



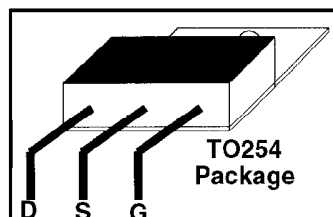
# NES

NEW ENGLAND SEMICONDUCTOR

## NES8024

### POWER MOSFET - N CHANNEL

- Switching Power Supplies
- Repetitive Avalanche Rating
- Isolated Hermetic Package
- High Reliability



POWER  
MOSFET  
800 VOLTS  
 $r_{DS(on)} 2.4 \Omega$

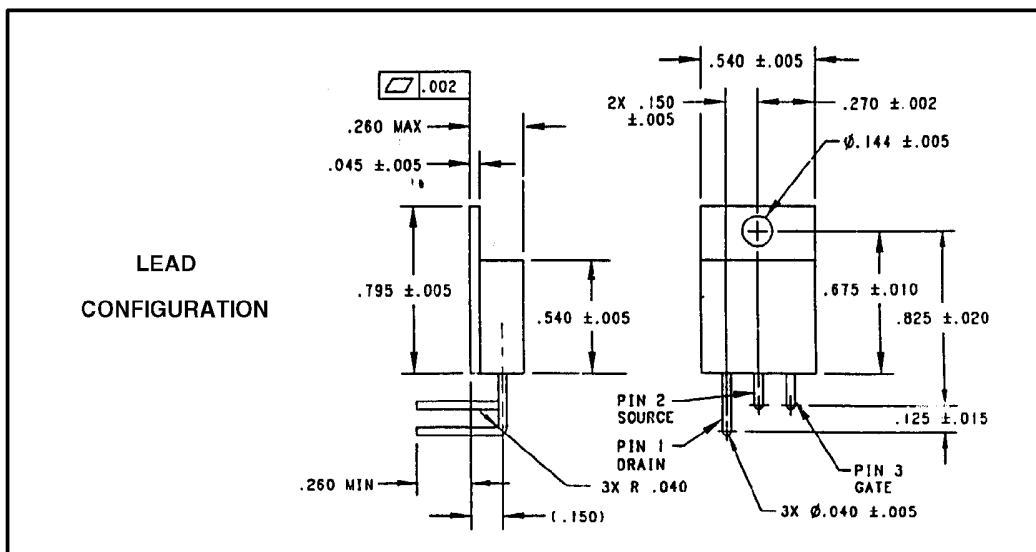
ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

| PARAMETERS/TEST CONDITIONS                      |                          | SYMBOL         | NES8024           | UNITS            |
|-------------------------------------------------|--------------------------|----------------|-------------------|------------------|
| Drain-Source Voltage                            |                          | $V_{DS}$       | 800               | V                |
| Gate-Source Voltage                             |                          | $V_{GS}$       | $\pm 30$          | V                |
| Continuous Drain Current                        | $T_C = 25^\circ\text{C}$ | $I_D$          | 4.5               | A                |
| Pulsed Drain Current (1)                        |                          | $I_{DM}$       | 18.0 <sup>1</sup> | A                |
| Power Dissipation                               | $T_C = 25^\circ\text{C}$ | $P_D$          | 125               | W                |
| Operating Junction & Storage Temperature Range  |                          | $T_J, T_{stg}$ | -55 to 150        | $^\circ\text{C}$ |
| Lead Temperature (1/16" from case for 10 secs.) |                          | $T_L$          | 300               | $^\circ\text{C}$ |

#### THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE  | Symbol     | Typ. | Max. | Units |
|---------------------|------------|------|------|-------|
| Junction-to-Case    | $R_{thJC}$ | -    | -    | K/W   |
| Junction-to-Ambient | $R_{thJA}$ | -    | -    | K/W   |
| Case-to-Sink        | $R_{thCS}$ | -    | -    | K/W   |

(1) Pulse width limited by maximum junction temperature.



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1-800-446-1158 / (978) 794-1666 / FAX (978) 689-0803

T4-4.8-860-901  
REV:-



# NES

NEW ENGLAND SEMICONDUCTOR

NES8024

**ELECTRICAL CHARACTERISTICS ( $T_J = 25^{\circ}\text{C}$  unless otherwise noted)**

| PARAMETERS/TEST CONDITIONS                                                                                 |                                                                                                                                                        | Symbol       | Min | Typ. | Max. | Units         |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----|------|------|---------------|
| Drain-Source Breakdown Voltage<br>$V_{GS} = 0, I_D = 250 \mu\text{A}$                                      |                                                                                                                                                        | $V_{(BR)DS}$ | 800 | -    | -    | V             |
| Gate Threshold Voltage<br>$V_{DS} = V_{GS}, I_D = 1000 \mu\text{A}$                                        |                                                                                                                                                        | $V_{GS(th)}$ | 2.0 | -    | 4.0  | V             |
| Gate-Body Leakage<br>$V_{DS} = 0, V_{GS} = \pm 30 \text{ V}$                                               |                                                                                                                                                        | $I_{GSS}$    | -   | -    | 100  | nA            |
| Zero Gate Voltage Drain Current<br>$V_{DS} = V_{(BR)DS}, V_{GS} = 0$                                       |                                                                                                                                                        | $I_{DSS}$    | -   | -    | 250  | $\mu\text{A}$ |
| Zero Gate Voltage Drain Current<br>$V_{DS} = 0.8 \times V_{(BR)DS}, V_{GS} = 0, T_J = 125^{\circ}\text{C}$ |                                                                                                                                                        | $I_{DSS}$    | -   | -    | 1000 | $\mu\text{A}$ |
| On-State Drain Current<br>$V_{GS} = 10 \text{ V}$                                                          |                                                                                                                                                        | $I_{D(on)}$  | 4.5 | -    | -    | A             |
| Drain-Source On-State Resistance (1)<br>$V_{GS} = 10 \text{ V}, I_D = 2.25 \text{ A}$                      |                                                                                                                                                        | $r_{DS(on)}$ | -   | -    | 2.40 | $\Omega$      |
| Drain-Source On-State Resistance (1)<br>$V_{GS} = \text{ V}, I_D = \text{ A}$                              |                                                                                                                                                        | $r_{DS(on)}$ | -   | -    | -    | $\Omega$      |
| Body Drain Diode (1)<br>$I_S = 4.5 \text{ A}, V_{GS} = 0 \text{ V}$                                        |                                                                                                                                                        | $V_{SD}$     | -   | -    | 1.3  | $V_{PK}$      |
| Input Capacitance                                                                                          | $V_{GS} = 0$                                                                                                                                           | $C_{iss}$    | -   | -    | 950  | pF            |
| Output Capacitance                                                                                         | $V_{DS} = 25 \text{ V}$                                                                                                                                | $C_{oss}$    | -   | -    | 163  |               |
| Reverse Transfer Capacitance                                                                               | $f = 1 \text{ MHz}$                                                                                                                                    | $C_{rss}$    | -   | -    | 66   |               |
| Total Gate Charge                                                                                          | $V_{DS} = 0.5 \times V_{(BR)DS},$<br>$V_{GS} = 10 \text{ V}, I_D = 4.5 \text{ A}$<br>(Gate charge is essentially independent of operating temperature) | $Q_g$        | -   | -    | 55.0 | nC            |
| Gate-Source Charge                                                                                         |                                                                                                                                                        | $Q_{gs}$     | -   | -    | 7.0  |               |
| Gate-Drain Charge                                                                                          |                                                                                                                                                        | $Q_{gd}$     | -   | -    | 53.0 |               |
| Turn-On Delay Time                                                                                         | $V_{DD} = 400 \text{ V},$<br>$I_D = 4.5 \text{ A},$<br><br>(Switching time is essentially independent of operating temperature)                        | $t_{d(on)}$  | -   | -    | 20   | ns            |
| Rise time                                                                                                  |                                                                                                                                                        | $t_r$        | -   | -    | 22   |               |
| Turn-Off Delay Time                                                                                        |                                                                                                                                                        | $t_{d(off)}$ | -   | -    | 53   |               |
| Fall Time                                                                                                  |                                                                                                                                                        | $t_f$        | -   | -    | 26   |               |

(1) Pulse test: Pulse width < 380  $\mu\text{sec}$ . Duty Cycle  $\leq 2\%$ .

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