

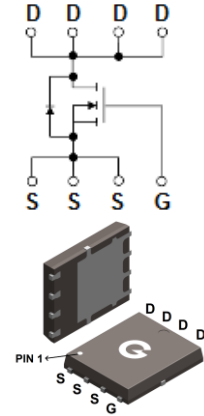
### Features

- Advanced shielded-gate trench technology
- High speed switching
- Low on-resistance
- HBM: JESD22-A114-B: 1B
- RoHS compliant with Halogen-free

HF

### Mechanical Data

- Case: PDFN5×6-8L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



PDFN5×6-8L

### Ordering Information

| Part Number     | Package    | Shipping Quantity      | Marking Code |
|-----------------|------------|------------------------|--------------|
| BL200N15TH-5DL8 | PDFN5×6-8L | 5000 pcs / Tape & Reel | 200N15TH     |

### Maximum Ratings (@ T<sub>C</sub> = 25°C unless otherwise specified)

| Parameter                                                           | Symbol           | Value      | Unit |
|---------------------------------------------------------------------|------------------|------------|------|
| Drain-to-Source Voltage                                             | V <sub>DSS</sub> | 150        | V    |
| Gate-to-Source Voltage                                              | V <sub>GSS</sub> | ±20        | V    |
| Continuous Drain Current (T <sub>C</sub> = 25°C)                    | I <sub>D</sub>   | 50         | A    |
| Continuous Drain Current (T <sub>C</sub> = 100°C)                   |                  | 32         |      |
| Continuous Drain Current (T <sub>A</sub> = 25°C) *1                 |                  | 8.6        |      |
| Continuous Drain Current (T <sub>A</sub> = 100°C) *1                |                  | 5.4        |      |
| Pulsed Drain Current (t <sub>p</sub> = 10μs, T <sub>C</sub> = 25°C) | I <sub>DM</sub>  | 200        | A    |
| Single Pulse Avalanche Energy (L = 0.5mH) *3                        | E <sub>AS</sub>  | 80         | mJ   |
| Power Dissipation (T <sub>C</sub> = 25°C)                           | P <sub>D</sub>   | 113        | W    |
| Power Dissipation (T <sub>A</sub> = 25°C) *1                        |                  | 3.1        |      |
| Operating Junction Temperature Range                                | T <sub>J</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range                                           | T <sub>STG</sub> | -55 ~ +150 | °C   |

### Thermal Characteristics

| Parameter                             | Symbol           | Min. | Typ. | Max. | Unit |
|---------------------------------------|------------------|------|------|------|------|
| Thermal Resistance Junction-to-Case   | R <sub>θJC</sub> | -    | 0.7  | 1.1  | °C/W |
| Thermal Resistance Junction-to-Air *1 | R <sub>θJA</sub> | -    | 33   | 40   | °C/W |

### Electrical Characteristics (@ $T_J = 25^\circ\text{C}$ unless otherwise specified)

| Symbol                             | Parameter                       | Test Condition                                                                                 | Min. | Typ. | Max. | Unit |
|------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------|------|------|------|------|
| Static Characteristics             |                                 |                                                                                                |      |      |      |      |
| V <sub>DSS</sub>                   | Drain-Source Breakdown Voltage  | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                                   | 150  | -    | -    | V    |
| I <sub>DSS</sub>                   | Zero Gate Voltage Drain Current | V <sub>DS</sub> = 150V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C                            | -    | -    | 1    | μA   |
|                                    |                                 | V <sub>DS</sub> = 150V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 100°C                           | -    | -    | 100  |      |
| I <sub>GSS</sub>                   | Gate-Body Leakage Current       | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V                                                   | -    | -    | ±100 | nA   |
| On Characteristics                 |                                 |                                                                                                |      |      |      |      |
| R <sub>DS(ON)</sub>                | Drain-Source On-resistance *2   | V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A                                                    | -    | 16   | 20   | mΩ   |
| V <sub>GS(th)</sub>                | Gate Threshold Voltage          | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                     | 2    | 3.1  | 4    | V    |
| R <sub>G</sub>                     | Gate Resistance                 | V <sub>GS</sub> = 0V, f = 1MHz                                                                 | -    | 2.3  | -    | Ω    |
| g <sub>fs</sub>                    | Transconductance                | V <sub>DS</sub> = 5V, I <sub>D</sub> = 20A                                                     | -    | 103  | -    | S    |
| Dynamic Characteristics            |                                 |                                                                                                |      |      |      |      |
| C <sub>ISS</sub>                   | Input Capacitance               | V <sub>GS</sub> = 0V<br>V <sub>DS</sub> = 75V<br>f = 100kHz                                    | -    | 2020 | -    | pF   |
| C <sub>OSS</sub>                   | Output Capacitance              |                                                                                                | -    | 146  | -    |      |
| C <sub>RSS</sub>                   | Reverse Transfer Capacitance    |                                                                                                | -    | 8    | -    |      |
| Switching Characteristics          |                                 |                                                                                                |      |      |      |      |
| t <sub>d(ON)</sub>                 | Turn-on Delay Time *4           | V <sub>DD</sub> = 75V<br>V <sub>GS</sub> = 10V<br>R <sub>G</sub> = 10Ω<br>I <sub>D</sub> = 20A | -    | 9    | -    | ns   |
| t <sub>r</sub>                     | Turn-on Rise Time *4            |                                                                                                | -    | 8    | -    |      |
| t <sub>d(OFF)</sub>                | Turn-Off Delay Time *4          |                                                                                                | -    | 15   | -    |      |
| t <sub>f</sub>                     | Turn-Off Fall Time *4           |                                                                                                | -    | 9    | -    |      |
| Q <sub>G</sub>                     | Total Gate-Charge               | V <sub>DD</sub> = 75V<br>V <sub>GS</sub> = 10V<br>I <sub>D</sub> = 20A                         | -    | 27   | -    | nC   |
| Q <sub>GS</sub>                    | Gate to Source Charge           |                                                                                                | -    | 9    | -    |      |
| Q <sub>GD</sub>                    | Gate to Drain (Miller) Charge   |                                                                                                | -    | 7    | -    |      |
| Source-Drain Diode Characteristics |                                 |                                                                                                |      |      |      |      |
| V <sub>SD</sub>                    | Diode Forward Voltage *2        | I <sub>SD</sub> = 20A, V <sub>GS</sub> = 0V                                                    | -    | 0.84 | 1.2  | V    |
| t <sub>rr</sub>                    | Reverse Recovery Time           | I <sub>F</sub> = 20A, V <sub>GS</sub> = 0V<br>dI <sub>F</sub> /dI <sub>t</sub> = 100A/us       | -    | 60   | -    | ns   |
| Q <sub>rr</sub>                    | Reverse Recovery Charge         |                                                                                                | -    | 120  | -    | nC   |

Notes:

- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper
- The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- The  $E_{AS}$  data shows Max. rating. The test condition is  $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH$
- Guaranteed by design, not subject to production

**Ratings and Characteristics Curves** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

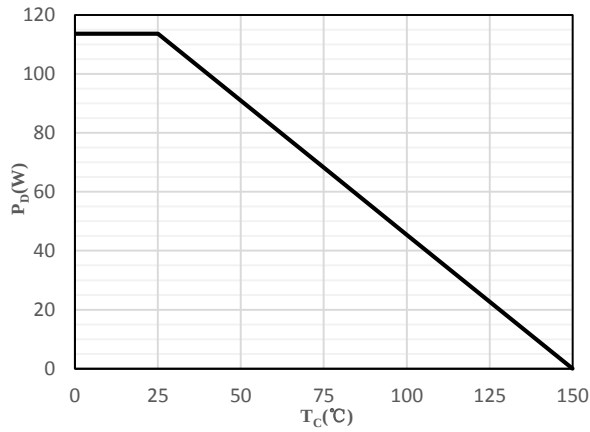


**Fig 1 Power Dissipation**

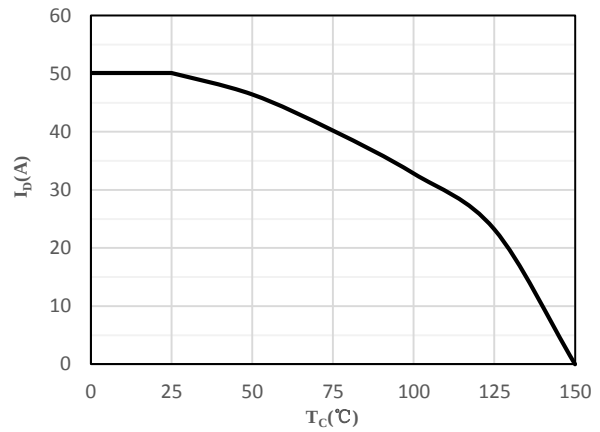


**Fig 2 Drain Current**

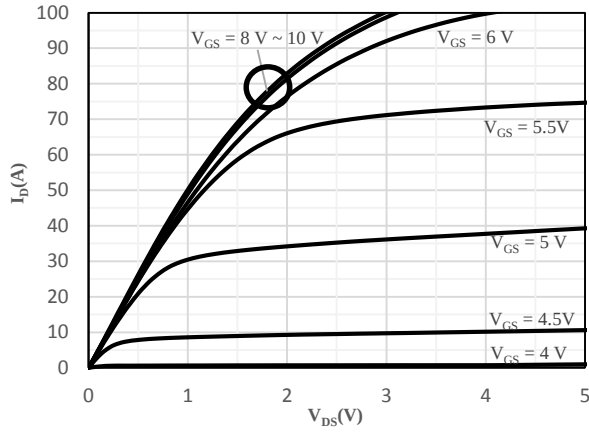


**Fig 3 Typical Output Characteristics**

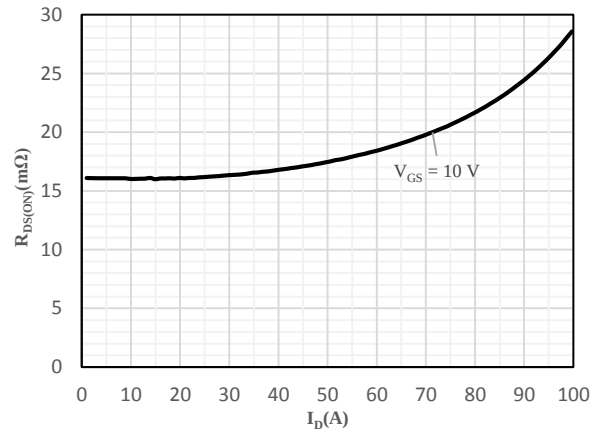


**Fig 4 On-Resistance vs. Drain Current  
and Gate Voltage**

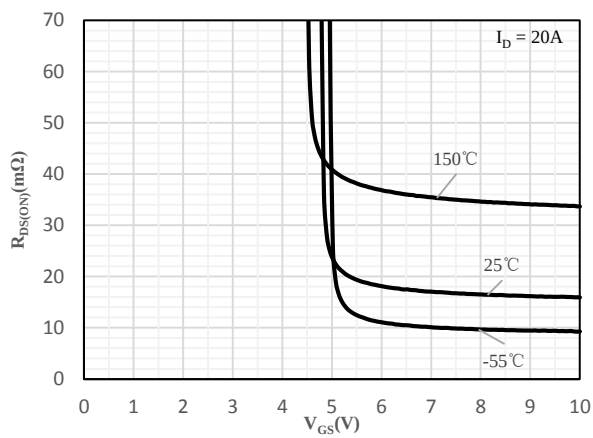


**Fig 5 On-Resistance vs. Gate-Source Voltage**

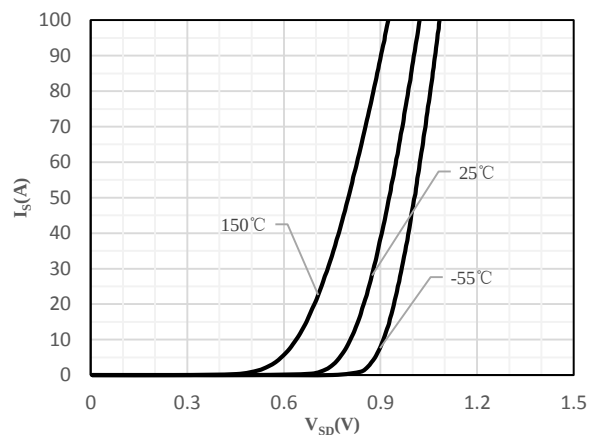


**Fig 6 Body-Diode Characteristics**

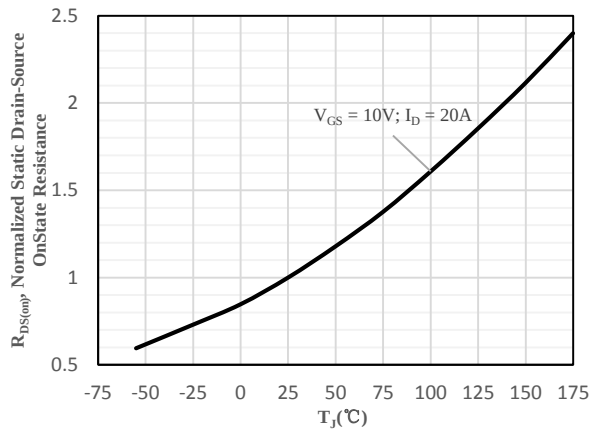


Fig 7 Normalized On-Resistance vs. Junction Temperature

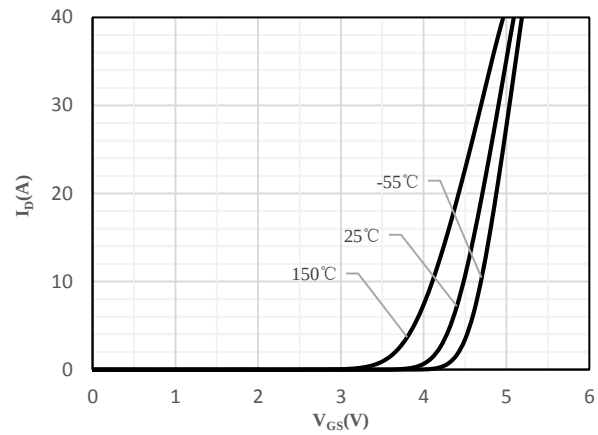


Fig 8 Transfer Characteristics

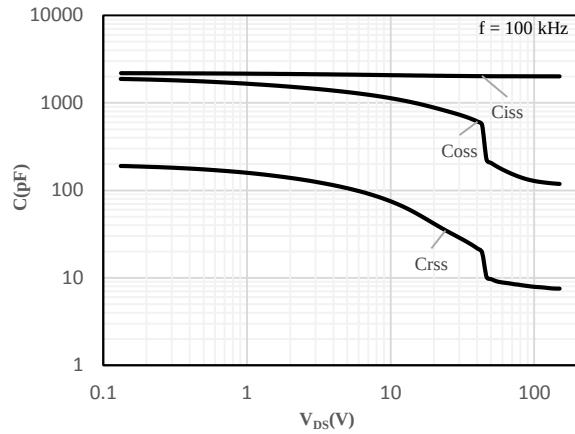


Fig 9 Capacitance Characteristics

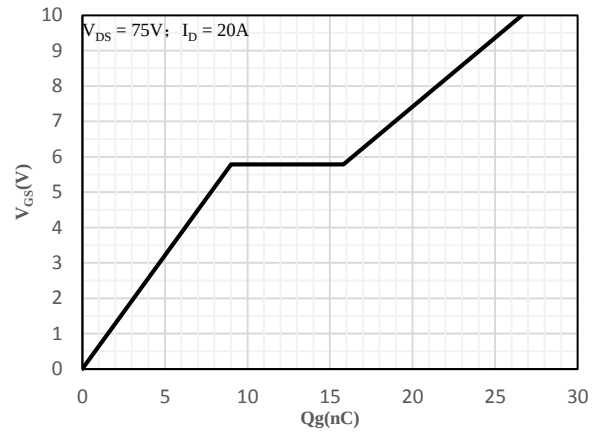


Fig 10 Gate-Charge Characteristics

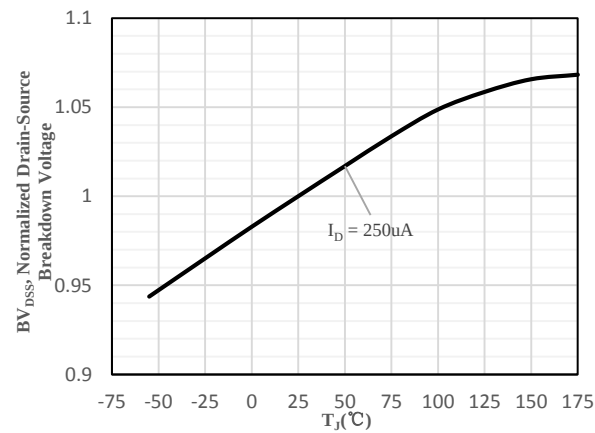


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

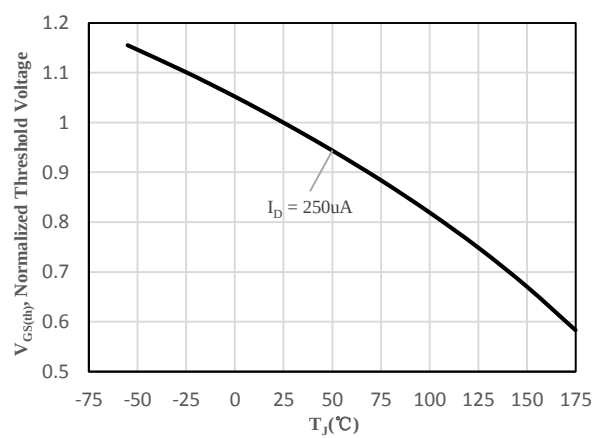
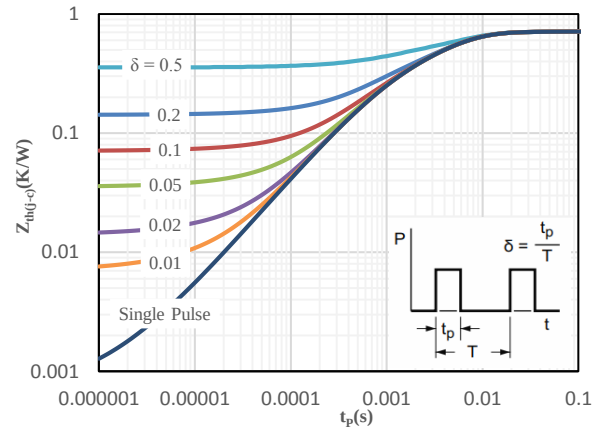
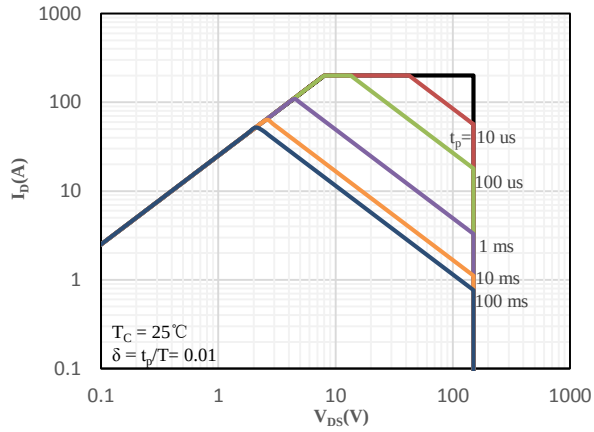
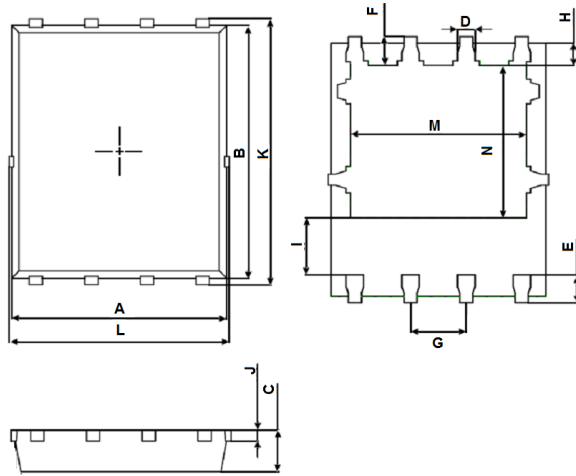


Fig 12 Normalized  $V_{GS(th)}$  vs. Junction Temperature



**Package Outline Dimensions** (Unit: mm)



| PDFN5x6-8L |       |       |
|------------|-------|-------|
| Dimension  | Min.  | Max.  |
| A          | 4.824 | 4.976 |
| B          | 5.674 | 5.826 |
| C          | 0.900 | 1.000 |
| D          | 0.350 | 0.450 |
| E          | 0.559 | 0.711 |
| F          | 0.574 | 0.726 |
| G          | 1.250 | 1.290 |
| H          | 0.424 | 0.576 |
| I          | 1.190 | 1.390 |
| J          | 0.154 | 0.354 |
| K          | 5.974 | 6.126 |
| L          | 4.944 | 5.096 |
| M          | 3.910 | 4.110 |
| N          | 3.375 | 3.575 |

**Mounting Pad Layout** (Unit: mm)

**PDFN5x6-8L**

