



**N-CHANNEL 80V (D-S) MOSFET**

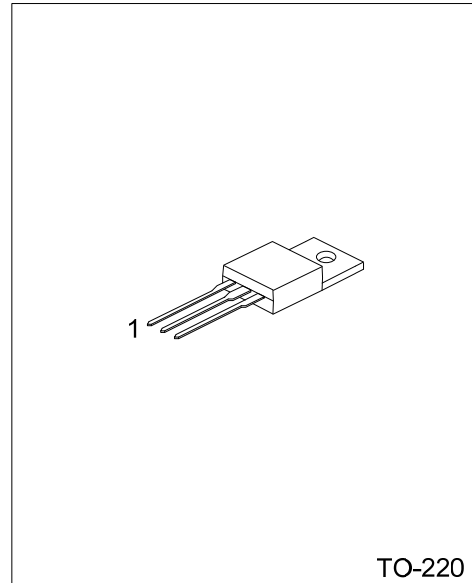
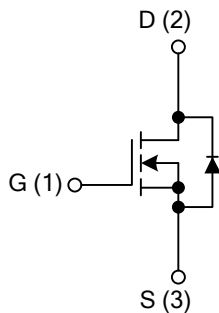
■ **DESCRIPTION**

The UTC **80N08** is an N-channel MOSFET using UTC trench technology. It can be used in applications, such as power supply (secondary synchronous rectification), industrial and primary switch etc.

■ **FEATURES**

- \* Trench FET Power MOSFETS Technology
- \* 100 % R<sub>G</sub> and UIS Tested

■ **SYMBOL**



TO-220

■ **ORDERING INFORMATION**

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

Note: G: GND, D: Drain, S: Source

|  |   |
|--|---|
| <p>80N08G-TA3-T</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Halogen Free</li> </ul> | <ul style="list-style-type: none"> <li>(1) T: Tube</li> <li>(2) TA3: TO-220</li> <li>(3) G: Halogen Free, L: Lead Free</li> </ul> |
|--|---|

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

| PARAMETER                               | SYMBOL        | TEST CONDITIONS  | RATINGS    | UNIT             |
|---|---------------|--|------------|------------------|
| Continuous Drain Current (Note 1)       | $I_D$         | $T_C = 25^\circ\text{C}$ , $V_{GS} = 10\text{V}$           | 80         | A                |
|   |               | $T_C = 100^\circ\text{C}$ , $V_{GS} = 10\text{V}$ (Note 2) | 80         |                  |
| Pulsed Drain Current (Note 2)           | $I_{D,pulse}$ | $T_C = 25^\circ\text{C}$                                   | 320        | A                |
| Avalanche Energy, Single Pulse (Note 2) | $E_{AS}$      | $I_D = 80\text{A}$   | 810        | mJ               |
| Gate Source Voltage (Note 3)            | $V_{GS}$      |  | $\pm 20$   | V                |
| Power Dissipation                       | $P_{TOT}$     | $T_C = 25^\circ\text{C}$                                   | 300        | W                |
| Junction Temperature                    | $T_J$         |  | +150       | $^\circ\text{C}$ |
| Storage Temperature                     | $T_{STG}$     |  | -55 ~ +150 | $^\circ\text{C}$ |

Note: 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.

■ THERMAL DATA

| PARAMETER           | SYMBOL        | RATINGS | UNIT |
|---------------------|---------------|---------|------|
| Junction to Ambient | $\theta_{JA}$ | 62      | K/W  |
| Junction to Case    | $\theta_{JC}$ | 0.5     | K/W  |

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

| PARAMETER  | SYMBOL        | TEST CONDITIONS   | MIN | TYP  | MAX | UNIT          |
|--|---------------|---|-----|------|-----|---------------|
| <b>OFF CHARACTERISTICS</b>                             |               |   |     |      |     |               |
| Drain-Source Breakdown Voltage                         | $BV_{DSS}$    | $I_D = 1\text{mA}$ , $V_{GS} = 0\text{V}$   | 80  |      |     | V             |
| Drain-Source Leakage Current                           | $I_{DSS}$     | $V_{DS} = 75\text{V}$ , $V_{GS} = 0\text{V}$ , $T_J = 25^\circ\text{C}$                 |     | 0.01 | 1   | $\mu\text{A}$ |
|  |               | $V_{DS} = 75\text{V}$ , $V_{GS} = 0\text{V}$ , $T_J = 125^\circ\text{C}$ <sup>2</sup>   |     | 1    | 100 |               |
| Gate-Source Leakage Current                            | $I_{GSS}$     | $V_{DS} = 0\text{V}$ , $V_{GS} = 20\text{V}$  |     | 1    | 100 | nA            |
| <b>ON CHARACTERISTICS</b>                              |               |   |     |      |     |               |
| Gate Threshold Voltage                                 | $V_{GS(TH)}$  | $V_{DS} = V_{GS}$ , $I_D = 250\mu\text{A}$  | 2.1 | 3.0  | 4.0 | V             |
| Static Drain-Source On-State Resistance                | $R_{DS(ON)}$  | $V_{GS} = 10\text{V}$ , $I_D = 80\text{A}$  |     |      | 12  | m $\Omega$    |
| <b>DYNAMIC PARAMETERS (Note 2)</b>                     |               |   |     |      |     |               |
| Input Capacitance                                      | $C_{ISS}$     | $V_{GS} = 0\text{V}$ , $V_{DS} = 25\text{V}$ , $f = 1.0\text{MHz}$                      |     | 4700 |     | pF            |
| Output Capacitance                                     | $C_{OSS}$     |   |     | 1260 |     | pF            |
| Reverse Transfer Capacitance                           | $C_{RSS}$     |   |     | 580  |     | pF            |
| <b>SWITCHING PARAMETERS (Note 2)</b>                   |               |   |     |      |     |               |
| Gate to Source Charge                                  | $Q_{GS}$      | $V_{DD} = 60\text{V}$ , $V_{GS} = 0 \sim 10\text{V}$ , $I_D = 80\text{A}$               |     | 25   | 37  | nC            |
| Gate to Drain Charge                                   | $Q_{GD}$      |   |     | 69   | 116 | nC            |
| Total Gate Charge                                      | $Q_G$         |   |     | 144  | 180 | nC            |
| Gate Plateau Voltage                                   | $V_{plateau}$ |   |     | 5.4  |     | V             |
| Turn-ON Delay Time                                     | $t_{D(ON)}$   | $V_{DD} = 40\text{V}$ , $R_G = 2.2\Omega$<br>$I_D = 80\text{A}$ , $V_{GS} = 10\text{V}$ |     | 26   |     | ns            |
| Rise Time  | $t_R$         |   |     | 50   |     | ns            |
| Turn-OFF Delay Time                                    | $t_{D(OFF)}$  |   |     | 61   |     | ns            |
| Fall-Time  | $t_F$         |   |     | 30   |     | ns            |
| <b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b> |               |   |     |      |     |               |
| Maximum Body-Diode Continuous Current                  | $I_S$         | $T_C = 25^\circ\text{C}$ (Note 2)   |     |      | 80  | A             |
| Pulsed Current   | $I_{S,pulse}$ |   |     |      | 320 |               |
| Drain-Source Diode Forward Voltage (Note1)             | $V_{SD}$      | $I_F = 80\text{A}$ , $V_{GS} = 0\text{V}$ , $T_J = 25^\circ\text{C}$                    |     | 0.9  | 1.3 | V             |
| Reverse Recovery Time (Note 2)                         | $t_{RR}$      | $I_F = I_S$ , $dI_F/dt = 100\text{A}/\mu\text{s}$                                       |     | 110  | 140 | ns            |
| Reverse Recovery Charge (Note 2)                       | $Q_{RR}$      | $V_R = 40\text{V}$  |     | 470  | 590 | nC            |

Note: 1. Current is limited by bondwire; with an  $\theta_{JC} = 0.5\text{K/W}$  the chip is able to carry 132A at  $25^\circ\text{C}$ .

2. Defined by design. Not subject to production test.

3. Qualified at -20V and +20V.

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.