF | V _{DS} = 20V, V _{GS} = 0, f = 1MHz (Note 1) |
| C _{rss} | Common-Source Reverse Transfer Capacitance | | 5 | | 5 | | 5 | | V _{DS} = 0, V _{GS} = -20V, f = 1MHz (Note 1) |
| t _{d(ON)} | Turn-ON Delay Time (Note 1) | | 15 | | 15 | | 20 | ns | V _{DD} = 3V, V _{GS(ON)} = 0 |
| t _r | Rise Time (Note 1) | | 10 | | 20 | | 40 | | I _{D(on)} = 6.6mA, V _{GS(off)} = -12V, R ₁ = 425Ω |
| | | | | | | | | | 4092 4mA -8V 700Ω |
| t _{off} | Turn-OFF Time (Note 1) | | 40 | | 60 | | 80 | | 4093 2.5mA -6V 1120Ω |