

**UTT80P06**

Preliminary

Power MOSFET

**80A, 60V P-CHANNEL  
POWER MOSFET**

## ■ DESCRIPTION

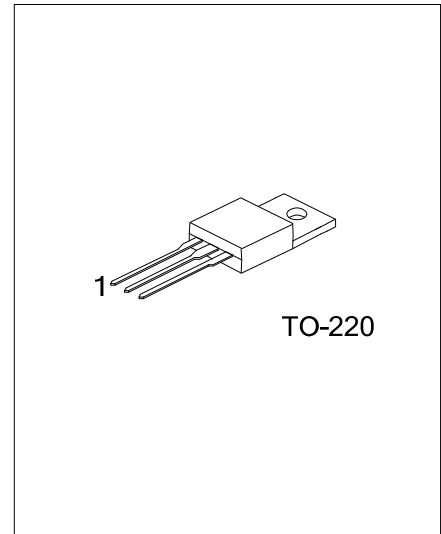
The UTC **UTT80P06** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed and a minimum on-state resistance, and it can also withstand high energy in the avalanche.

The UTC **UTT80P06** is suitable for low voltage and high speed switching applications

## ■ FEATURES

\*  $R_{DS(ON)}=0.021\Omega$  @  $V_{GS}=-10V$ ,  $I_D=-64A$

\* High Switching Speed



## ■ ORDERING INFORMATION

| Ordering Number |                 | Package | Pin Assignment |   |   | Packing |
|-----------------|-----------------|---------|----------------|---|---|---------|
| Lead Free       | Halogen Free    |         | 1              | 2 | 3 |         |
| UTT80P06L-TA3-T | UTT80P06G-TA3-T | TO-220  | G              | D | S | Tube    |

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

|                 |                 |                                   |
|-----------------|-----------------|-----------------------------------|
| UTT80P06L-TA3-T | (1)Packing Type | (1) T: Tube                       |
|                 | (2)Package Type | (2) TA3: TO-220                   |
|                 | (3)Lead Free    | (3) G: Halogen Free, L: Lead Free |

■ 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 | $T_C=25^\circ\text{C}$  | $I_D$     | -80      | A                |
|                      |            | $T_C=100^\circ\text{C}$ |           | -64      | A                |
|                      | Pulsed     | $T_C=25^\circ\text{C}$  | $I_{DM}$  | -320     | A                |
| Avalanche Energy     |            | Single Pulsed           | $E_{AS}$  | 823      | mJ               |
|                      |            | Repetitive              | $E_{AR}$  | 34       | mJ               |
| Power Dissipation    |            | $T_C=25^\circ\text{C}$  | $P_D$     | 313      | W                |
| Junction Temperature |            |                         | $T_J$     | +150     | $^\circ\text{C}$ |
| Storage Temperature  |            |                         | $T_{STG}$ | -55~+150 | $^\circ\text{C}$ |

Notes: 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 Case    | $\theta_{JC}$ | 0.4     | $^\circ\text{C/W}$ |
| Junction to Ambient | $\theta_{JA}$ | 62      | $^\circ\text{C/W}$ |

■ 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 <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, T <sub>J</sub> =25°C                          |      | -0.1  | -1    | μA   |
|                                                 |         |                     | V <sub>DS</sub> =-60V, T <sub>C</sub> =150°C                                              |      | -10   | -100  | μA   |
| Gate-Source Leakage Current                     | Forward | I <sub>GSS</sub>    | V <sub>GS</sub> =+20V, V <sub>DS</sub> =0V                                                |      |       | +100  | nA   |
|                                                 | Reverse |                     | V <sub>GS</sub> =-20V, V <sub>DS</sub> =0V                                                |      |       | -100  | nA   |
| ON CHARACTERISTICS                              |         |                     |                                                                                           |      |       |       |      |
| Gate Threshold Voltage                          |         | V <sub>GS(TH)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-5.5mA                                 | -2.1 | -3    | -4    | V    |
| Static Drain-Source On-State Resistance         |         | R <sub>DS(ON)</sub> | I <sub>D</sub> =-64A, V <sub>GS</sub> =-10V                                               |      | 0.021 | 0.023 | Ω    |
| DYNAMIC PARAMETERS                              |         |                     |                                                                                           |      |       |       |      |
| Input Capacitance                               |         | C <sub>ISS</sub>    | V <sub>GS</sub> =0V, V <sub>DS</sub> =-25V, f=1.0MHz                                      |      | 4026  | 5033  | pF   |
| Output Capacitance                              |         | C <sub>OSS</sub>    |                                                                                           |      | 1252  | 1565  | pF   |
| Reverse Transfer Capacitance                    |         | C <sub>RSS</sub>    |                                                                                           |      | 437   | 546   | pF   |
| SWITCHING PARAMETERS                            |         |                     |                                                                                           |      |       |       |      |
| Total Gate Charge                               |         | Q <sub>G</sub>      | V <sub>DD</sub> =-48V, I <sub>D</sub> =-80A, V <sub>GS</sub> = -10V                       |      | 115   | 173   | nC   |
| Gate to Source Charge                           |         | Q <sub>GS</sub>     | V <sub>DD</sub> =-48V, I <sub>D</sub> =-80A                                               |      | 27.4  | 41    | nC   |
| Gate to Drain Charge                            |         | Q <sub>GD</sub>     |                                                                                           |      | 50    | 75    | nC   |
| Turn-ON Delay Time                              |         | t <sub>D(ON)</sub>  | V <sub>DD</sub> =-30V, I <sub>D</sub> =-64A, R <sub>G</sub> =1Ω,<br>V <sub>GS</sub> =-10V |      | 24    | 36    | ns   |
| Rise Time                                       |         | t <sub>R</sub>      |                                                                                           |      | 18    | 27    | ns   |
| Turn-OFF Delay Time                             |         | t <sub>D(OFF)</sub> |                                                                                           |      | 56    | 84    | ns   |
| Fall-Time                                       |         | t <sub>F</sub>      |                                                                                           |      | 30    | 45    | ns   |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS |         |                     |                                                                                           |      |       |       |      |
| Maximum Body-Diode Continuous Current           |         | I <sub>S</sub>      | T <sub>C</sub> =25°C                                                                      |      |       | -80   | A    |
| Maximum Body-Diode Pulsed Current               |         | I <sub>SM</sub>     | T <sub>C</sub> =25°C                                                                      |      |       | -320  | A    |
| Drain-Source Diode Forward Voltage              |         | V <sub>SD</sub>     | I <sub>F</sub> =-80A, V <sub>GS</sub> =0V                                                 |      | -1.2  | -1.6  | V    |

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