



UT30N04

Advance

Power MOSFET

30A, 40V N-CHANNEL POWER MOSFET

DESCRIPTION

The UTC **UT30N04** is a N-channel enhancement MOSFET using UTC's advanced technology to provide the customers with perfect $R_{DS(ON)}$ and high switching speed.

The UTC **UT30N04** is suitable for all commercial-industrial applications at power dissipation levels to approximately 50 watts, etc.

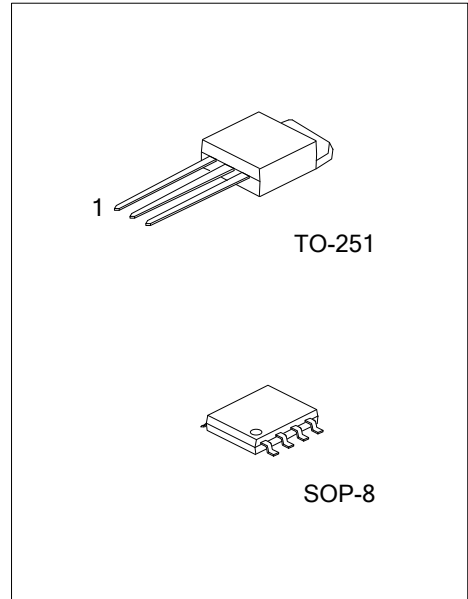
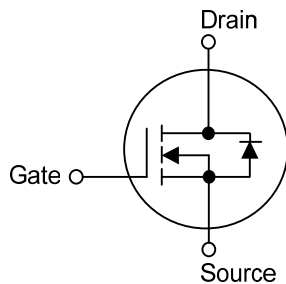
FEATURES

* $R_{DS(ON)} \leq 13m\Omega @ V_{GS}=10V, I_D=15A$

$R_{DS(ON)} \leq 25m\Omega @ V_{GS}=4.5V, I_D=15A$

* High Switching Speed

SYMBOL



ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | | | | | | Packing |
|-----------------|----------------|---------|----------------|---|---|---|---|---|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| UT30N04L-TM3-T | UT30N04G-TM3-T | TO-251 | G | D | S | - | - | - | - | - | Tube |
| UT30N04L-S08-R | UT30N04G-S08-R | SOP-8 | S | S | S | G | D | D | D | D | Tape Reel |

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

| | |
|---|--|
| <p>UT30N04G-TM3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p> | <p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, S08: SOP-8</p> <p>(3) L: Lead Free, G: Halogen Free and Lead Free</p> |
|---|--|

MARKING

| TO-251 | SOP-8 |
|--|--|
| <p>UTC UT30N04</p> <p>Lot Code</p> <p>K: Lead Free G: Halogen Free Date Code</p> | <p>UTC UT30N04</p> <p>Date Code</p> <p>L: Lead Free G: Halogen Free Lot Code</p> |

■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|----------------------|-----------------------------|-----------|------------|------|
| Drain-Source Voltage | | V_{DSS} | 40 | V |
| Gate-Source Voltage | | V_{GSS} | ±20 | V |
| Drain Current | Continuous ($V_{GS}=10V$) | I_D | 30 | A |
| | Pulsed (Note 2) | I_{DM} | 60 | A |
| Power Dissipation | TO-251 | P_D | 50 | W |
| | SOP-8 | | 2.5 | W |
| Junction Temperature | | T_J | +150 | °C |
| Storage Temperature | | T_{STG} | -55 ~ +150 | °C |

Notes: 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. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ THERMAL CHARACTERISTICS

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|--------|---------------|-----------|------|
| Junction to Ambient | TO-251 | θ_{JA} | 110 | °C/W |
| | SOP-8 | | 62.5 | °C/W |
| Junction to Case | TO-251 | θ_{JC} | 2.5 | °C/W |
| | SOP-8 | | 50 (Note) | °C/W |

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

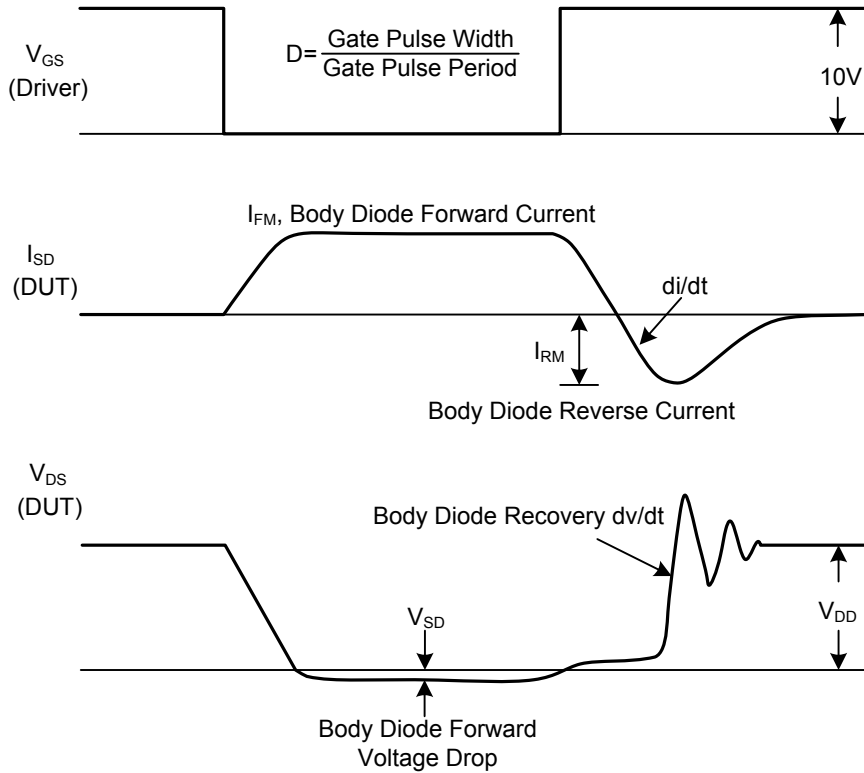
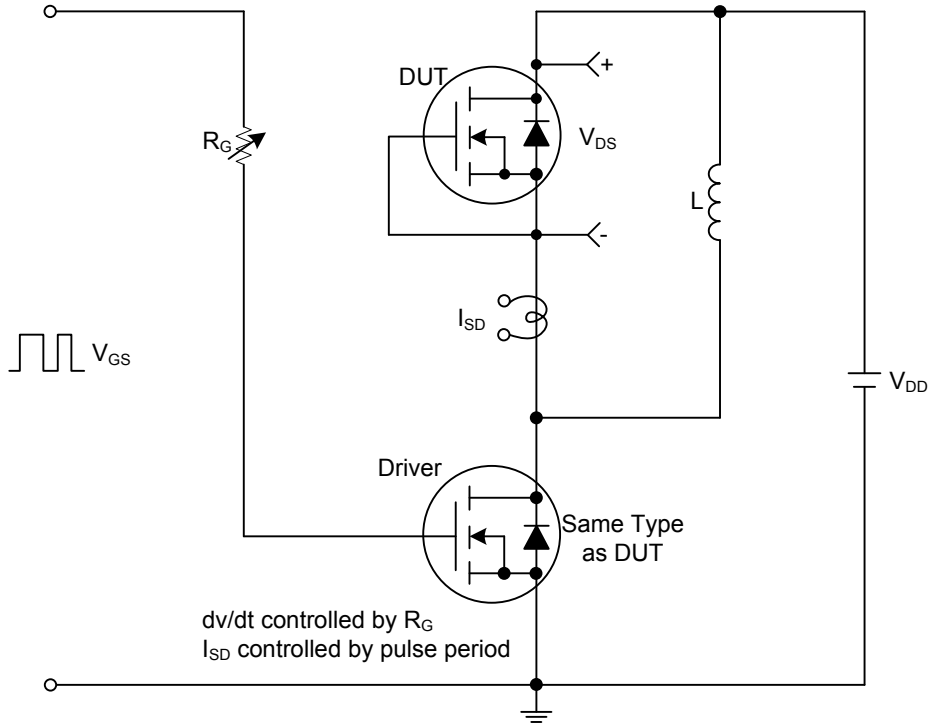
■ ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|--------------|-------------------------------|-----|-----|------|------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 40 | | | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=40V, V_{GS}=0V$ | | | 1 | μA |
| Gate- Source Leakage Current | I_{GSS} | $V_{GS}=+20V, V_{DS}=0V$ | | | +100 | nA |
| | | $V_{GS}=-20V, V_{DS}=0V$ | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 3.0 | V |
| Static Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=15A$ | | | 13 | m Ω |
| | | $V_{GS}=4.5V, I_D=15A$ | | | 25 | m Ω |
| SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS | | | | | | |
| Maximum Continuous Drain-Source Diode Forward Current | I_S | | | | 30 | A |
| Maximum Pulsed Drain-Source Diode Forward Current | I_{SM} | | | | 60 | A |
| Drain-Source Diode Forward Voltage | V_{SD} | $I_S=60A, V_{GS}=0V$ | | | 1.4 | V |

Notes: 1. Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

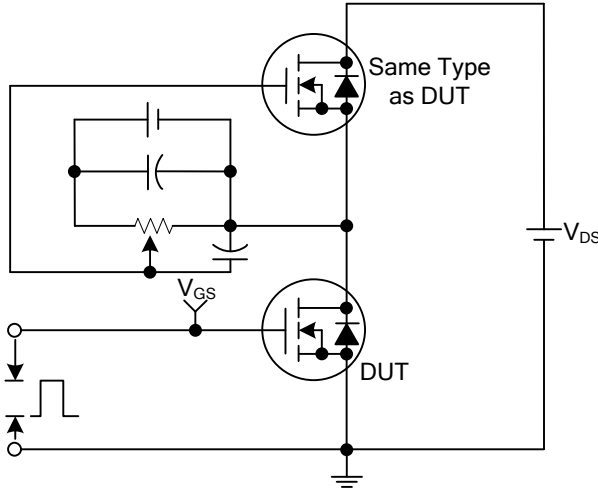
2. Essentially independent of operating ambient temperature.

■ TEST CIRCUITS AND WAVEFORMS

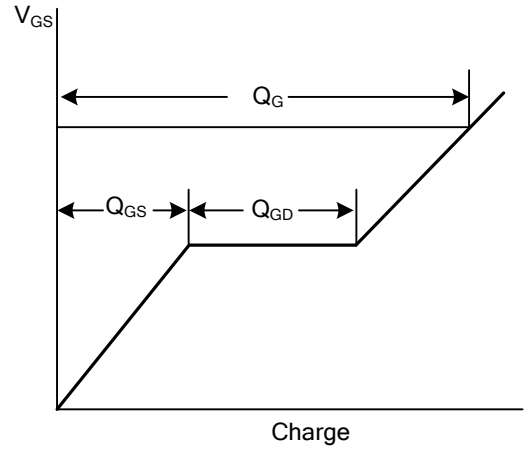


Peak Diode Recovery dv/dt Test Circuit and Waveforms

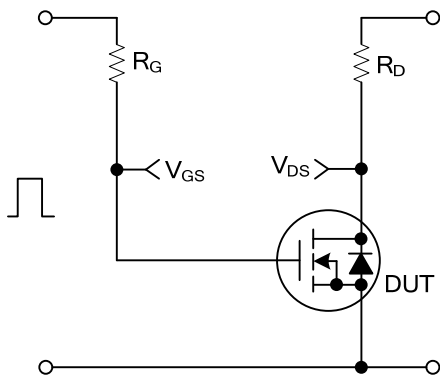
■ TEST CIRCUITS AND WAVEFORMS



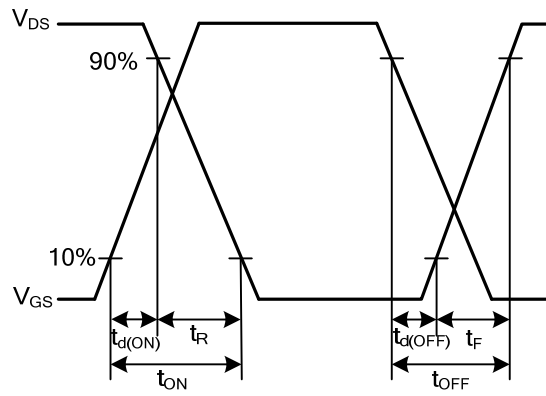
Gate Charge Test Circuit



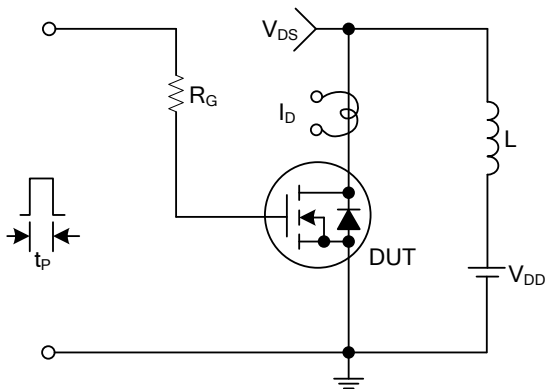
Gate Charge Waveforms



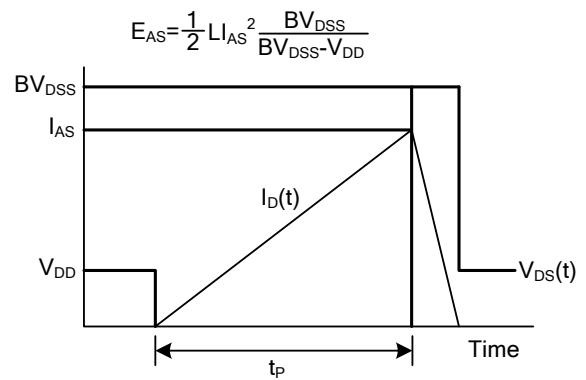
Resistive Switching Test Circuit



Resistive Switching Waveforms



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

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