



80N08-S

Power MOSFET

**80A, 80V N-CHANNEL
POWER MOSFET**

■ DESCRIPTION

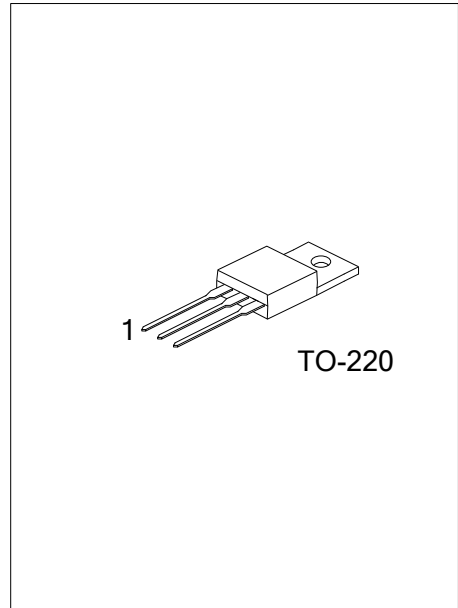
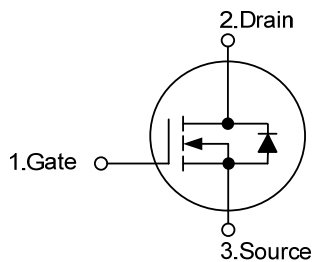
The UTC **80N08-S** is a N-channel MOSFET using UTC advanced technology.

The UTC **80N08-S** is suitable for power supply (secondary synchronous rectification), industrial and primary switch etc.

■ FEATURES

* $R_{DS(on)} < 18\text{ m}\Omega$ @ $V_{GS}=10\text{V}$, $I_D=40\text{A}$

■ SYMBOL



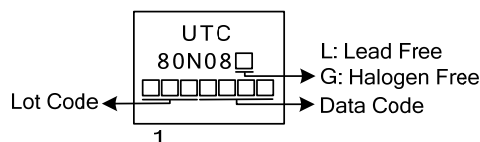
■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|--------------|---------|----------------|---|---|---------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| 80N08L-TA3-T | 80N08G-TA3-T | TO-220 | G | D | S | Tube |

Note: Pin Assignment: G: Gate D: Drain S: Source

| | |
|---|--|
| <p>80N08G-TA3-T</p> <p>(1)Packing Type (2)Package Type (3)Green Package</p> | <p>(1) T: Tube (2) TA3: TO-220 (3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|---|--|

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_c=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|------------------------------------|------------------------|-----------|------------|------------------|
| Drain-Source Voltage | | V_{DSS} | 80 | V |
| Gate-Source Voltage | | V_{GSS} | ± 20 | V |
| Continuous Drain Current | Continuous | I_D | 80 | A |
| Pulsed Drain Current | Pulsed (Note 2) | I_{DM} | 320 | A |
| Avalanche Current (Note 3) | | I_{AR} | 91 | A |
| Avalanche energy | Single Pulsed (Note 3) | E_{AS} | 414 | mJ |
| Peak Diode Recovery dv/dt (Note 4) | | dv/dt | 15 | V/nS |
| Power Dissipation | | P_D | 200 | W |
| Junction Temperature | | T_J | +150 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | -55 ~ +150 | $^\circ\text{C}$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Repetitive Rating: Pulse width limited by maximum junction temperature.

3. $L=0.1\text{mH}$, $I_{AS}=91\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J = 25^\circ\text{C}$.

4. $I_{SD} \leq 30\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq V_{(BR)DSS}$, $T_J = 25^\circ\text{C}$.

■ THERMAL DATA

| PARAMETER | SYMBOL | MAX | UNIT |
|---------------------|---------------|------|---------------------------|
| Junction to Ambient | θ_{JA} | 62 | $^\circ\text{C}/\text{W}$ |
| Junction to Case | θ_{JC} | 0.75 | $^\circ\text{C}/\text{W}$ |

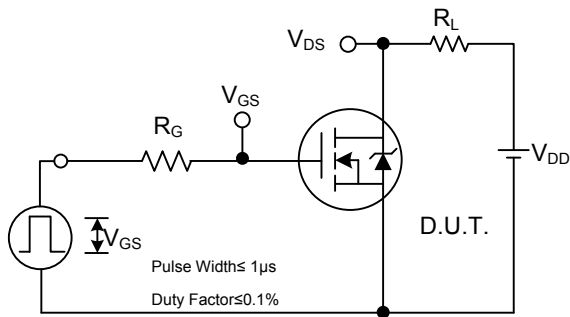
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|--------------|--|-----|------|-----------|---------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $I_D=1\text{mA}$, $V_{GS}=0\text{V}$ | 80 | | | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=80\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$ | | | 1 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$ | | | ± 100 | nA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$ | 1.0 | | 3.0 | V |
| Static Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=10\text{V}$, $I_D=40\text{A}$ | | | 18 | m Ω |
| DYNAMIC PARAMETERS | | | | | | |
| Input Capacitance | C_{ISS} | $V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$ | | 3550 | | pF |
| Output Capacitance | C_{OSS} | | | 463 | | pF |
| Reverse Transfer Capacitance | C_{RSS} | | | 36 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Total Gate Charge (Note 1) | Q_G | $V_{DS}=50\text{V}$, $I_D=1.3\text{A}$, $V_{GS}=10\text{V}$ $I_G=100\mu\text{A}$ (Note1, 2) | | 223 | | nC |
| Gate to Source Charge | Q_{GS} | | | 15 | | nC |
| Gate to Drain Charge | Q_{GD} | | | 19.2 | | nC |
| Turn-ON Delay Time (Note 1) | $t_{D(ON)}$ | $V_{DD}=30\text{V}$, $I_D=0.5\text{A}$, $R_G=25\Omega$, $V_{GS}=0\text{V}$ (Note1, 2) | | 70 | | ns |
| Rise Time | t_R | | | 73 | | ns |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | | 1085 | | ns |
| Fall-Time | t_F | | | 205 | | ns |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Maximum Body-Diode Continuous Current | I_S | | | | 80 | A |
| Maximum Body-Diode Pulsed Current | I_{SM} | | | | 320 | |
| Drain-Source Diode Forward Voltage (Note 1) | V_{SD} | $I_S=30\text{A}$, $V_{GS}=0\text{V}$ | | | 1.3 | V |
| Body Diode Reverse Recovery Time (Note 1) | t_{rr} | $I_S=30\text{A}$, $V_{GS}=0\text{V}$ | | 63.6 | | ns |
| Body Diode Reverse Recovery Charge | Q_{rr} | $di/dt=100\text{A}/\mu\text{s}$ | | 164 | | nC |

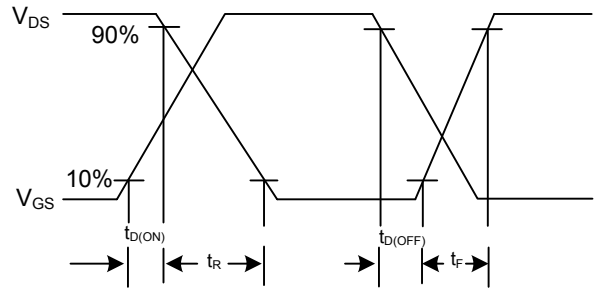
Note: 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

2. Essentially independent of operating temperature.

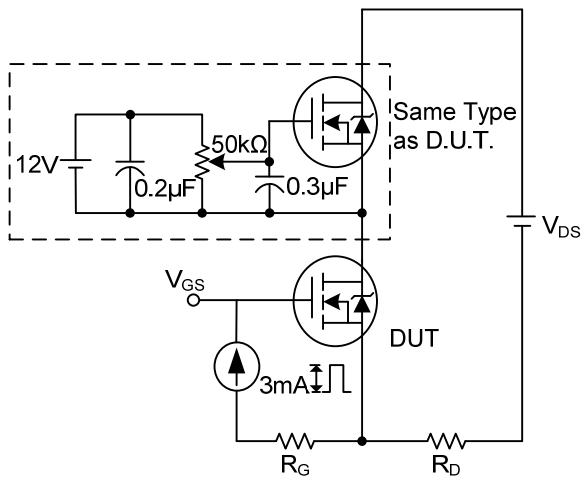
TEST CIRCUITS AND WAVEFORMS (Cont.)



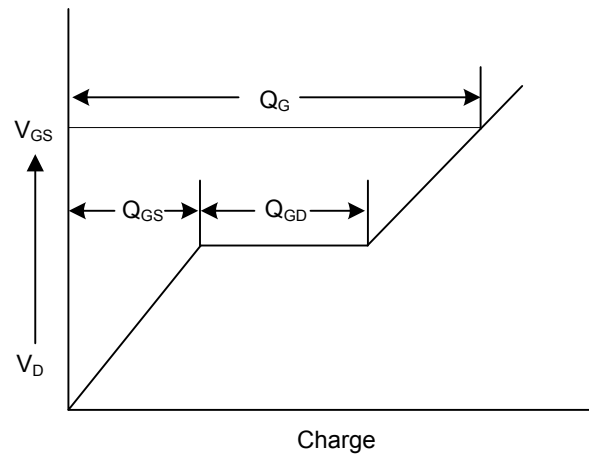
2A Switching Test Circuit



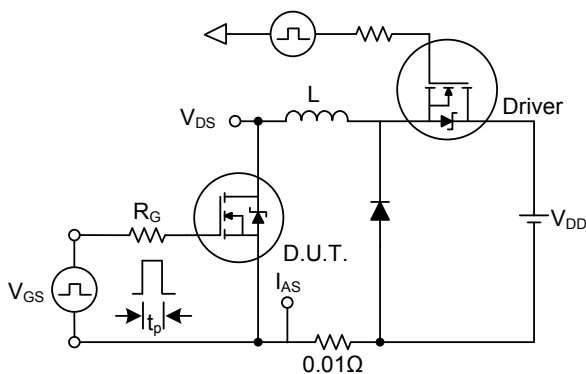
2B Switching Waveforms



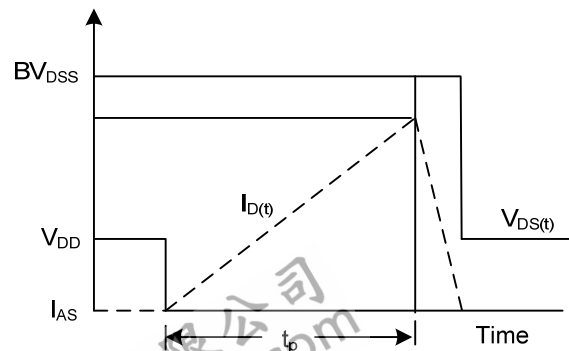
3A Gate Charge Test Circuit



3B Gate Charge Waveform



4A Unclamped Inductive Switching Test Circuit



4B Unclamped Inductive Switching Waveforms

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.