

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---------------|-----------------|-------|
| 60V           | 3.8mΩ@10V       | 100A  |

### Feature

- Advanced shielded-gate trench technology
- Super low gate charge
- Low on-resistance
- Suffix “-Q1” for AEC-Q101

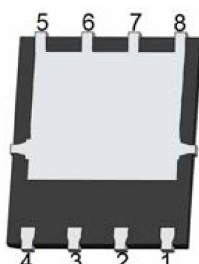
### Application

- Power switching application
- Uninterruptible power supply

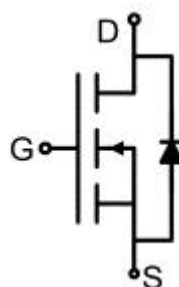
### Package



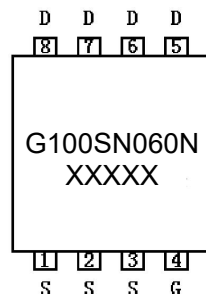
PDFN5\*6-8L



### Circuit diagram



### Marking



### Absolute maximum ratings (T<sub>C</sub>=25°C unless otherwise noted)

| Parameter                                                               | Symbol                 | Value      | Unit |
|-------------------------------------------------------------------------|------------------------|------------|------|
| Drain-Source Voltage                                                    | V <sub>DS</sub>        | 60         | V    |
| Gate-Source Voltage                                                     | V <sub>GS</sub>        | ±20        | V    |
| Continuous Drain Current                                                | I <sub>D</sub>         | 100        | A    |
| Continuous Drain Current (V <sub>GS</sub> =10V, T <sub>C</sub> =100°C ) | I <sub>D</sub> (100°C) | 85         | A    |
| Pulsed Drain Current (t <sub>p</sub> =10μs)                             | I <sub>DM</sub>        | 400        | A    |
| Single Pulse Avalanche Energy <sup>1)</sup>                             | E <sub>AS</sub>        | 140        | mJ   |
| Power Dissipation                                                       | P <sub>D</sub>         | 125        | W    |
| Thermal Resistance Junction to Case                                     | R <sub>θJC</sub>       | 1          | °C/W |
| Operating Junction Temperature                                          | T <sub>J</sub>         | -55 ~ +150 | °C   |
| Storage Temperature Range                                               | T <sub>STG</sub>       | -55 ~ +150 | °C   |

### Electrical characteristics (T<sub>A</sub>=25 °C, unless otherwise noted)

| Parameter                                | Symbol               | Test Condition                                                                         | Min. | Typ. | Max. | Unit |
|------------------------------------------|----------------------|----------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics                   |                      |                                                                                        |      |      |      |      |
| Drain-source breakdown voltage           | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                             | 60   |      |      | V    |
| Zero gate voltage drain current          | I <sub>DSS</sub>     | V <sub>DS</sub> =48V, V <sub>GS</sub> =0V                                              |      |      | 1    | μA   |
| Gate-body leakage current                | I <sub>GSS</sub>     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V                                             |      |      | ±100 | nA   |
| Gate threshold voltage                   | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                               | 2    | 2.6  | 4    | V    |
| Drain-source on-resistance <sup>2)</sup> | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =60A                                              |      | 2.8  | 3.8  | mΩ   |
| Dynamic characteristics <sup>3)</sup>    |                      |                                                                                        |      |      |      |      |
| Input Capacitance                        | C <sub>iss</sub>     | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V<br>f =150kHz                                 |      | 4646 |      | pF   |
| Output Capacitance                       | C <sub>oss</sub>     |                                                                                        |      | 1250 |      |      |
| Reverse Transfer Capacitance             | C <sub>rss</sub>     |                                                                                        |      | 55   |      |      |
| Total Gate Charge                        | Q <sub>g</sub>       | V <sub>DS</sub> =48V, V <sub>GS</sub> =10V, I <sub>D</sub> =45A                        |      | 63   |      | nC   |
| Gate-Source Charge                       | Q <sub>gs</sub>      |                                                                                        |      | 20   |      |      |
| Gate-Drain Charge                        | Q <sub>gd</sub>      |                                                                                        |      | 5.1  |      |      |
| Turn-on delay time                       | t <sub>d(on)</sub>   | V <sub>DS</sub> =30V, V <sub>GS</sub> =10V<br>I <sub>D</sub> =100A, R <sub>G</sub> =3Ω |      | 14   |      | nS   |
| Turn-on rise time                        | t <sub>r</sub>       |                                                                                        |      | 96   |      |      |
| Turn-off delay time                      | t <sub>d(off)</sub>  |                                                                                        |      | 40   |      |      |
| Turn-off fall time                       | t <sub>f</sub>       |                                                                                        |      | 115  |      |      |
| Source-Drain Diode characteristics       |                      |                                                                                        |      |      |      |      |
| Diode Forward Current                    | I <sub>S</sub>       |                                                                                        |      |      | 100  | A    |
| Diode Forward voltage <sup>2)</sup>      | V <sub>SD</sub>      | V <sub>GS</sub> =0V, I <sub>S</sub> =1A                                                |      |      | 1.2  | V    |
| Reverse Recovery Time                    | T <sub>rr</sub>      | V <sub>GS</sub> =30V, I <sub>S</sub> =30A<br>di/dt =100A/μs                            |      | 53   |      | nS   |
| Reverse Recovery Charge                  | Q <sub>rr</sub>      |                                                                                        |      | 74   |      | nC   |

Notes:

1) The EAS data shows Max. rating. The test condition is V<sub>DD</sub> = 50V, V<sub>GS</sub> = 10V, L = 0.5mH.

2) The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%.

3) Guaranteed by design, not subject to production.

## Typical Characteristics

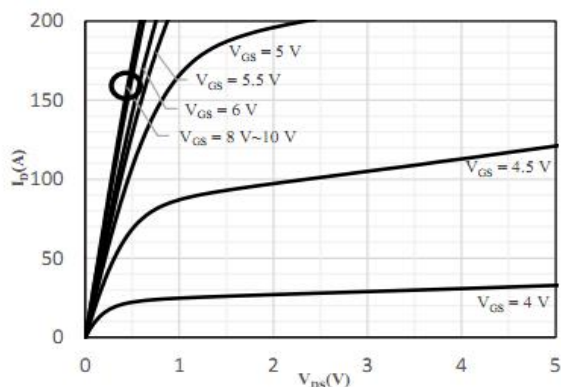


Fig 1 Typical Output Characteristics

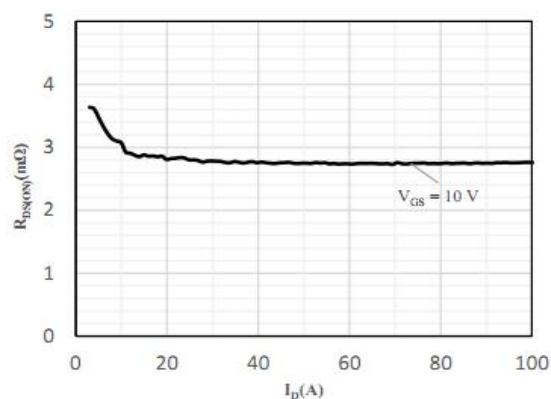


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

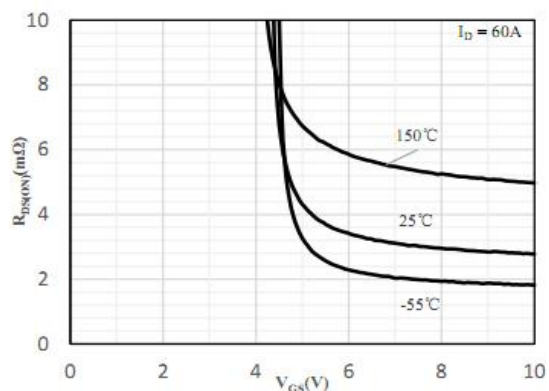


Fig 3 On-Resistance vs. Gate-Source Voltage

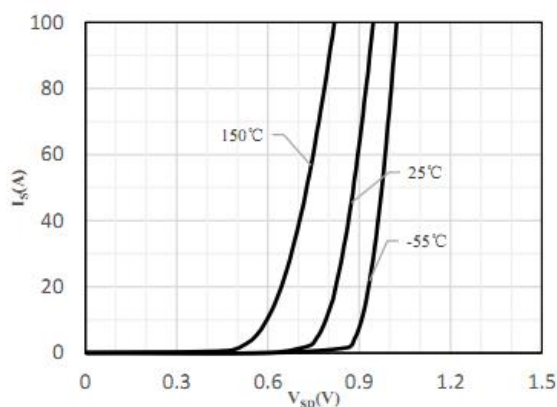


Fig 4 Body-Diode Characteristics

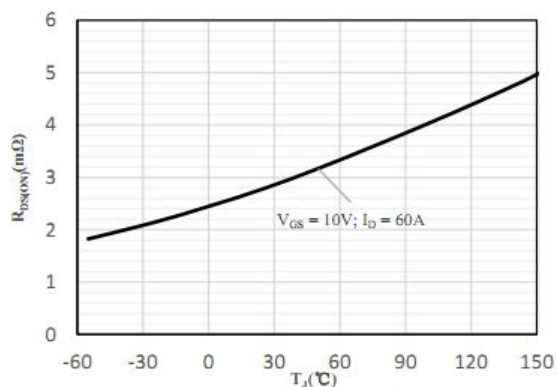


Fig 5 On-Resistance vs. Junction Temperature

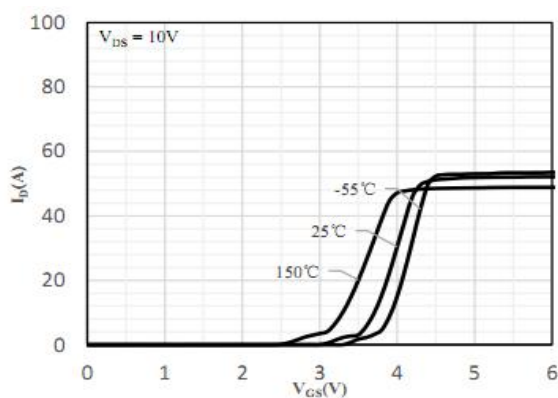
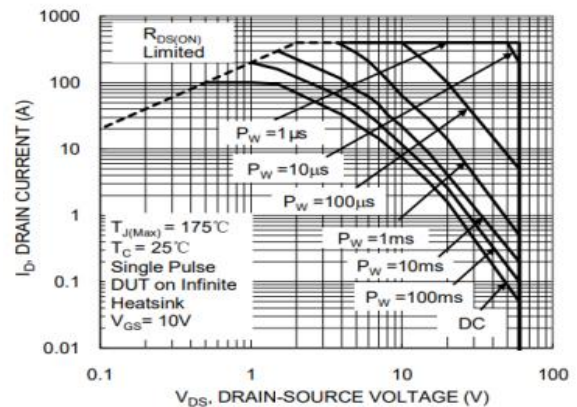
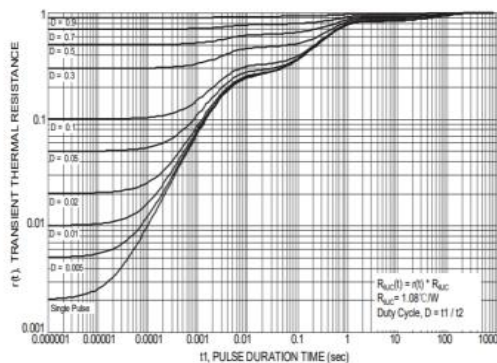
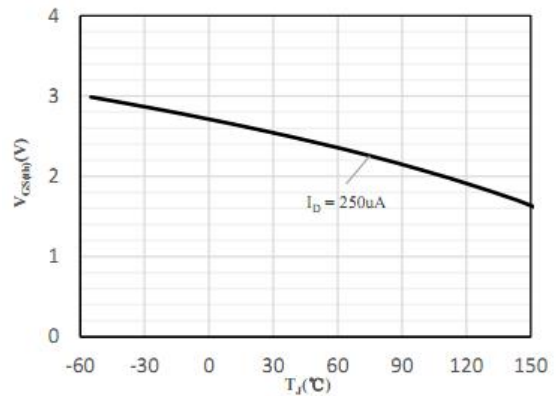
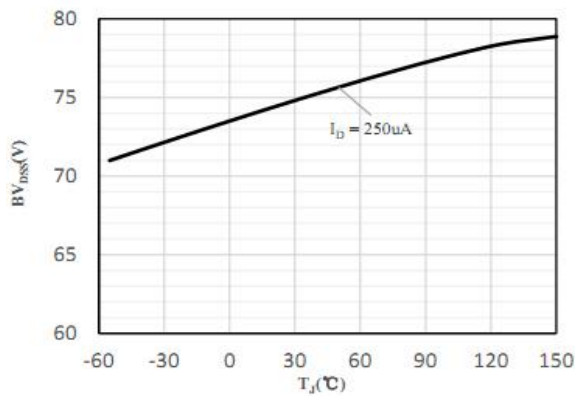
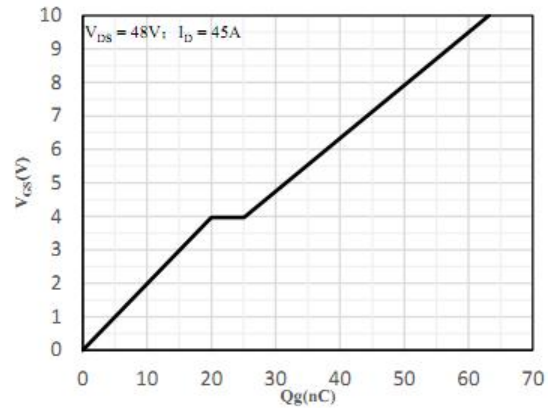
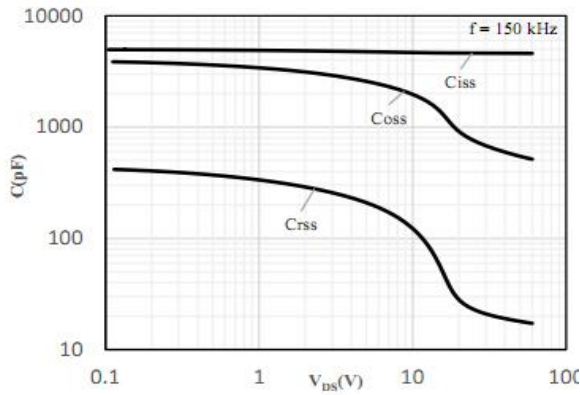
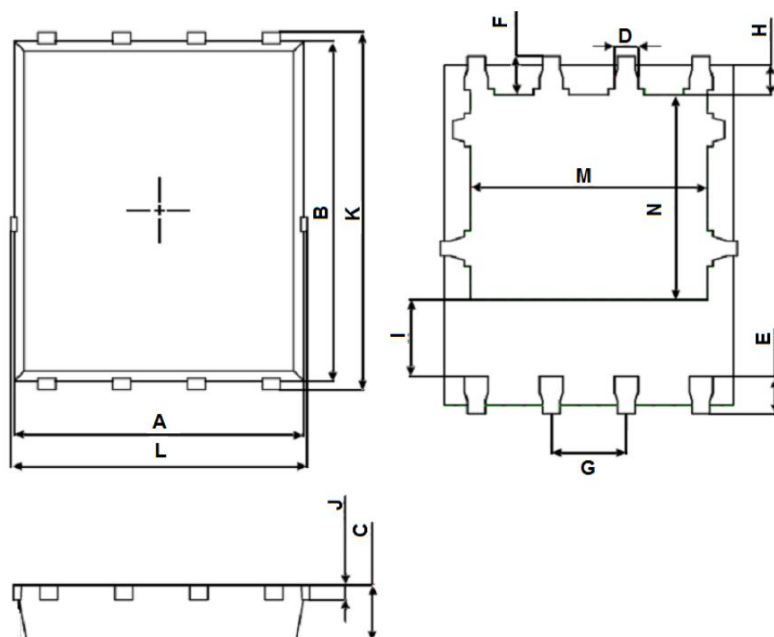


Fig 6 Transfer Characteristics

## Typical Characteristics



## PDFN5\*6-8L Package Information



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 4.824                     | 4.976 | 0.190                | 0.196 |
| B      | 5.674                     | 5.826 | 0.223                | 0.229 |
| C      | 0.900                     | 1.000 | 0.035                | 0.039 |
| D      | 0.350                     | 0.450 | 0.014                | 0.018 |
| E      | 0.559                     | 0.711 | 0.022                | 0.028 |
| F      | 0.574                     | 0.726 | 0.023                | 0.029 |
| G      | 1.250                     | 1.290 | 0.049                | 0.051 |
| H      | 0.424                     | 0.576 | 0.017                | 0.023 |
| I      | 1.190                     | 1.390 | 0.047                | 0.055 |
| J      | 0.154                     | 0.354 | 0.006                | 0.014 |
| K      | 5.974                     | 6.126 | 0.235                | 0.241 |
| L      | 4.944                     | 5.096 | 0.195                | 0.201 |
| M      | 3.910                     | 4.110 | 0.154                | 0.162 |
| N      | 3.375                     | 3.575 | 0.133                | 0.141 |