

## 600V Super-Junction Power MOSFET

### ◆ Features:

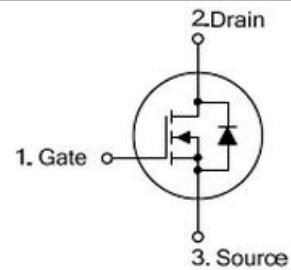
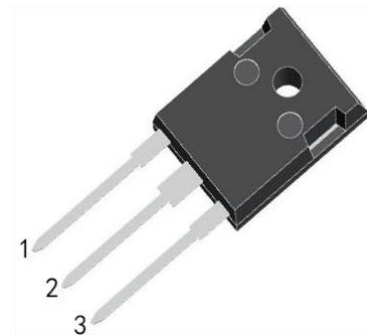
- ✧ Very Low FOM  $R_{DS(on)}$   
低内阻
- ✧ %100 avalanche tested  
%100 雪崩能量测试
- ✧ RoHS compliant  
RoHS 认证
- ✧ Improved  $dv/dt$  capability, high ruggedness  
提高  $dv/dt$  能力, 高耐用性

### ◆ Applications

- ✧ High efficiency switch mode power supplies  
高效率开关电源
- ✧ Power factor correction  
功率因数校正
- ✧ Electronic lamp ballast  
电子整流器

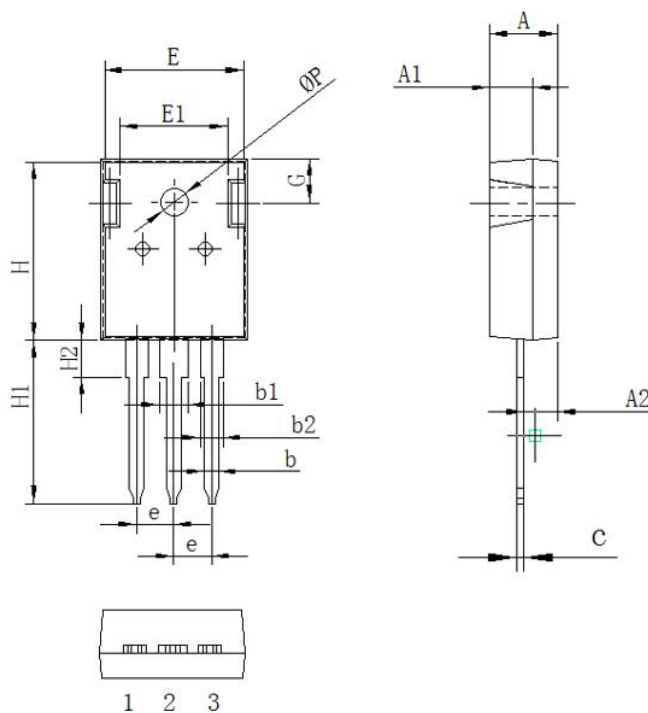


### TO-247H



### 外形名称: TO-247H

### 基本尺寸



| Symbol | 单位 mm |      |      |
|--------|-------|------|------|
|        | Min   | Nom  | Max  |
| A      | 4.8   | 5.00 | 5.20 |
| A1     | 3.3   | 3.5  | 3.7  |
| A2     | 2.20  | 2.40 | 2.60 |
| b      | 1.00  | 1.2  | 1.40 |
| b1     | 2.90  | 3.10 | 3.30 |
| b2     | 1.90  | 2.10 | 2.30 |
| c      | 0.50  | 0.60 | 0.70 |
| e      | 5.25  | 5.45 | 5.65 |
| E      | 15.2  | 15.7 | 16.2 |
| E1     | 10.2  | 10.7 | 11.2 |
| H      | 20.8  | 21   | 21.2 |
| H1     | 19.5  | 20.0 | 20.5 |
| H2     | 4.00  | 4.20 | 4.40 |
| G      | 5.60  | 5.80 | 600  |
| ΦP     | 3.30  | 3.50 | 3.70 |



IPW60R099C7-OSEN

600V Super-Junction Power MOSFET

### ◆ Absolute Maximum Ratings (Tc=25°C)

| Symbol           | Parameters                                       | Ratings | Unit |
|------------------|--------------------------------------------------|---------|------|
| V <sub>DSS</sub> | Drain-Source Voltage<br>漏源电压                     | 600     | V    |
| V <sub>GS</sub>  | Gate-Source Voltage-Continuous<br>栅源电压           | ±30     | V    |
| I <sub>D</sub>   | Drain Current-Continuous (Note 2)<br>漏极持续电流      | 22      | A    |
| I <sub>DM</sub>  | Drain Current-Single Pulsed (Note 1)<br>漏极单次脉冲电流 | 83      | A    |
| P <sub>D</sub>   | Power Dissipation (Note 2)<br>功率损耗               | 110     | W    |
| T <sub>j</sub>   | Max.Operating junction temperature<br>最大结温       | 150     | °C   |

### ◆ Electrical characteristics (Tc=25°C unless otherwise noted)

| Symbol                        | Parameters                                                | Min | Typ   | Max   | Units | Conditions                                                          |
|-------------------------------|-----------------------------------------------------------|-----|-------|-------|-------|---------------------------------------------------------------------|
| <b>Static Characteristics</b> |                                                           |     |       |       |       |                                                                     |
| B <sub>VDSS</sub>             | Drain-Source Breakdown Voltage Current (Note 1)<br>漏极击穿电压 | 600 | --    | --    | V     | I <sub>D</sub> =250μA,<br>V <sub>GS</sub> =0V, T <sub>J</sub> =25°C |
| V <sub>GS(th)</sub>           | Gate Threshold Voltage<br>栅极开启电压                          | 3.0 | --    | 5.0   | V     | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA            |
| R <sub>DS(on)</sub>           | Drain-Source On-Resistance<br>漏源导通电阻                      | --  | 0.085 | 0.099 | Ω     | V <sub>GS</sub> =10V, I <sub>D</sub> =20A                           |
| I <sub>GSS</sub>              | Gate-Body Leakage Current<br>栅极漏电流                        | --  | --    | ±100  | nA    | V <sub>GS</sub> =±30V, V <sub>DS</sub> =0                           |
| I <sub>DSS</sub>              | Zero Gate Voltage Drain Current<br>零栅极电压漏极电流              | --  | --    | 1     | μA    | V <sub>DS</sub> =600V, V <sub>GS</sub> =0                           |
| g <sub>fs</sub>               | Forward Trans conductance<br>正向跨导                         | --  | 21    | --    | S     | V <sub>DS</sub> =10V, I <sub>D</sub> =20A                           |

**IPW60R099C7-OSEN****600V Super-Junction Power MOSFET**

| Switching Characteristics |                                                                 |    |      |      |      |                                                                    |
|---------------------------|-----------------------------------------------------------------|----|------|------|------|--------------------------------------------------------------------|
| T <sub>d (on)</sub>       | Turn-On Delay Time<br>开启延迟时间                                    | -- | 15   | --   | ns   | V <sub>DS</sub> =400V,I <sub>D</sub> =9.7A<br>R <sub>G</sub> =5.3Ω |
| T <sub>r</sub>            | Rise Time<br>上升时间                                               | -- | 9    | --   | ns   |                                                                    |
| T <sub>d (off)</sub>      | Turn-Off Delay Time<br>关闭延迟时间                                   | -- | 60   | --   | ns   |                                                                    |
| T <sub>f</sub>            | Fall Time<br>下降时间                                               | -- | 5    | --   | ns   |                                                                    |
| Q <sub>g</sub>            | Total Gate Charge<br>栅极总电荷                                      | -- | 42   | --   | nC   | V <sub>DS</sub> =400V,V <sub>GS</sub> =10V<br>I <sub>D</sub> =9.7A |
| Q <sub>gs</sub>           | Gate-Source Charge<br>栅源极电荷                                     | -- | 12   | --   | nC   |                                                                    |
| Q <sub>gd</sub>           | Gate-Drain Charge<br>栅漏极电荷                                      | -- | 47   | --   | nC   |                                                                    |
| Dynamic Characteristics   |                                                                 |    |      |      |      |                                                                    |
| C <sub>iss</sub>          | Input Capacitance<br>输入电容                                       | -- | 3900 | --   | pF   | V <sub>DS</sub> =50V, V <sub>GS</sub> =0<br>f=1MHz                 |
| C <sub>oss</sub>          | Output Capacitance<br>输出电容                                      | -- | 63   | --   | pF   |                                                                    |
| C <sub>rss</sub>          | Reverse Transfer Capacitance<br>反向传输电容                          | -- | 77   | --   | pF   |                                                                    |
| I <sub>S</sub>            | Continuous Drain-Source Diode<br>Forward Current<br>二极管导通正向持续电流 | -- | --   | 22   | A    |                                                                    |
| V <sub>SD</sub>           | Diode Forward On-Voltage<br>二极管正向导通电压                           | -- | --   | 1.3  | V    | I <sub>S</sub> =22A, V <sub>GS</sub> =0                            |
| R <sub>th(j-c)</sub>      | Thermal Resistance, Junction to<br>Case<br>结到外壳的热阻              | -- | --   | 1.14 | °C/W |                                                                    |

Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature

Note 2: Pulse test: PW ≤ 300us , duty cycle ≤ 2%.