



DUAL POWER MOSFET (N-CHANNEL/P-CHANNEL)

DESCRIPTION

The UTC **UTT30NP30** is a dual power MOSFET. it uses UTC's advanced technology to provide customers with a minimum on-state resistance, low capacitance and low gate charge, etc.

The UTC **UTT30NP30** is suitable for CPU Power Delivery and DC-DC Converters, etc.

FEATURES

* N-Channel: 30A, 20V

$R_{DS(on)} < 15m\Omega @ V_{GS}=10V, I_D=30A$

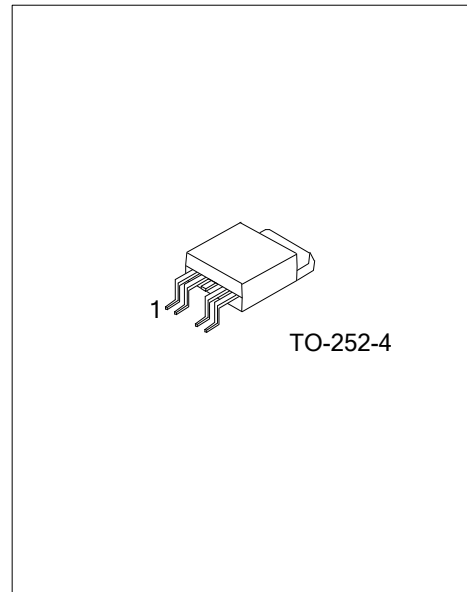
$R_{DS(on)} < 18m\Omega @ V_{GS}=4.5V, I_D=30A$

P-Channel: -30A, -25V

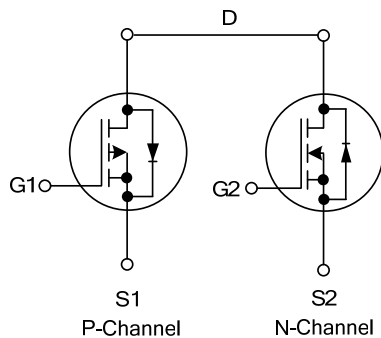
$R_{DS(on)} < 25m\Omega @ V_{GS}= -10V, I_D= -30A$

$R_{DS(on)} < 24m\Omega @ V_{GS}= -4.5V, I_D= -30A$

* Low capacitance



SYMBOL



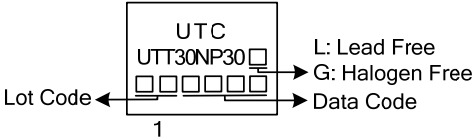
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | | | Packing |
|------------------|------------------|----------|----------------|----|---|----|----|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | |
| UTT30NP30L-TN4-R | UTT30NP30G-TN4-R | TO-252-4 | S1 | G1 | D | S2 | G2 | Tape Reel |

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

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| UTT30NP30L-TN4-T <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package | <ul style="list-style-type: none"> (1) R: Tape Reel (2) TN4: TO-252-4 (3) L: Lead Free, G: Halogen Free and Lead Free |
|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|

MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_J=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | | UNIT | |
|---------------------------|---------------------------------|-----------------|-----------|------|---|
| | | N-CHANNEL | P-CHANNEL | | |
| Drain-Source Voltage | V _{DSS} | 20 | -25 | V | |
| Gate-Source Voltage | V _{GSS} | ±8 | ±20 | V | |
| Drain Current | Continuous T _A =25°C | I _D | 30 | -30 | A |
| | Pulsed (Note) | I _{DM} | 120 | -120 | A |
| Power Dissipation | P _D | 3.1 | | 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 | θ _{JA} | 40 | °C/W |

■ ELECTRICAL CHARACTERISTICS(T_J=25°C unless otherwise noted)

N-channel

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------|-----|------|------|------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D =250μA | 20 | | | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =20V, V _{GS} =0V, T _J =25°C | | | 1.0 | μA |
| Gate-Source Leakage Current | I _{GSS} | Forward V _{GS} =+8V, V _{GS} =0V | | | +100 | nA |
| | | Reverse V _{GS} =-8V, V _{GS} =0V | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =V _{GS} , I _D =250μA | 0.5 | | 1.2 | V |
| Static Drain-Source On-State Resistance (Note 2) | R _{DS(ON)} | V _{GS} =10V, I _D =30A | | | 15 | mΩ |
| | | V _{GS} =4.5V, I _D =30A | | | 18 | mΩ |
| DYNAMIC PARAMETERS | | | | | | |
| Input Capacitance | C _{ISS} | V _{GS} =0V, V _{DS} =20V, f=1.0MHz | | 1500 | | pF |
| Output Capacitance | C _{OSS} | | | 260 | | pF |
| Reverse Transfer Capacitance | C _{RSS} | | | 260 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Total Gate Charge (Note 2) | Q _G | V _{GS} =10V, V _{DS} =16V, I _D =30A | | 160 | 170 | nC |
| Gate to Source Charge | Q _{GS} | | | 5.5 | | nC |
| Gate to Drain Charge | Q _{GD} | | | 10.5 | | nC |
| Turn-ON Delay Time (Note 2) | t _{D(ON)} | V _{DS} =10V, I _D =1A V _{GS} =10V, R _G =3.3Ω | | 31 | 38 | nS |
| Rise Time | t _R | | | 57 | 62 | nS |
| Turn-OFF Delay Time | t _{D(OFF)} | | | 458 | 510 | nS |
| Fall-Time | t _F | | | 234 | 270 | nS |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Drain-Source Diode Forward Voltage(Note 2) | V _{SD} | I _{SD} =30A | | 0.9 | 1.25 | V |

■ ELECTRICAL CHARACTERISTICS(Cont.)

P-Channel

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------------------------|--------------|----------------------------------------------------------|-----|------|------|------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=-250\mu A$ | -25 | | | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=-24V, V_{GS}=0V, T_J=25^\circ C$ | | | -1.0 | μA |
| Gate-Source Leakage Current | Forward | $V_{GS}=+25V, V_{GS}=0V$ | | | +100 | nA |
| | Reverse | $V_{GS}=-25V, V_{GS}=0V$ | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1 | -1.5 | -3 | V |
| Static Drain-Source On-State Resistance (Note 2) | $R_{DS(ON)}$ | $V_{GS}=-10V, I_D=-30A$ | | | 25 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-30A$ | | | 34 | m Ω |
| DYNAMIC PARAMETERS | | | | | | |
| Input Capacitance | C_{ISS} | $V_{GS}=0V, V_{DS}=-15V, f=1.0MHz$ | | 1500 | | pF |
| Output Capacitance | C_{OSS} | | | 270 | | pF |
| Reverse Transfer Capacitance | C_{RSS} | | | 230 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Total Gate Charge (Note 2) | Q_G | $V_{GS}=-10V, V_{DS}=-20V, I_D=-30A$ | | 140 | 160 | nC |
| Gate to Source Charge | Q_{GS} | | | 5.4 | | nC |
| Gate to Drain Charge | Q_{GD} | | | 8.7 | | nC |
| Turn-ON Delay Time (Note 2) | $t_{D(ON)}$ | $V_{DS}=-12.5V, I_D=-1A$ $V_{GS}=-10V, R_G=3.3\Omega$ | | 34 | 42 | nS |
| Rise Time | t_R | | | 42 | 48 | nS |
| Turn-OFF Delay Time | $t_{D(OFF)}$ | | | 308 | 330 | nS |
| Fall-Time | t_F | | | 173 | 220 | nS |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Drain-Source Diode Forward Voltage(Note 2) | V_{SD} | $I_S=-30A$ | | | -1.2 | V |

Notes: 1. Pulse Test: Pulse width limited by Max. junction temperature.

2. N-CH, P-CH are same, mounted on 2oz FR4 board $t \leq 10s$.

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