**UNISONIC TECHNOLOGIES CO., LTD**

# UT3N06　　　Preliminary　　　*Power MOSFET*

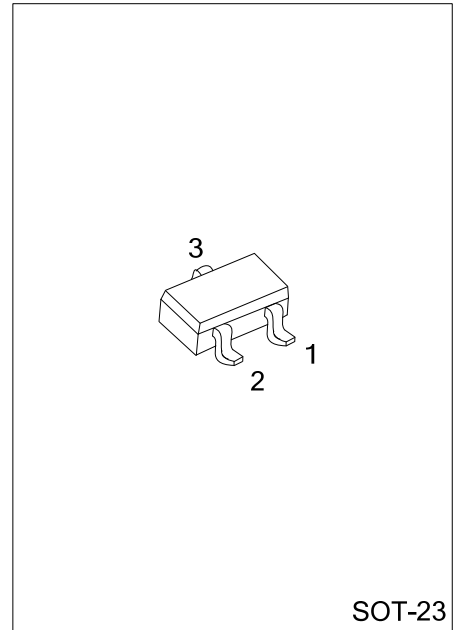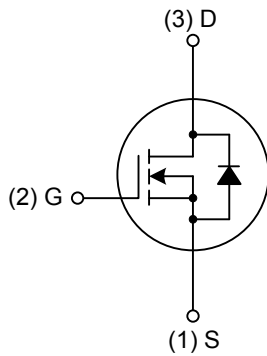## N-CHANNEL ENHANCEMENT MODE POWER MOSFET



SOT-23

■　**DESCRIPTION**

　　The UTC **UT3N06** is an N-channel POWER MOSFET providing very low on-resistance. It has high efficiency and perfect cost-effectiveness. It can be generally applied in the commercial and industrial fields.

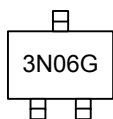■　**FEATURES**

* Simple drive requirement
* Halogen Free

■　**SYMBOL**



■　**ORDERING INFORMATION**

| Ordering Number | Package | Pin Assignment | | | Packing |
| --- | --- | --- | --- | --- | --- |
| | | 1 | 2 | 3 | |
| UT3N06G-AE3-R | SOT-23 | S | G | D | Tape Reel |

UT3N06G-AE3-R

　(1)Packing Type
　(2)Package Type
　(3)Halogen Free

(1) R: Tape Reel

(2) AE3: SOT-23

(3) G: Halogen Free

■　**MARKING**



3N06G

QW-R502-366.a

# UT3N06

■ **ABSOLUTE MAXIMUM RATINGS**

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 60 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±20 | V |
| Continuous Drain Current ($V_{GS}$=4.5V, Ta= 25°C) (Note 2) | $I_D$ | 3.0 | A |
| Pulsed Drain Current (Note 3.4) | $I_{DM}$ | 10 | A |
| Power Dissipation (Ta= 25°C) | $P_D$ | 1.38 | W |
| Junction Temperature | $T_J$ | +150 | °C |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | °C |

Note: 1. 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.
    2. Surface mounted on 1 in$^2$ copper pad of FR4 board; 270°C/W when mounted on min. copper pad.
    3. Pulse width limited by $T_{J(MAX)}$
    4. Pulse width ≤300µs, duty cycle≤2%.

■ **THERMAL DATA**

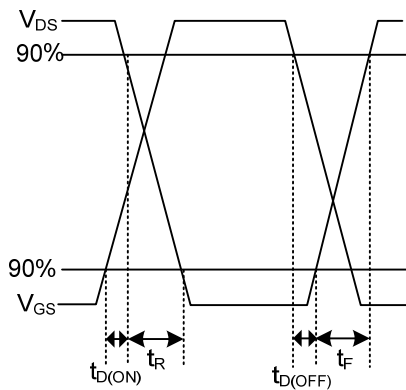| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Junction to Ambient (Note) | $\theta_{JA}$ | | | 90 | °C/W |

Note: Surface mounted on 1 in$^2$ copper pad of FR4 board; 270°C/W when mounted on min. copper pad.

■ **ELECTRICAL CHARACTERISTICS** ($T_J$ = 25°C, unless otherwise specified)

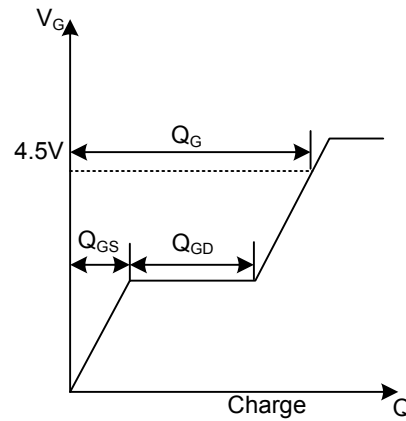| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$ =0V, $I_D$ =250µA | 60 | | | V |
| Breakdown Voltage Temperature Coefficient | $\dfrac{\Delta BV_{DSS}}{\Delta T_J}$ | Reference to 25°C, $I_D$=1mA | | 0.05 | | V/°C |
| Drain-Source Leakage Current | $I_{DSS}$ | $V_{DS}$ =60V,$V_{GS}$ =0V | | | 10 | µA |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$ =±20V | | | ±100 | nA |
| **ON CHARACTERISTICS** | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250µA | 1.0 | | 3.0 | V |
| Drain to Source On-state Resistance | $R_{DS(ON)}$ | $V_{GS}$ =10V, $I_D$ =3A | | | 90 | mΩ |
| | | $V_{GS}$ =4.5V, $I_D$ =2A | | | 120 | mΩ |
| **DYNAMIC PARAMETERS** | | | | | | |
| Input Capacitance | $C_{ISS}$ | | | 490 | 780 | pF |
| Output Capacitance | $C_{OSS}$ | $V_{DS}$=25V,$V_{GS}$=0V,f =1.0MHz | | 55 | | pF |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 40 | | pF |
| **SWITCHING PARAMETERS** | | | | | | |
| Turn-ON Delay Time (Note) | $t_{D(ON)}$ | | | 6 | | ns |
| Turn-ON Rise Time | $t_R$ | $V_{GS}$=10V, $V_{DS}$=30V, $I_D$=1A, | | 5 | | ns |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | $R_D$ =30Ω, $R_G$ =3.3Ω | | 16 | | ns |
| Turn-OFF Fall-Time | $t_F$ | | | 3 | | ns |
| Total Gate Charge (Note) | $Q_G$ | | | 6 | 10 | nC |
| Gate Source Charge | $Q_{GS}$ | $V_{GS}$ =4.5V, $V_{DS}$ =48V, $I_D$ =3A | | 1.6 | | nC |
| Gate Drain Charge | $Q_{GD}$ | | | 3 | | nC |
| **SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS** | | | | | | |
| Drain-Source Diode Forward Voltage (Note) | $V_{SD}$ | $I_S$ =1.2A, $V_{GS}$ =0V | | | 1.2 | V |
| Reverse Recovery Time | $t_{RR}$ | $I_S$=3A,$V_{GS}$=0V,dI/dt=100A/µs | | 25 | | ns |
| Reverse Recovery Charge | $Q_{RR}$ | | | 26 | | nC |

Note: Pulse width ≤300µs, duty cycle≤2%.

■ **TEST WAVEFORMS**

**Switching Time Waveform**          **Gate Charge Waveform**

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