

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 100V          | 76mΩ@10V        | 15A   |

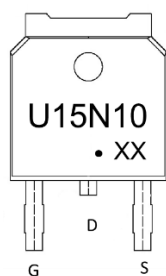
### Feature

- Excellent package for good heat dissipation
- Low reverse transfer capacitance
- Fast switching capability

### Application

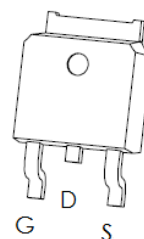
- Power switching application

### MARKING:

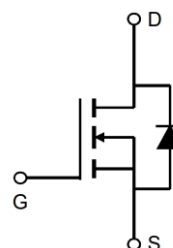


U15N10 = Device Code  
XX = Date Code

TO-252



Schematic diagram



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

| Parameter                                   | Symbol          | Value     | Unit                 |
|---------------------------------------------|-----------------|-----------|----------------------|
| Drain-Source Voltage                        | $V_{DS}$        | 100       | V                    |
| Gate-Source Voltage                         | $V_{GS}$        | ±20       | V                    |
| Continuous Drain Current                    | $I_D$           | 15        | A                    |
| Pulsed Drain Current                        | $I_{DM}$        | 45        | A                    |
| Single Pulsed Avalanche Energy <sup>1</sup> | $E_{AS}$        | 12        | mJ                   |
| Power Dissipation                           | $P_D$           | 44.6      | W                    |
| Thermal Resistance from Junction to Case    | $R_{\theta JC}$ | 2.8       | $^{\circ}\text{C/W}$ |
| Junction Temperature                        | $T_J$           | 150       | $^{\circ}\text{C}$   |
| Storage Temperature                         | $T_{STG}$       | -55~ +150 | $^{\circ}\text{C}$   |

**MOSFET ELECTRICAL CHARACTERISTICS**( $T_C=25^{\circ}\text{C}$  unless otherwise noted)

| Parameter                               | Symbol               | Test Condition                                                                                                 | Min | Type | Max  | Unit |
|-----------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------|-----|------|------|------|
| Static Characteristics                  |                      |                                                                                                                |     |      |      |      |
| Drain-source breakdown voltage          | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA                                                                    | 100 |      |      | V    |
| Zero gate voltage drain current         | I <sub>DSS</sub>     | V <sub>DS</sub> =80V,V <sub>GS</sub> = 0V                                                                      |     |      | 1    | μA   |
| Gate-body leakage current               | I <sub>GSS</sub>     | V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V                                                                    |     |      | ±100 | nA   |
| Gate threshold voltage <sup>2</sup>     | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                                       | 1.0 | 2.0  | 3.0  | V    |
| Drain-source on-resistance <sup>2</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =8A                                                                       |     | 76   | 105  | mΩ   |
| Dynamic characteristics <sup>3</sup>    |                      |                                                                                                                |     |      |      |      |
| Input Capacitance                       | C <sub>iss</sub>     | V <sub>DS</sub> =30V,V <sub>GS</sub> =0V,f =1MHz                                                               |     | 580  |      | pF   |
| Output Capacitance                      | C <sub>oss</sub>     |                                                                                                                |     | 50   |      |      |
| Reverse Transfer Capacitance            | C <sub>rss</sub>     |                                                                                                                |     | 40   |      |      |
| Switching Characteristics <sup>3</sup>  |                      |                                                                                                                |     |      |      |      |
| Total Gate Charge@10V                   | Q <sub>g</sub>       | V <sub>DS</sub> =30V , V <sub>GS</sub> =10V , I <sub>D</sub> =3A                                               |     | 17   |      | nC   |
| Gate-Source Charge                      | Q <sub>gs</sub>      |                                                                                                                |     | 4    |      |      |
| Gate-Drain Charge                       | Q <sub>gd</sub>      |                                                                                                                |     | 5    |      |      |
| Turn-on delay time                      | t <sub>d(on)</sub>   | V <sub>DD</sub> =30V , V <sub>GS</sub> =10V , R <sub>G</sub> =2.5Ω,<br>I <sub>D</sub> =2A, R <sub>L</sub> =15Ω |     | 13   |      | ns   |
| Turn-on rise time                       | t <sub>r</sub>       |                                                                                                                |     | 8    |      |      |
| Turn-off delay time                     | t <sub>d(off)</sub>  |                                                                                                                |     | 25   |      |      |
| Turn-off fall time                      | t <sub>f</sub>       |                                                                                                                |     | 11   |      |      |
| Diode Characteristics <sup>2</sup>      |                      |                                                                                                                |     |      |      |      |
| Diode Forward Voltage                   | V <sub>SD</sub>      | V <sub>GS</sub> =0V , I <sub>S</sub> =8A ,                                                                     |     | 0.85 | 1.2  | V    |

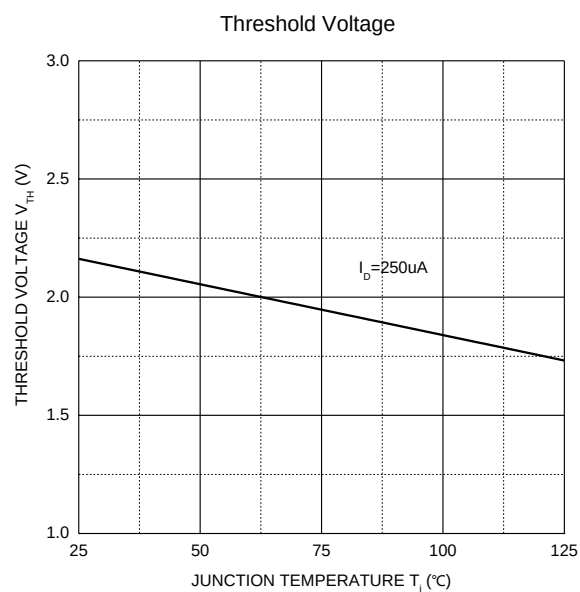
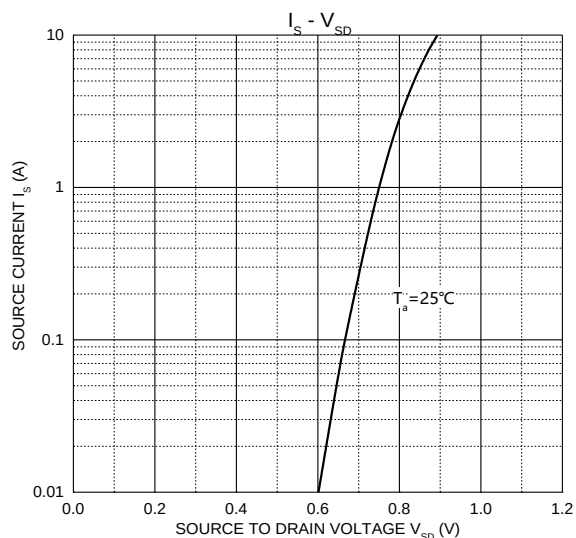
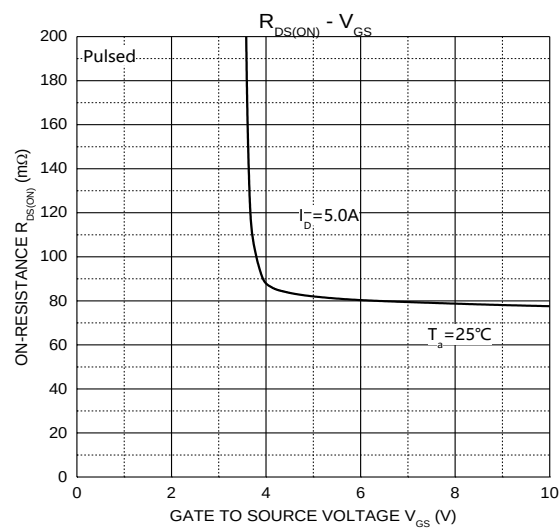
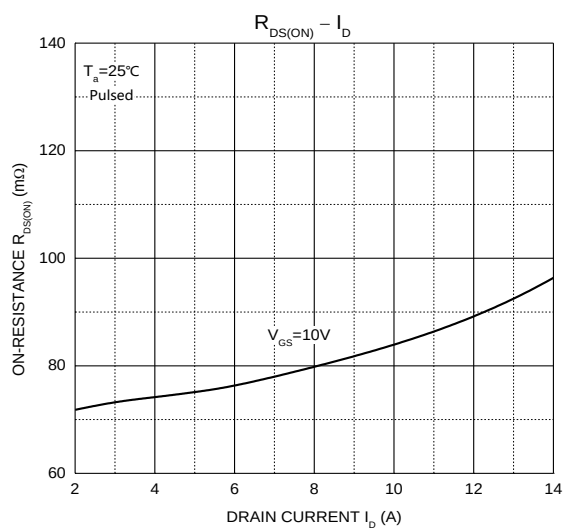
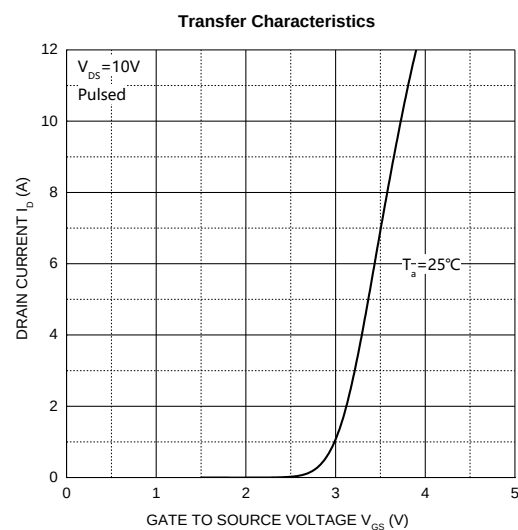
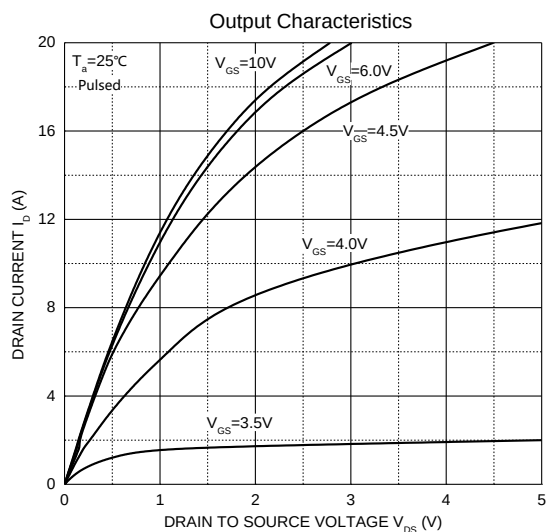
Note :

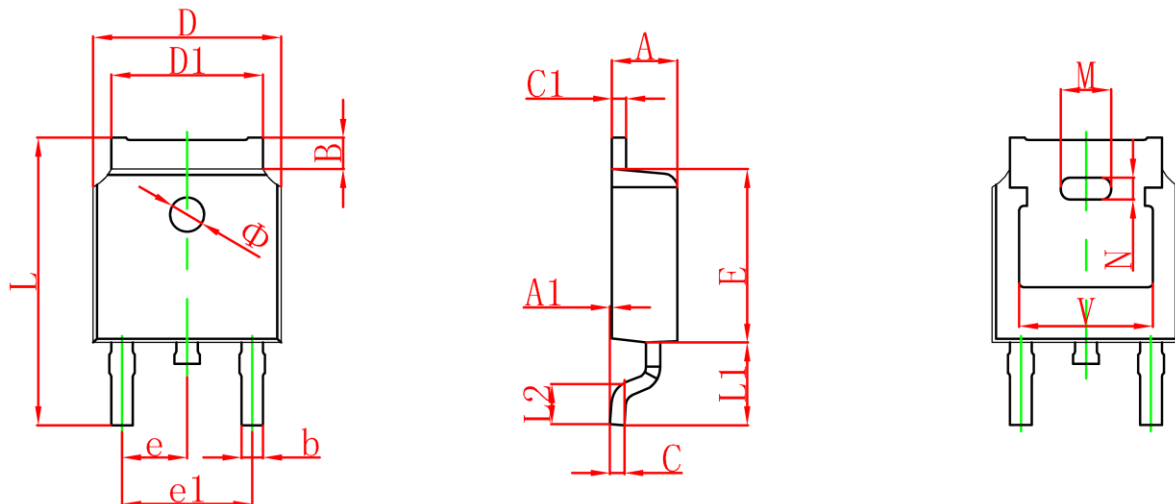
1.  $V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=7A$ , Starting  $T_J=25^{\circ}\text{C}$ .

2. Pulse Test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

3. Guaranteed by design, not subject to production

## Typical Electrical and Thermal Characteristics



**TO-252 Package Information**


| Symbol | Dimensions In Millimeters |        | Dimensions In Inches |       |
|--------|---------------------------|--------|----------------------|-------|
|        | Min.                      | Max.   | Min.                 | Max.  |
| A      | 2.200                     | 2.380  | 0.087                | 0.094 |
| A1     | 0.000                     | 0.100  | 0.000                | 0.004 |
| B      | 0.800                     | 1.400  | 0.031                | 0.055 |
| b      | 0.710                     | 0.810  | 0.028                | 0.032 |
| c      | 0.460                     | 0.560  | 0.018                | 0.022 |
| c1     | 0.460                     | 0.560  | 0.018                | 0.022 |
| D      | 6.500                     | 6.700  | 0.256                | 0.264 |
| D1     | 5.130                     | 5.460  | 0.202                | 0.215 |
| E      | 6.000                     | 6.200  | 0.236                | 0.244 |
| e      | 2.286 TYP.                |        | 0.090 TYP.           |       |
| e1     | 4.327                     | 4.727  | 0.170                | 0.186 |
| M      | 1.778REF.                 |        | 0.070REF.            |       |
| N      | 0.762REF.                 |        | 0.018REF.            |       |
| L      | 9.800                     | 10.400 | 0.386                | 0.409 |
| L1     | 2.9REF.                   |        | 0.114REF.            |       |
| L2     | 1.400                     | 1.700  | 0.055                | 0.067 |
| V      | 4.830 REF.                |        | 0.190 REF.           |       |
| Φ      | 1.100                     | 1.300  | 0.043                | 0.051 |