

### Product Summary

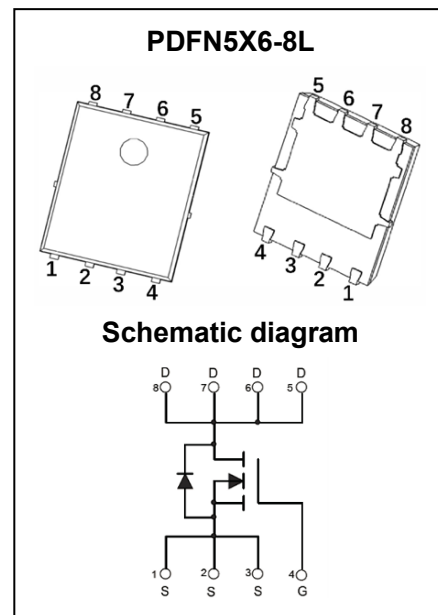
| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| 100V          | 21mΩ@10V        | 30A   |
|               | 27mΩ@4.5V       |       |

### Feature

- Split Gate Trench Technology
- Low  $R_{DS(on)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

### Application

- Power Management
- Motor Driving
- High frequency switching, synchronous rectification



### Package Marking and Ordering Information

| Part Number  | Package    | Marking  | Packing     | Reel Size | Tape Width | Qty     |
|--------------|------------|----------|-------------|-----------|------------|---------|
| GPT200N10LNC | PDFN5X6-8L | T200N10L | Reel & Tape | 330mm     | 12mm       | 5000pcs |

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Parameter                                                |                           | Symbol          | Value     | Unit               |
|----------------------------------------------------------|---------------------------|-----------------|-----------|--------------------|
| Drain-Source Voltage                                     |                           | $V_{DS}$        | 100       | V                  |
| Gate-Source Voltage                                      |                           | $V_{GS}$        | $\pm 20$  | V                  |
| Continuous Drain Current <sup>1</sup>                    | $T_C = 25^\circ\text{C}$  | $I_D$           | 30        | A                  |
|                                                          | $T_C = 100^\circ\text{C}$ |                 | 19        |                    |
| Pulsed Drain Current <sup>2</sup>                        |                           | $I_{DM}$        | 120       | A                  |
| Single Pulsed Avalanche Current <sup>3</sup>             |                           | $I_{AS}$        | 15        | A                  |
| Single Pulsed Avalanche Energy <sup>3</sup>              |                           | $E_{AS}$        | 56        | mJ                 |
| Power Dissipation <sup>5</sup>                           |                           | $P_D$           | 50        | W                  |
| $T_C = 25^\circ\text{C}$                                 |                           |                 |           |                    |
| Thermal Resistance from Junction to Ambient <sup>6</sup> |                           | $R_{\theta JA}$ | 50        | $^\circ\text{C/W}$ |
| Thermal Resistance from Junction to Case                 |                           | $R_{\theta JC}$ | 2.5       | $^\circ\text{C/W}$ |
| Junction Temperature                                     |                           | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      |                           | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |

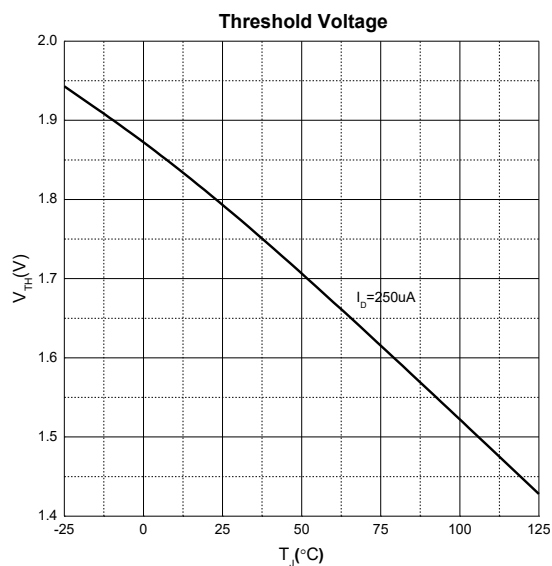
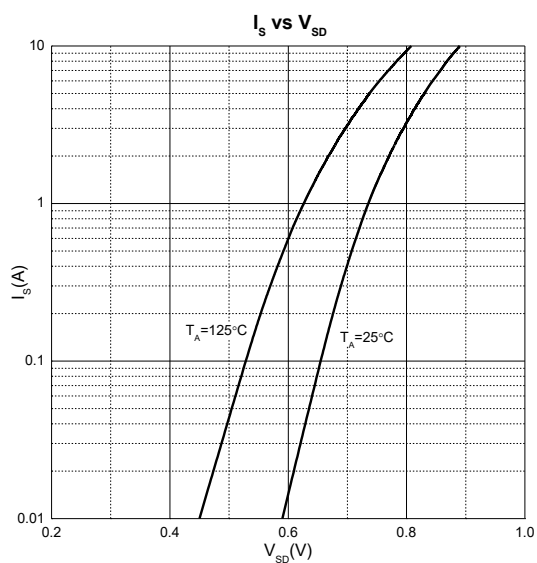
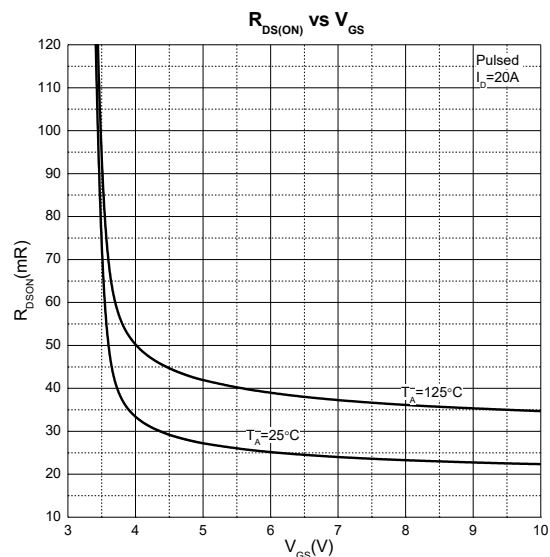
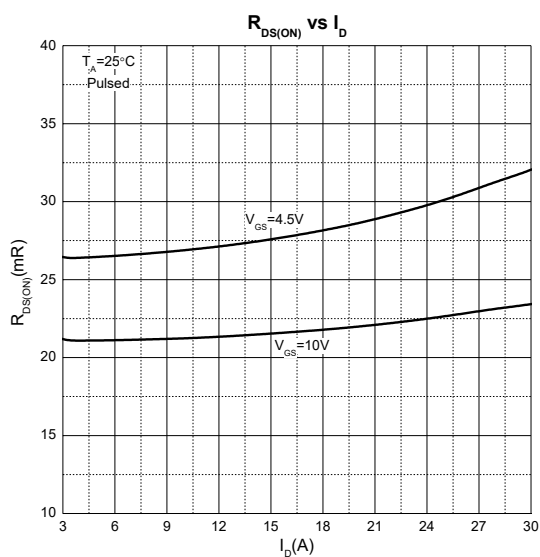
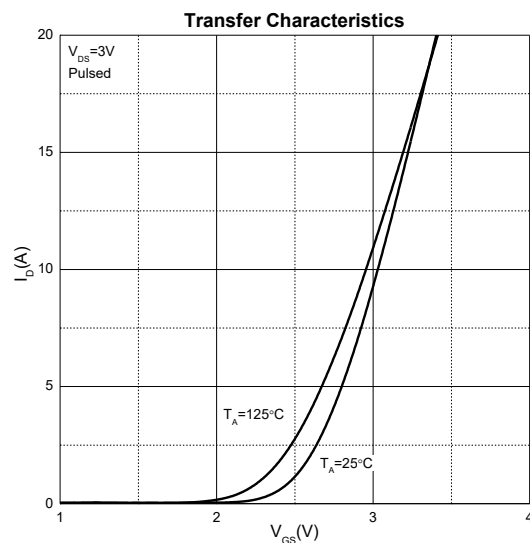
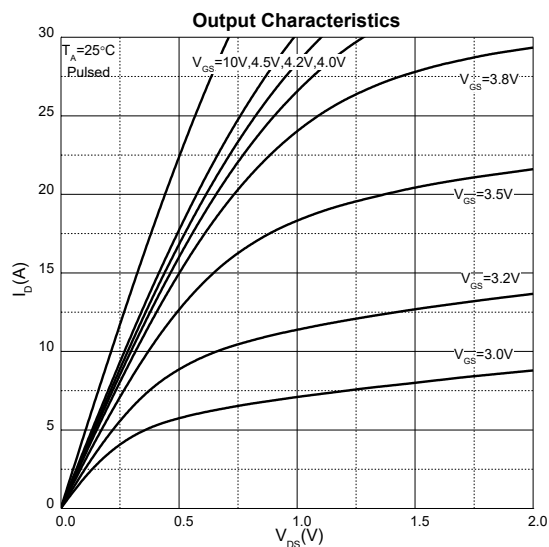
## MOSFET ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

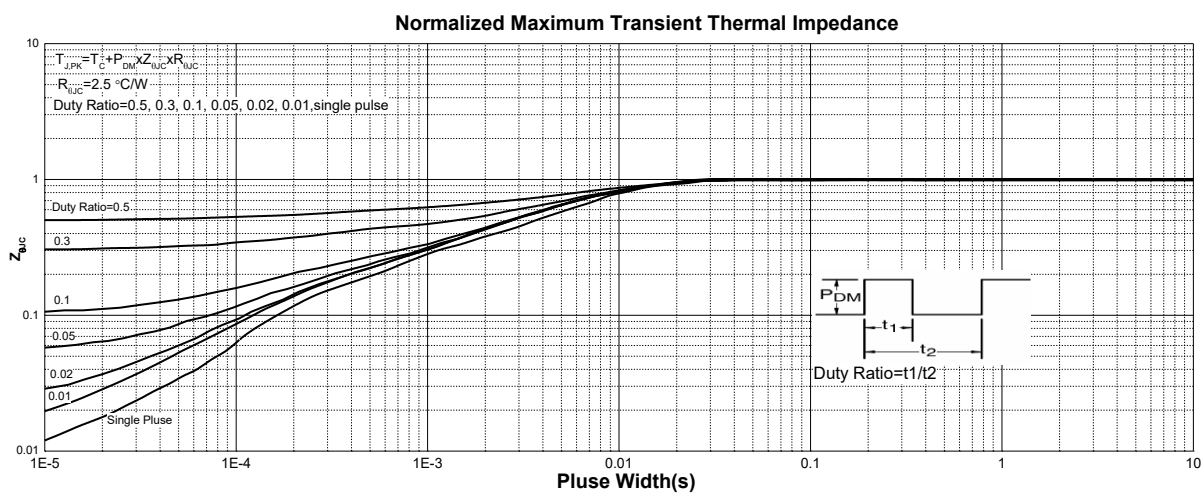
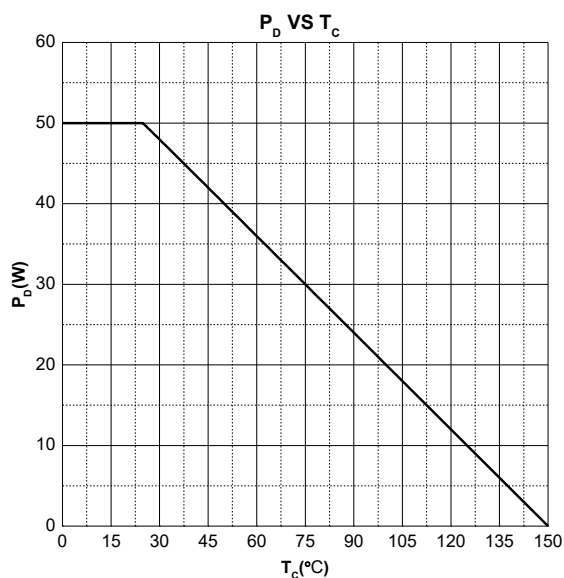
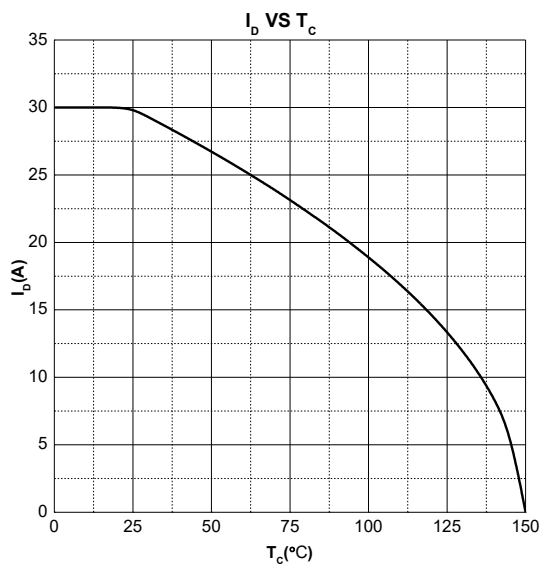
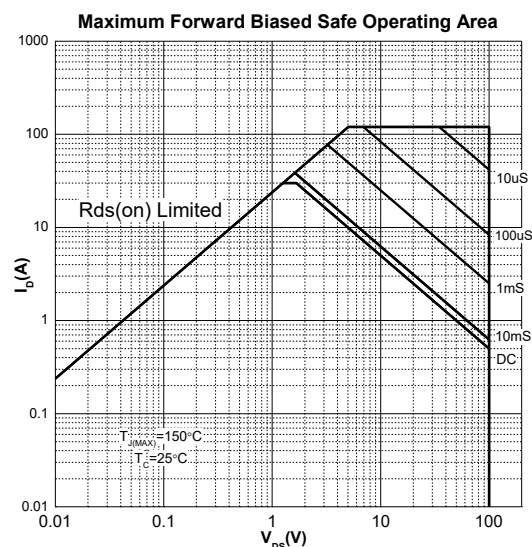
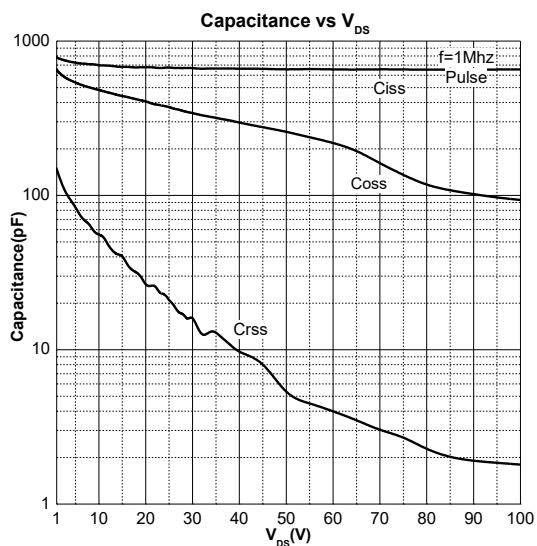
| Parameter                                     | Symbol               | Test Condition                                                                             | Min | Type | Max  | Unit |
|-----------------------------------------------|----------------------|--------------------------------------------------------------------------------------------|-----|------|------|------|
| Off Characteristics                           |                      |                                                                                            |     |      |      |      |
| Drain-Source Breakdown Voltage                | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                               | 100 |      |      | V    |
| Zero Gate Voltage Drain Current               | I <sub>DSS</sub>     | V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V                                               |     |      | 1    | μA   |
| Gate-Body Leakage Current                     | I <sub>GSS</sub>     | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V                                               |     |      | ±100 | nA   |
| On Characteristics <sup>4</sup>               |                      |                                                                                            |     |      |      |      |
| Gate Threshold Voltage                        | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA                                 | 1.2 | 1.8  | 2.5  | V    |
| Drain-Source On-Resistance                    | R <sub>DS(on)</sub>  | V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A                                                |     | 21   | 28   | mΩ   |
|                                               |                      | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 15A                                               |     | 27   | 36   | mΩ   |
| Dynamic Characteristics                       |                      |                                                                                            |     |      |      |      |
| Input Capacitance                             | C <sub>iss</sub>     | V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0V, f = 1MHz                                      |     | 646  |      | pF   |
| Output Capacitance                            | C <sub>oss</sub>     |                                                                                            |     | 259  |      |      |
| Reverse Transfer Capacitance                  | C <sub>rss</sub>     |                                                                                            |     | 4.9  |      |      |
| Gate Resistance                               | R <sub>g</sub>       | V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz                                       |     | 2.0  |      | Ω    |
| Switching Characteristics                     |                      |                                                                                            |     |      |      |      |
| Total Gate Charge                             | Q <sub>g</sub>       | V <sub>DS</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A                         |     | 12   |      | nC   |
| Gate-Source Charge                            | Q <sub>gs</sub>      |                                                                                            |     | 2.2  |      |      |
| Gate-Drain Charge                             | Q <sub>gd</sub>      |                                                                                            |     | 2.7  |      |      |
| Gate Plateau Voltage                          | V <sub>plateau</sub> |                                                                                            |     | 3.4  |      | V    |
| Turn-On Delay Time                            | t <sub>d(on)</sub>   | V <sub>DD</sub> = 50V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A,<br>R <sub>G</sub> = 3Ω |     | 3.5  |      | ns   |
| Turn-On Rise Time                             | t <sub>r</sub>       |                                                                                            |     | 2.8  |      |      |
| Turn-Off Delay Time                           | t <sub>d(off)</sub>  |                                                                                            |     | 12   |      |      |
| Turn-Off Fall Time                            | t <sub>f</sub>       |                                                                                            |     | 4.0  |      |      |
| Source-Drain Diode Characteristics            |                      |                                                                                            |     |      |      |      |
| Diode Forward Voltage <sup>4</sup>            | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A                                                 |     |      | 1.2  | V    |
| Diode Continuous Forward Current <sup>1</sup> | I <sub>S</sub>       | T <sub>C</sub> = 25℃                                                                       |     |      | 30   | A    |
| Diode Pulse Forward Current <sup>2</sup>      | I <sub>SM</sub>      | T <sub>C</sub> = 25℃                                                                       |     |      | 120  | A    |
| Diode Reverse Recovery Time                   | t <sub>rr</sub>      | I <sub>F</sub> = 20A, dI/dt = 100A/μs                                                      |     | 35   |      | ns   |
| Diode Reverse Recovery Charge                 | Q <sub>rr</sub>      | I <sub>F</sub> = 20A, dI/dt = 100A/μs                                                      |     | 40   |      | nC   |

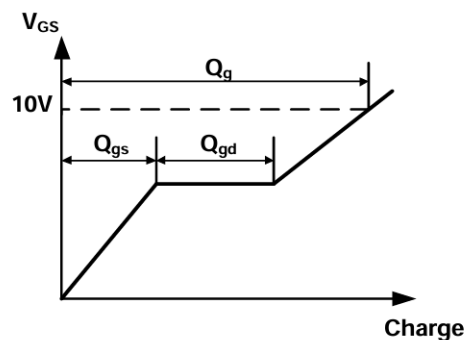
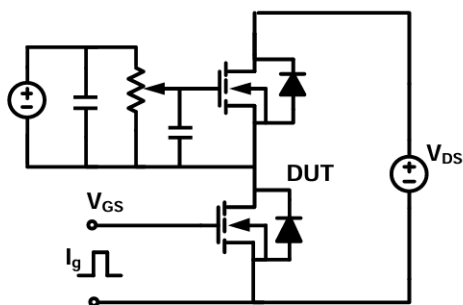
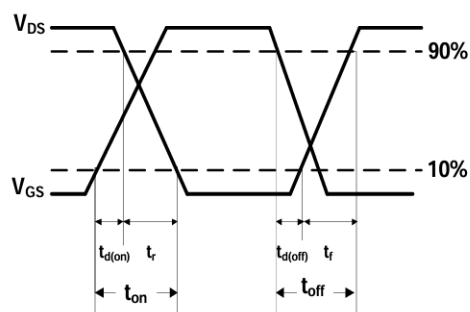
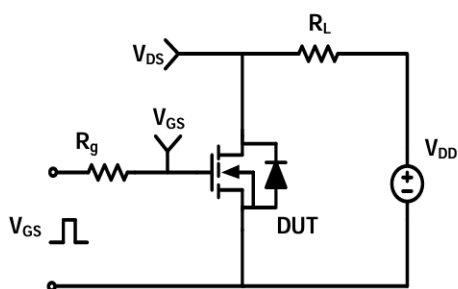
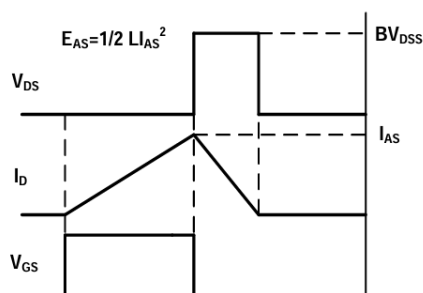
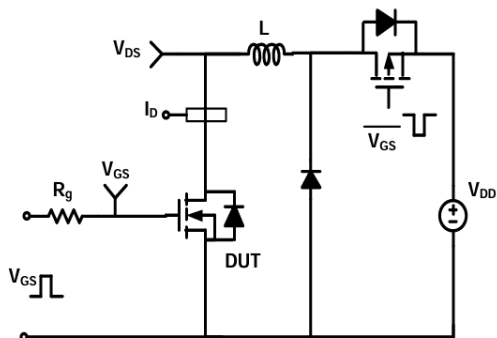
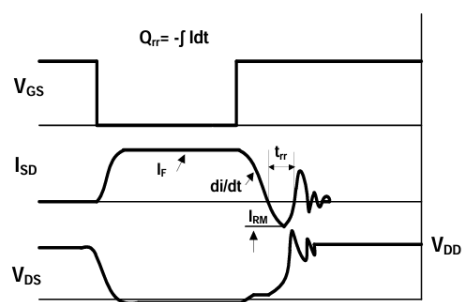
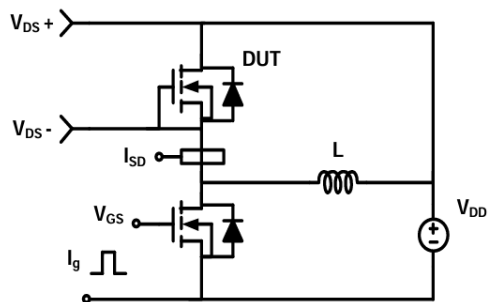
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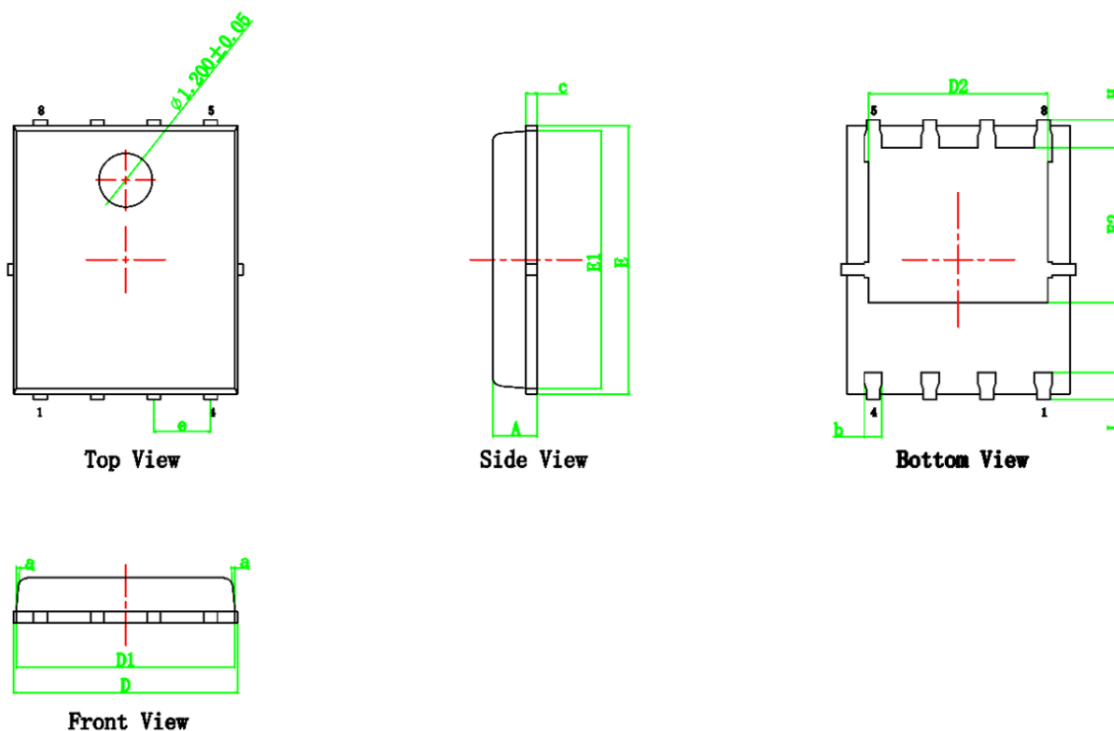
- 1.The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2.Pulse Test: Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: V<sub>DD</sub> = 50V, V<sub>GS</sub> = 10V, L = 0.5mH, R<sub>G</sub> = 25Ω Starting T<sub>J</sub> = 25°C.
- 4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P<sub>D</sub> is limited by T<sub>J(MAX)</sub> = 150°C. And device mounted on a large heatsink.
- 6.Device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> = 25°C.

## Typical Characteristics





**Test Circuit**
**Gate Charge Test Circuit & Waveform**

**Resistive Switching Test Circuit & Waveform**

**Unclamped Inductive Switching (UIS) Test Circuit & Waveform**

**Diode Recovery Test Circuit & Waveform**


**PDFN5X6-8L Package Information**


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.200 | 0.035                | 0.047 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.190                     | 0.300 | 0.007                | 0.012 |
| D      | 4.800                     | 5.220 | 0.189                | 0.210 |
| D2     | 3.900                     | 4.300 | 0.154                | 0.170 |
| E      | 5.900                     | 6.100 | 0.232                | 0.240 |
| E1     | 5.700                     | 5.800 | 0.224                | 0.228 |
| E2     | 3.350                     | 3.750 | 0.132                | 0.148 |
| e      | 1.270REF                  |       | 0.050REF             |       |
| H      | 0.350                     | 0.720 | 0.014                | 0.028 |
| D1     | 4.800                     | 5.000 | 0.189                | 0.197 |
| L      | 0.350                     | 0.750 | 0.014                | 0.030 |
| a      | 0°                        | 12°   | 0°                   | 12°   |

**Attention:**

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