



# UTT100N06

Power MOSFET

## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

### DESCRIPTION

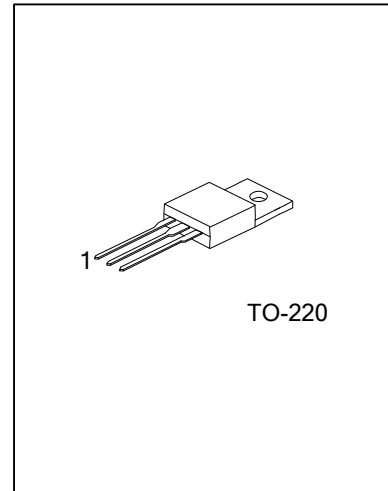
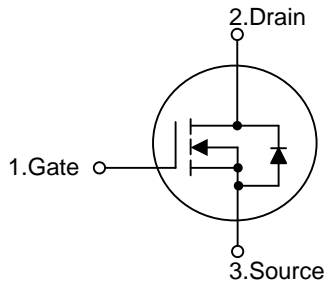
The UTC **UTT100N06** is an N-channel enhancement mode Power FET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

It also can withstand high energy pulse in the avalanche and commutation mode.

### FEATURES

- \* Fast switching speed
- \* 100A, 60V,  $R_{DS(ON)} = 7m\Omega @ V_{GS} = 10V$
- \* Work below 175°C
- \* 100% avalanche tested
- \* Improved dv/dt capability

### SYMBOL



### ORDERING INFORMATION

| Ordering Number  |                  | Package | Pin Assignment |   |   | Packing |
|------------------|------------------|---------|----------------|---|---|---------|
| Lead Free        | Halogen Free     |         | 1              | 2 | 3 |         |
| UTT100N06L-TA3-T | UTT100N06G-TA3-T | TO-220  | G              | D | S | Tube    |

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

|  |  |
|--|--|
| <p>UTT100N06L-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p> | <p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p> |
|--|--|

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

| PARAMETER                 |               | SYMBOL    | RATINGS  | UNIT               |
|---------------------------|---------------|-----------|----------|--------------------|
| Drain-Source Voltage      |               | $V_{DSS}$ | 60       | V                  |
| Gate-Source Voltage       |               | $V_{GSS}$ | $\pm 20$ | V                  |
| Drain Current             | Continuous    | $I_D$     | 100      | A                  |
|                           | Pulsed        | $I_{DM}$  | 400      | A                  |
| Avalanche Energy          | Single Pulsed | $E_{AS}$  | 450      | mJ                 |
| Peak Diode Recovery dv/dt |               | dv/dt     | 6        | V/ns               |
| Power Dissipation         |               | $P_D$     | 100      | 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.

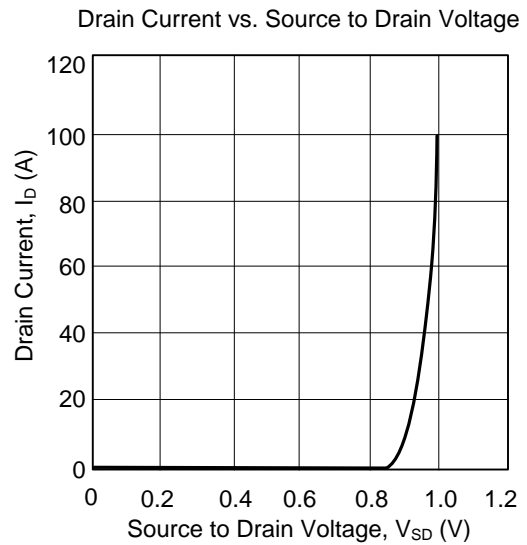
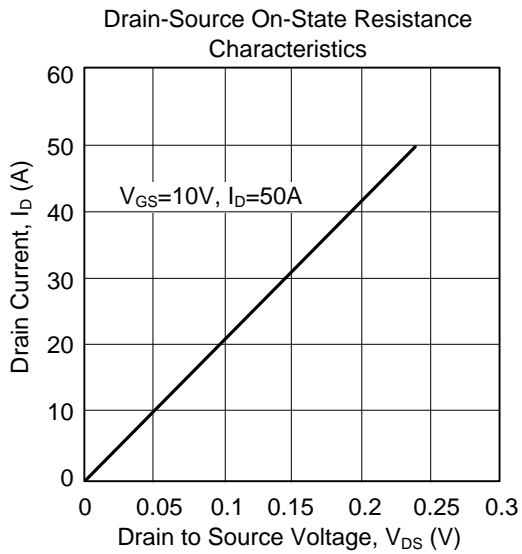
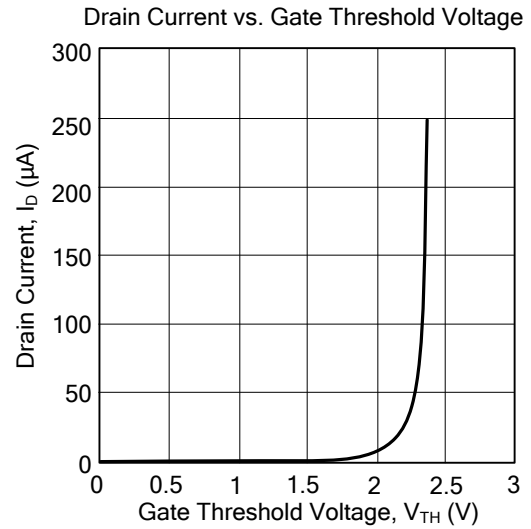
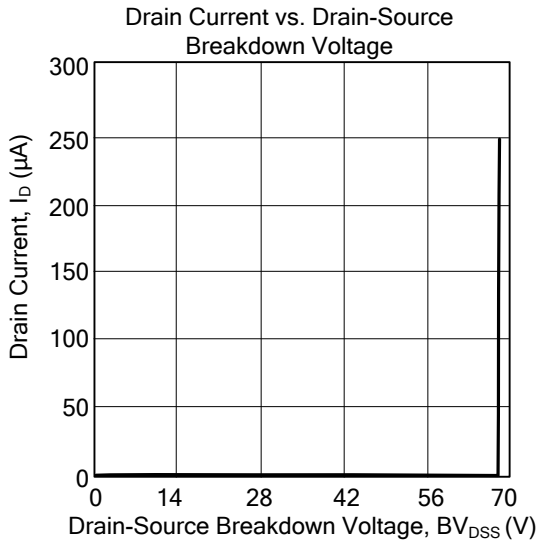
■ THERMAL CHARACTERISTICS

| PARAMETER           | SYMBOL        | RATINGS | UNIT                 |
|---------------------|---------------|---------|----------------------|
| Junction to Ambient | $\theta_{JA}$ | 62.5    | $^{\circ}\text{C/W}$ |
| Junction to Case    | $\theta_{JC}$ | 1.5     | $^{\circ}\text{C/W}$ |

■ 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                         | $BV_{DSS}$   | $I_D=250\mu\text{A}$ , $V_{GS}=0\text{V}$  | 60   |       |      | V             |
| Drain-Source Leakage Current                           | $I_{DSS}$    | $V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$   |      |       | 10   | $\mu\text{A}$ |
| Gate- Source Leakage Current                           | $I_{GSS}$    | Forward  |      |       | +100 | nA            |
|  |              | Reverse  |      |       | -100 | nA            |
| <b>ON CHARACTERISTICS</b>                              |              |  |      |       |      |               |
| Gate Threshold Voltage                                 | $V_{GS(TH)}$ | $V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$   | 1    |       | 3    | V             |
| Static Drain-Source On-State Resistance                | $R_{DS(ON)}$ | $V_{GS}=10\text{V}$ , $I_D=50\text{A}$   |      | 7     |      | m $\Omega$    |
| <b>DYNAMIC PARAMETERS</b>                              |              |  |      |       |      |               |
| Input Capacitance                                      | $C_{ISS}$    | $V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1.0\text{MHz}$                       |      | 12900 |      | pF            |
| Output Capacitance                                     | $C_{OSS}$    |  |      | 1060  |      | pF            |
| Reverse Transfer Capacitance                           | $C_{RSS}$    |  |      | 700   |      | pF            |
| <b>SWITCHING PARAMETERS</b>                            |              |  |      |       |      |               |
| Total Gate Charge                                      | $Q_G$        | $V_{GS}=10\text{V}$ , $V_{DS}=30\text{V}$ , $I_D=100\text{A}$                      |      | 500   |      | nC            |
| Gate to Source Charge                                  | $Q_{GS}$     |  |      | 50    |      | nC            |
| Gate to Drain Charge                                   | $Q_{GD}$     |  |      | 33    |      | nC            |
| Turn-ON Delay Time                                     | $t_{D(ON)}$  | $V_{DD}=30\text{V}$ , $V_{GS}=10\text{V}$ , $I_D=100\text{A}$ ,<br>$R_G=0.4\Omega$ |      | 90    |      | ns            |
| Rise Time  | $t_R$        |  |      | 130   | 200  | ns            |
| Turn-OFF Delay Time                                    | $t_{D(OFF)}$ |  |      | 768   |      | ns            |
| Fall-Time  | $t_F$        |  |      | 280   | 420  | ns            |
| Transconductance                                       | $g_{FS}$     | $V_{DS}=15\text{V}$ , $I_D=30\text{A}$   | 30   |       |      | S             |
| <b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b> |              |  |      |       |      |               |
| Maximum Body-Diode Continuous Current                  | $I_S$        |  | 100  |       |      | A             |
| Maximum Body-Diode Pulsed Current                      | $I_{SM}$     |  | 400  |       |      | A             |
| Drain-Source Diode Forward Voltage                     | $V_{SD}$     | $I_S=100\text{A}$ , $V_{GS}=0\text{V}$   |      | 1.0   | 1.5  | V             |
| Resistance of Gate                                     | $R_G$        |  | 0.65 | 1.3   | 2    | $\Omega$      |

### ■ TYPICAL CHARACTERISTICS



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