

### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---------------|-----------------|-------|
| -60V          | 110mΩ@-10V      | -2.6A |
|               | 150mΩ@-4.5V     |       |

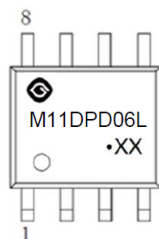
### Feature

- Trench Technology Power MOSFET
- Low  $R_{DS(ON)}$
- Low Gate Charge

### Application

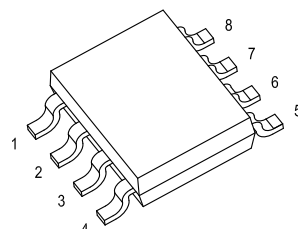
- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

### MARKING:

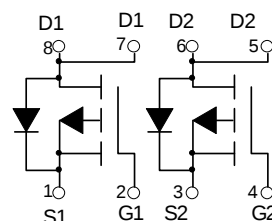


M11DPD06L = Device Code  
 XX = Data Code  
 Solid Dot = Green Device Indicator

SOP8



Schematic diagram



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

| Parameter                                                |                           | Symbol          | Value     | Unit               |
|----------------------------------------------------------|---------------------------|-----------------|-----------|--------------------|
| Drain-Source Voltage                                     |                           | $V_{DS}$        | -60       | V                  |
| Gate-Source Voltage                                      |                           | $V_{GS}$        | $\pm 20$  | V                  |
| Continuous Drain Current <sup>1,5</sup>                  | $T_A = 25^\circ\text{C}$  | $I_D$           | -2.6      | A                  |
|                                                          | $T_A = 100^\circ\text{C}$ |                 | -1.7      |                    |
| Pulsed Drain Current <sup>2</sup>                        |                           | $I_{DM}$        | -10       | A                  |
| Power Dissipation <sup>4,5</sup>                         |                           | $P_D$           | 1.34      | W                  |
| $T_A = 25^\circ\text{C}$                                 |                           |                 |           |                    |
| Thermal Resistance from Junction to Ambient <sup>5</sup> |                           | $R_{\theta JA}$ | 93        | $^\circ\text{C/W}$ |
| Junction Temperature                                     |                           | $T_J$           | 150       | $^\circ\text{C}$   |
| Storage Temperature                                      |                           | $T_{STG}$       | -55~ +150 | $^\circ\text{C}$   |

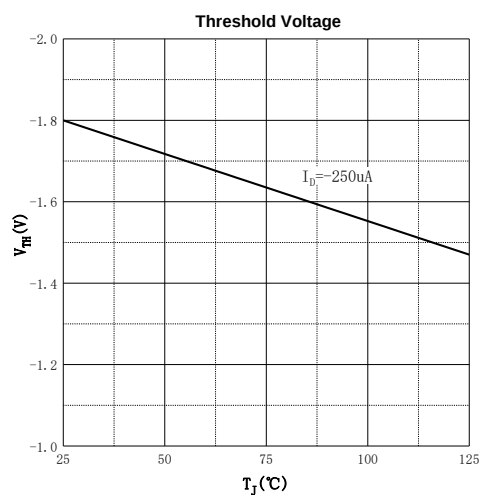
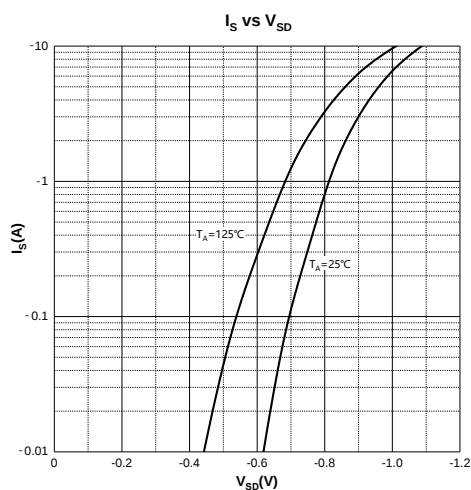
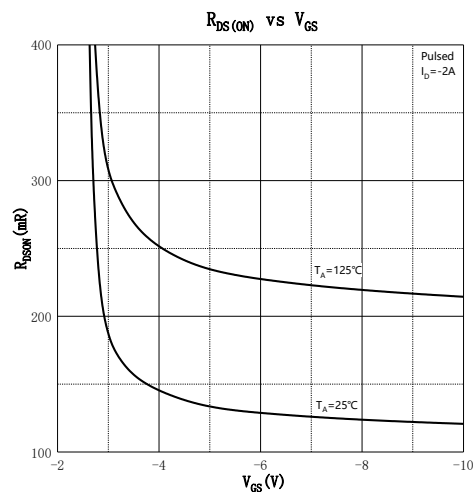
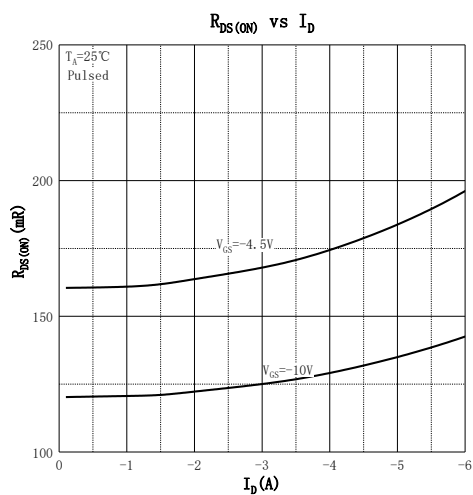
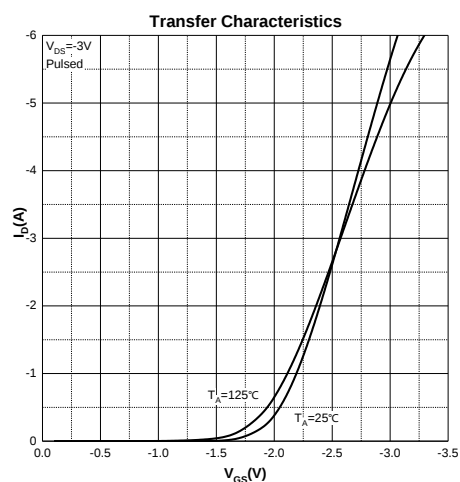
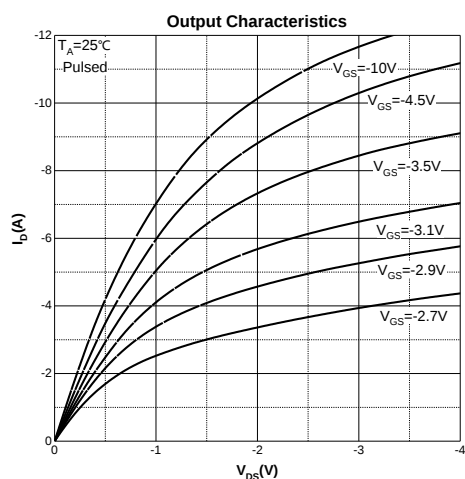
**MOSFET ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)**

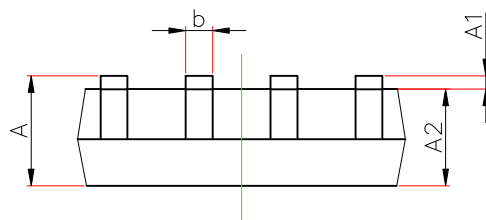
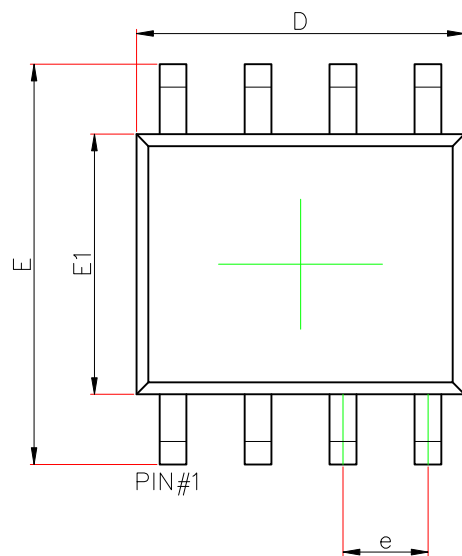
| Parameter                              | Symbol               | Test Condition                                                                               | Min | Type | Max  | Unit |
|----------------------------------------|----------------------|----------------------------------------------------------------------------------------------|-----|------|------|------|
| Off Characteristics                    |                      |                                                                                              |     |      |      |      |
| Drain-Source Breakdown Voltage         | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA                                                | -60 |      |      | V    |
| Zero Gate Voltage Drain Current        | I <sub>DSS</sub>     | V <sub>DS</sub> = -60V, 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>3</sup>        |                      |                                                                                              |     |      |      |      |
| Gate Threshold Voltage                 | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                  | -1  | -2   | -3   | V    |
| Drain-Source On-Resistance             | R <sub>DS(on)</sub>  | V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.5A                                               |     | 110  | 160  | mΩ   |
|                                        |                      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -1.0A                                              |     | 160  | 220  |      |
| Dynamic Characteristics <sup>4</sup>   |                      |                                                                                              |     |      |      |      |
| Input Capacitance                      | C <sub>iss</sub>     | V <sub>DS</sub> = -30V, V <sub>GS</sub> = 0V, f = 1MHz                                       |     | 455  |      | pF   |
| Output Capacitance                     | C <sub>oss</sub>     |                                                                                              |     | 38   |      |      |
| Reverse Transfer Capacitance           | C <sub>rss</sub>     |                                                                                              |     | 30   |      |      |
| Gate Resistance                        | R <sub>g</sub>       | f = 1MHz                                                                                     |     | 4.6  |      | Ω    |
| Switching Characteristics <sup>4</sup> |                      |                                                                                              |     |      |      |      |
| Total Gate Charge                      | Q <sub>g</sub>       | V <sub>DS</sub> = -30V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -1.5A                       |     | 10   |      | nC   |
| Gate-Source Charge                     | Q <sub>gs</sub>      |                                                                                              |     | 1.5  |      |      |
| Gate-Drain Charge                      | Q <sub>gd</sub>      |                                                                                              |     | 2.7  |      |      |
| Turn-On Delay Time                     | t <sub>d(on)</sub>   | V <sub>DD</sub> = -30V, V <sub>GS</sub> = -10V, R <sub>L</sub> = 15Ω,<br>R <sub>G</sub> = 3Ω |     | 7    |      | ns   |
| Turn-On Rise Time                      | t <sub>r</sub>       |                                                                                              |     | 6    |      |      |
| Turn-Off Delay Time                    | t <sub>d(off)</sub>  |                                                                                              |     | 12   |      |      |
| Turn-Off Fall Time                     | t <sub>f</sub>       |                                                                                              |     | 7    |      |      |
| Source-Drain Diode Characteristics     |                      |                                                                                              |     |      |      |      |
| Diode Forward Voltage <sup>3</sup>     | V <sub>SD</sub>      | V <sub>GS</sub> = 0V, I <sub>S</sub> = -2A                                                   |     |      | -1.2 | V    |

Notes :

- 1.The maximum current rating is limited by package.
- 2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.Pulse Test : Pulse Width ≤ 600μs, duty cycle ≤ 2%.
- 4.The power dissipation P<sub>D</sub> is limited by T<sub>J(MAX)</sub> = 150°C.
- 5.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



**SOP8 Package Information**


| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550 | 0.053                | 0.061 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.156                     | 0.250 | 0.006                | 0.010 |
| D      | 4.700                     | 5.100 | 0.185                | 0.201 |
| e      | 1.270(BSC)                |       | 0.050(BSC)           |       |
| E      | 5.800                     | 6.200 | 0.228                | 0.244 |
| E1     | 3.700                     | 4.100 | 0.146                | 0.161 |
| L      | 0.400                     | 1.270 | 0.016                | 0.05  |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

**Attention:**

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
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