

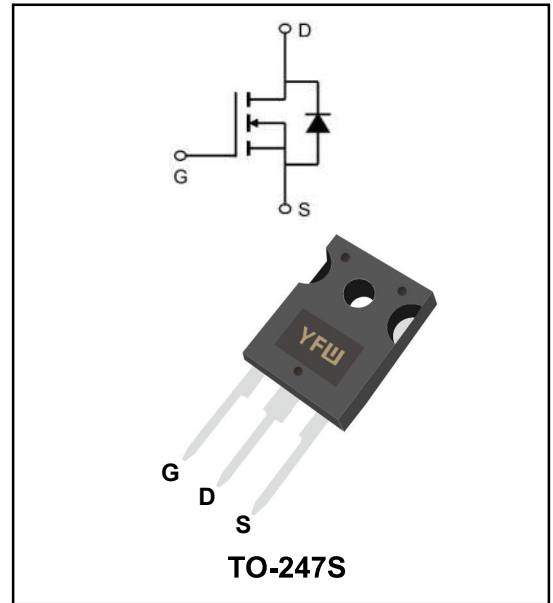
**150V N-Channel Enhancement Mode Power MOSFET**

**MAIN CHARACTERISTICS**

|                                                    |                             |
|----------------------------------------------------|-----------------------------|
| <b>I<sub>D</sub></b>                               | 200A                        |
| <b>V<sub>DSS</sub></b>                             | 150V                        |
| <b>R<sub>DS(on)</sub>-typ(@V<sub>GS</sub>=10V)</b> | <7.5mΩ( <b>Typ:6.2 mΩ</b> ) |

**FEATURES**

- ♦ **YFW-SGT technology**
- ♦ DC/DC Converter
- ♦ LED Backlighting
- ♦ Power Management Switches



**Maximum Ratings at T<sub>c</sub>=25°C unless otherwise specified**

| Characteristics                                                        | Symbols                | Value       | Units       |
|------------------------------------------------------------------------|------------------------|-------------|-------------|
| Drain-Source Voltage                                                   | <b>V<sub>DS</sub></b>  | 150         | <b>V</b>    |
| Gate - Source Voltage                                                  | <b>V<sub>GS</sub></b>  | ±20         | <b>V</b>    |
| Continuous drain current, V <sub>GS</sub> @ 10V @T <sub>C</sub> =25°C  | <b>I<sub>D</sub></b>   | 200         | <b>A</b>    |
| Continuous drain current, V <sub>GS</sub> @ 10V @T <sub>C</sub> =100°C | <b>I<sub>D</sub></b>   | 140         | <b>A</b>    |
| Pulsed Drain Current (Note1)                                           | <b>I<sub>DM</sub></b>  | 550         | <b>A</b>    |
| Single Pulse Avalanche Energy                                          | <b>E<sub>AS</sub></b>  | 506         | <b>mJ</b>   |
| Avalanche Current                                                      | <b>I<sub>AS</sub></b>  | 53.4        | <b>A</b>    |
| Total Power Dissipation <sup>4</sup>                                   | <b>P<sub>D</sub></b>   | 278         | <b>W</b>    |
| Storage Temperature Range                                              | <b>T<sub>STG</sub></b> | -55 to +150 | <b>°C</b>   |
| Operating Temperature Range                                            | <b>T<sub>J</sub></b>   | -55 to +150 | <b>°C</b>   |
| Thermal Resistance, Junction to Ambient                                | <b>R<sub>θJA</sub></b> | 0.45        | <b>°C/W</b> |
| Thermal Resistance, Junction to Case                                   | <b>R<sub>θJC</sub></b> | 62          | <b>°C/W</b> |

**Maximum Ratings at Tc=25°C unless otherwise specified**

| Characteristics                                   | Test Condition                                             | Symbols      | Min | Typ  | Max       | Units      |
|---------------------------------------------------|------------------------------------------------------------|--------------|-----|------|-----------|------------|
| Drain-Source Breakdown Voltage                    | $V_{GS}=0V, I_D=250\mu A$                                  | $BV_{DSS}$   | 150 | -    | -         | V          |
| Gate-Source Leakage Current                       | $V_{GS}=\pm 20V, V_{DS}=0V$                                | $I_{GSS}$    | -   | -    | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current $T_J=25^\circ C$  | $V_{DS}=100V, V_{GS}=0V$                                   | $I_{DSS}$    | -   | -    | 1         | $\mu A$    |
| Zero Gate Voltage Drain Current $T_J=100^\circ C$ |                                                            | $I_{DSS}$    | -   | -    | 100       |            |
| Gate -Threshold Voltage                           | $V_{DS}=V_{GS}, I_D=250\mu A$                              | $V_{GS(th)}$ | 2.0 | 3.0  | 4.0       | V          |
| Drain-Source On-State Resistance <sup>2</sup>     | $V_{GS}=10V, I_D=40A$                                      | $R_{DS(ON)}$ | -   | 6.2  | 7.5       | m $\Omega$ |
| Input Capacitance                                 | $V_{GS}=0V$<br>$V_{DS}=50V$<br>$f=1MHz$                    | $C_{iss}$    | -   | 5240 | -         | pF         |
| Output Capacitance                                |                                                            | $C_{oss}$    | -   | 412  | -         |            |
| Reverse Transfer Capacitance                      |                                                            | $C_{rss}$    | -   | 10   | -         |            |
| Gate Resistance                                   | $V_{GS}=0V, V_{DS}=0V, f=1MHz$                             | $R_g$        | -   | 1.7  | -         | $\Omega$   |
| Total Gate Charge                                 | $V_{GS}=10V, V_{DS}=50V,$<br>$I_D=20A$                     | $Q_g$        | -   | 18   | -         | nC         |
| Gate-Source Charge                                |                                                            | $Q_{gs}$     | -   | 10   | -         |            |
| Gate-Drain Charge                                 |                                                            | $Q_{gd}$     | -   | 72   | -         |            |
| Turn-on delay time                                | $V_{GS}=10V$<br>$V_{DS}=50V$<br>$R_G=3\Omega$<br>$I_D=20A$ | $t_{d(on)}$  | -   | 22   | -         | ns         |
| Rise Time                                         |                                                            | $T_r$        | -   | 115  | -         |            |
| Turn-Off Delay Time                               |                                                            | $t_{d(OFF)}$ | -   | 44   | -         |            |
| Fall Time                                         |                                                            | $t_f$        | -   | 105  | -         |            |
| Diode Forward Voltage <sup>2</sup>                | $I_F=20A, V_{GS}=0V$                                       | $V_{SD}$     | -   | -    | 1.2       | V          |
| Diode forward current <sup>1, 5</sup>             | $V_G=V_D=0V$ , Force Current                               | $I_S$        | -   | -    | 200       | A          |
| Reverse Recovery Time                             | $I_F=20A$<br>$di_F/dt=100A/\mu s$                          | $t_{rr}$     | -   | 45   | -         | ns         |
| Reverse Recovery Charge                           |                                                            | $Q_{rr}$     | -   | 12   | -         | nC         |

Notes:

- 1、The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3、The EAS data shows Max. rating . The test condition is  $V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=45A$
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

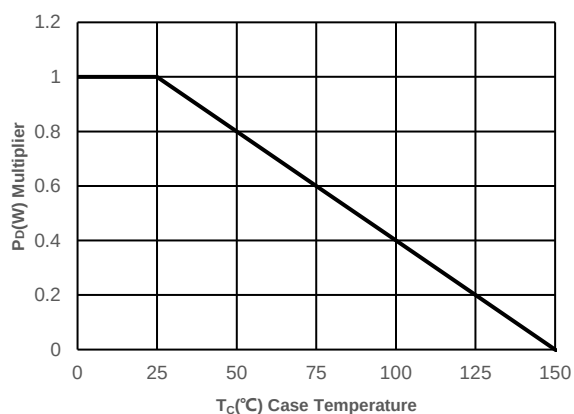


Figure 1. Power dissipation

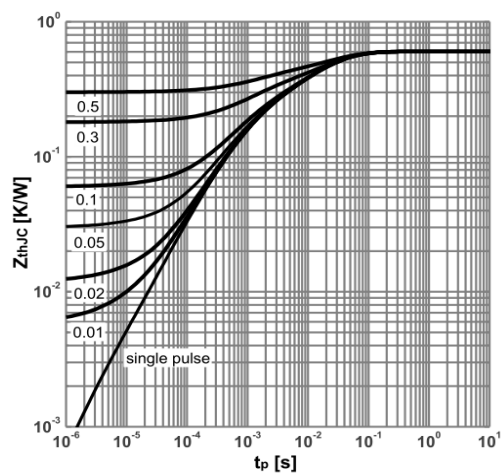


Figure 2. Max. transient thermal impedance

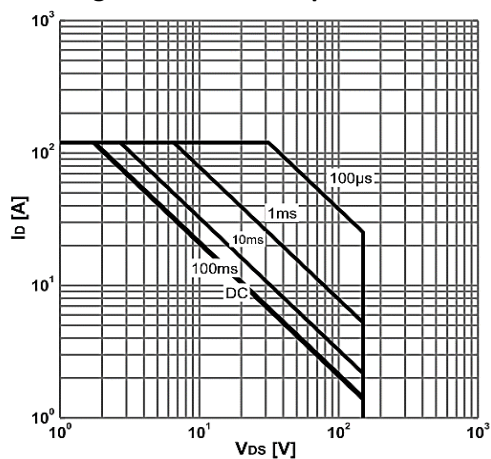


Figure 3. Safe operating area

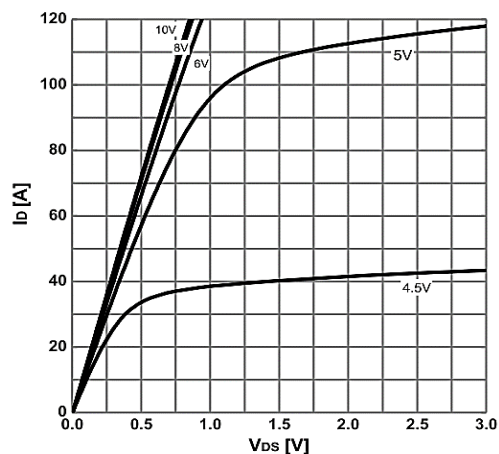


Figure 4. Typ. output characteristics

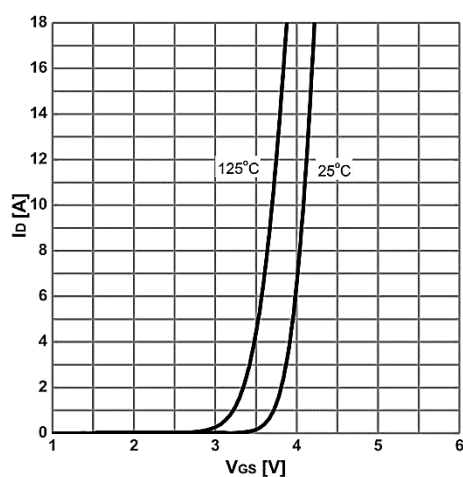


Figure 5. Typ. transfer characteristics

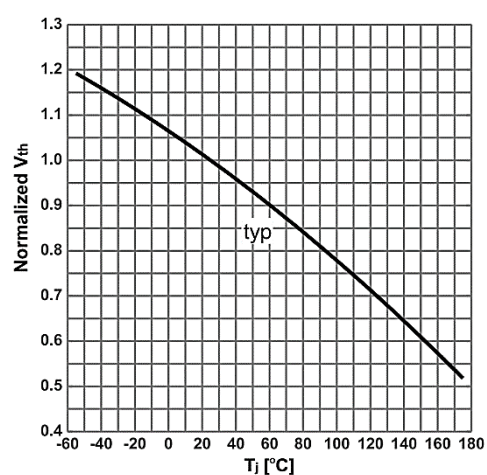


Figure 6. Gate threshold voltage vs. Junction Temperature

Typical Characteristics

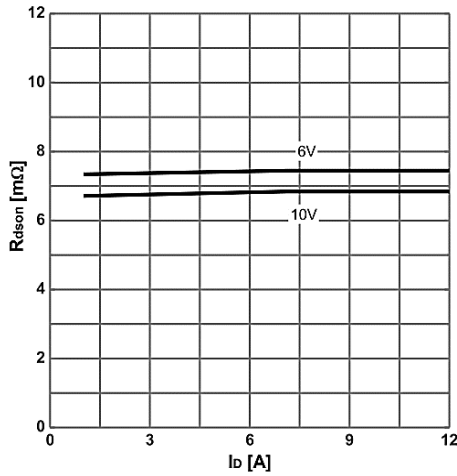


Figure 7. On-state resistance vs. Drain current

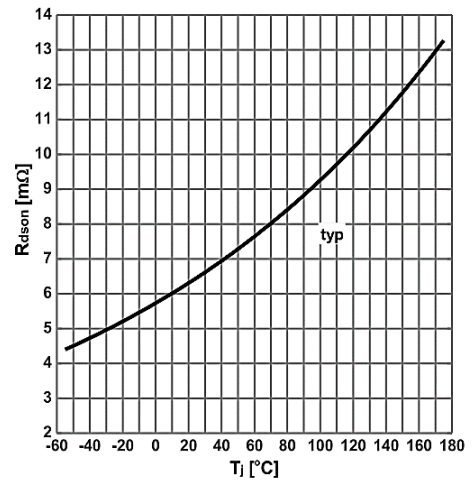


Figure 8. On-state resistance vs. Junction temperature

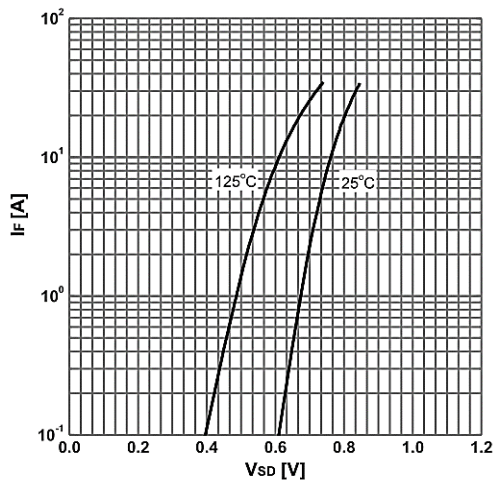


Figure 9. Forward characteristics of reverse diode

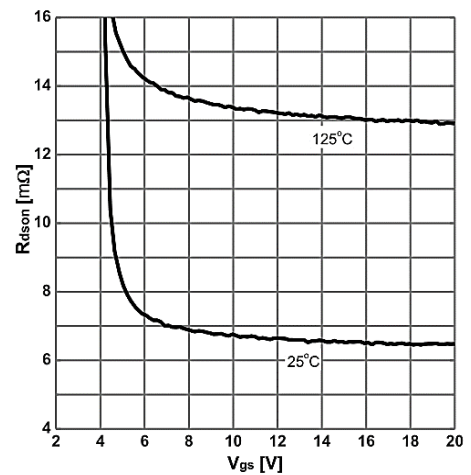


Figure 10. On-state resistance vs. Vgs characteristics

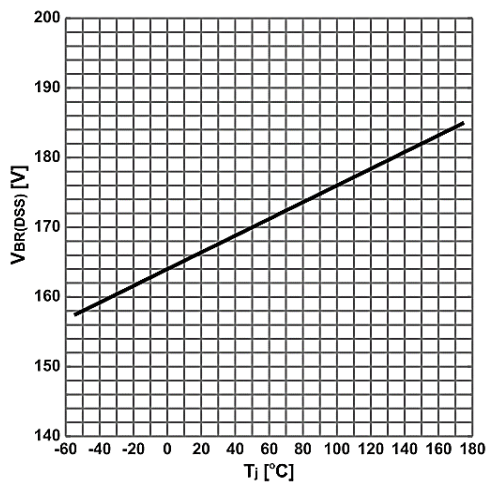


Figure 10: Breakdown Voltage Variation vs. Temperature

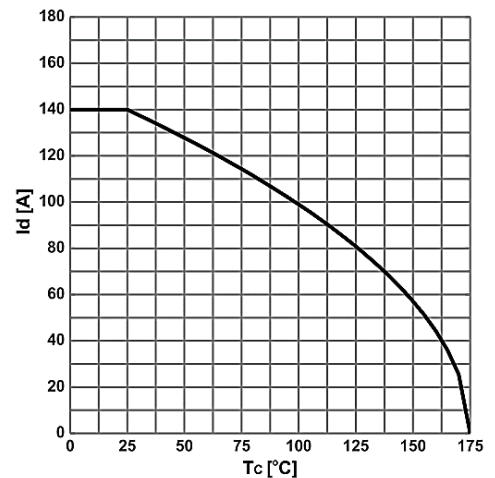
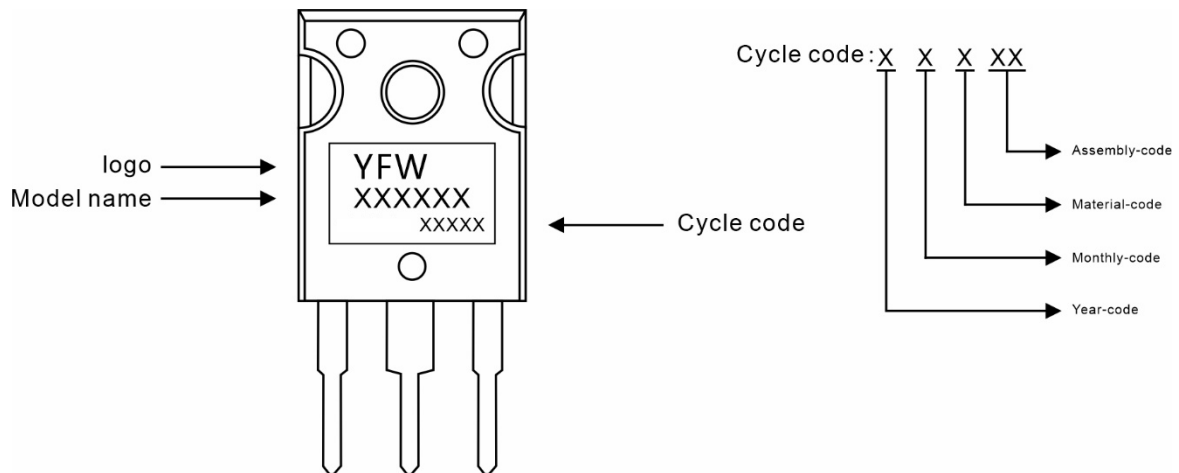


Figure 11: Maximum Drain Current

## Marking Diagram



## Ordering information

| Model name    | Package | Unit Weight    | Base Quantity | Packing Quantity          |
|---------------|---------|----------------|---------------|---------------------------|
| YFWG200N15APS | TO-247S | 0.158oz(4.48g) | 30pcs/tube    | 600PCS/Box 2400PCS/Carton |

## Package Dimensions

### TO-247S

| Dim. | Millimeter |       | Inches |      |
|------|------------|-------|--------|------|
|      | Min.       | Max.  | Min.   | Max. |
| E    | 15.40      | 15.80 | 0.60   | 0.62 |
| D    | 19.50      | 20.50 | 0.77   | 0.80 |
| S    | 5.30       | 5.50  | 0.21   | 0.22 |
| ØR   | 4.50       | 5.50  | 0.18   | 0.22 |
| ØP   | 3.40       | 3.80  | 0.13   | 0.15 |
| L    | 14.0       | 14.5  | 0.55   | 0.57 |
| L1   | 3.70       | 4.30  | 0.15   | 0.17 |
| L2   | 18.5       |       | 0.73   |      |
| e    | 5.20       | 5.70  | 0.20   | 0.22 |
| b    | 1.15       | 1.25  | 0.04   | 0.05 |
| b1   | 1.80       | 2.20  | 0.07   | 0.09 |
| b2   | 2.80       | 3.20  | 0.11   | 0.13 |
| A    | 4.80       | 5.00  | 0.19   | 0.20 |
| c    | 0.40       | 0.70  | 0.01   | 0.02 |
| A1   | 2.30       | 2.45  | 0.09   | 0.10 |

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