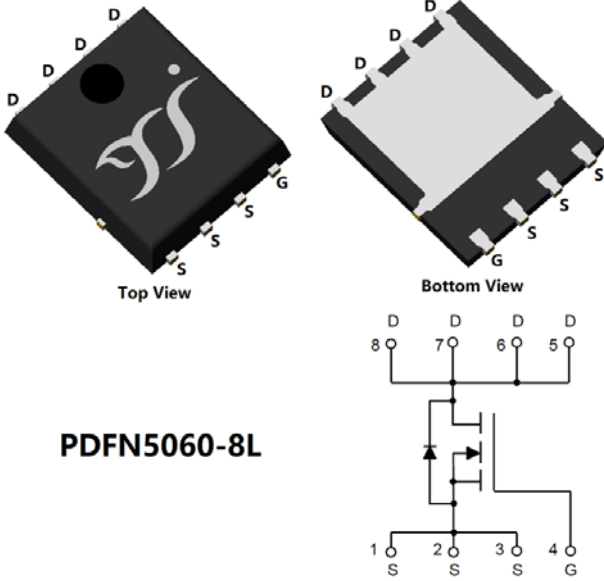


## N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L

### Product Summary

|                                   |      |
|-----------------------------------|------|
| $V_{DS}$                          | 40V  |
| $I_D$                             | 30A  |
| $R_{DS(ON)}$ ( at $V_{GS}=10V$ )  | <16m |
| $R_{DS(ON)}$ ( at $V_{GS}=4.5V$ ) | <20m |
| 100% EAS Tested                   |      |
| 100% $\nabla V_{DS}$ Tested       |      |

### General Description

Excellent package for heat dissipation  
High density cell design for low  $R_{DS(ON)}$   
Moisture Sensitivity Level 3  
Part no. with suffix "Q" means AEC-Q101 qualified

### Applications

Power switching application  
Uninterruptible power supply  
DC-DC convertor  
12V Automotive systems

### Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

| Parameter   |                   | Symbol         | Limit    | Unit         |
|---|-------------------|----------------|----------|--------------|
| Drain-source Voltage                                |                   | $V_{DS}$       | 40       | V            |
| Gate-source Voltage                                 |                   | $V_{GS}$       | $\pm 20$ | V            |
| Drain Current                                       | $T_A=25^\circ C$  | $I_D$          | 8.8      | A            |
|   | $T_A=100^\circ C$ |                | 6        |              |
|   | $T_C=25^\circ C$  |                | 30       |              |
|   | $T_C=100^\circ C$ |                | 21       |              |
| Pulsed Drain Current <sup>A</sup>                   |                   | $I_{DM}$       | 90       | A            |
| Avalanche energy <sup>B</sup>                       |                   | EAS            | 40       | mJ           |
| Total Power Dissipation <sup>C</sup>                | $T_A=25^\circ C$  | $P_D$          | 2.5      | W            |
|   | $T_A=100^\circ C$ |                | 1        |              |
|   | $T_C=25^\circ C$  |                | 35.7     |              |
|   | $T_C=100^\circ C$ |                | 14       |              |
| Thermal Resistance Junction-to-Case                 |                   | $R_{JC}$       | 3.5      | $^\circ C/W$ |
| Thermal Resistance Junction-to-Ambient <sup>D</sup> |                   | $R_{JA}$       | 50       | $^\circ C/W$ |
| Junction and Storage Temperature Range              |                   | $T_J, T_{STG}$ | -55~+150 | $^\circ C$   |

### Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | Marking   | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-----------|----------------------|-------------------------|----------------------------|---------------|
| YJG30N04AQ    | F1           | YJG30N04A | 5000                 | 10000                   | 100000                     | 13" reel      |



# YJG30N04AQ

## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

| Parameter                         | Symbol              | Conditions   | Min | Typ | Max  | Units |
|-----------------------------------|---------------------|--|-----|-----|------|-------|
| <b>Static Parameter</b>           |                     |  |     |     |      |       |
| Drain-Source Breakdown Voltage    | BV <sub>DSS</sub>   | V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA  | 40  |     |      | V     |
| Zero Gate Voltage Drain Current   | I <sub>DSS</sub>    | V <sub>DS</sub> =40V, 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    |
| Gate Threshold Voltage            | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA                          | 1   | 1.6 | 2.5  | V     |
| Static Drain-Source On-Resistance | R <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =20A<br>V <sub>GS</sub> =4.5V, I <sub>D</sub> |     | 10  | 16   | m     |



# YJG30N04AQ

## Typical Electrical and Thermal Characteristics Diagrams

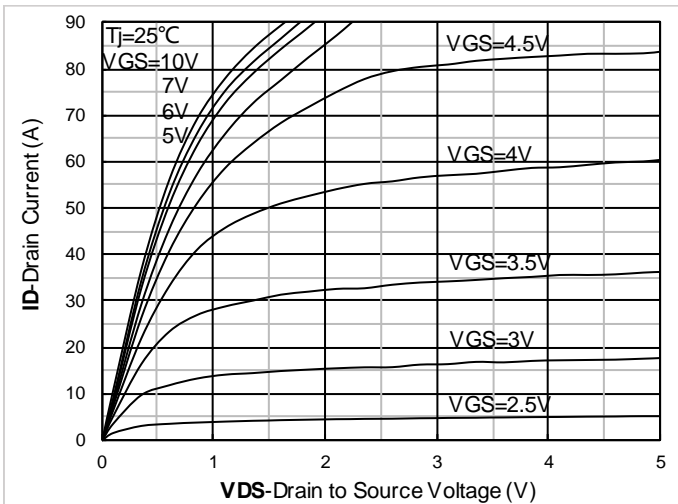


Figure 1. Output Characteristics

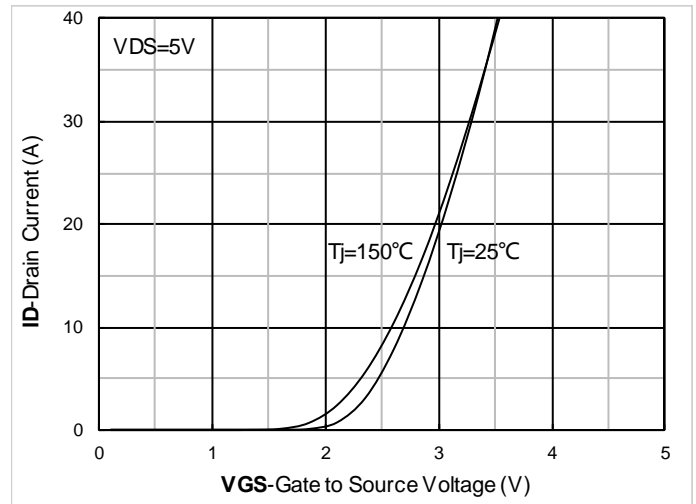


Figure 2. Transfer Characteristics

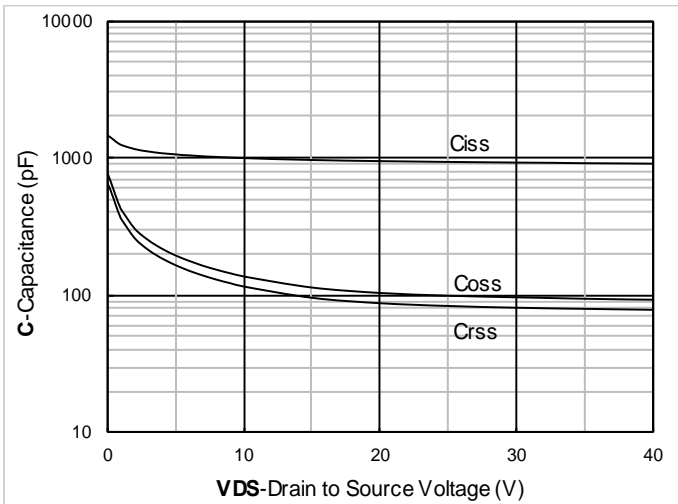


Figure 3. Capacitance Characteristics

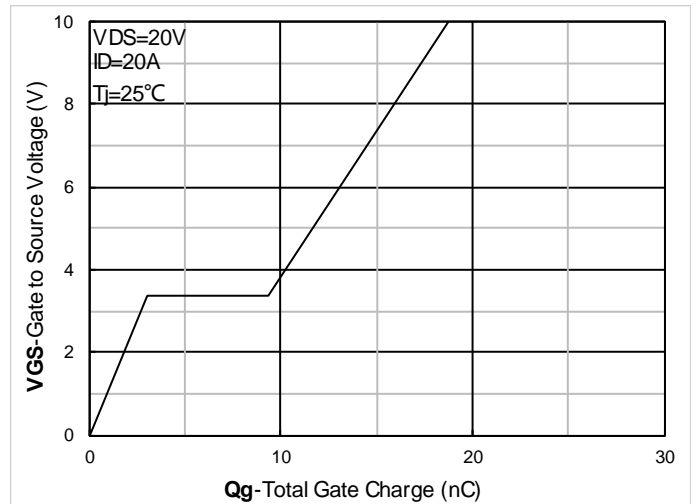


Figure 4. Gate Charge

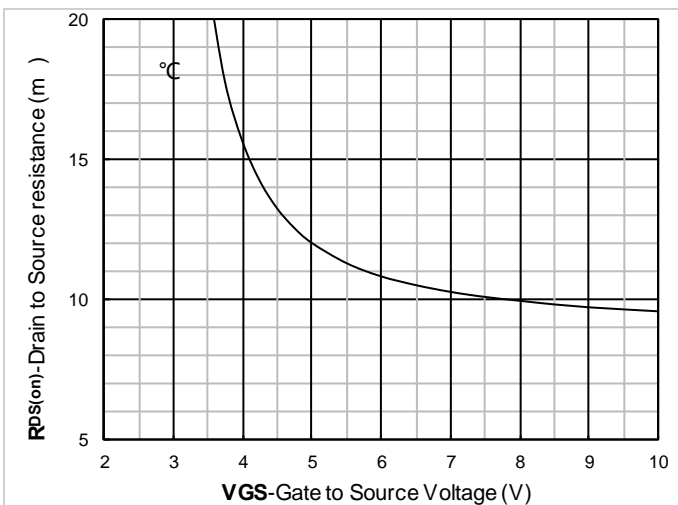


Figure 5. On-Resistance vs Gate to Source Voltage

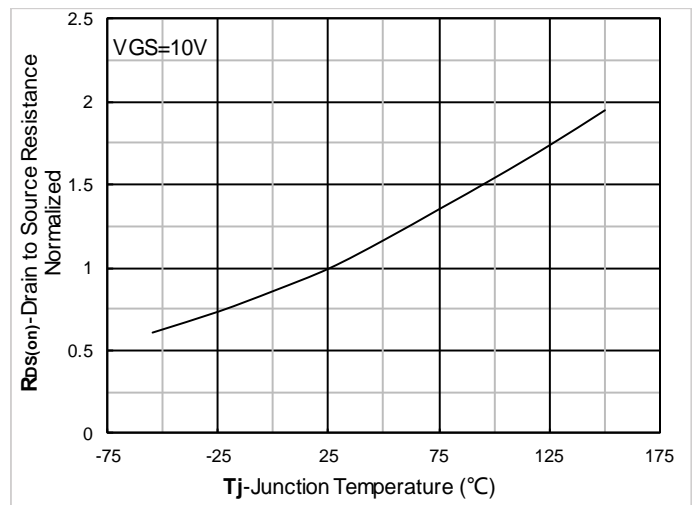


Figure 6. Normalized On-Resistance



# YJG30N04AQ

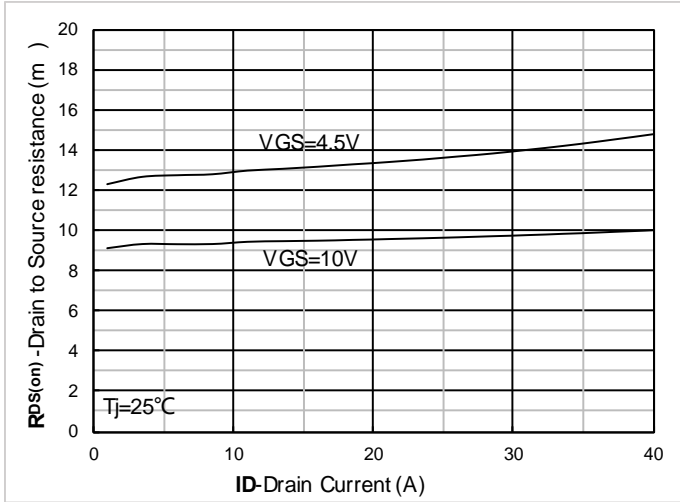


Figure 7.  $R_{DS(on)}$  VS Drain Current

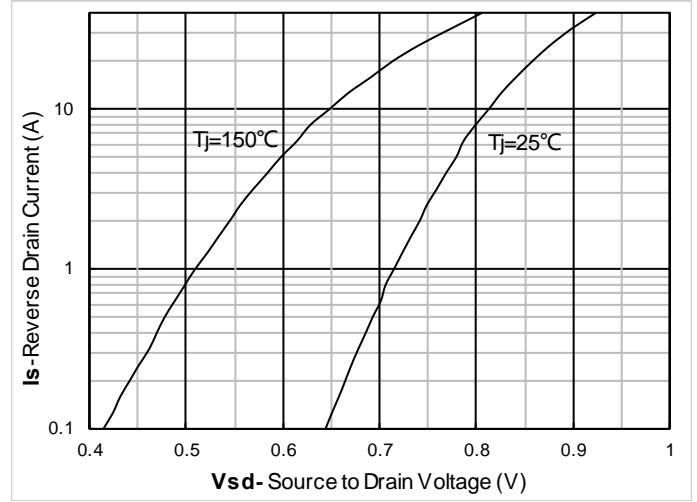


Figure 8. Forward characteristics of reverse diode

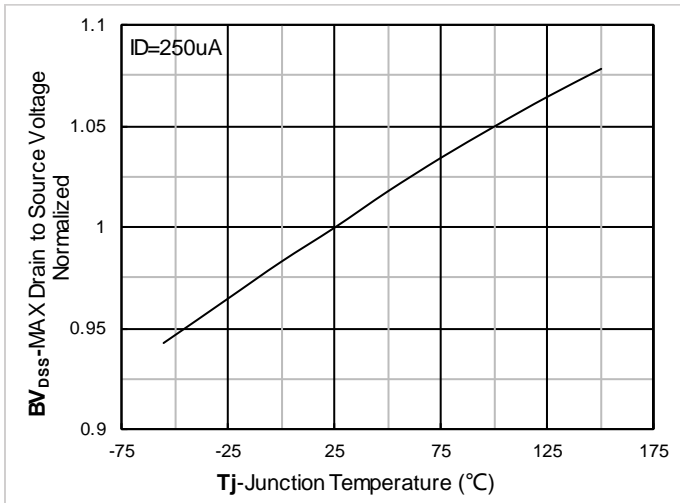


Figure 9. Normalized breakdown voltage

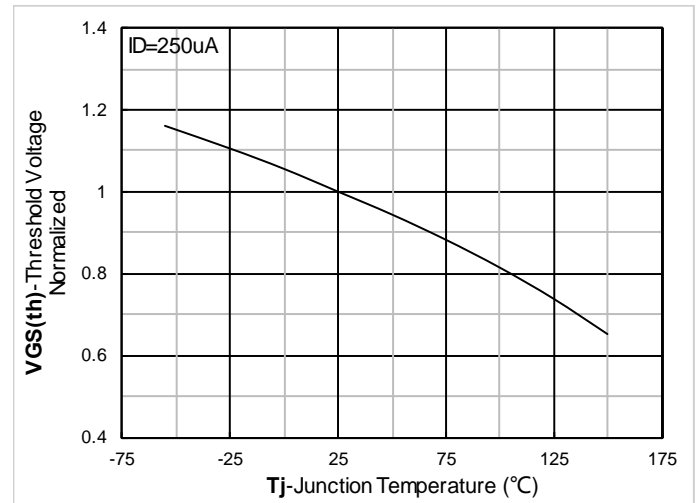


Figure 10. Normalized Threshold voltage

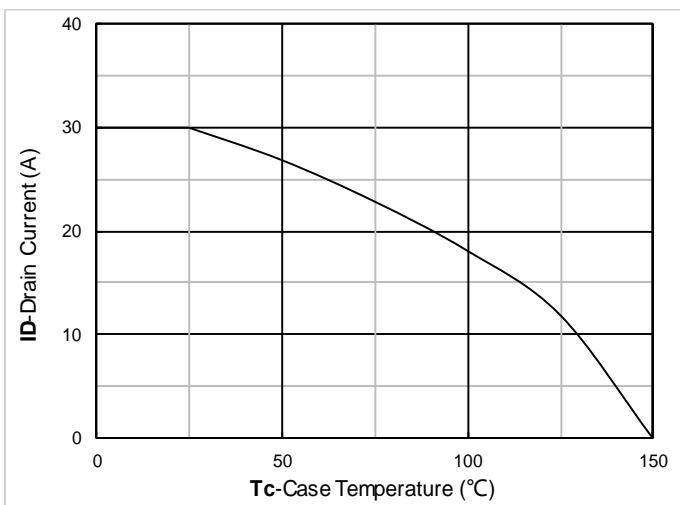


Figure 11. Current dissipation

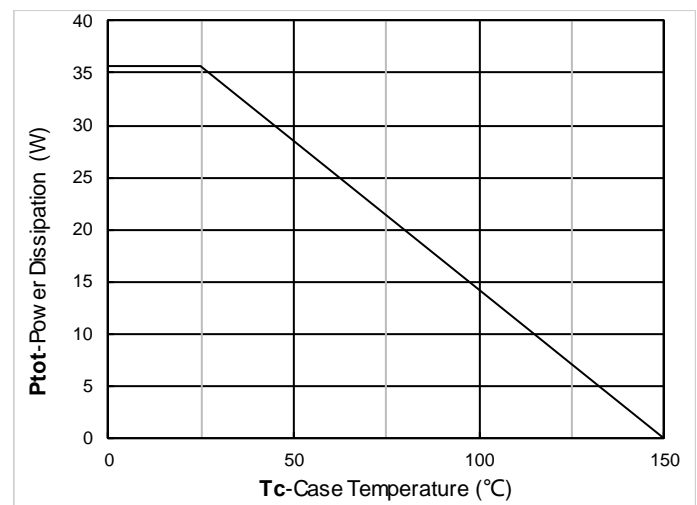


Figure 12. Power dissipation



# YJG30N04AQ

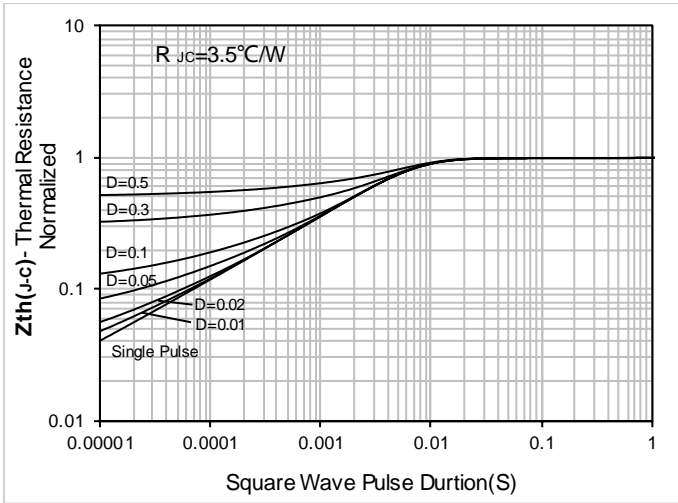


Figure 13. Maximum Transient Thermal Impedance

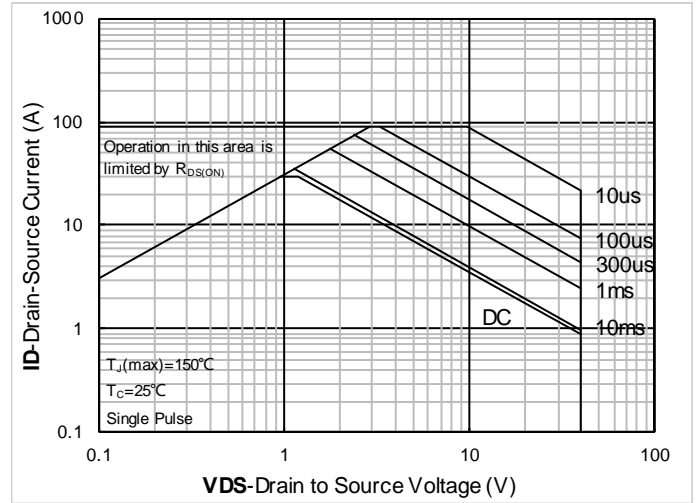
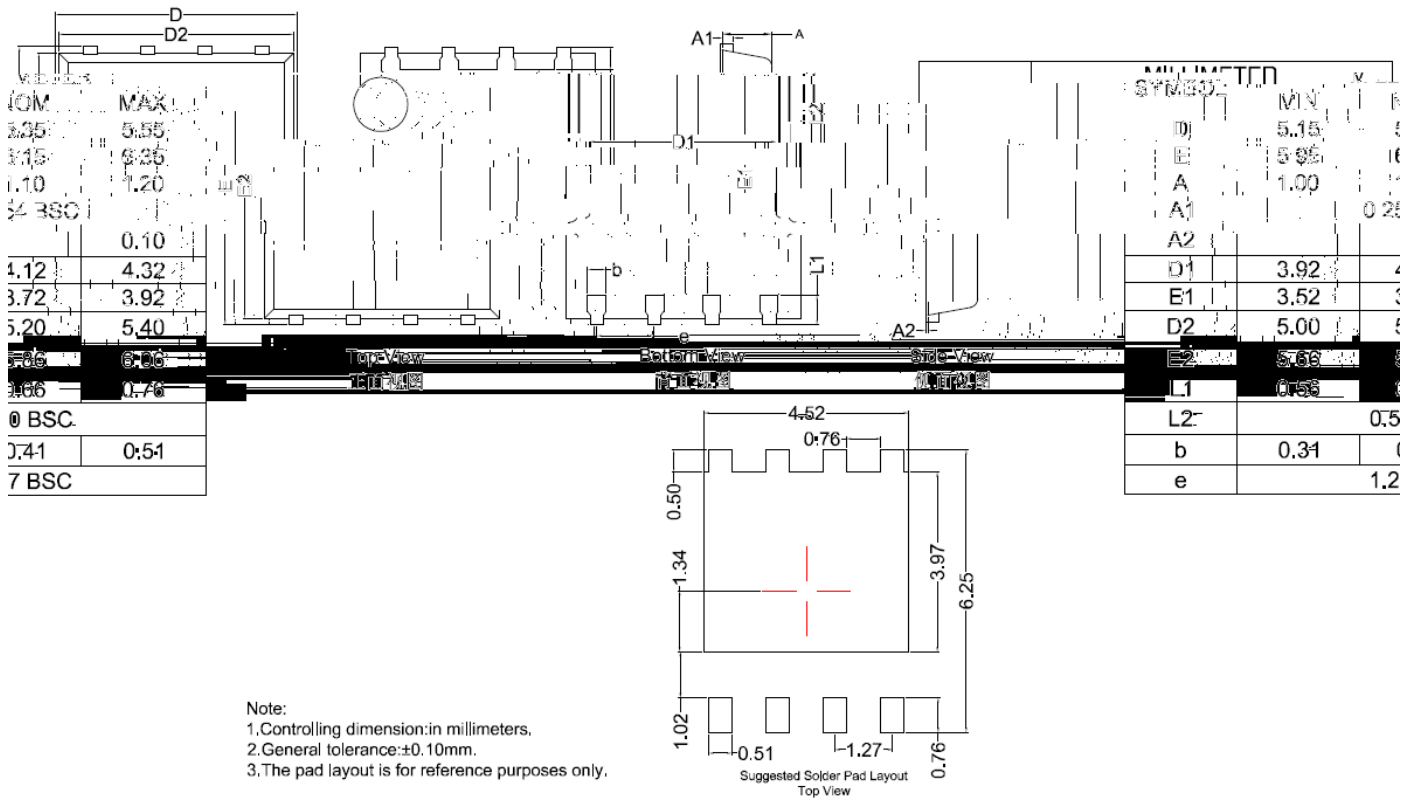


Figure 14. Safe Operation Area



# YJG30N04AQ

## PDFN5060-8L-1.1MM Package information





## YJG30N04AQ

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