

3875081 G E SOLID STATE

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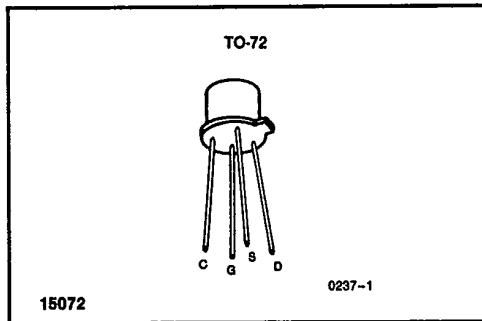


**3N161**  
**Diode Protected P-Channel**  
**Enhancement Mode MOSFET**  
**General Purpose Amplifier/Switch**

**FEATURES**

- Channel Cut Off With Zero Gate Voltage
- Square-Law Transfer Characteristic Reduces Distortion
- Independent Substrate Connection Provides Flexibility in Biasing
- Internally Connected Diode Protects Gate From Damage Due to Overvoltage

**PIN CONFIGURATION**



**ABSOLUTE MAXIMUM RATINGS**

(T<sub>A</sub> = 25°C unless otherwise noted)

|                                     |                 |
|-------------------------------------|-----------------|
| Drain-Source or Drain-Gate Voltage  | 40V             |
| Drain Current                       | 50mA            |
| Gate Forward Current                | 10µA            |
| Gate Reverse Current                | 1mA             |
| Storage Temperature                 | -65°C to +200°C |
| Operating Temperature               | -55°C to +150°C |
| Lead Temperature (Soldering, 10sec) | +300°C          |
| Power Dissipation                   | 375mW           |
| Derate above 25°C                   | 3.0mW/°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**

|       |
|-------|
| TO-72 |
| 3N161 |

**ELECTRICAL CHARACTERISTICS** (T<sub>A</sub> = 25°C and V<sub>BS</sub> = 0 unless otherwise specified)

| Symbol              | Parameter   | Test Conditions                                | Min      | Max  | Units |    |
|---------------------|---|--|----------|------|-------|----|
| I <sub>GSSF</sub>   | Forward Gate-Terminal Current                                     | V <sub>GS</sub> = -25V, V <sub>DS</sub> = 0    |          | -100 | pA    |    |
|                     |   | T <sub>A</sub> = +100°C                        |          | -10  | nA    |    |
| BV <sub>GSS</sub>   | Forward Gate-Source Break-down Voltage                            | I <sub>G</sub> = -0.1mA, V <sub>DS</sub> = 0   | -25      |      | V     |    |
| I <sub>DSS</sub>    | Zero-Gate-Voltage Drain Current                                   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = 0    |          | -10  | nA    |    |
|                     |   | V <sub>DS</sub> = -25V, V <sub>GS</sub> = 0    |          | -10  | µA    |    |
| V <sub>GS(th)</sub> | Gate-Source Threshold Voltage                                     | V <sub>DS</sub> = -15V, I <sub>D</sub> = -10µA | -1.5     | -5   | V     |    |
| V <sub>GS</sub>     | Gate-Source Voltage   | V <sub>DS</sub> = -15V, I <sub>D</sub> = -8mA  | -4.5     | -8   |       |    |
| I <sub>D(on)</sub>  | On-State Drain Current (Note 2)                                   | V <sub>DS</sub> = -15V, V <sub>GS</sub> = -15V | -40      | -120 | mA    |    |
| Y <sub>fs</sub>     | Small-Signal Common-Source Forward Transfer Admittance            | V <sub>DS</sub> = -15V, I <sub>D</sub> = -8mA  | 3500     | 6500 | µS    |    |
| Y <sub>os</sub>     | Small-Signal Common-Source Output Admittance                      |  |          | 250  |       |    |
| C <sub>iss</sub>    | Common-Source Short-Circuit Input Capacitance (Note 1)            |  | f = 1MHz |      | 10    | pF |
| C <sub>rss</sub>    | Common-Source Short Circuit Reverse Transfer Capacitance (Note 1) |  |          |      | 4     |    |

**NOTE 1:** For design reference only, not 100% tested.  
**2:** Pulse test duration 300 µs; duty cycle ≤ 3%

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**NOTE:** All typical values have been characterized but are not tested.