



10A, 150V, 0.3Ω, N-CANNEL POWER MOSFETS

DESCRIPTION

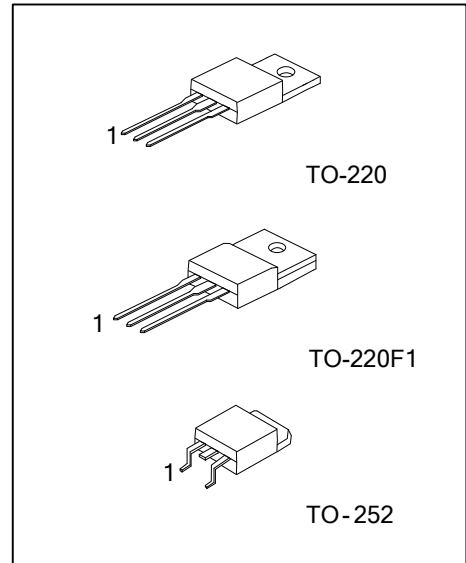
The UTC 10N15 is an N-channel enhancement mode silicon-gate power field effect transistors, it uses UTC's advanced technology to provide the customers with high breakdown voltage etc.

The UTC 10N15 is suitable for switching converters, switching regulators, relay drivers and motor drivers, etc.

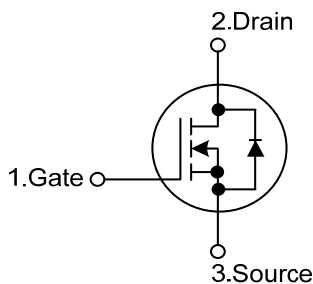
FEATURES

* $R_{DS(ON)} < 0.3\Omega @ V_{GS}=10V, I_D=10A$

* High breakdown voltage



SYMBOL



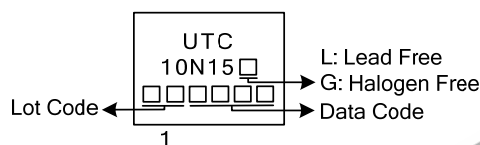
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|--------------|----------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| 10N15L-TA3-T | 10N15G-TA3-T | TO-220 | G | D | S | Tube |
| 10N15L-TF1-T | 10N15G-TF1-T | TO-220F1 | G | D | S | Tube |
| 10N15L-TN3-T | 10N15G-TN3-T | TO-252 | G | D | S | Tape Reel |

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

| | |
|---|---|
| <p>10N15L-TA3-T</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package | <ul style="list-style-type: none"> (1) T: Tube, R: Tape Reel (2) TA3: TO-220, TF1: TO-220F1, TN3: TO-252 (3) L: Lead Free, G: Halogen Free and Lead Free |
|---|---|

MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$ unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|------------|-----------|-------------|---------------------|
| Drain-Source Voltage (Note 1) | | V_{DSS} | 150 | V |
| Drain-Gate Voltage ($R_{GS}=20\text{k}\Omega$) ($T_J=25\sim 125^\circ\text{C}$) | | V_{DGR} | 150 | V |
| Gate-Source Voltage | | V_{GSS} | ± 20 | V |
| Drain Current | Continuous | I_D | 10 | A |
| | Pulsed | I_{DM} | 25 (Note 2) | A |
| Power Dissipation | TO-220 | P_D | 100 | W |
| | TO-220F1 | | 62 | W |
| | TO-252 | | 54 | W |
| Linear Derating Factor | TO-220 | | 0.8 | W/ $^\circ\text{C}$ |
| | TO-220F1 | | 0.48 | W/ $^\circ\text{C}$ |
| | TO-252 | | 0.43 | W/ $^\circ\text{C}$ |
| Junction Temperature | | T_J | -55~+150 | $^\circ\text{C}$ |
| Storage Temperature Range | | T_{STG} | -55~+150 | $^\circ\text{C}$ |

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 is limited by maximum junction temperature.

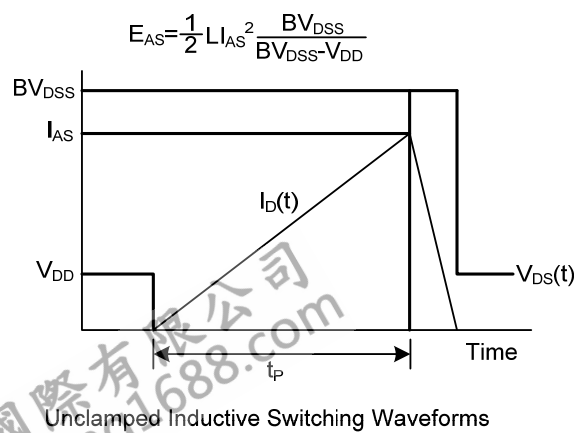
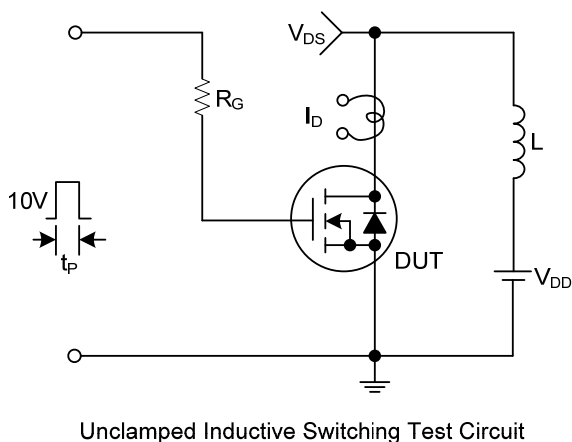
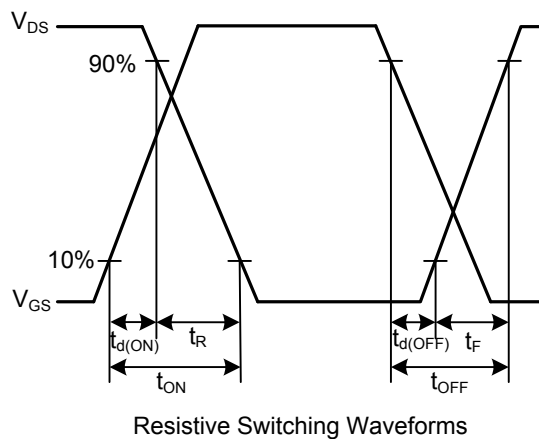
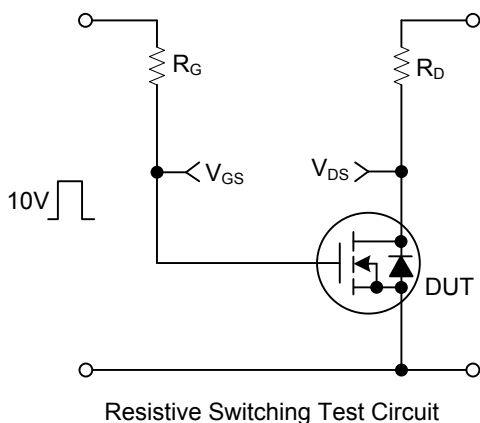
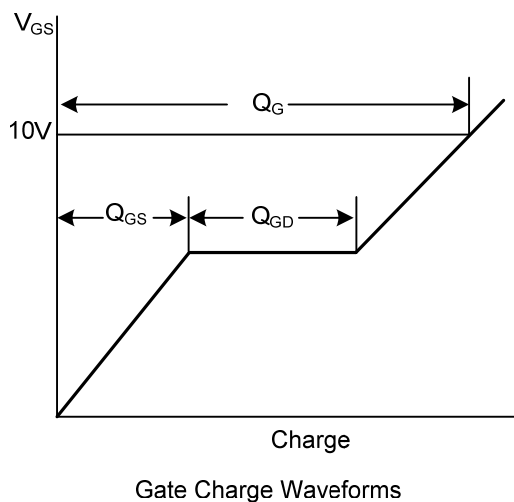
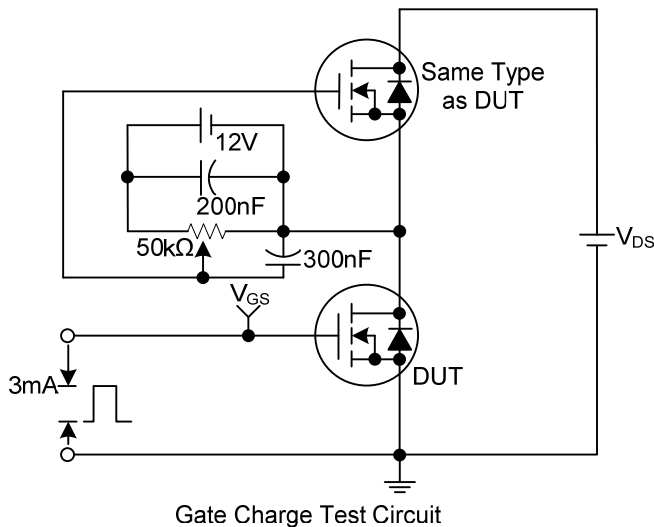
| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---------------------|-----------------|---------------|---------|--------------------|
| Junction to Ambient | TO-220/TO-220F1 | θ_{JA} | 62.5 | $^\circ\text{C/W}$ |
| | TO-252 | | 110 | |
| Junction to Case | TO-220 | θ_{JC} | 1.25 | $^\circ\text{C/W}$ |
| | TO-220F1 | | 2 | |
| | TO-252 | | 2.3 | |

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

| PARAMETER | | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--|---------|--------------|---|-----|-----|------|---------------|
| OFF CHARACTERISTICS | | | | | | | |
| Drain-Source Breakdown Voltage | | BV_{DSS} | $I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$ | 150 | | | V |
| Drain-Source Leakage Current | | I_{DSS} | $V_{DS}=\text{Rated } BV_{DSS}$, $V_{GS}=0\text{V}$ | | | 1 | μA |
| Gate-Source Leakage Current | Forward | I_{GSS} | $V_{GS}=+20\text{V}$, $V_{DS}=0\text{V}$ | | | +100 | nA |
| | Reverse | | $V_{GS}=-20\text{V}$, $V_{DS}=0\text{V}$ | | | -100 | nA |
| ON CHARACTERISTICS | | | | | | | |
| Gate Threshold Voltage | | $V_{GS(TH)}$ | $V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$ | 2 | | 4 | V |
| Static Drain-Source On-State Resistance (Note 1) | | $R_{DS(ON)}$ | $V_{GS}=10\text{V}$, $I_D=10\text{A}$ | | | 0.3 | Ω |
| Drain-Source On Voltage (Note 1) | | $V_{DS(ON)}$ | $V_{GS}=10\text{V}$, $I_D=10\text{A}$ | | | 3.0 | V |
| DYNAMIC PARAMETERS | | | | | | | |
| Input Capacitance | | C_{ISS} | $V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$ | | | 850 | pF |
| Output Capacitance | | C_{OSS} | | | | 230 | pF |
| Reverse Transfer Capacitance | | C_{RSS} | | | | 100 | pF |
| SWITCHING PARAMETERS | | | | | | | |
| Turn-ON Delay Time | | $t_{D(ON)}$ | $V_{DD}=75\text{V}$, $V_{GS}=10\text{V}$, $I_D\approx 5\text{A}$, $R_G=50\Omega$, $R_L=14.7\Omega$ | | 40 | 60 | ns |
| Rise Time | | t_R | | | 165 | 250 | ns |
| Turn-OFF Delay Time | | $t_{D(OFF)}$ | | | 90 | 135 | ns |
| Fall-Time | | t_F | | | 90 | 135 | ns |
| SOURCE TO DRAIN DIODE SPECIFICATIONS | | | | | | | |
| Source to Drain Diode Voltage (Note 1) | | V_{SD} | $I_{SD}=5\text{A}$ | | | 1.4 | V |
| Diode Reverse Recovery Time | | t_{RR} | $I_{SD}=4\text{A}$, $dI_{SD}/dt=100\text{A}/\mu\text{s}$ | | 200 | | ns |

Note: 1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

■ TEST CIRCUITS AND WAVEFORMS



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