

3N170 3N171

N-CHANNEL MOSFET ENHANCEMENT MODE

FEATURES

Direct Replacement for INTERSIL 3N170 & 3N171

LOW DRAIN TO SOURCE RESISTANCE $r_{ds(on)} \leq 200\Omega$

FAST SWITCHING $t_{d(on)} \leq 3.0ns$

ABSOLUTE MAXIMUM RATINGS¹

@ 25 °C (unless otherwise stated)

Maximum Temperatures

Storage Temperature -65 to +150 °C

Operating Junction Temperature -55 to +135 °C

Maximum Power Dissipation

Continuous Power Dissipation 300mW

Maximum Current

Drain to Source 30mA

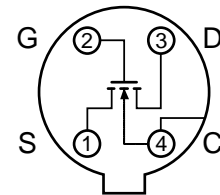
Maximum Voltages

Drain to Gate $\pm 35V$

Drain to Source 25V

Gate to Source $\pm 35V$

TO-72
BOTTOM VIEW



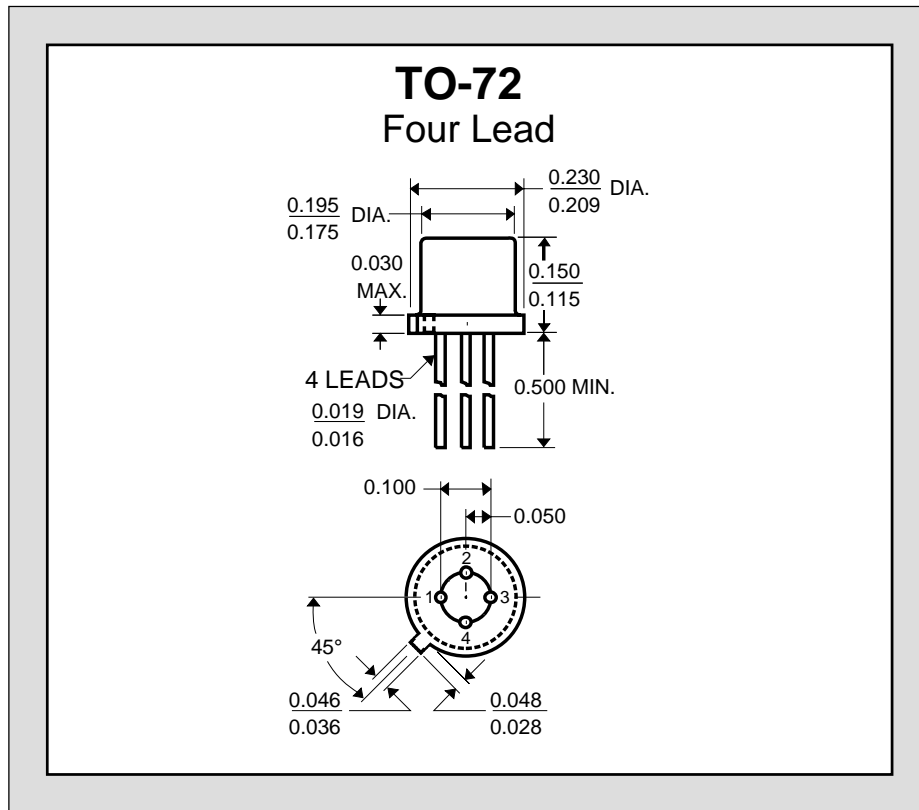
* Body tied to Case.

ELECTRICAL CHARACTERISTICS @ 25 °C (unless otherwise stated) ($V_{SB} = 0V$ unless otherwise stated)

| SYMBOL | CHARACTERISTIC | MIN | TYP | MAX | UNITS | CONDITIONS |
|--------------|-----------------------------------|-------|-----|-----|----------|---|
| BV_{DSS} | Drain to Source Breakdown Voltage | 25 | | | V | $I_D = 10\mu A, V_{GS} = 0V$ |
| $V_{DS(on)}$ | Drain to Source "On" Voltage | | | 2.0 | | $I_D = 10mA, V_{GS} = 10V$ |
| $V_{GS(th)}$ | Gate to Source Threshold Voltage | 3N170 | 1.0 | 2.0 | | $V_{DS} = 10V, I_D = 10\mu A$ |
| | | 3N171 | 1.5 | 2.0 | | |
| I_{GSS} | Gate Leakage Current | | | 10 | pA | $V_{GS} = -35V, V_{DS} = 0V$ |
| I_{DSS} | Drain Leakage Current "Off" | | | 10 | nA | $V_{DS} = 10V, V_{GS} = 0V$ |
| $I_{D(on)}$ | Drain Current "On" | 10 | | | mA | $V_{GS} = 10V, V_{DS} = 10V$ |
| g_{fs} | Forward Transconductance | 1000 | | | μS | $V_{DS} = 10V, I_D = 2.0mA, f = 1.0kHz$ |
| $r_{ds(on)}$ | Drain to Source "On" Resistance | | | 200 | Ω | $V_{GS} = 10V, I_D = 0A, f = 1.0kHz$ |
| C_{rss} | Reverse Transfer Capacitance | | | 1.3 | pF | $V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$ |
| C_{iss} | Input Capacitance | | | 5.0 | | $V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz$ |
| C_{db} | Drain to Body Capacitance | | | 5.0 | | $V_{DB} = 10V, f = 1.0MHz$ |

SWITCHING CHARACTERISTICS

| SYMBOL | CHARACTERISTIC | MIN | TYP | MAX | UNITS | CONDITIONS |
|--------------|---------------------|-----|-----|-----|-------|---|
| $t_{d(on)}$ | Turn On Delay Time | | | 3.0 | ns | $V_{DD} = 10V, I_{D(on)} = 10mA,$ $V_{GS(on)} = 10V, V_{GS(off)} = 0V$ $R_G = 50\Omega$ |
| t_r | Turn On Rise Time | | | 10 | | |
| $t_{d(off)}$ | Turn Off Delay Time | | | 3.0 | | |
| t_f | Turn Off Fall Time | | | 15 | | |



1. Absolute maximum ratings are limiting values above which serviceability may be impaired.

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