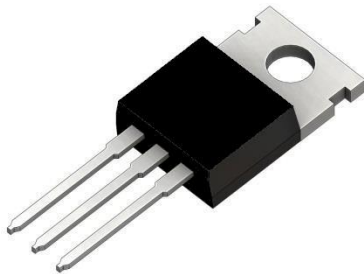


#### General Description

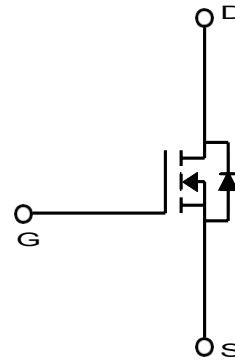
The FWP08N110 uses advanced Fulwin's MOSFET Technology, which provides high performance in on-state resistance, fast switching performance and excellent quality. FWP08N110 is suitable device for Synchronous Rectification For Server and general purpose applications.

#### Features

- $V_{DS} = 80V$
- $I_D = 110A @ V_{GS} = 10V$
- $R_{DS(ON)} < 5.2m\Omega @ V_{GS} = 10V$
- 100% UIL Tested
- 100% Rg Tested



TO-220



#### Absolute Maximum Ratings (Ta = 25°C)

| Characteristics                              | Symbol         | Rating                             | Unit |
|--|----------------|------------------------------------|------|
| Drain-Source Voltage                         | $V_{DSS}$      | 80                                 | V    |
| Gate-Source Voltage                          | $V_{GSS}$      | ±20                                | V    |
| Continuous Drain Current <sup>(1)</sup>      | $I_D$          | $T_C=25^\circ C$ (Silicon Limited) | 110  |
|  |                | $T_C=100^\circ C$                  | 70   |
| Pulsed Drain Current                         | $I_{DM}$       | 440                                | A    |
| Power Dissipation                            | $P_D$          | $T_C=25^\circ C$                   | 157  |
|  |                | $T_C=100^\circ C$                  | 63   |
| Single Pulse Avalanche Energy <sup>(2)</sup> | $E_{AS}$       | 144.5                              | mJ   |
| Junction and Storage Temperature Range       | $T_J, T_{stg}$ | -55~150                            | °C   |

#### Thermal Characteristics

| Characteristics  | Symbol          | Rating | Unit |
|--|-----------------|--------|------|
| Thermal Resistance, Junction-to-Ambient <sup>(1)</sup> | $R_{\theta JA}$ | 62.5   | °C/W |
| Thermal Resistance, Junction-to-Case                   | $R_{\theta JC}$ | 0.8    |      |

## Ordering Information

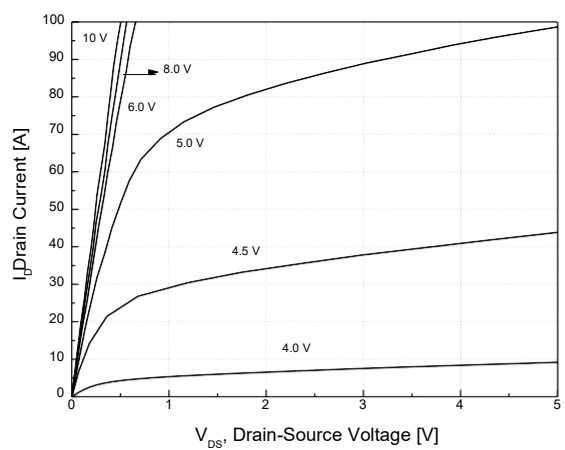
| Part Number | Temp. Range | Package | Packing | RoHS Status  |
|-------------|-------------|---------|---------|--------------|
| FWP08N110TH | -55~150°C   | TO-220  | Tube    | Halogen Free |

## Electrical Characteristics (T<sub>J</sub> = 25°C)

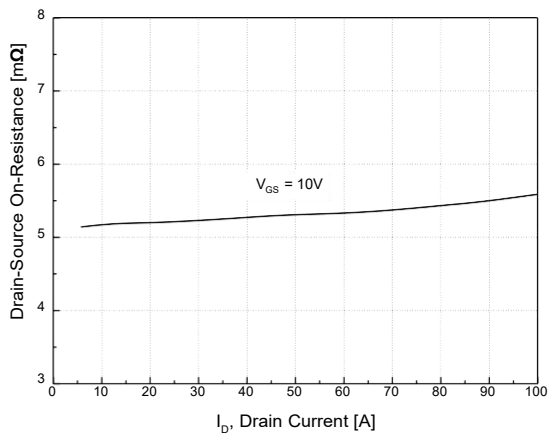
| Characteristics                                | Symbol              | Test Condition   | Min | Typ   | Max  | Unit |
|--|---------------------|--|-----|-------|------|------|
| <b>Static Characteristics</b>                  |                     |  |     |       |      |      |
| Drain-Source Breakdown Voltage                 | BV <sub>DSS</sub>   | I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V   | 80  | -     | -    | V    |
| Gate Threshold Voltage                         | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                   | 2.0 | -     | 4.0  |      |
| Drain Cut-Off Current                          | I <sub>DSS</sub>    | V <sub>DS</sub> = 64V, V <sub>GS</sub> = 0V  | -   | -     | 1.0  | μA   |
| Gate Leakage Current                           | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V   | -   | -     | ±0.1 |      |
| Drain-Source ON Resistance                     | R <sub>DS(ON)</sub> | V <sub>GS</sub> = 10V, I <sub>D</sub> = 50A  | -   | 4.8   | 5.2  | mΩ   |
| Forward Transconductance                       | g <sub>fs</sub>     | V <sub>DS</sub> = 10V, I <sub>D</sub> = 50A  | -   | 47    | -    | S    |
| <b>Dynamic Characteristics</b>                 |                     |  |     |       |      |      |
| Total Gate Charge                              | Q <sub>g</sub>      | V <sub>DS</sub> = 40V, I <sub>D</sub> = 50A,<br>V <sub>GS</sub> = 10V                        | -   | 59    | -    | nC   |
| Gate-Source Charge                             | Q <sub>gs</sub>     |  | -   | 16    | -    |      |
| Gate-Drain Charge                              | Q <sub>gd</sub>     |  | -   | 12    | -    |      |
| Input Capacitance                              | C <sub>iss</sub>    | V <sub>DS</sub> = 40V, V <sub>GS</sub> = 0V,<br>f = 1.0MHz                                   | -   | 3,850 | -    | pF   |
| Reverse Transfer Capacitance                   | C <sub>rss</sub>    |  | -   | 34    | -    |      |
| Output Capacitance                             | C <sub>oss</sub>    |  | -   | 650   | -    |      |
| Turn-On Delay Time                             | t <sub>d(on)</sub>  | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 40V,<br>I <sub>D</sub> = 50A, R <sub>G</sub> = 3.0Ω | -   | 15.6  | -    | ns   |
| Rise Time                                      | t <sub>r</sub>      |  | -   | 32.7  | -    |      |
| Turn-Off Delay Time                            | t <sub>d(off)</sub> |  | -   | 24.2  | -    |      |
| Fall Time                                      | t <sub>f</sub>      |  | -   | 15.1  | -    |      |
| Gate Resistance                                | R <sub>g</sub>      | f=1 MHz  | -   | 2.5   | -    | Ω    |
| <b>Drain-Source Body Diode Characteristics</b> |                     |  |     |       |      |      |
| Source-Drain Diode Forward Voltage             | V <sub>SD</sub>     | I <sub>S</sub> = 50A, V <sub>GS</sub> = 0V   | -   | 0.9   | 1.2  | V    |
| Body Diode Reverse Recovery Time               | t <sub>rr</sub>     | I <sub>F</sub> = 50A, dI/dt = 100A/μs  | -   | 65    | -    | ns   |
| Body Diode Reverse Recovery Charge             | Q <sub>rr</sub>     |  | -   | 150   | -    | nC   |

Note :

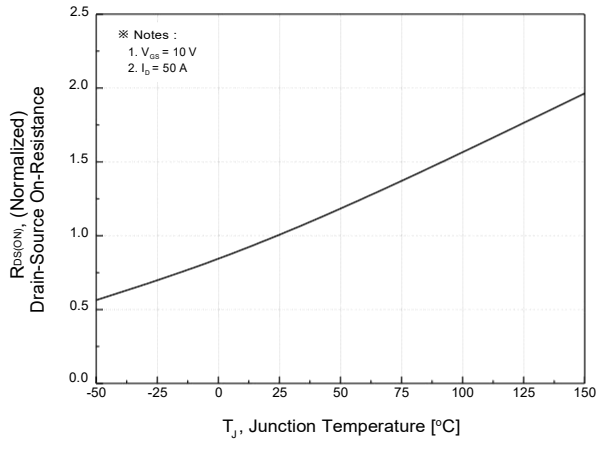
- Surface mounted FR-4 board by JEDEC (jesd51-7). Continuous current at T<sub>c</sub>=25°C is silicon limited
- E<sub>AS</sub> is tested at starting T<sub>j</sub> = 25°C, L = 1.0mH, I<sub>AS</sub> = 17.0A, V<sub>GS</sub> = 10V.



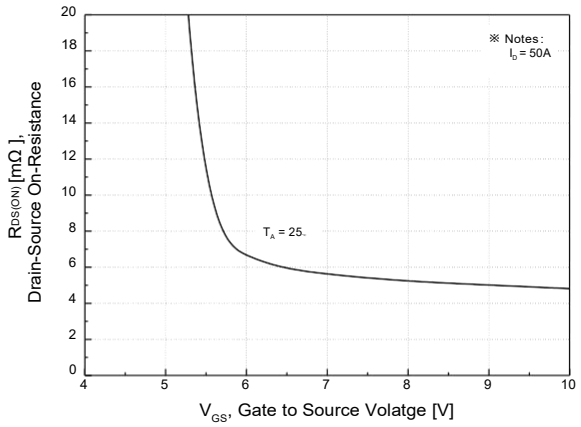
**Fig.1 On-Region Characteristics**



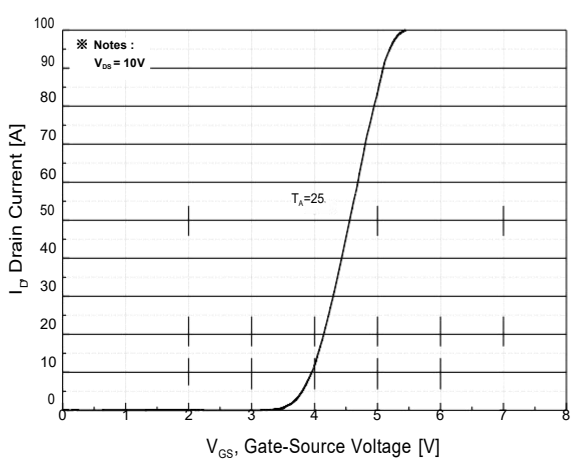
**Fig.2 On-Resistance Variation with Drain Current and Gate Voltage**



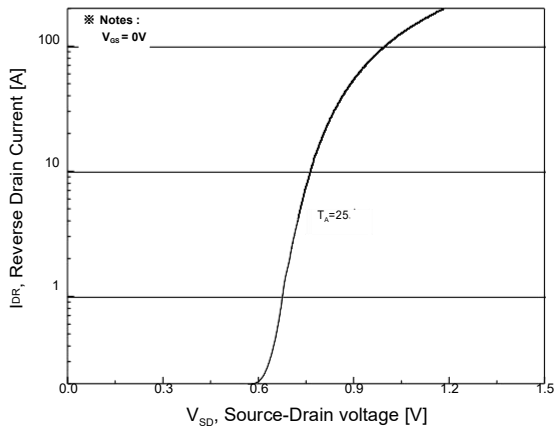
**Fig.3 On-Resistance Variation with Temperature**



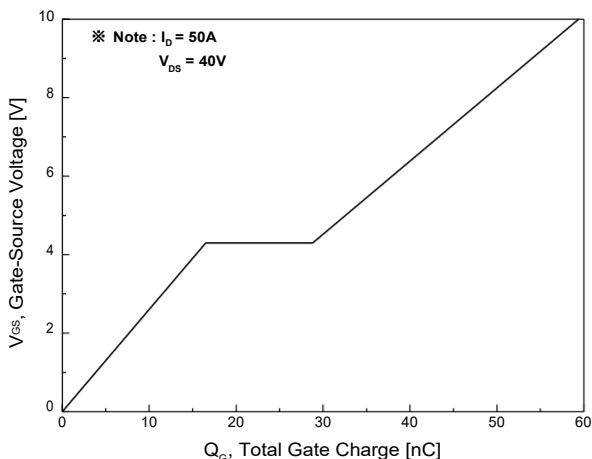
**Fig.4 On-Resistance Variation with Gate to Source Voltage**



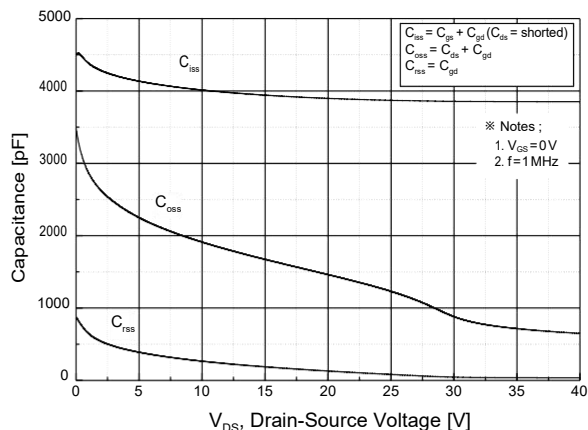
**Fig.5 Transfer Characteristics**



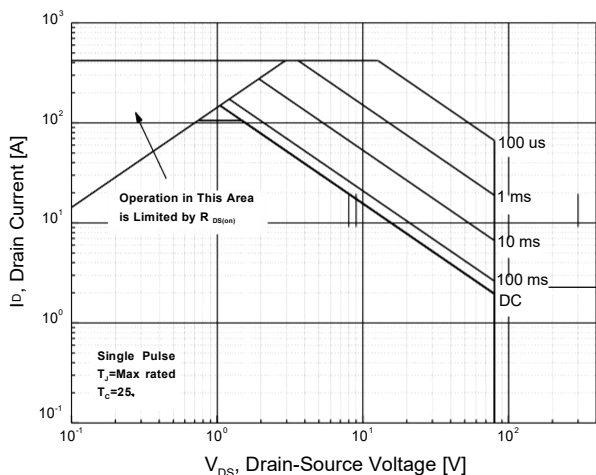
**Fig.6 Body Diode Forward Voltage Variation with Source Current and Temperature**



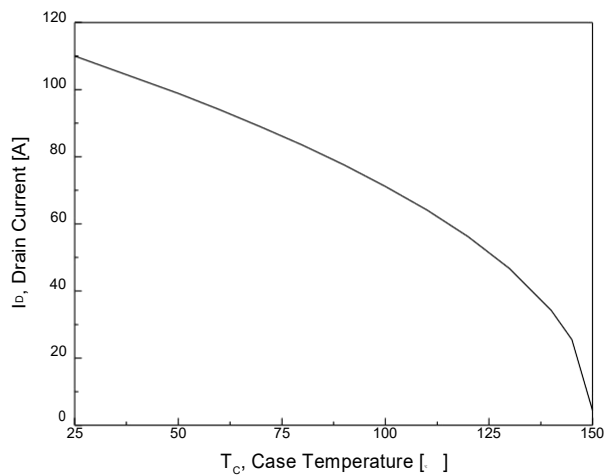
**Fig.7 Gate Charge Characteristics**



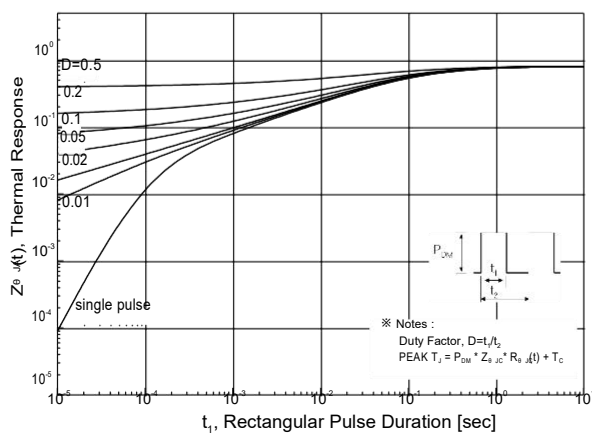
**Fig.8 Capacitance Characteristics**



**Fig.9 Maximum Safe Operating Area**



**Fig.10 Maximum Drain Current vs. Case Temperature**

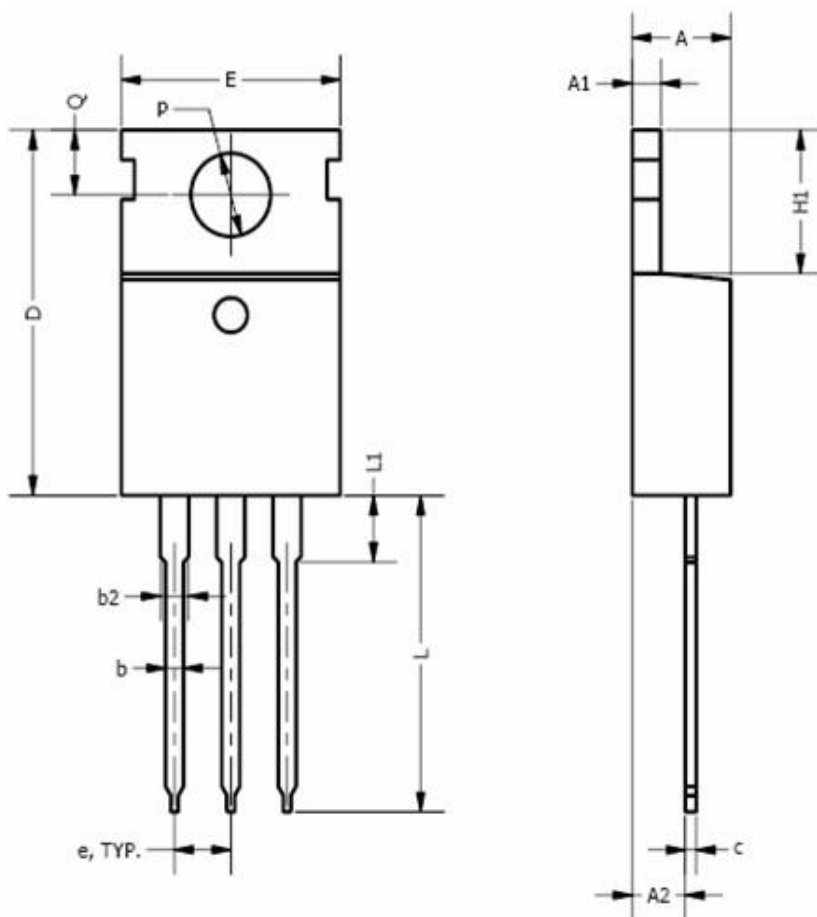


**Fig.11 Transient Thermal Response Curve**

## Package Dimension

### 3 Leads, TO-220

Dimensions are in millimeters unless otherwise specified



| Symbol   | Min      | Nom  | Max   |
|----------|----------|------|-------|
| A        | 3.56     |      | 4.83  |
| A1       | 0.50     |      | 1.40  |
| A2       | 2.03     |      | 2.92  |
| b        | 0.38     | 0.69 | 1.02  |
| b2       | 1.14     | 1.45 | 1.78  |
| c        | 0.36     |      | 0.61  |
| D        | 14.22    |      | 16.51 |
| e        | 2.54 TYP |      |       |
| E        | 9.65     |      | 10.67 |
| H1       | 5.84     |      | 6.86  |
| L        | 12.70    |      | 14.73 |
| L1       |          |      | 6.35  |
| $\phi P$ | 3.53     |      | 4.09  |
| Q        | 2.54     |      | 3.43  |

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