

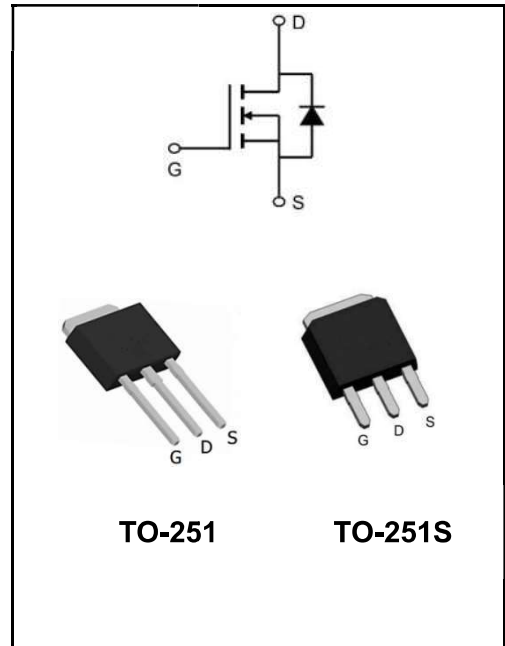
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

| | |
|--|------------------------------|
| I_D | 30A |
| V_{DSS} | 100V |
| R_{DS(on)-typ(@V_{GS}=10V)} | < 48mΩ (Type:36 mΩ) |

Application

- ◆Automotive lighting
- ◆Load switch
- ◆Uninterruptible power supply



Product Specification Classification

| Part Number | Package | Marking | Pack |
|-------------|---------|--------------------|--------------|
| YFW30N10AMJ | TO-251 | YFW 30N10AMJ XXXXX | 4000PCS/Tape |
| YFW30N10AMJ | TO-251S | YFW 30N10AMJ XXXXX | 4000PCS/Tape |

Maximum Ratings at T_c=25°C unless otherwise specified

| Characteristics | Symbols | Value | Units |
|--|------------------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | 100 | V |
| Gate - Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current, V _{GS} @ 10V @T _c =25°C | I_D | 30 | A |
| Continuous Drain Current, V _{GS} @ 10V @T _c =100°C | I_D | 13 | A |
| Pulsed Drain Current ¹ | I_{DM} | 90 | A |
| Total Power Dissipation @T _c =25°C | P_D | 42 | W |
| Total Power Dissipation ³ @T _A =25°C | P_D | 1.7 | W |
| Storage Temperature Range | T_{STG} | -55 to +150 | °C |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |
| Maximum Thermal Resistance, Junction ambient | R_{θJA} | 62.5 | °C/W |
| Maximum Thermal Resistance, Junction-case | R_{θJC} | 3.6 | °C/W |

Maximum Ratings at Tc=25°C unless otherwise specified

| Characteristics | Test Condition | Symbols | Min | Typ | Max | Units |
|--|---|---------------------------|-----|------|------|-----------|
| Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | V(BR)DSS | 100 | 107 | - | V |
| Zero Gate Voltage Drain Current | $V_{DS}=100V, V_{GS}=0V$ | I_{DSS} | - | - | 1.0 | μA |
| Gate to Body Leakage Current | $V_{GS}=\pm 20V, V_{DS}=0V$ | I_{GSS} | - | - | ±100 | nA |
| Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=250\mu A$ | V_{GS(th)} | 1.0 | 1.5 | 2.2 | V |
| Static Drain-Source on-Resistance | $V_{GS}=10V, I_D=10A$ | R_{DS(ON)} | - | 36 | 48 | mΩ |
| | $V_{GS}=4.5V, I_D=6A$ | | - | 39 | 55 | |
| Input Capacitance | $V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$ | C_{iss} | - | 1964 | - | μF |
| Output Capacitance | | C_{oss} | - | 90 | - | |
| Reverse Transfer Capacitance | | C_{rss} | - | 74 | - | |
| Total Gate Charge | $V_{DS}=80V$ $V_{GS}=4.5V$ $I_D=20A$ | Q_g | - | 20 | - | nC |
| Gate-Source Charge | | Q_{gs} | - | 3.1 | - | |
| Gate-Drain("Miller") Charge | | Q_{gd} | - | 14 | - | |
| Turn-on delay time | $V_{DS}=80V$ $I_D=20A$ $R_G=3.1\Omega$ $V_{GS}=4.5V$ | t_{d(on)} | - | 11 | - | ns |
| Turn-on Rise Time | | T_r | - | 91 | - | |
| Turn-Off Delay Time | | t_{d(OFF)} | - | 40 | - | |
| Turn-Off Fall Time | | t_f | - | 71 | - | |
| Maximum Continuous Drain to Source Diode Forward Current | | I_S | - | - | 30 | A |
| Maximum Pulsed Drain to Source Diode Forward Current | | I_{SM} | - | - | 80 | A |
| Drain to Source Diode Forward Voltage | $V_{GS}=0V, I_S=20A$ | V_{SD} | - | - | 1.2 | V |
| Body Diode Reverse Recovery Time | $I_F=20A, dI/dt=100A/\mu s$ | t_{rr} | - | 64 | - | ns |
| Body Diode Reverse Recovery Charge | | Q_{rr} | - | 152 | - | nC |

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 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 $V_{DD}=72V, V_{GS}=10V, L=0.1mH, I_{AS}=10A$
- 4、 The power dissipation is limited by 150°C junction temperature
- 5、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation

Ratings and Characteristic Curves

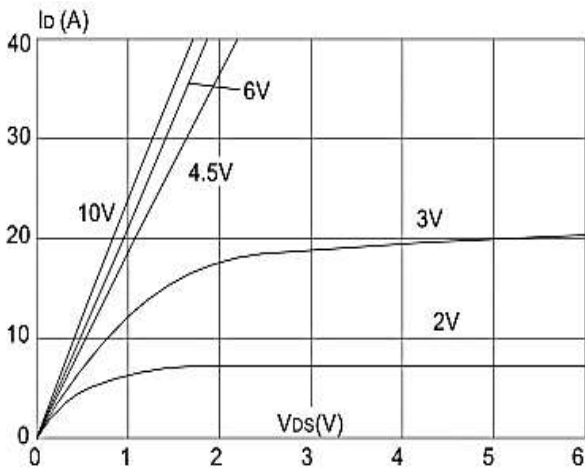


Figure 1: Output Characteristics

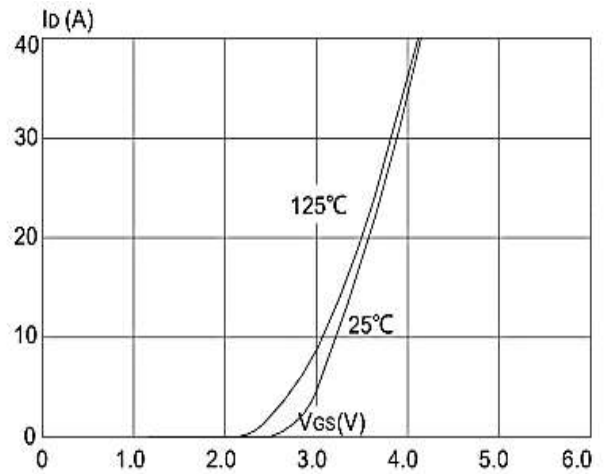


Figure 2: Typical Transfer Characteristics

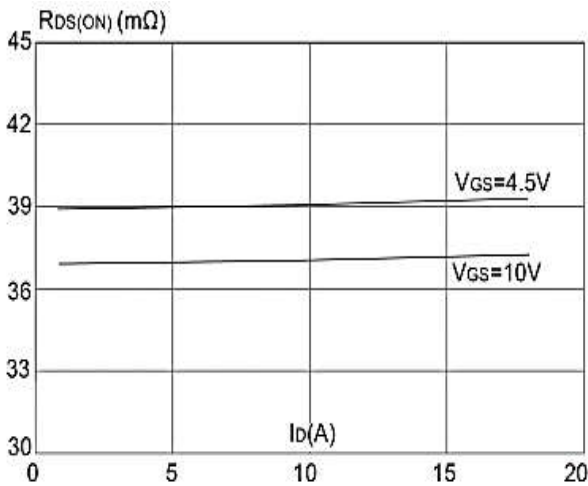


Figure 3: On-resistance vs. Drain Current

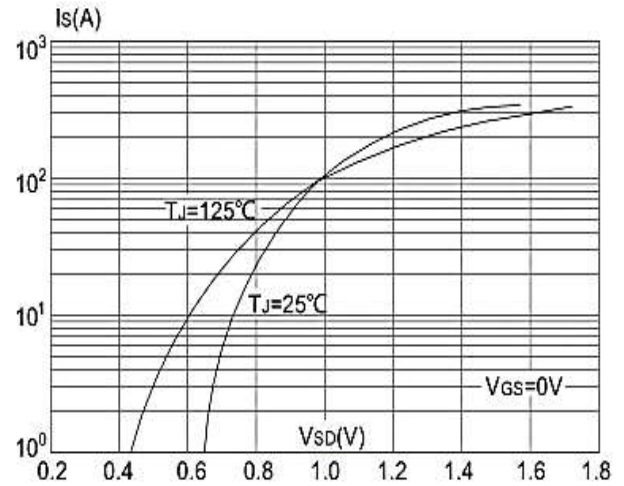


Figure 4: Body Diode Characteristics

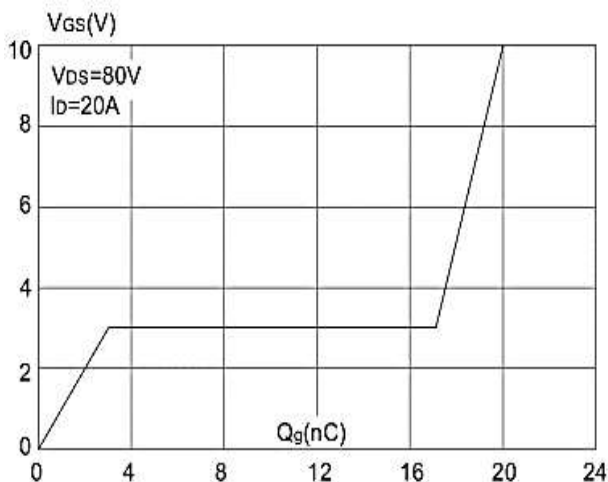


Figure 5: Gate Charge Characteristics

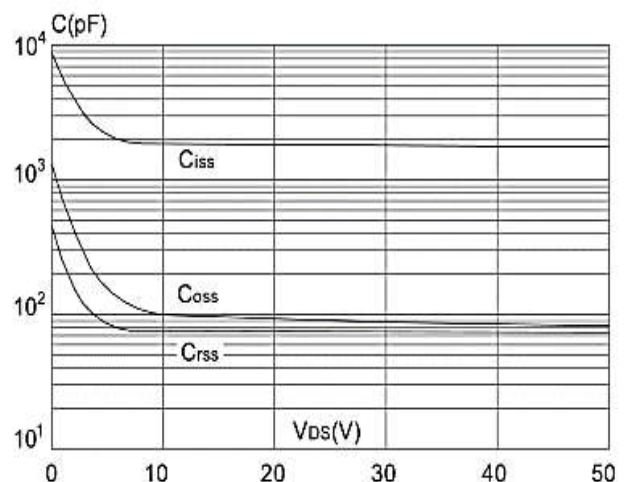


Figure 6: Capacitance Characteristics

Ratings and Characteristic Curves

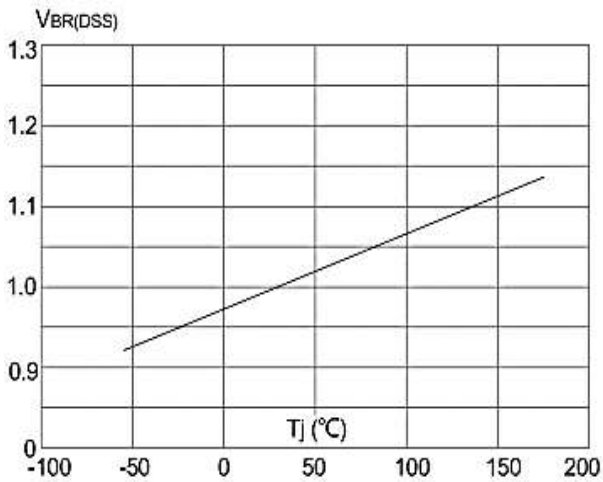


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

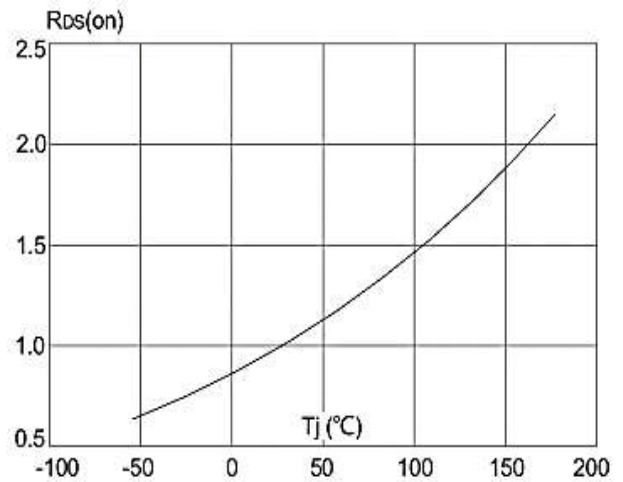


Figure 8: Normalized on Resistance vs. Junction Temperature

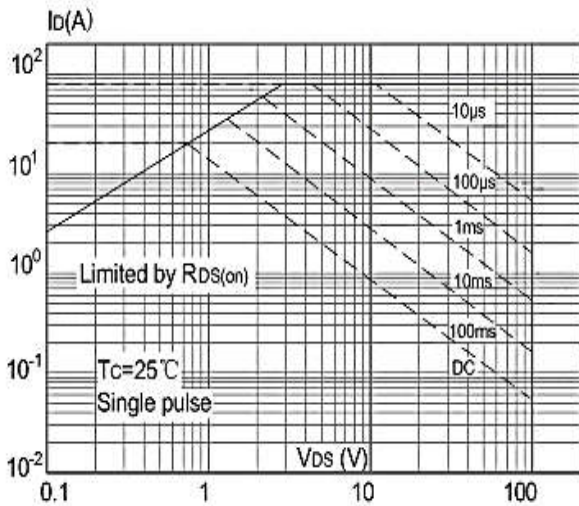


Figure 9: Maximum Safe Operating Area vs. Case Temperature

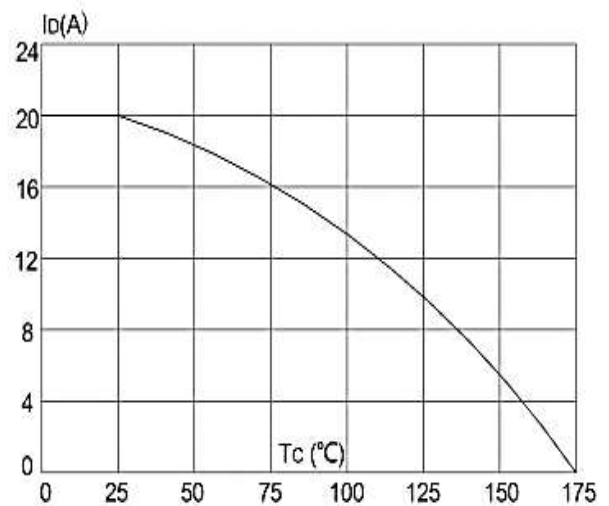


Figure 10: Maximum Continuous Drain Current

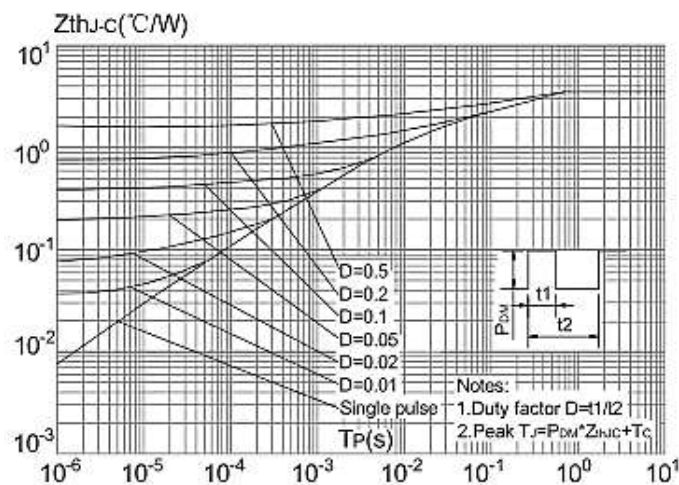
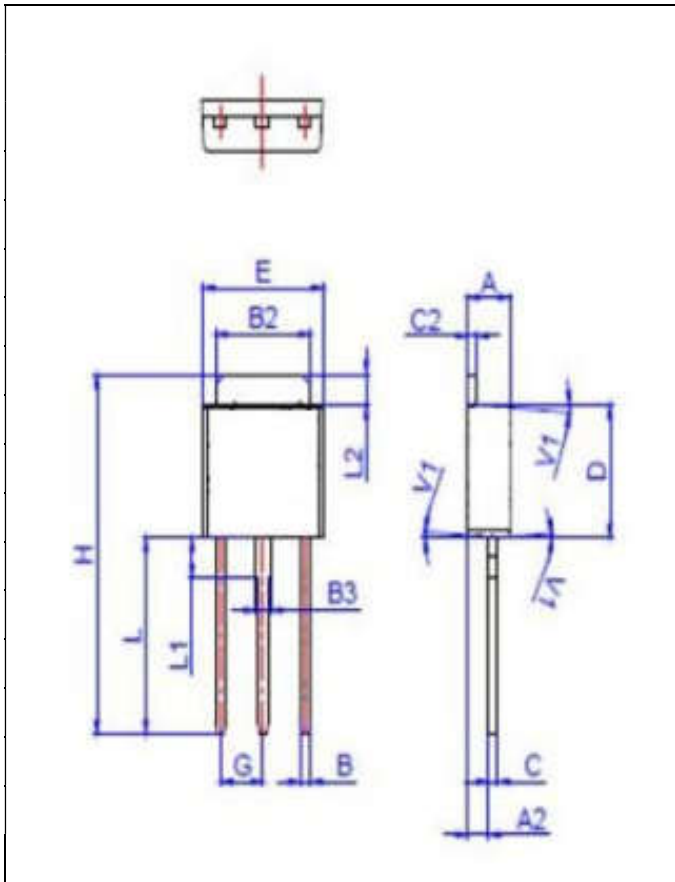


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

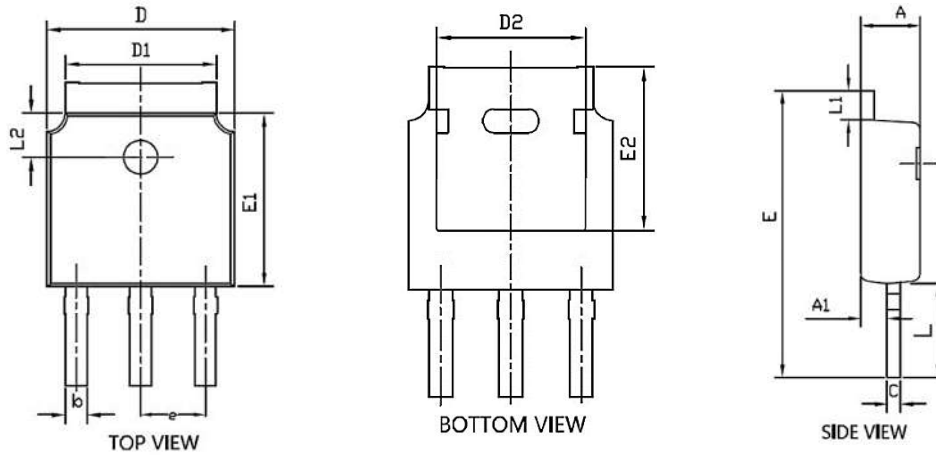
Package Outline Dimensions Millimeters

TO-251

| Pef. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millometers | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.20 | | 2.40 | 0.088 | | 0.095 |
| A2 | 0.90 | | 1.20 | 0.035 | | 0.047 |
| B | 0.55 | | 0.65 | 0.022 | | 0.026 |
| B2 | 5.10 | | 5.40 | 0.200 | | 0.213 |
| B3 | 0.76 | | 0.85 | 0.030 | | 0.033 |
| C | 0.45 | | 0.62 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.62 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.236 | | 0.244 |
| E | 6.40 | | 6.70 | 0.252 | | 0.264 |
| G | | 2.30 | | | 0.091 | |
| H | 16.0 | | 17.0 | 0.630 | | 0.669 |
| L | 8.90 | | 9.40 | 0.350 | | 0.370 |
| L1 | 1.80 | | 1.90 | 0.071 | | 0.075 |
| L2 | 1.37 | | 1.50 | 0.054 | | 0.059 |
| V1 | | 4° | | | 4° | |



TO-251S



| Symbol | Common | | |
|--------|----------|------|------|
| | mm | | |
| | Mim | Nom | Max |
| A | 2.2 | 2.3 | 2.4 |
| A1 | 0.9 | 1.0 | 1.1 |
| b | 0.66 | 0.76 | 0.86 |
| C | 0.46 | 0.52 | 0.58 |
| D | 6.50 | 6.6 | 6.7 |
| D1 | 5.15 | 5.3 | 5.45 |
| D2 | 4.6 | 4.8 | 4.95 |
| E | 10.4 | ---- | 11.5 |
| E1 | 6.0 | 6.1 | 6.2 |
| E2 | 5.400REF | | |
| e | 2.286BSC | | |
| L | 3.5 | 4.0 | 4.3 |
| L1 | 0.9 | --- | 1.27 |
| L2 | 1.4 | --- | 1.9 |