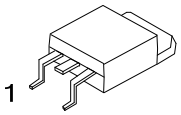
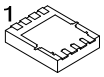
# UTT95N03-H

**POWER MOSFET**

## 95A 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET




TO-252




DFN5060-8

## ■ DESCRIPTION

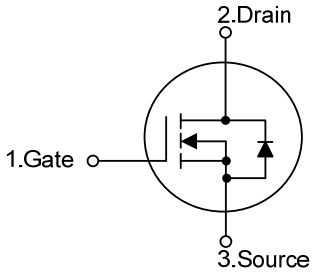
The UTC **UTT95N03-H** is a N-channel enhancement mode power MOSFET, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and fast switching, etc.

The UTC **UTT95N03-H** is suitable for low voltage applications such as DC/DC converters.

## ■ FEATURES

* For TO-252
  $R_{DS(ON)}$ < 4.0 mΩ @ $V_{GS}$=10V, $I_D$=40A
  $R_{DS(ON)}$ < 6.0 mΩ @ $V_{GS}$=4.5V, $I_D$=30A
  For DFN5060-8
  $R_{DS(ON)}$ < 5.5 mΩ @ $V_{GS}$=10V, $I_D$=40A
  $R_{DS(ON)}$ < 7.0 mΩ @ $V_{GS}$=4.5V, $I_D$=30A
* Fast switching characteristic
* Low on-resistance

## ■ SYMBOL




## ■ ORDERING INFORMATION

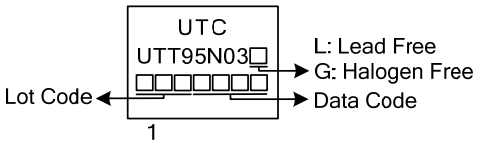
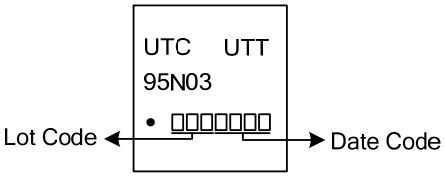
| Ordering Number | | Package | Pin Assignment | | | | | | | | Packing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| UTT95N03L-TN3-R | UTT95N03G-TN3-R | TO-252 | G | D | S | - | - | - | - | - | Tape Reel |
| UTT95N03G-K08-5060-R | UTT95N03G-K08-5060-R | DFN5060-8 | S | S | S | G | D | D | D | D | Tape Reel |

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

UTT95N03G-TN3-R

| | |
|---|---|
| (1)Packing Type | (1) T: Tube, R: Tape Reel |
| (2)Package Type | (2) TN3: TO-252, K08-5060: DFN5060-8 |
| (3)Green Package | (3) G: Halogen Free and Lead Free, L: Lead Free |

## ■ MARKING

| TO-252 | DFN5060-8 |
|---|---|
|  |  |

## ■ ABSOLUTE MAXIMUM RATING

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±20 | V |
| Continuous Drain Current $V_{GS}$ @ 10V ($T_C$=25°C) (Note 4) | TO-252 | $I_D$ | 95 | A |
| | DFN5060-8 | | 29 | A |
| Pulsed Drain Current (Note 1) | TO-252 | $I_{DM}$ | 300 | A |
| | DFN5060-8 | | 92 | A |
| Total Power Dissipation | $T_C$=25°C | $P_D$ | 50 | W |
| | $T_A$=25°C | | 2 | W |
| Junction Temperature | | $T_J$ | -55 ~ +150 | °C |
| Storage Temperature Range | | $T_{STG}$ | -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 DATA

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Junction to Ambient | TO-252 | $\theta_{JA}$ | 62.5 | °C/W |
| | DFN5060-8 | | 40.3 | °C/W |
| Junction to Case | TO-252 | $\theta_{JC}$ | 2.5 | °C/W |
| | DFN5060-8 | | 6 | °C/W |

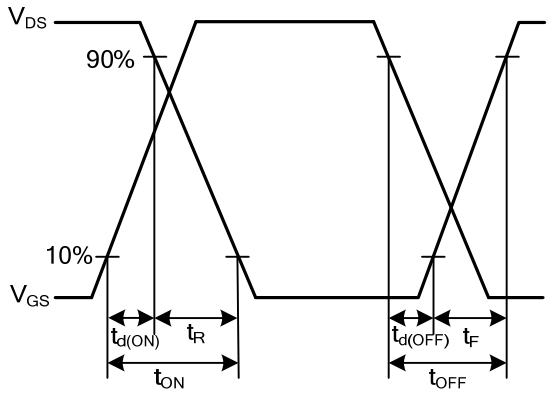
Note: Surface mounted on 1 $in^2$ copper pad of FR4 board.

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

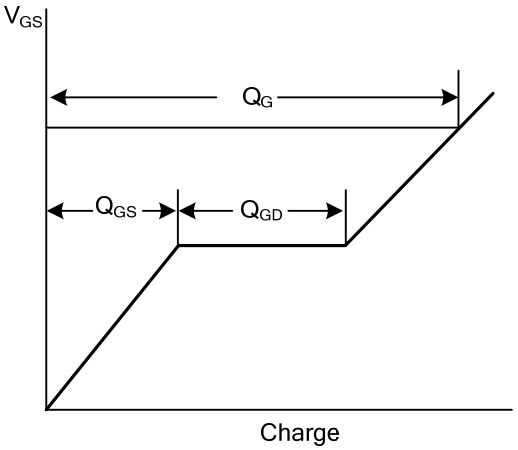
| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| **STATIC PARAMETERS** | | | | | | | |
| Drain-Source Breakdown Voltage | | $BV_{DSS}$ | $I_D$=250μA, $V_{GS}$=0V | 30 | | | V |
| Drain-Source Leakage Current | | $I_{DSS}$ | $V_{DS}$=30V, $V_{GS}$=0V | | | 10 | μA |
| Gate-Source Leakage Current | Forward | $I_{GSS}$ | $V_{GS}$=+20V, $V_{DS}$=0V | | | +100 | nA |
| | Reverse | | $V_{GS}$=-20V, $V_{DS}$=0V | | | -100 | nA |
| **ON CHARACTERISTICS** | | | | | | | |
| Gate Threshold Voltage | | $V_{GS(TH)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250μA | 1.0 | | 3.0 | V |
| Static Drain-Source On-State Resistance (Note 2) | TO-252 | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=40A | | | 4.0 | mΩ |
| | | | $V_{GS}$=4.5V, $I_D$=30A | | | 6.0 | mΩ |
| | DFN5060-8 | | $V_{GS}$=10V, $I_D$=40A | | | 5.5 | mΩ |
| | | | $V_{GS}$=4.5V, $I_D$=30A | | | 7.0 | mΩ |
| **DYNAMIC PARAMETERS** | | | | | | | |
| Input Capacitance | | $C_{ISS}$ | $V_{GS}$=0V, $V_{DS}$=15V, f=1.0MHz | | 2700 | | pF |
| Output Capacitance | | $C_{OSS}$ | | | 460 | | pF |
| Reverse Transfer Capacitance | | $C_{RSS}$ | | | 330 | | pF |
| Gate Resistance | | $R_G$ | f=1.0MHz | | 1.2 | | Ω |
| **SWITCHING PARAMETERS** | | | | | | | |
| Total Gate Charge (Note 2) | | $Q_G$ | $V_{GS}$=10V, $V_{DS}$=24V, $I_D$=62A $I_G$=1mA | | 57 | | nC |
| Gate to Source Charge | | $Q_{GS}$ | | | 16 | | nC |
| Gate to Drain ("Miller") Charge | | $Q_{GD}$ | | | 11 | | nC |
| Turn-ON Delay Time (Note 2) | | $t_{D(ON)}$ | $V_{GS}$=10V, $V_{DS}$=30V, $I_D$=1.0A, $R_G$=25Ω | | 40 | | ns |
| Rise Time | | $t_R$ | | | 120 | | ns |
| Turn-OFF Delay Time | | $t_{D(OFF)}$ | | | 800 | | ns |
| Fall-Time | | $t_F$ | | | 430 | | ns |
| **SOURCE-DRAIN BODY DIODE CHARACTERISTICS** | | | | | | | |
| Forward On Voltage (Note 2) | | $V_{SD}$ | $I_S$=40A,$V_{GS}$=0V | | | 1.2 | V |
| Reverse Recovery Time (Note 2) | | $t_{rr}$ | $I_S$=10A, $V_{GS}$=0V, dI/dt=100A/μs | | 35 | | ns |
| Reverse Recovery Charge | | $Q_{rr}$ | | | 35 | | nC |

Notes: 1. Pulse width limited by max. junction temperature.
2. Pulse test.
3. Package limitation current is 75A.

## ■ TEST CIRCUITS AND WAVEFORMS



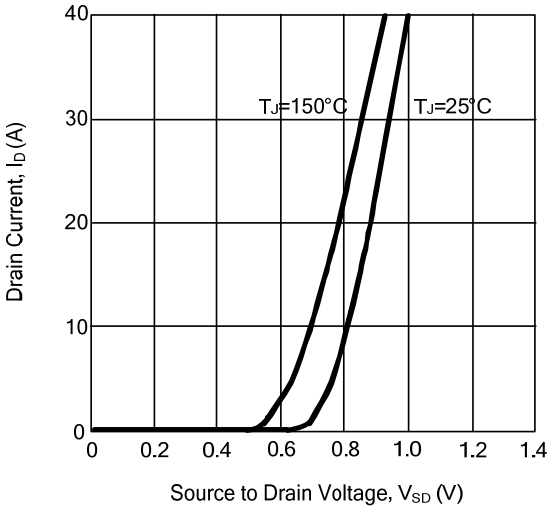

Switching Time Waveform



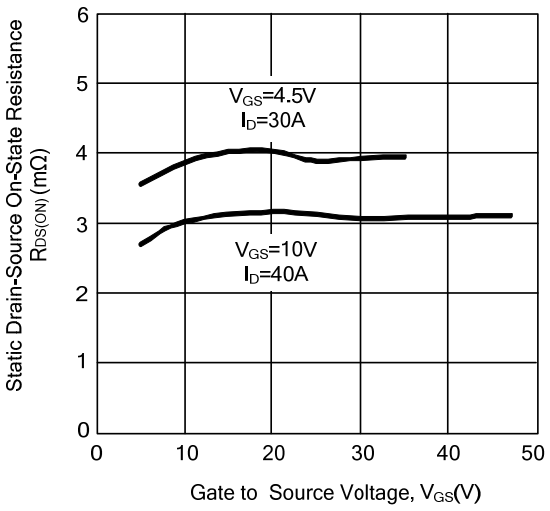

Gate Charge Waveform

## ■ TYPICAL CHARACTERISTICS

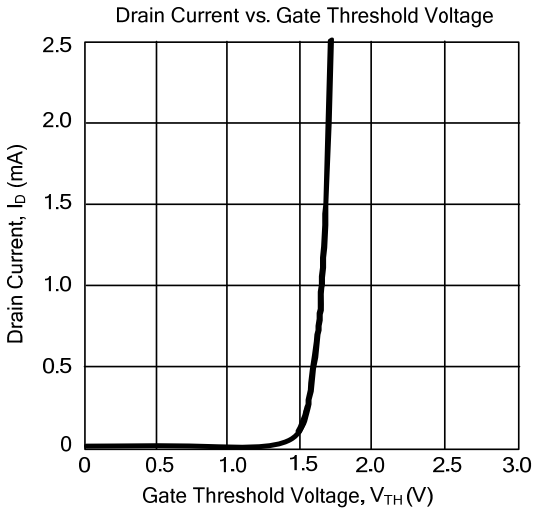
Drain Current vs. Source to Drain Voltage



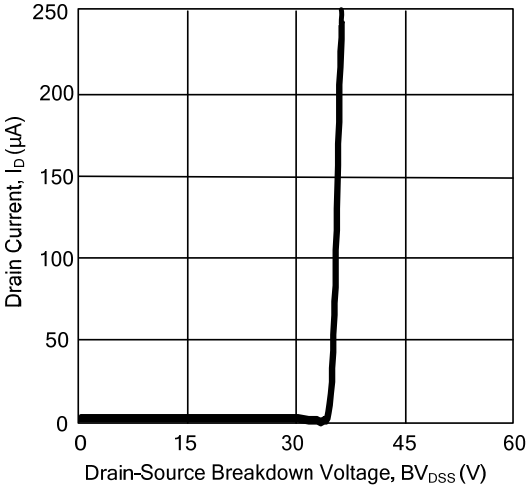

On-Resistance vs. Gate Voltage



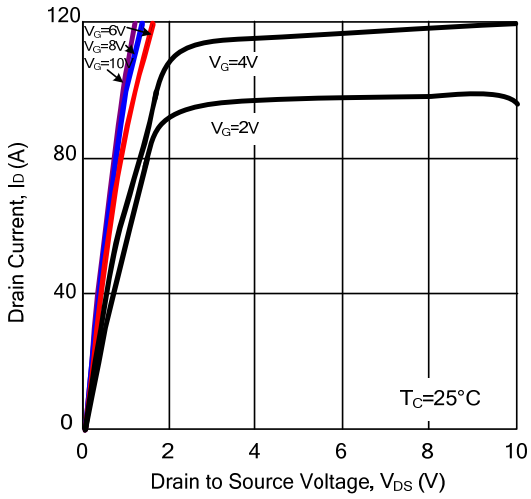

Drain Current vs. Gate Threshold Voltage



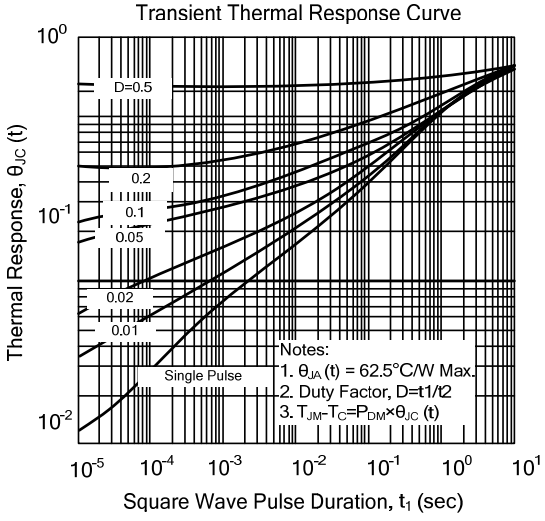

Drain Current vs. Drain-Source Breakdown Voltage




On-State Characteristics




Transient Thermal Response Curve



## ■ TYPICAL CHARACTERISTICS (Cont.)