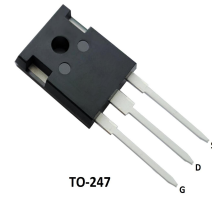


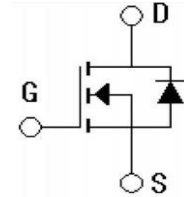
### Features

- $V_{DS}=1200V, I_D=12A$
- 100% avalanche tested
- Low drain-source on-resistance
- Gate charge minimized



### Applications

- High Efficiency Synchronous Rectification in SMPS
- High Speed Power Switching
- Hard Switched and High Frequency Circuits



### Absolute Ratings ( $T_C=25^{\circ}C$ )

| Parameter                                               | Symbol                 | Limit    | Unit        |
|---------------------------------------------------------|------------------------|----------|-------------|
| Drain-Source Voltage                                    | $V_{DSS}$              | 1200     | V           |
| Gate-Source Voltage                                     | $V_{GSS}$              | $\pm 20$ | V           |
| Drain Current-continuous                                | $I_D, T_C=25^{\circ}C$ | 12       | A           |
|                                                         | $T_C=100^{\circ}C$     | 7.8      |             |
| Drain Current-pulse <sup>(1)</sup>                      | $I_{DM}$               | 48       | A           |
| Single Pulsed Avalanche Energy<br>( $T_J=25^{\circ}C$ ) | $E_{AS}$               | 230      | mJ          |
| Maximum Power Dissipation                               | $P_D, T_C=25^{\circ}C$ | 750      | W           |
| Operating and Storage Temperature Range                 | $T_J, T_{STG}$         | -55~+150 | $^{\circ}C$ |

1. Pulse width Limited by safe operating area

### Electrical Characteristics( $T_C=25^{\circ}C$ )

| Parameter                       | Symbol     | Tests conditions                             | Min  | Typ | Max       | Units   |
|---------------------------------|------------|----------------------------------------------|------|-----|-----------|---------|
| Drain-Source Voltage            | $BV_{DSS}$ | $I_D=250\mu A, V_{GS}=0V$                    | 1200 | -   | -         | V       |
| Zero Gate Voltage Drain Current | $I_{DSS}$  | $V_{DS}=V_{DSS}, V_{GS}=0V, T_C=25^{\circ}C$ | -    | -   | 2.5       | $\mu A$ |
|                                 |            | $T_C=125^{\circ}C$                           | -    | -   | 50        | $\mu A$ |
| Gate-Body Leakage Current       | $I_{GSS}$  | $V_{GS}= \pm 20V, V_{DS}=0V$                 | -    | -   | $\pm 100$ | nA      |

| On-Characteristics                |              |                                      |     |      |      |          |
|-----------------------------------|--------------|--------------------------------------|-----|------|------|----------|
| Gate Threshold Voltage            | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$        | 3.0 | 4.1  | 5.0  | V        |
| Static Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=2A$                 | -   | 0.56 | 0.70 | $\Omega$ |
| Forward Transconductance          | $g_{fs}$     | $V_{DS}=20V, I_D=6A$                 | -   | 16   | -    | S        |
| Dynamic Characteristics           |              |                                      |     |      |      |          |
| Input capacitance                 | $C_{iss}$    | $V_{DS}=100V, V_{GS}=0V$<br>$f=1MHz$ | -   | 1422 | -    | pF       |
| Output capacitance                | $C_{oss}$    |                                      | -   | 108  | -    | pF       |
| Reverse transfer capacitance      | $C_{rss}$    |                                      | -   | 1.1  | -    | pF       |

**Electrical Characteristics** ( $T_{CASE}=25^{\circ}C$  unless otherwise specified)

| Parameter                                                   | Symbol              | Tests conditions                                                                        | Min | Typ  | Max | Units |
|-------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------|-----|------|-----|-------|
| Switching-Characteristics                                   |                     |                                                                                         |     |      |     |       |
| Turn-On delay time                                          | t <sub>d(on)</sub>  | V <sub>DS</sub> =600V,I <sub>D</sub> =6A,<br>V <sub>GS</sub> = 10V,R <sub>G</sub> =4.7Ω | -   | 25   | -   | ns    |
| Turn-On rise time                                           | t <sub>r</sub>      |                                                                                         | -   | 13   | -   | ns    |
| Turn-Off delay time                                         | t <sub>d(Off)</sub> |                                                                                         | -   | 67   | -   | ns    |
| Turn-Off rise time                                          | t <sub>f</sub>      |                                                                                         | -   | 16   | -   | ns    |
| Total Gate Charge                                           | Q <sub>g</sub>      | V <sub>DS</sub> =960V,I <sub>D</sub> =12A<br>V <sub>GS</sub> = 10V                      | -   | 46   | -   | nC    |
| Gate-Source charge                                          | Q <sub>gs</sub>     |                                                                                         | -   | 9.5  | -   | nC    |
| Gate-Drain charge                                           | Q <sub>gd</sub>     |                                                                                         | -   | 33   | -   | nC    |
| Drain-Source Diode Characteristics and Maximum Ratings      |                     |                                                                                         |     |      |     |       |
| Maximum Continuous<br>Drain-Source Diode<br>Forward Current | V <sub>SD</sub>     | V <sub>GS</sub> =0V,I <sub>S</sub> =1A                                                  | 0.5 | -    | 1.2 | V     |
| Diode Forward Current                                       | I <sub>S</sub>      |                                                                                         | -   | -    | 12  | A     |
| Reverse recovery time                                       | T <sub>rr</sub>     | I <sub>S</sub> =12A,<br>dI/dT= 100A/μS<br>V <sub>DD</sub> = 60V,                        | -   | 558  | -   | nS    |
| Reverse recovery charge                                     | Q <sub>rr</sub>     |                                                                                         | -   | 10.8 | -   | μC    |

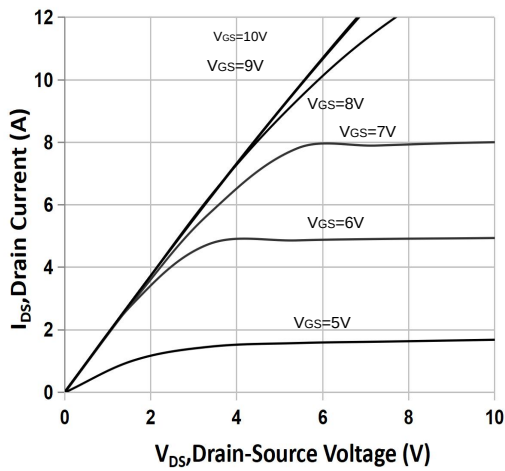
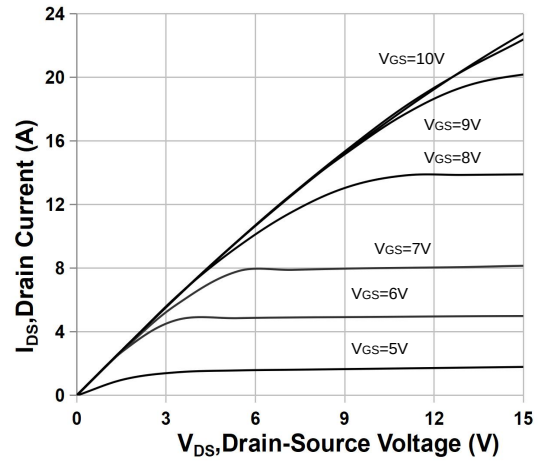
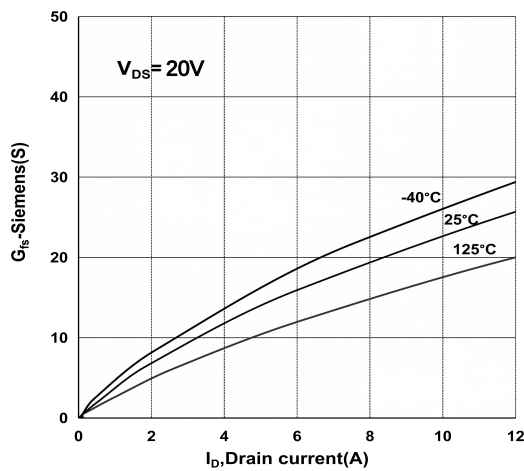
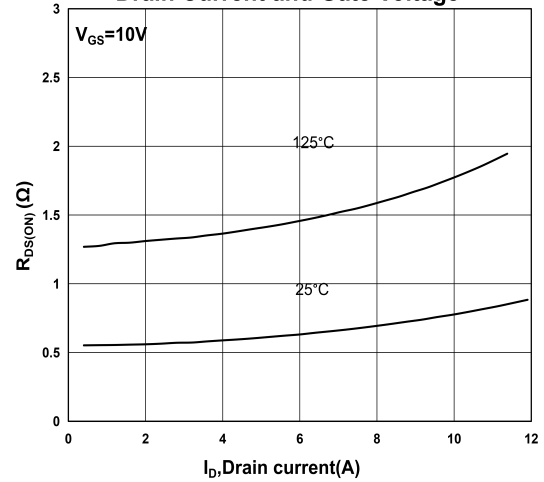
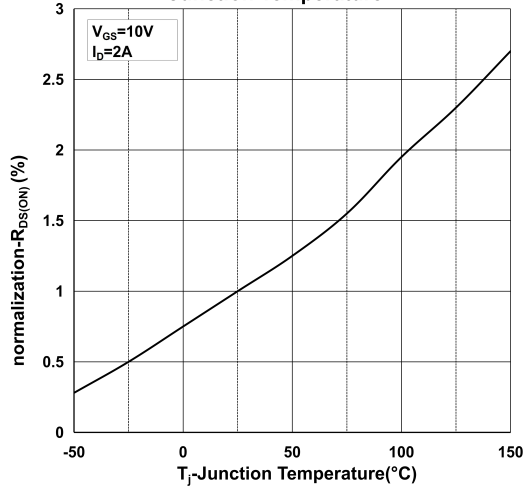
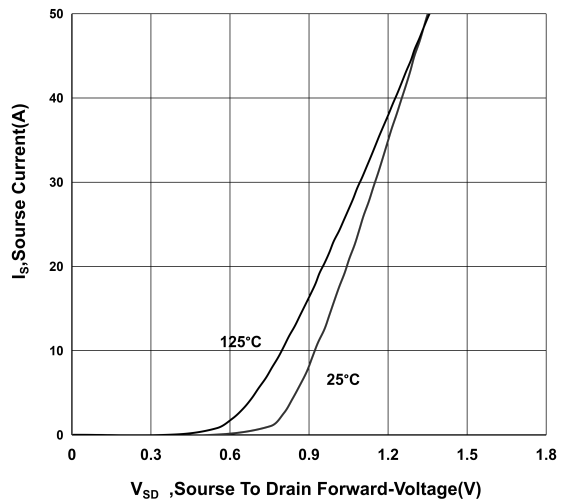
**Thermal Characteristic**

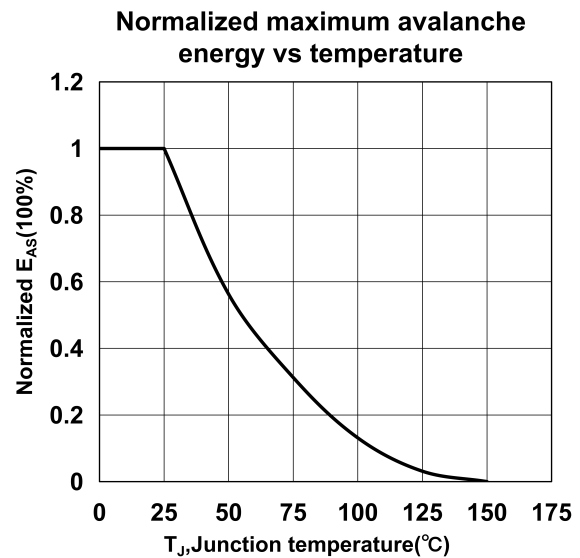
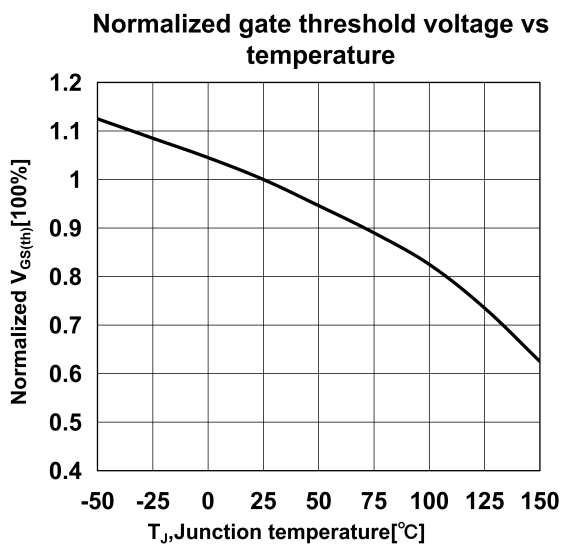
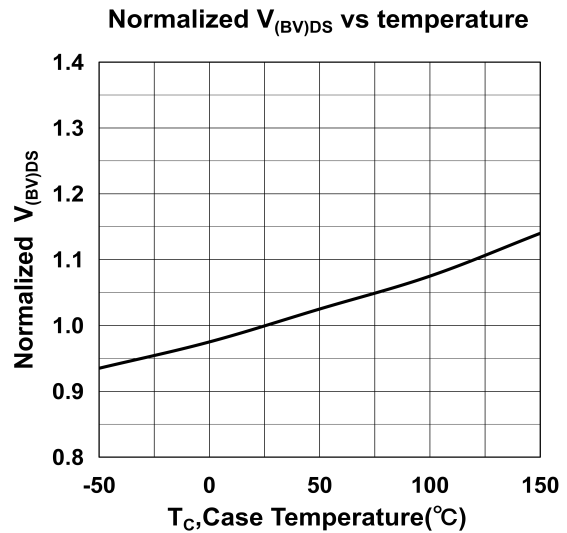
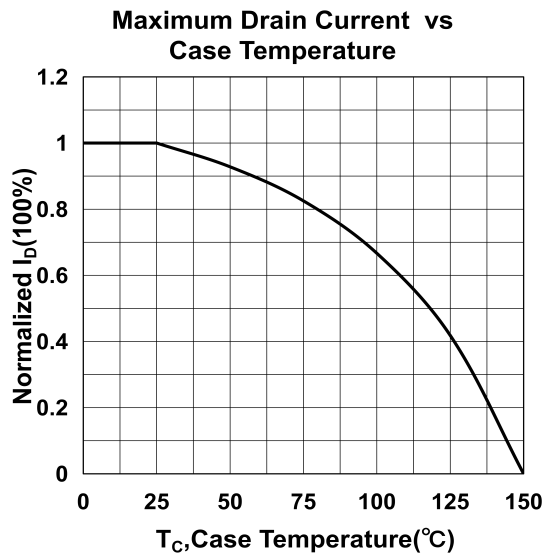
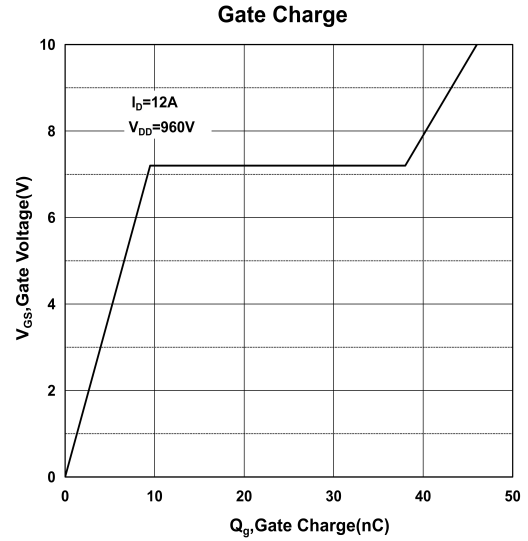
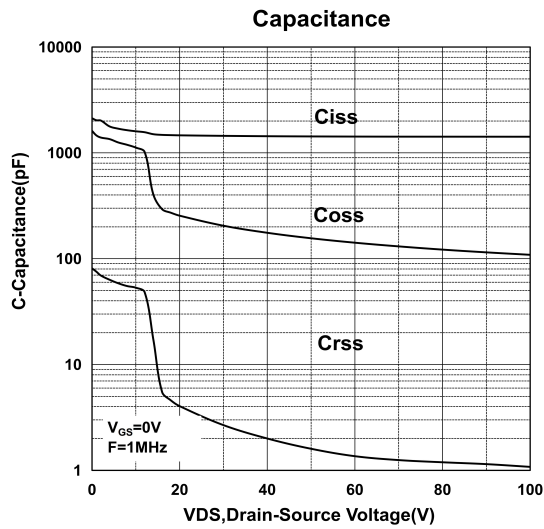
| Parameter                               | Symbol        | Value | Unit          |
|-----------------------------------------|---------------|-------|---------------|
| Thermal Resistance, junction to Case    | $R_{th(j-C)}$ | 0.17  | $^{\circ}C/W$ |
| Thermal Resistance, junction to Ambient | $R_{th(j-A)}$ | 40    | $^{\circ}C/W$ |

Notes:

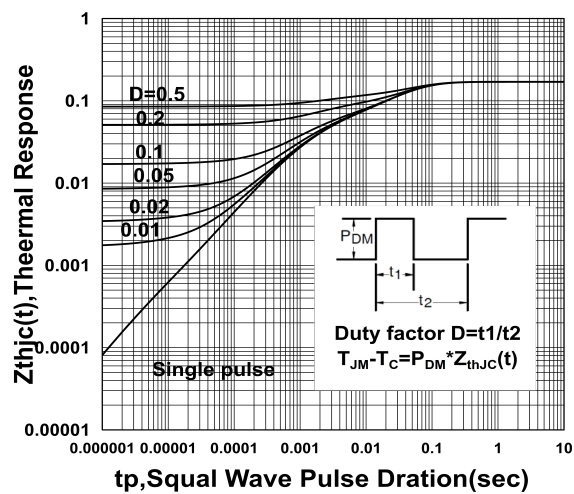
1. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2\%$

## Electrical Characteristics

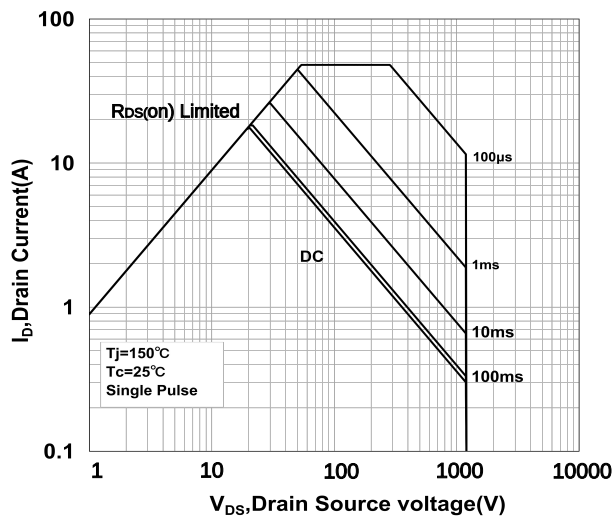
**On-Region Characteristic@25°C**

**Extended On-Region Characteristic@25°C**

**Transconductance**

**On-Resistance Variation vs Drain Current and Gate Voltage**

**Normalization On-Resistance Variation vs Junction Temperature**

**Body Diode Forward Voltage Variation with Source Current and Temperature**




Transient response Curve



Safe Operating Area



### Package Mechanical Data

