

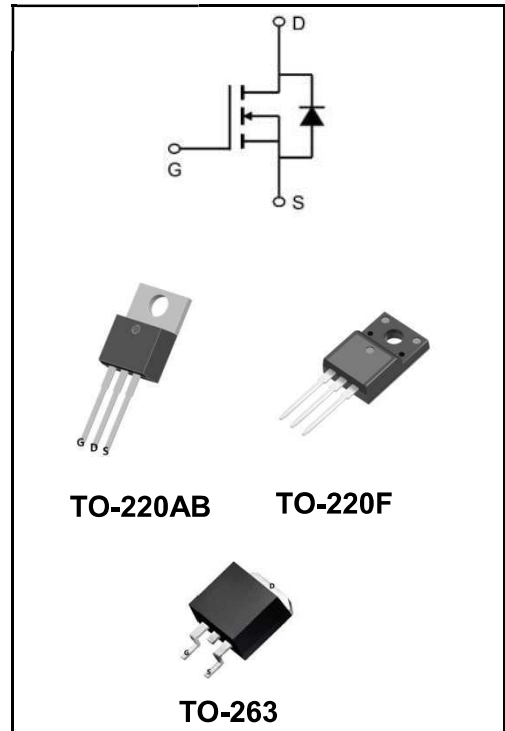
80V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

| | |
|--|-----------------------------|
| I_D | 160A |
| V_{DSS} | 85V |
| R_{DS(on)-typ(@V_{GS}=10V)} | < 4mΩ(Type:3.2 mΩ) |

Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Uninterruptible power supply



Product Specification Classification

| Part Number | Package | Marking | Pack |
|-------------|----------|--------------------|-------------|
| YFW160N08AT | TO-220AB | YFW 160N08AT XXXXX | 1000PCS/box |
| YFW160N08AF | TO-220F | YFW 160N08AF XXXXX | 1000PCS/box |
| YFW160N08AS | TO-263 | YFW 160N08AS XXXXX | 800PCS/Reel |

Maximum Ratings at T_c=25°C unless otherwise specified

| Characteristics | Symbols | Value | Units |
|--|------------------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | 85 | V |
| Gate-Source Voltage | V_{GS} | ±20 | V |
| Continuous Drain Current, V _{GS} @ 10V @T _c =25°C | I_D | 160 | A |
| Continuous Drain Current, V _{GS} @ 10V @T _c =100°C | I_D | 85 | A |
| Pulsed Drain Current | I_{DM} | 480 | A |
| Single Pulse Avalanche Energy | E_{AS} | 320 | mJ |
| Total Power Dissipation ⁴ @TC=25°C | P_D | 122.5 | W |
| Storage Temperature Range | T_{STG} | -55 to +150 | °C |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |
| Thermal Resistance Junction-Ambient | R_{θJA} | 62 | °C/W |
| Thermal Resistance Junction-Case | R_{θJC} | 1.02 | °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 | 85 | 95 | - | V |
| Gate-body Leakage current | $V_{GS}=\pm 20V, V_{DS}=0V$ | I_{GSS} | - | - | ± 100 | nA |
| Zero gate voltage drain current | $V_{DS}=80V, V_{GS}=0V, T_J=25^\circ C$ | I_{DSS} | - | - | 1 | μA |
| | $V_{DS}=80V, V_{GS}=0V, T_J=100^\circ C$ | | - | - | 100 | |
| Gate -Threshold Voltage | $V_{DS}=V_{GS}, I_D=250\mu A$ | V_{GS(th)} | 2 | 3 | 4 | V |
| Drain-source on- resistance ² | $V_{GS}=10V, I_D=20A$ | R_{DS(ON)} | - | 3.2 | 4 | mΩ |
| Forward Transconductance ² | $V_{DS}=10V, I_D=20A$ | g_{fs} | - | 75 | - | S |
| Input Capacitance | $V_{GS}=0V$ $V_{DS}=40V$ $f=1MHz$ | C_{iss} | - | 5235 | - | pF |
| Output Capacitance | | C_{oss} | - | 985 | - | |
| Reverse Transfer Capacitance | | C_{rss} | - | 58 | - | |
| Gate resistance | $V_{GS}=0V, V_{DS}=0V, f=1MHz$ | R_G | - | 0.6 | - | Ω |
| Gate Total Charge | $V_{GS}=10V$ $V_{DS}=40V$ $I_D=20A$ | Q_g | - | 78.5 | - | nC |
| Gate-Source Charge | | Q_{gs} | - | 19.6 | - | |
| Gate-Drain Charge | | Q_{gd} | - | 17 | - | |
| Turn-on delay time | $V_{GS}=10V$ $V_{DS}=40V$ $R_G=3\Omega$ $I_D=20A$ | t_{d(on)} | - | 15.4 | - | ns |
| Rise Time | | T_r | - | 13 | - | |
| Turn-Off Delay Time | | t_{d(OFF)} | - | 34 | - | |
| Fall Time | | t_f | - | 6.2 | - | |
| Diode Forward Voltage ² | $I_F=20A, V_{GS}=0V$ | V_{SD} | - | - | 1.2 | V |
| Continuous Source Current ^{1,5} | $V_G = V_D = 0V, \text{ Force Current}$ | I_S | - | - | 130 | A |
| Body Diode Reverse Recovery Time | $I_F=20A, di/dt=100A/\mu s$ | t_{rr} | - | 57 | - | ns |
| Body Diode Reverse Recovery Charge | | Q_{rr} | - | 114 | - | nC |

Note :

- 1、 The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、 The test cond $\cong 300\mu s$ duty cycle $\cong 2\%$, duty cycle ition is $V_{DD}=64V, V_{GS}=10V, L=0.1mH, I_{AS}=40A$
- 4、 The power dissipation is limited by 175°C junction temperature
- 5、 The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Ratings and Characteristic Curves

Typical Characteristics

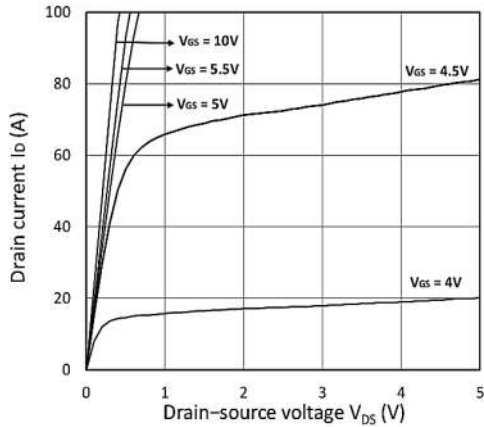


Figure 1. Output Characteristics

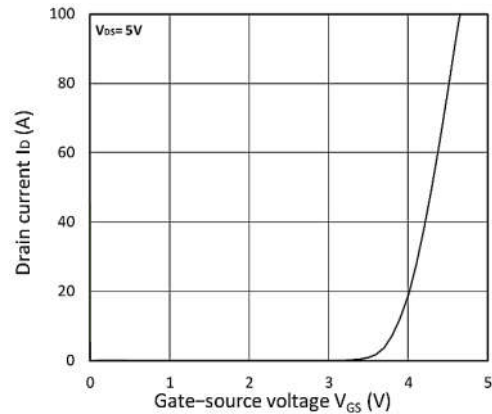


Figure 2. Transfer Characteristics

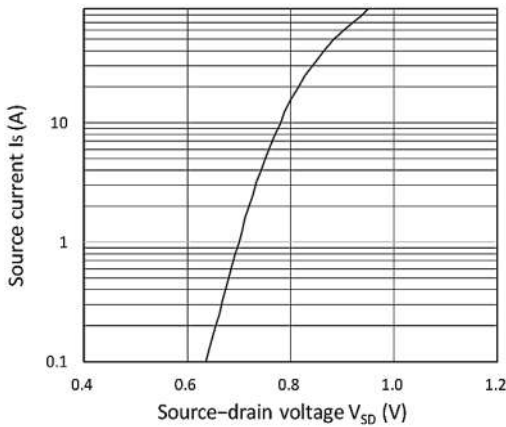


Figure 3. Forward Characteristics of Reverse

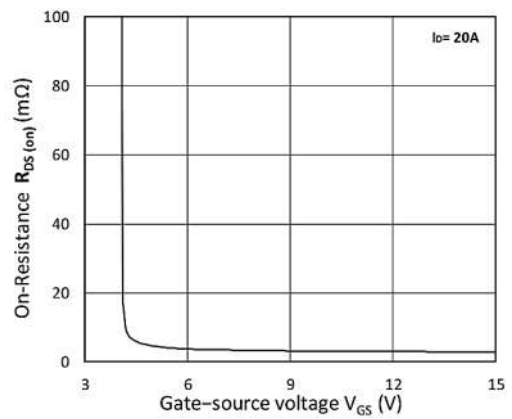


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

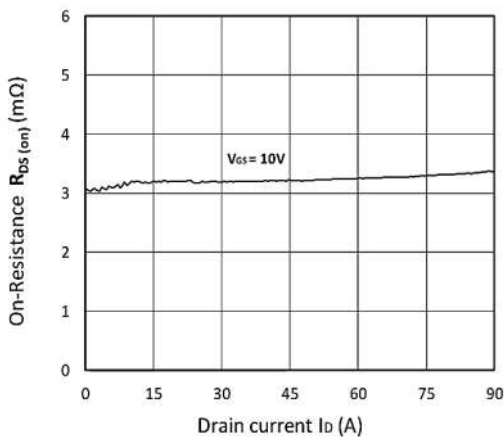


Figure 5. $R_{DS(ON)}$ vs. I_D

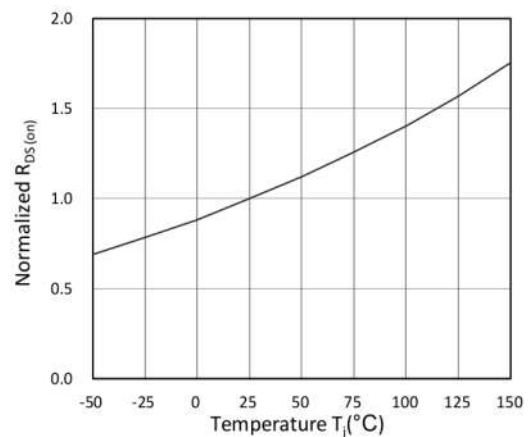


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Ratings and Characteristic Curves

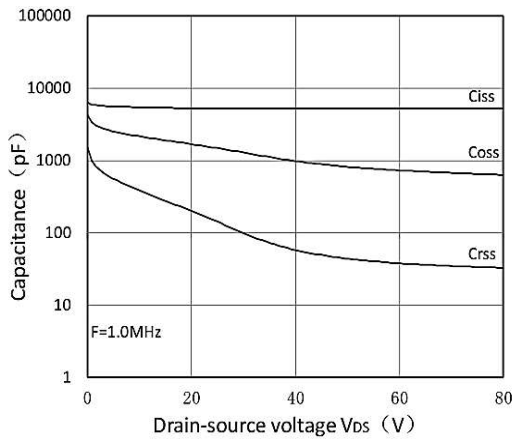


Figure 7. Capacitance Characteristics

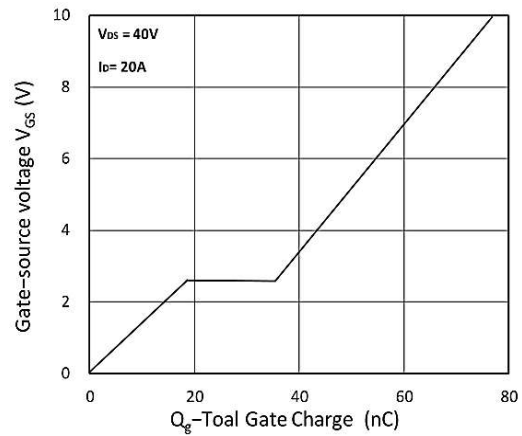


Figure 8. Gate Charge Characteristics

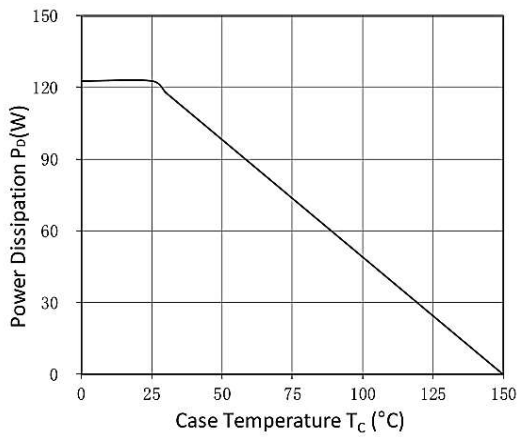


Figure 9. Power Dissipation

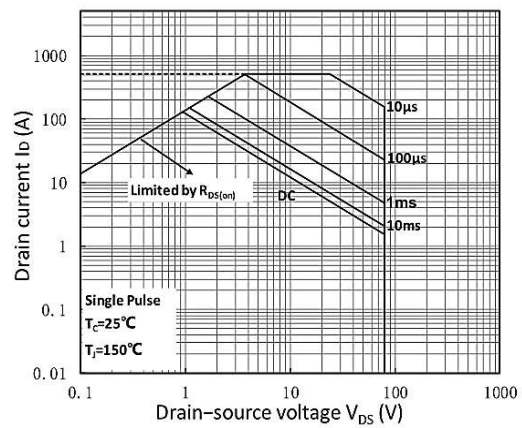


Figure 10. Safe Operating Area

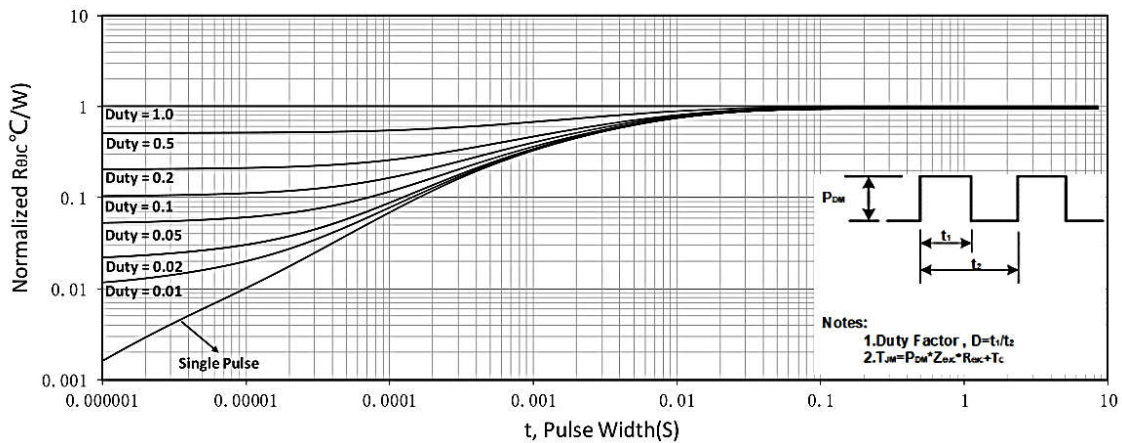


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions Millimeters

TO-220AB

| | | | |
|------------------------------|------|----------|-------|
| | Dim. | Min. | Max. |
| | A | 10.15 | 10.35 |
| | B | 2.65 | 2.95 |
| | C | 3.70 | 3.90 |
| | D | 28.5 | 29.5 |
| | E | 1.30 | 1.45 |
| | F | 6.35 | 6.55 |
| | G | 2.9 | 3.3 |
| | H | 15.0 | 16.0 |
| | I | 0.38 | 0.42 |
| | J | 4.45 | 4.55 |
| | K | 1.25 | 1.35 |
| | L | Typ 5.08 | |
| | M | Typ 2.54 | |
| | N | 3.1 | 3.3 |
| O | 0.76 | 0.84 | |
| All Dimensions in millimeter | | | |

TO-220F

| | | | |
|------------------------------|------|----------|-------|
| | Dim. | Min. | Max. |
| | A | 9.95 | 10.25 |
| | B | 2.95 | 3.25 |
| | C | 1.25 | 1.45 |
| | D | 12.95 | 13.25 |
| | E | 0.50 | 0.65 |
| | F | 3.1 | 3.3 |
| | G | 1.30 | 1.45 |
| | H | Typ 2.54 | |
| | I | Typ 5.08 | |
| | J | 4.60 | 4.75 |
| | K | 2.50 | 2.65 |
| | L | 6.35 | 6.55 |
| | M | 15.4 | 16.0 |
| | N | 2.75 | 3.05 |
| O | 0.48 | 0.52 | |
| P | 0.76 | 0.84 | |
| All Dimensions in millimeter | | | |

Package Outline Dimensions Millimeters

TO-263

| Dim. | Min. | Max. |
|------------------------------|---------|------|
| A | 10.1 | 10.2 |
| B | 7.4 | 7.6 |
| C | 1.3 | 1.5 |
| D | 0.55 | 0.75 |
| E | 5.0 | 6.0 |
| F | 1.4 | 1.6 |
| G | 0.78 | 0.86 |
| H | 1.2 | 1.3 |
| I | Typ2.54 | |
| J | 8.4 | 8.6 |
| K | 4.45 | 4.55 |
| L | 1.25 | 1.35 |
| M | 0.02 | 0.1 |
| N | 2.4 | 2.8 |
| O | 0.36 | 0.40 |
| All Dimensions in millimeter | | |