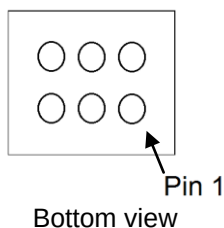
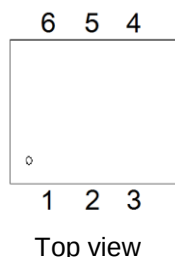
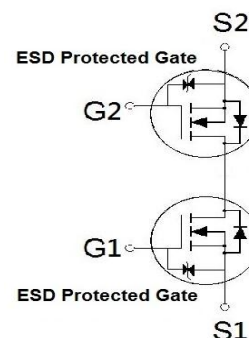


PRODUCT SUMMARY

|               |               |       |
|---------------|---------------|-------|
| $V_{(BR)SSS}$ | $R_{SS(ON)}$  | $I_S$ |
| 12V           | 4.5m $\Omega$ | 15A   |



1. Source1
2. Gate1
3. Source1
4. Source2
5. Gate2
6. Source2



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25\text{ }^{\circ}\text{C}$  Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS                     | SYMBOL          | LIMITS     | UNITS                         |
|------------------------------------------------|-----------------|------------|-------------------------------|
| Source-Source Voltage                          | $V_{SSS}$       | 12         | V                             |
| Gate-Source Voltage                            | $V_{GSS}$       | $\pm 12$   | V                             |
| Continuous Source Current                      | $I_S$           | 15         | A                             |
| Pulsed Source Current <sup>1</sup>             | $I_{SP}$        | 60         |                               |
| Total Dissipation <sup>2</sup>                 | $P_T$           | 1.7        | W                             |
| Thermal Resistance <sup>2</sup>                | $R_{\theta JA}$ | 73         | $^{\circ}\text{C} / \text{W}$ |
| Operating Junction & Storage Temperature Range | $T_j, T_{stg}$  | -55 to 150 | $^{\circ}\text{C}$            |

<sup>1</sup>PW $\leq 10\mu\text{s}$ , duty cycle $\leq 1\%$ .

<sup>2</sup>When mounted on 1in<sup>2</sup> FR-4 board.

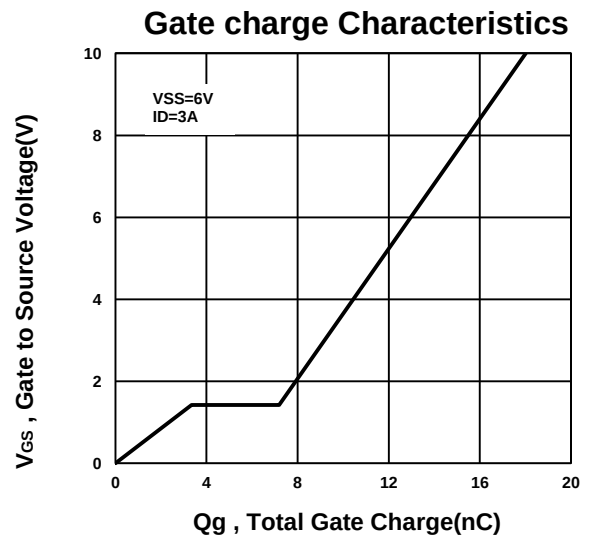
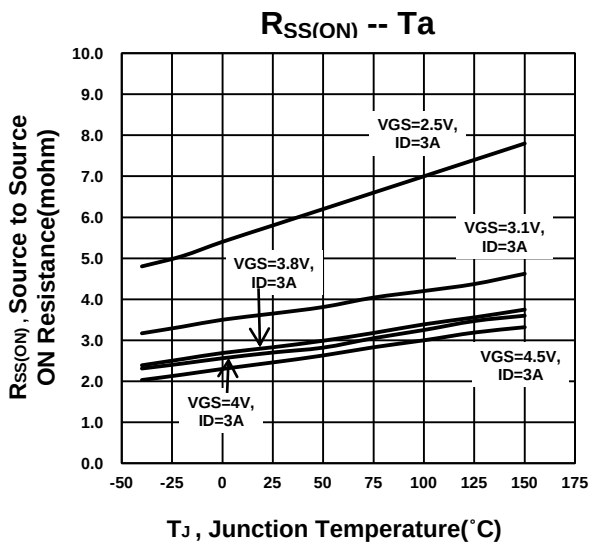
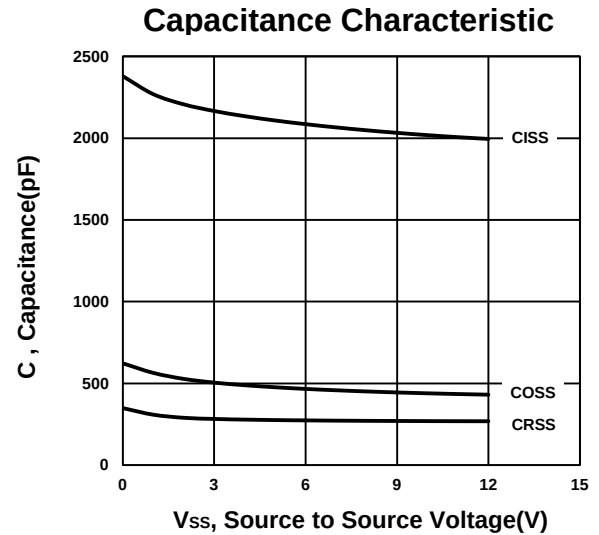
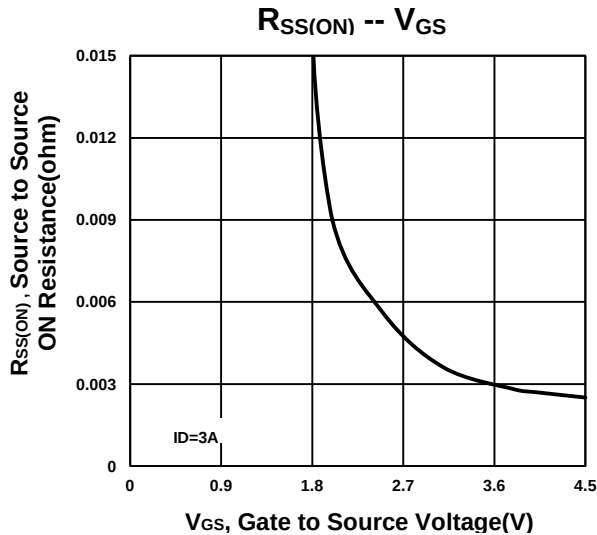
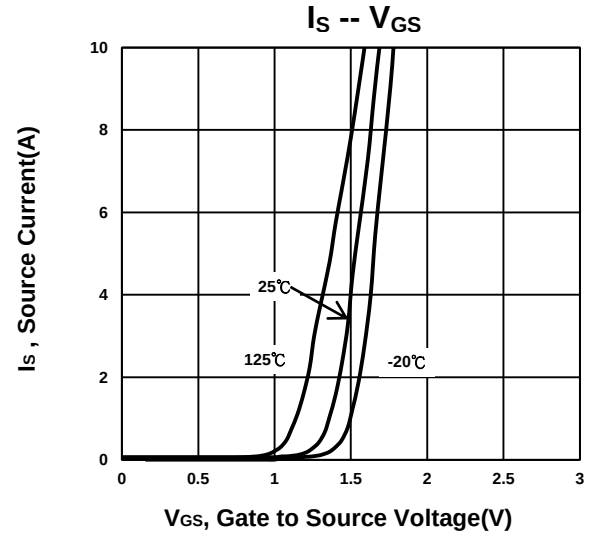
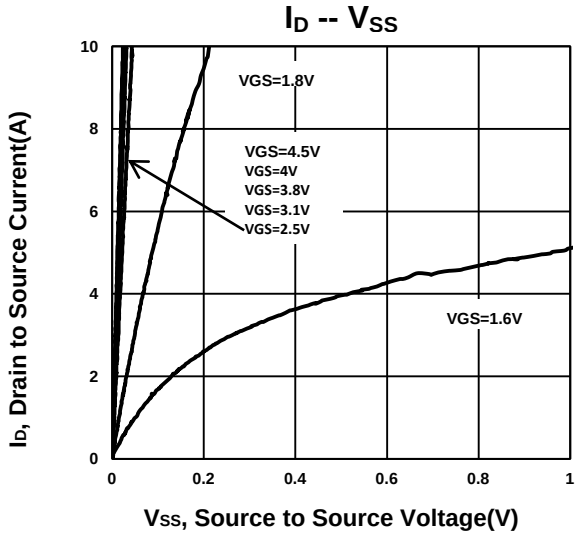
ELECTRICAL CHARACTERISTICS ( $T_j = 25\text{ }^{\circ}\text{C}$ , Unless Otherwise Noted)

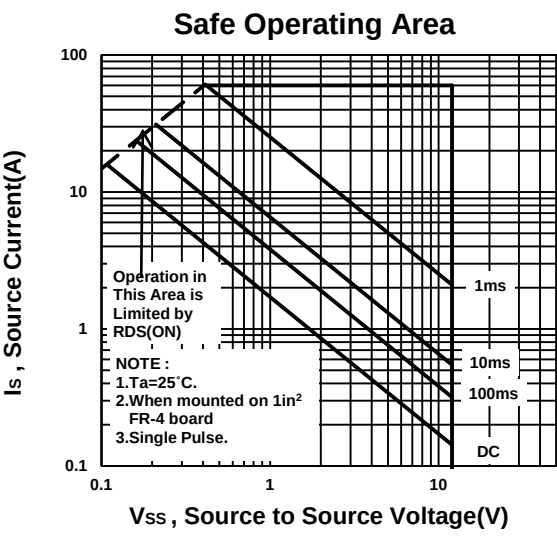
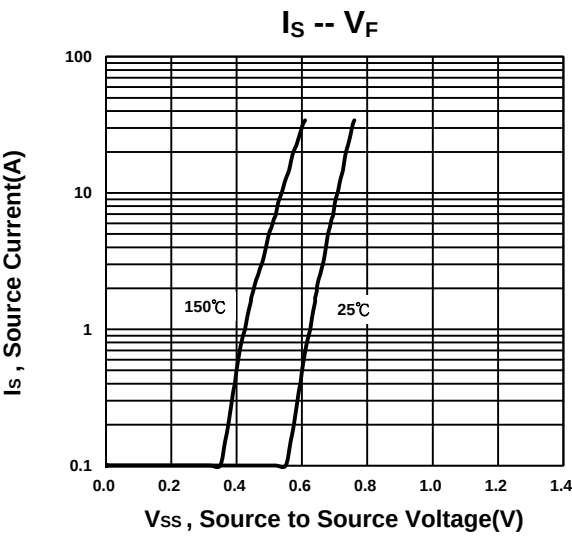
| PARAMETER                                      | SYMBOL        | TEST CONDITIONS                | LIMITS |     |          | UNIT       |
|------------------------------------------------|---------------|--------------------------------|--------|-----|----------|------------|
|                                                |               |                                | MIN    | TYP | MAX      |            |
| STATIC                                         |               |                                |        |     |          |            |
| Source-Source Breakdown Voltage                | $V_{(BR)SSS}$ | $V_{GS} = 0V, I_S = 1mA$       | 12     |     |          | V          |
| Gate Threshold Voltage                         | $V_{GS(th)}$  | $V_{SS} = 10V, I_S = 1mA$      | 0.5    | 0.9 | 1.3      |            |
| Gate-Source Leakage                            | $I_{GSS}$     | $V_{SS} = 0V, V_{GS} = \pm 8V$ |        |     | $\pm 10$ | $\mu A$    |
|                                                |               | $V_{SS} = 0V, V_{GS} = \pm 5V$ |        |     | $\pm 2$  |            |
| Zero Gate Voltage Source Current               | $I_{SSS}$     | $V_{SS} = 10V, V_{GS} = 0V$    |        |     | 1        | $\mu A$    |
| Source-Source On-State Resistance <sup>1</sup> | $R_{SS(ON)}$  | $V_{GS} = 4.5V, I_S = 3A$      | 2.1    | 3   | 4.5      | m $\Omega$ |
|                                                |               | $V_{GS} = 4V, I_S = 3A$        | 2.2    | 3.4 | 4.5      |            |
|                                                |               | $V_{GS} = 3.8V, I_S = 3A$      | 2.3    | 3.6 | 4.65     |            |
|                                                |               | $V_{GS} = 3.1V, I_S = 3A$      | 2.9    | 4.2 | 6.3      |            |
|                                                |               | $V_{GS} = 2.5V, I_S = 3A$      | 3.5    | 5.1 | 7.7      |            |

|                                                                         |                     |                                                                      |  |      |     |    |
|-------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------|--|------|-----|----|
| Forward Transfer Admittance <sup>1</sup>                                | y <sub>fs</sub>     | V <sub>SS</sub> = 5V, I <sub>S</sub> = 3A                            |  | 39   |     | S  |
| DYNAMIC                                                                 |                     |                                                                      |  |      |     |    |
| Input Capacitance                                                       | C <sub>iss</sub>    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 6V, f = 1MHz                 |  | 2073 |     | pF |
| Output Capacitance                                                      | C <sub>oss</sub>    |                                                                      |  | 464  |     |    |
| Reverse Transfer Capacitance                                            | C <sub>rss</sub>    |                                                                      |  | 273  |     |    |
| Total Gate Chang <sup>2</sup>                                           | Qg                  | V <sub>SS</sub> = 6V , V <sub>GS</sub> = 4.5V<br>I <sub>S</sub> = 3A |  | 17   |     | nC |
| Turn-On Delay Time <sup>2</sup>                                         | t <sub>d(on)</sub>  | V <sub>SS</sub> = 6V,<br>I <sub>S</sub> ≅ 3A, V <sub>GS</sub> = 4.5V |  | 36   |     | nS |
| Rise Time <sup>2</sup>                                                  | t <sub>r</sub>      |                                                                      |  | 57   |     |    |
| Turn-Off Delay Time <sup>2</sup>                                        | t <sub>d(off)</sub> |                                                                      |  | 58   |     |    |
| Fall Time <sup>2</sup>                                                  | t <sub>f</sub>      |                                                                      |  | 34   |     |    |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T <sub>J</sub> = 25 °C) |                     |                                                                      |  |      |     |    |
| Forward Source-Source Voltage <sup>1</sup>                              | V <sub>F</sub>      | I <sub>S</sub> = 3A, V <sub>GS</sub> = 0V                            |  |      | 1.2 | V  |

<sup>1</sup>Pulse test : Pulse Width  $\leq 300 \mu sec$ , Duty Cycle  $\leq 2\%$ .

<sup>2</sup>Independent of operating temperature.

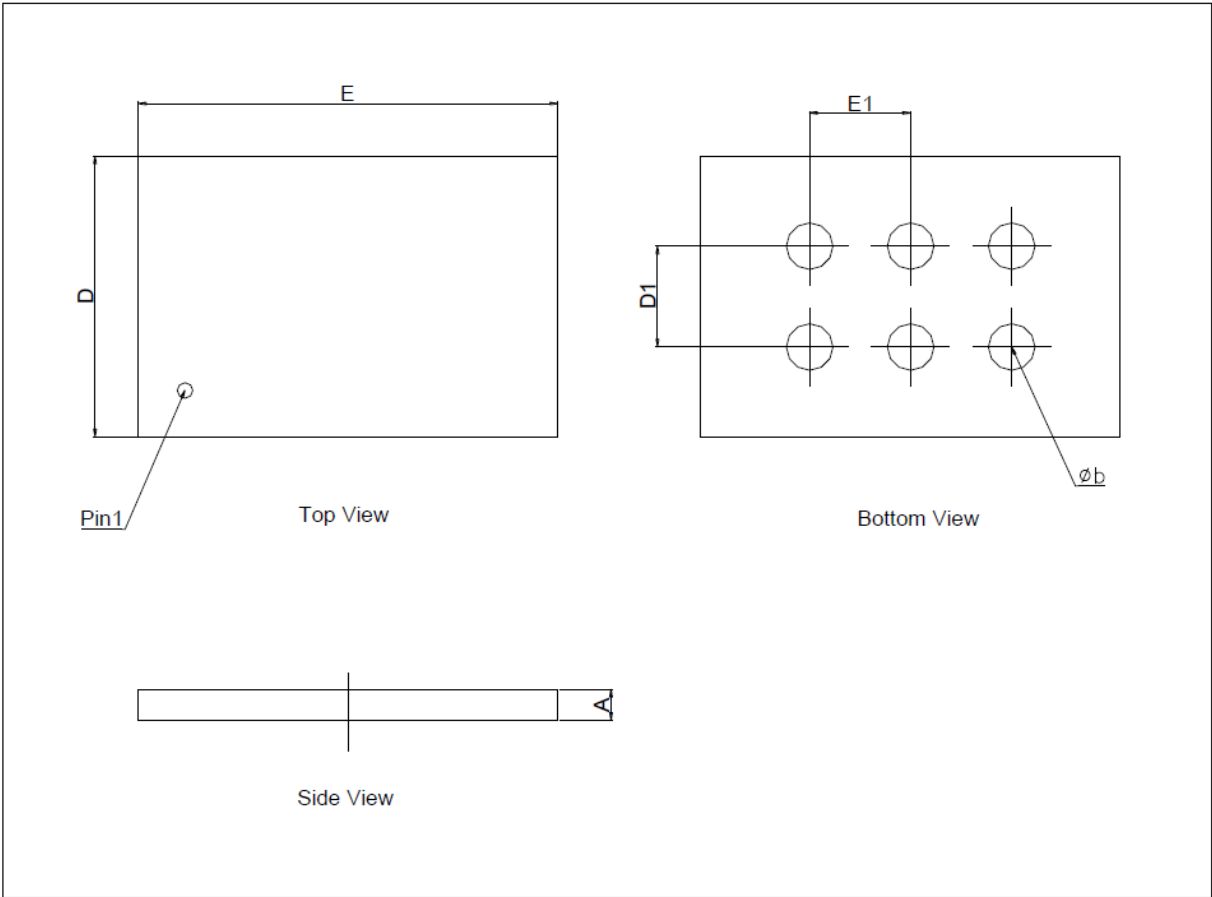




Package Dimension

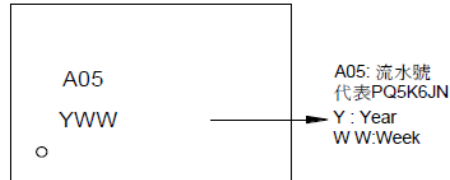
WLCSP(1.81\*2.7) MECHANICAL DATA

| Dimension | mm   |      |      | Dimension | mm   |      |      |
|-----------|------|------|------|-----------|------|------|------|
|           | Min. | Typ. | Max. |           | Min. | Typ. | Max. |
| A         | 0.18 |      | 0.22 | E         |      | 2.7  |      |
| φ b       |      | 0.26 |      | E1        |      | 0.65 |      |
| D         |      | 1.81 |      |           |      |      |      |
| D1        |      | 0.65 |      |           |      |      |      |

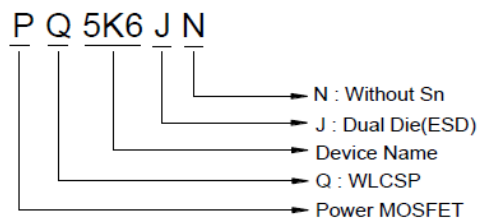


## A. Marking Information:(Please see the corresponding data sheet)

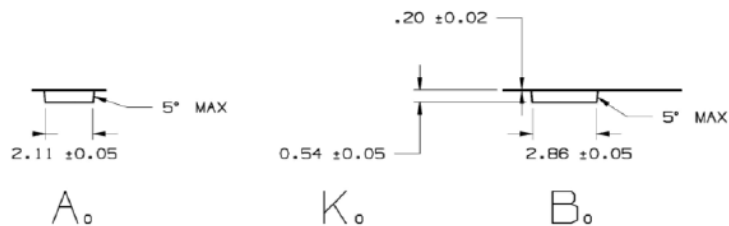
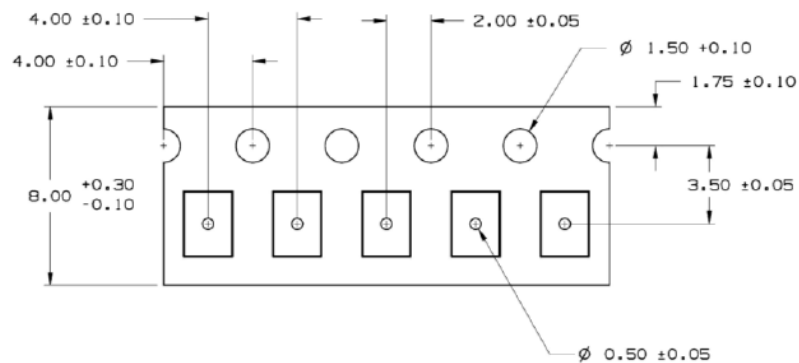
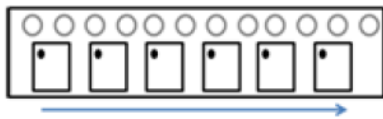
### 1.零件Marking 文字面說明

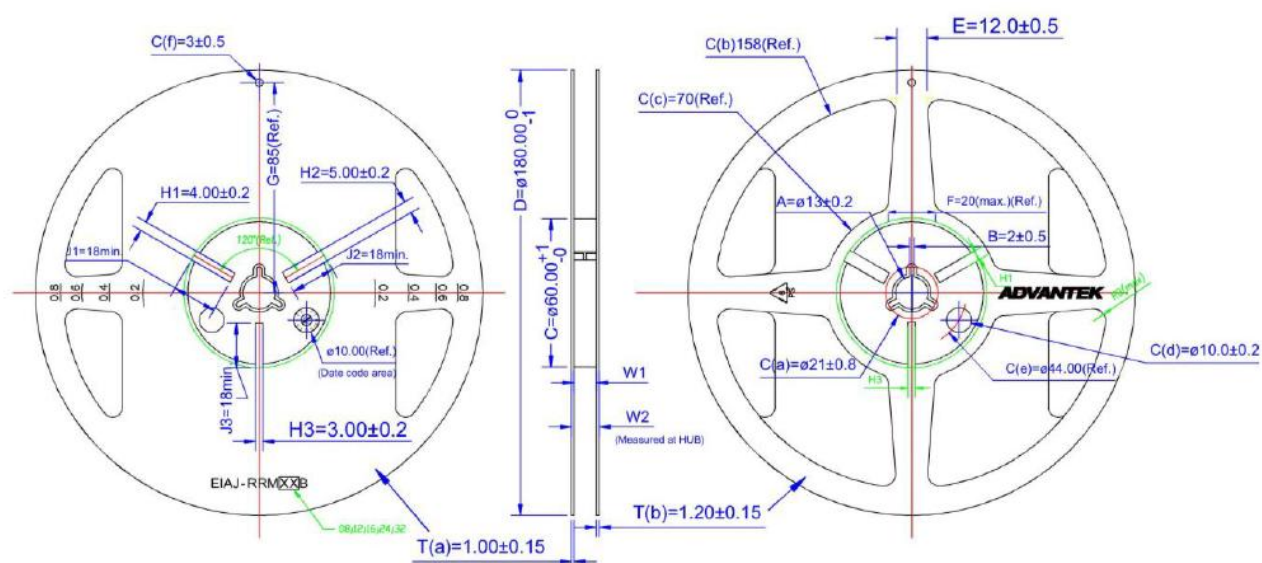


### 2.零件 Part number 說明



## B. Tape&Reel Information: 5000pcs/Reel

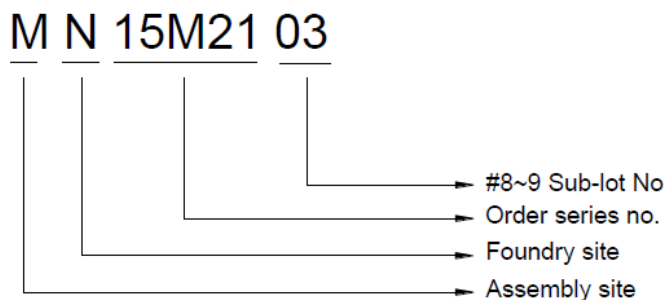




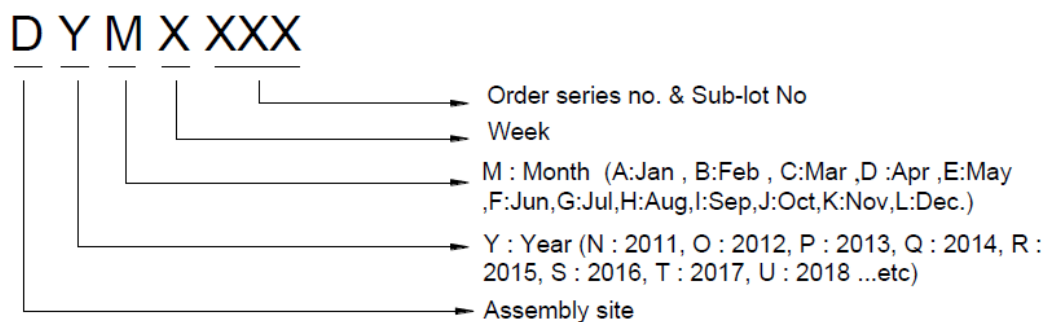
附註: All Dimension in millimeter

### C. Lot.No. & Date Code rule

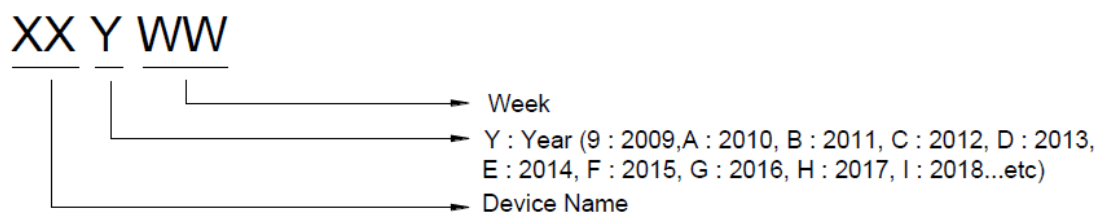
#### 1.LOT.NO.



#### 2.Date Code



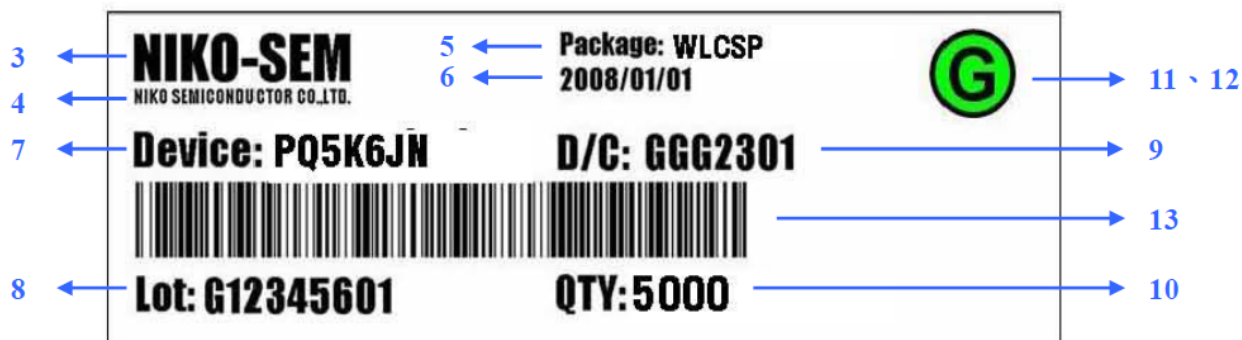
#### 3.Date Code (for Small package)





## D. Label rule

標籤內容 (Label content)



|    |                              |                                                                                                                                                                                               |
|----|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Label Size                   | 30 * 90 mm                                                                                                                                                                                    |
| 2  | Font style                   | Times New Roman or Arial<br>(或可區分英文”O”和數字”0”，”G”和”Q”的字型即可)<br>(Or any font capable of being distinguished for Letter O and digital 0, and for G and Q))                                       |
| 3  | NIKO-SEM                     | Height: 4 mm                                                                                                                                                                                  |
| 4  | NIKO SEMICONDUCTOR CO., LTD. | Height: 1 mm                                                                                                                                                                                  |
| 5  | Package                      | Height: 2 mm                                                                                                                                                                                  |
| 6  | Date                         | Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12                                                                                                                                        |
| 7  | Device                       | Height: 3 mm (Max: 16 Digit) Device Name not including Rev.                                                                                                                                   |
| 8  | Lot                          | Height: 3 mm (Max: 9 Digit) Sub lot                                                                                                                                                           |
| 9  | D/C                          | Height: 3 mm (Max: 7 Digit)                                                                                                                                                                   |
| 10 | QTY                          | Height: 3 mm (Max: 6 Digit) Thousand mark is no needed                                                                                                                                        |
| 11 | Pb Free label                |  Diameter: 1 cm bottom color: Green<br>Font color: Black Font style: Arial                                 |
| 12 | Halogen Free label           |  Diameter: 1 cm bottom color: Green<br>Font color: Black Font style: Arial                                 |
| 13 | Scan info                    | Device / Lot / D/C / QTY , Insert “ / “ between every parts.<br>for example: P3055LDG/G12345601/GGG2301/2000<br>DPI (Dots per inch): Over 300 dpi<br>Code : Code 128<br>Height: 6 mm at least |