



## UTT15P06

Preliminary

Power MOSFET

### 15A, 60V P-CHANNEL POWER MOSFET

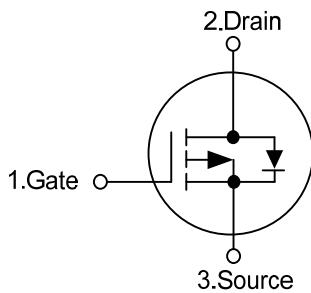
#### DESCRIPTION

The UTC **UTT15P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

#### FEATURES

- \*  $R_{DS(ON)}=90m\Omega$   $V_{GS}=-10V$ ,  $I_D=-15A$
- \* High Switching Speed

#### SYMBOL

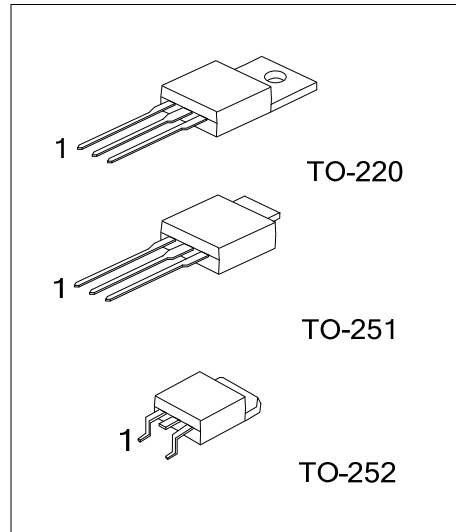


#### ORDERING INFORMATION

| Ordering Number |                 | Package | Pin Assignment |   |   | Packing   |
|-----------------|-----------------|---------|----------------|---|---|-----------|
| Lead Free       | Halogen Free    |         | 1              | 2 | 3 |           |
| UTT15P06L-TA3-T | UTT15P06G-TA3-T | TO-220  | G              | D | S | Tube      |
| UTT15P06L-TM3-T | UTT15P06G-TM3-T | TO-251  | G              | D | S | Tube      |
| UTT15P06L-TN3-T | UTT15P06G-TN3-T | TO-252  | G              | D | S | Tube      |
| UTT15P06L-TN3-R | UTT15P06G-TN3-R | TO-252  | G              | D | S | Tape Reel |

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

|  |  |
|--|--|
| <p>UTT15P06L-TA3-T</p> <p>(1)Packing Type<br/>(2)Package Type<br/>(3)Lead Free</p> | <p>(1) T: Tube, R: Tape Reel<br/>(2) TA3: TO-220, TM3: TO-251, TN3: TO-252<br/>(3) L: Lead Free, G: Halogen Free</p> |
|--|--|



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

| PARAMETER            |               | SYMBOL    | RATINGS  | UNIT             |
|----------------------|---------------|-----------|----------|------------------|
| Drain-Source Voltage |               | $V_{DSS}$ | -60      | V                |
| Gate-Source Voltage  |               | $V_{GSS}$ | $\pm 25$ | V                |
| Drain Current        | Continuous    | $I_D$     | -15      | A                |
|                      | Pulsed        | $I_{DM}$  | -45      | A                |
| Power Dissipation    | TO-220        | $P_D$     | 40       | W                |
|                      | TO-251/TO-252 |           | 31.3     |                  |
| 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 (Steady state) |               | $\theta_{JA}$ | 62      | $^\circ\text{C/W}$ |
| Junction to Case                   | TO-220        | $\theta_{JC}$ | 3.125   | $^\circ\text{C/W}$ |
|                                    | TO-251/TO-252 |               | 4       |                    |

■ 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   |         | $I_{DSS}$    | $V_{DS}=-60\text{V}, V_{GS}=0\text{V}$                                  |     |      | -1   | $\mu\text{A}$ |
| Gate-Source Leakage Current  | Forward | $I_{GSS}$    | $V_{GS}=+25\text{V}, V_{DS}=0\text{V}$                                  |     |      | +100 | nA            |
|  | Reverse |              | $V_{GS}=-25\text{V}, V_{DS}=0\text{V}$                                  |     |      | -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  |         | $R_{DS(ON)}$ | $V_{GS}=-10\text{V}, I_D=-15\text{A}$ (Note 1)                          |     |      | 90   | m $\Omega$    |
| <b>DYNAMIC PARAMETERS</b> (Note 2)   |         |              |   |     |      |      |               |
| Input Capacitance  |         | $C_{ISS}$    | $V_{GS}=0\text{V}, V_{DS}=-25\text{V}, f=1.0\text{MHz}$<br>(Note 2)     |     | 1100 | 2660 | pF            |
| Output Capacitance   |         | $C_{OSS}$    |   |     | 115  |      | pF            |
| Reverse Transfer Capacitance   |         | $C_{RSS}$    |   |     | 90   |      | pF            |
| <b>SWITCHING PARAMETERS</b>  |         |              |   |     |      |      |               |
| Total Gate Charge  |         | $Q_G$        | $V_{GS}=-10\text{V}, V_{DS}=-30\text{V},$<br>$I_D=-15\text{A}$ (Note 3) |     | 14   | 27   | nC            |
| Gate to Source Charge  |         | $Q_{GS}$     |   |     | 3    |      | nC            |
| Gate to Drain Charge   |         | $Q_{GD}$     |   |     | 8    |      | nC            |
| Turn-ON Delay Time   |         | $t_{D(ON)}$  | $V_{DD}=-30\text{V}, I_D=-1\text{A}, R_G=12.5\Omega$<br>(Note 3)        |     | 16   |      | ns            |
| Rise Time  |         | $t_R$        |   |     | 30   |      | ns            |
| Turn-OFF Delay Time  |         | $t_{D(OFF)}$ |   |     | 50   |      | ns            |
| Fall-Time  |         | $t_F$        |   |     | 20   |      | ns            |
| <b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b> ( $T_C=25^\circ\text{C}$ ) (Note 2) |         |              |   |     |      |      |               |
| Maximum Body-Diode Continuous Current  |         | $I_S$        |   |     |      | -15  | A             |
| Maximum Body-Diode Pulsed Current  |         | $I_{SM}$     |   |     |      | -45  | A             |
| Drain-Source Diode Forward Voltage   |         | $V_{SD}$     | $I_F=-15\text{A}, V_{GS}=0\text{V}$ (Note 1)                            |     | -1.0 | -1.5 | V             |

Notes: 1. Pulse test; pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

2. Guaranteed by design, not subject to production testing.

3. Independent of operating temperature.

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