



## N-CHANNEL ENHANCEMENT MODE POWER MOSFET

### DESCRIPTION

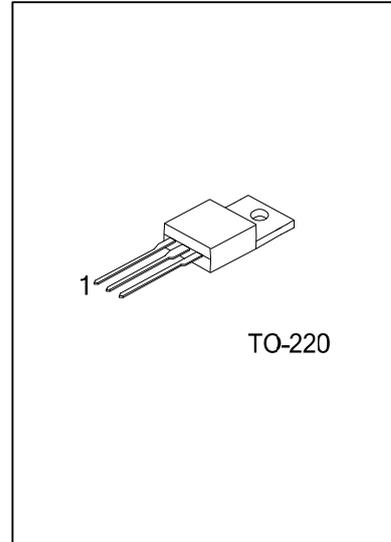
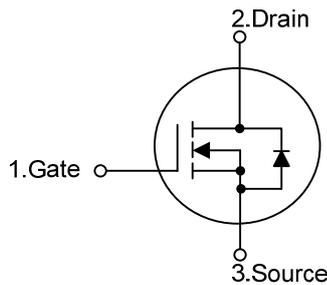
The UTC **UTT120N06** is an N-channel enhancement mode Power FET using UTC's advanced technology to provide customers with a minimum on-state resistance and superior switching performance.

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

### FEATURES

- \* Fast switching speed
- \*  $R_{DS(ON)} < 7m\Omega @ V_{GS}=10V$

### SYMBOL



### ORDERING INFORMATION

| Ordering Number  |                  | Package | Pin Assignment |   |   | Packing |
|------------------|------------------|---------|----------------|---|---|---------|
| Lead Free        | Halogen Free     |         | 1              | 2 | 3 |         |
| UTT120N06L-TA3-T | UTT120N06G-TA3-T | TO-220  | G              | D | S | Tube    |

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

|                      |  |   |
|----------------------|--|---|
| UTT120N06L-TA3-T<br> | (1)Packing Type<br>(2)Package Type<br>(3)Lead Free | (1) T: Tube<br>(2) TA3: TO-220<br>(3) G: Halogen Free, L: Lead Free |
|----------------------|--|---|

■ ABSOLUTE MAXIMUM RATINGS (T<sub>J</sub>=25°C, unless otherwise specified)

| PARAMETER                 |               | SYMBOL           | RATINGS  | UNIT |
|---------------------------|---------------|------------------|----------|------|
| Drain-Source Voltage      |               | V <sub>DSS</sub> | 60       | V    |
| Gate-Source Voltage       |               | V <sub>GSS</sub> | ±20      | V    |
| Drain Current             | Continuous    | I <sub>D</sub>   | 120      | A    |
|                           | Pulsed        | I <sub>DM</sub>  | 480      | A    |
| Avalanche Energy          | Single Pulsed | E <sub>AS</sub>  | 875      | mJ   |
| Peak Diode Recovery dv/dt |               | dv/dt            | 6        | V/ns |
| Power Dissipation         |               | P <sub>D</sub>   | 83       | W    |
| Junction Temperature      |               | T <sub>J</sub>   | +150     | °C   |
| Storage Temperature       |               | T <sub>STG</sub> | -55~+150 | °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 | θ <sub>JA</sub> | 62.5    | °C/W |
| Junction to Case    | θ <sub>JC</sub> | 1.5     | °C/W |

■ ELECTRICAL CHARACTERISTICS (T<sub>J</sub>=25°C, unless otherwise specified)

| PARAMETER  | SYMBOL              | TEST CONDITIONS   | MIN | TYP  | MAX  | UNIT |
|--|---------------------|---|-----|------|------|------|
| <b>OFF CHARACTERISTICS</b>                             |                     |   |     |      |      |      |
| Drain-Source Breakdown Voltage                         | BV <sub>DSS</sub>   | I <sub>D</sub> =250μA, V <sub>GS</sub> =0V  | 60  |      |      | V    |
| Drain-Source Leakage Current                           | I <sub>DSS</sub>    | V <sub>DS</sub> =60V, V <sub>GS</sub> =0V   |     |      | 10   | μA   |
| Gate- Source Leakage Current                           | I <sub>GSS</sub>    | Forward   |     |      | +100 | nA   |
|  |                     | Reverse   |     |      | -100 | nA   |
| <b>ON CHARACTERISTICS</b>                              |                     |   |     |      |      |      |
| Gate Threshold Voltage                                 | V <sub>GS(TH)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                              | 1   |      | 3    | V    |
| Static Drain-Source On-State Resistance                | R <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =50A   |     |      | 7    | mΩ   |
|  |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =40A  |     |      | 10   | mΩ   |
| <b>DYNAMIC PARAMETERS</b>                              |                     |   |     |      |      |      |
| Input Capacitance                                      | C <sub>ISS</sub>    | V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1.0MHz                                   |     | 2990 |      | pF   |
| Output Capacitance                                     | C <sub>OSS</sub>    |   |     | 585  |      | pF   |
| Reverse Transfer Capacitance                           | C <sub>RSS</sub>    |   |     | 340  |      | pF   |
| <b>SWITCHING PARAMETERS</b>                            |                     |   |     |      |      |      |
| Total Gate Charge                                      | Q <sub>G</sub>      | V <sub>GS</sub> =10V, V <sub>DS</sub> =30V, I <sub>D</sub> =60A                       |     | 500  |      | nC   |
| Gate to Source Charge                                  | Q <sub>GS</sub>     |   |     | 50   |      | nC   |
| Gate to Drain Charge                                   | Q <sub>GD</sub>     |   |     | 33   |      | nC   |
| Turn-ON Delay Time                                     | t <sub>D(ON)</sub>  | V <sub>DD</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =60A, R <sub>G</sub> =0.4Ω |     | 90   |      | ns   |
| Rise Time  | t <sub>R</sub>      |   |     | 130  |      | ns   |
| Turn-OFF Delay Time                                    | t <sub>D(OFF)</sub> |   |     | 768  |      | ns   |
| Fall-Time  | t <sub>F</sub>      |   |     | 280  |      | ns   |
| <b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b> |                     |   |     |      |      |      |
| Maximum Body-Diode Continuous Current                  | I <sub>S</sub>      |   |     |      | 120  | A    |
| Maximum Body-Diode Pulsed Current                      | I <sub>SM</sub>     |   |     |      | 480  | A    |
| Drain-Source Diode Forward Voltage                     | V <sub>SD</sub>     | I <sub>S</sub> =120A, V <sub>GS</sub> =0V   |     |      | 1.5  | V    |

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