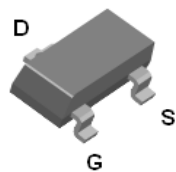


# PM515BA

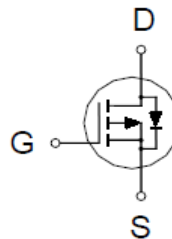
## P-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$            | $I_D$ |
|---------------|-------------------------|-------|
| -20V          | 65mΩ @ $V_{GS} = -4.5V$ | -3A   |



SOT-23(S)



**100% UIS Tested**  
**100% Rg Tested**

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

| PARAMETERS/TEST CONDITIONS           |                                    | SYMBOL         | LIMITS     | UNITS              |
|--------------------------------------|------------------------------------|----------------|------------|--------------------|
| Drain-Source Voltage                 |                                    | $V_{DS}$       | -20        | V                  |
| Gate-Source Voltage                  |                                    | $V_{GS}$       | ±8         |                    |
| Continuous Drain Current             | $T_A = 25\text{ }^{\circ}\text{C}$ | $I_D$          | -3         | A                  |
|                                      | $T_A = 70\text{ }^{\circ}\text{C}$ |                | -2.4       |                    |
| Pulsed Drain Current <sup>1</sup>    |                                    | $I_{DM}$       | -20        |                    |
| Power Dissipation                    | $T_A = 25\text{ }^{\circ}\text{C}$ | $P_D$          | 0.9        | W                  |
|                                      | $T_A = 70\text{ }^{\circ}\text{C}$ |                | 0.6        |                    |
| Junction & Storage Temperature Range |                                    | $T_J, T_{stg}$ | -55 to 150 | $^{\circ}\text{C}$ |

### THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE               | SYMBOL          | TYPICAL | MAXIMUM | UNITS                         |
|----------------------------------|-----------------|---------|---------|-------------------------------|
| Junction-to-Ambient <sup>2</sup> | $R_{\theta JA}$ |         | 131     | $^{\circ}\text{C} / \text{W}$ |

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz.Copper,in a still air environment with  $T_A = 25^{\circ}\text{C}$ .

# PM515BA

## P-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)

| PARAMETER                                                                 | SYMBOL               | TEST CONDITIONS                                                                                  | LIMITS |      |       | UNITS |
|---------------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------------------------|--------|------|-------|-------|
|                                                                           |                      |                                                                                                  | MIN    | TYP  | MAX   |       |
| STATIC                                                                    |                      |                                                                                                  |        |      |       |       |
| Drain-Source Breakdown Voltage                                            | V <sub>(BR)DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA                                                    | -20    |      |       | V     |
| Gate Threshold Voltage                                                    | V <sub>GS(th)</sub>  | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA                                      | -0.3   | -0.5 | -1    |       |
| Gate-Body Leakage                                                         | I <sub>GSS</sub>     | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V                                                      |        |      | ±100  | nA    |
| Zero Gate Voltage Drain Current                                           | I <sub>DSS</sub>     | V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V                                                     |        |      | -1    | μA    |
|                                                                           |                      | V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V , T <sub>J</sub> = 70 °C                            |        |      | -10   |       |
| Drain-Source On-State Resistance <sup>1</sup>                             | R <sub>DS(ON)</sub>  | V <sub>GS</sub> = -1.8V, I <sub>D</sub> = -1A                                                    |        | 91   | 120   | mΩ    |
|                                                                           |                      | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -2A                                                    |        | 70   | 85    |       |
|                                                                           |                      | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2.5A                                                  |        | 56   | 65    |       |
| Forward Transconductance <sup>1</sup>                                     | g <sub>fs</sub>      | V <sub>DS</sub> = -5V, I <sub>D</sub> = -2.5A                                                    |        | 11   |       | S     |
| DYNAMIC                                                                   |                      |                                                                                                  |        |      |       |       |
| Input Capacitance                                                         | C <sub>iss</sub>     | V <sub>GS</sub> = 0V, V <sub>DS</sub> = -10V, f = 1MHz                                           |        | 561  |       | pF    |
| Output Capacitance                                                        | C <sub>oss</sub>     |                                                                                                  |        | 65   |       |       |
| Reverse Transfer Capacitance                                              | C <sub>rss</sub>     |                                                                                                  |        | 53   |       |       |
| Total Gate Charge <sup>2</sup>                                            | Q <sub>g</sub>       | V <sub>DS</sub> = -10V,V <sub>GS</sub> = -4.5V,I <sub>D</sub> = -2.5A                            |        | 7.3  |       | nC    |
| Gate-Source Charge <sup>2</sup>                                           | Q <sub>gs</sub>      |                                                                                                  |        | 1    |       |       |
| Gate-Drain Charge <sup>2</sup>                                            | Q <sub>gd</sub>      |                                                                                                  |        | 2    |       |       |
| Turn-On Delay Time <sup>2</sup>                                           | t <sub>d(on)</sub>   | V <sub>DS</sub> = -10V, V <sub>GS</sub> = -4.5V<br>I <sub>D</sub> ≅ -2.5A, R <sub>GEN</sub> = 6Ω |        | 16   |       | nS    |
| Rise Time <sup>2</sup>                                                    | t <sub>r</sub>       |                                                                                                  |        | 38   |       |       |
| Turn-Off Delay Time <sup>2</sup>                                          | t <sub>d(off)</sub>  |                                                                                                  |        | 53   |       |       |
| Fall Time <sup>2</sup>                                                    | t <sub>f</sub>       |                                                                                                  |        | 60   |       |       |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE ( T <sub>J</sub> = 25 °C ) |                      |                                                                                                  |        |      |       |       |
| Continuous Current                                                        | I <sub>S</sub>       |                                                                                                  |        |      | -0.75 | A     |
| Forward Voltage <sup>1</sup>                                              | V <sub>SD</sub>      | I <sub>F</sub> = -2.5A, V <sub>GS</sub> = 0V                                                     |        |      | -1.2  | V     |
| Reverse Recovery Time                                                     | t <sub>rr</sub>      | I <sub>F</sub> = -2.5A, dI <sub>F</sub> /dt = 100A / μS                                          |        | 10   |       | nS    |
| Reverse Recovery Charge                                                   | Q <sub>rr</sub>      |                                                                                                  |        | 3    |       | nC    |

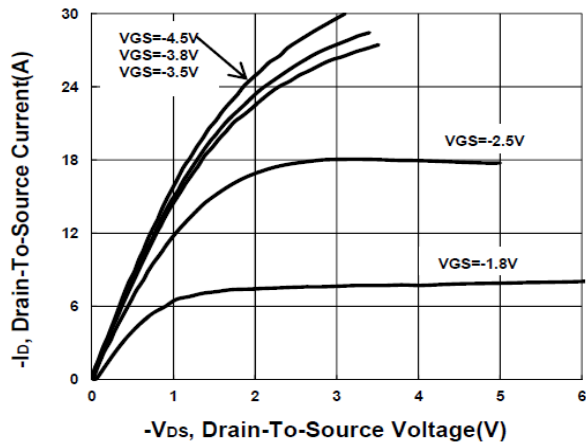
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

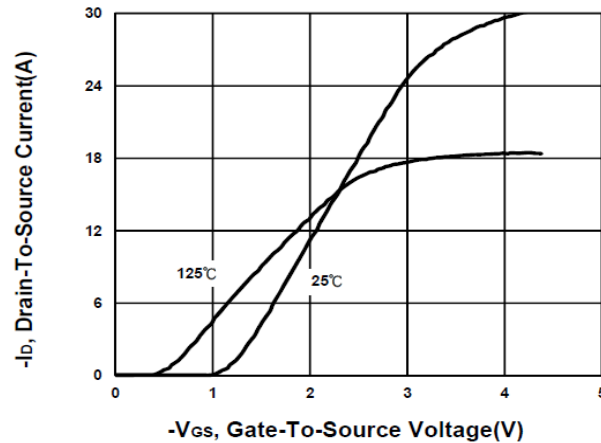
## PM515BA

### P-Channel Enhancement Mode MOSFET

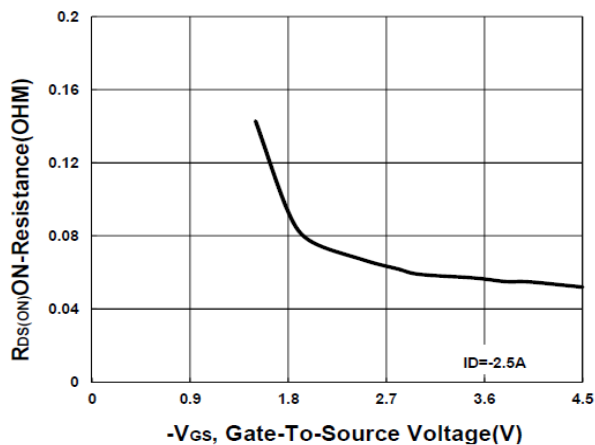
**Output Characteristics**



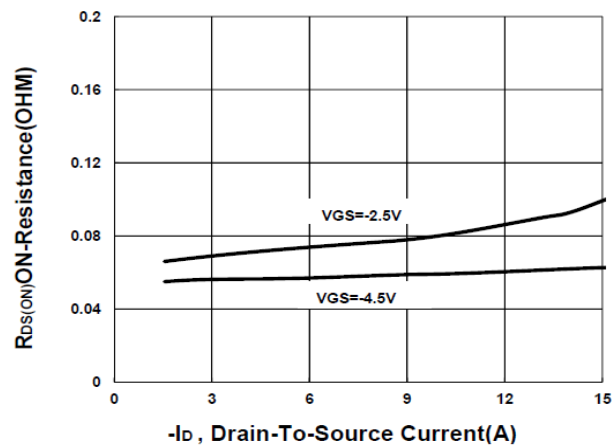
**Transfer Characteristics**



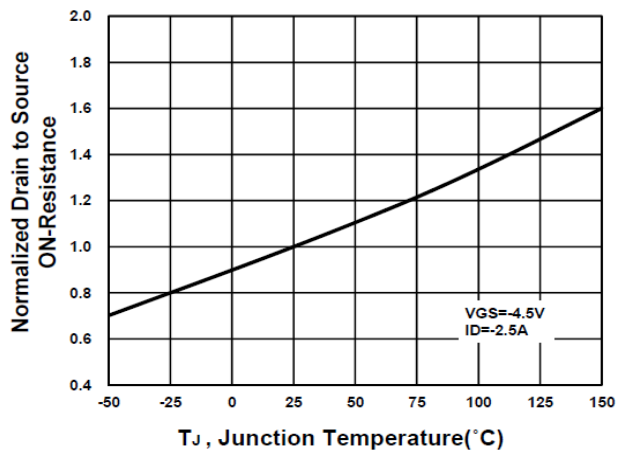
**On-Resistance VS Gate-To-Source**



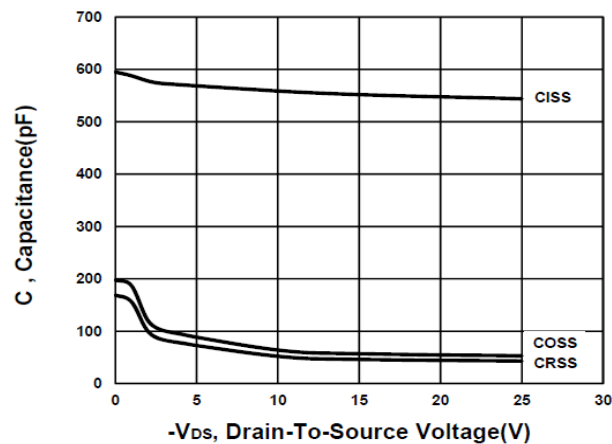
**On-Resistance VS Drain Current**



**On-Resistance VS Temperature**



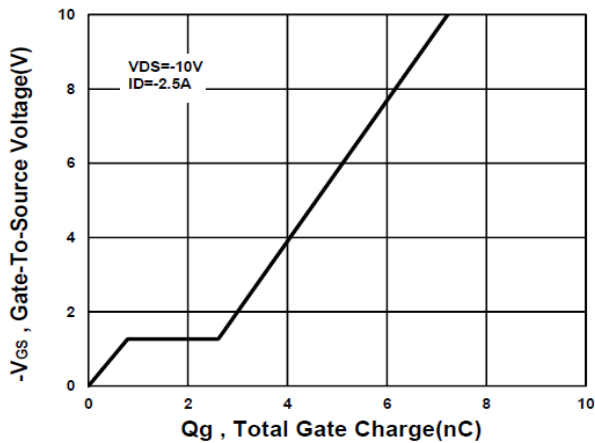
**Capacitance Characteristic**



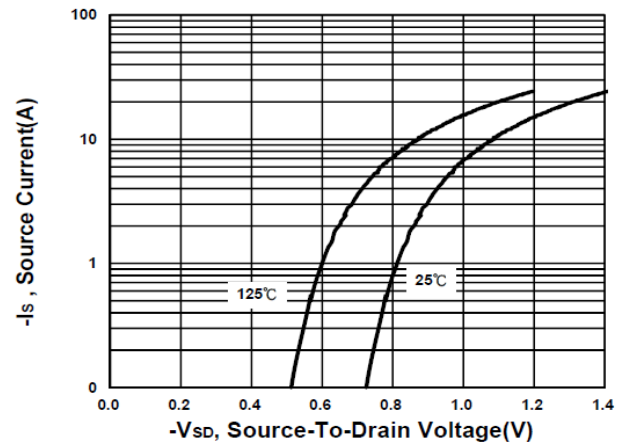
## PM515BA

### P-Channel Enhancement Mode MOSFET

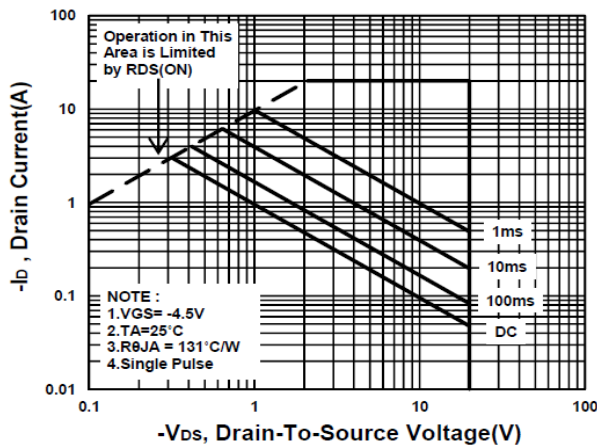
**Gate charge Characteristics**



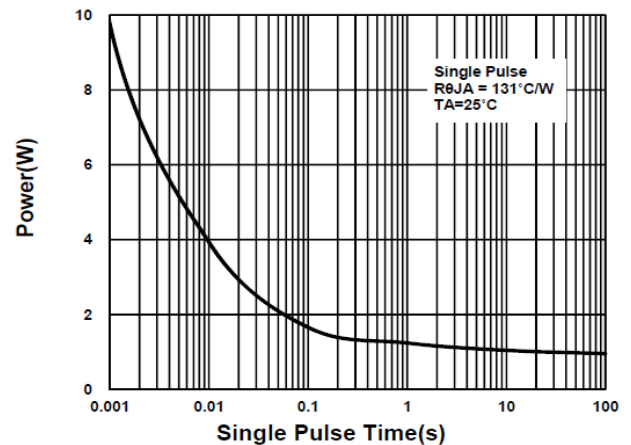
**Source-Drain Diode Forward Voltage**



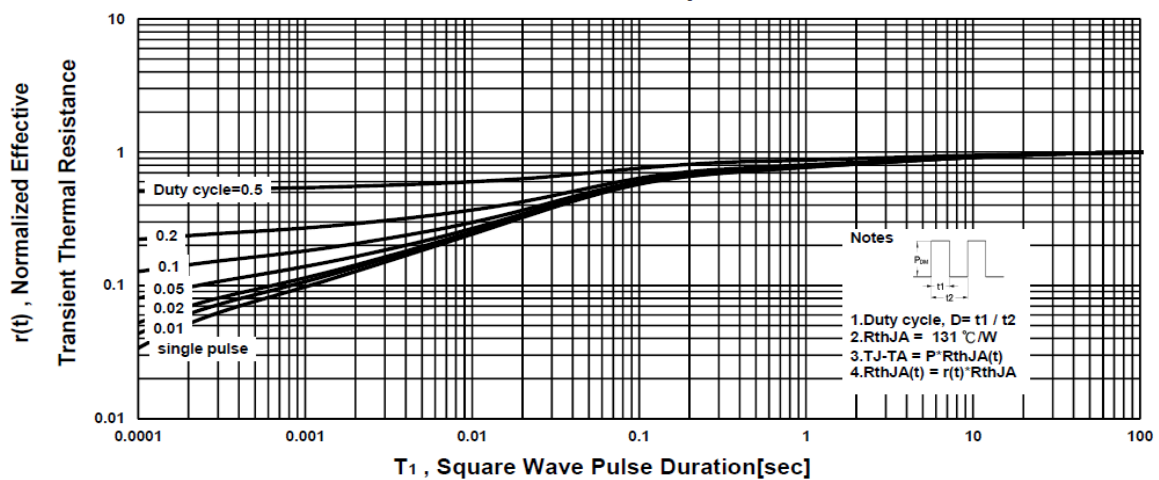
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



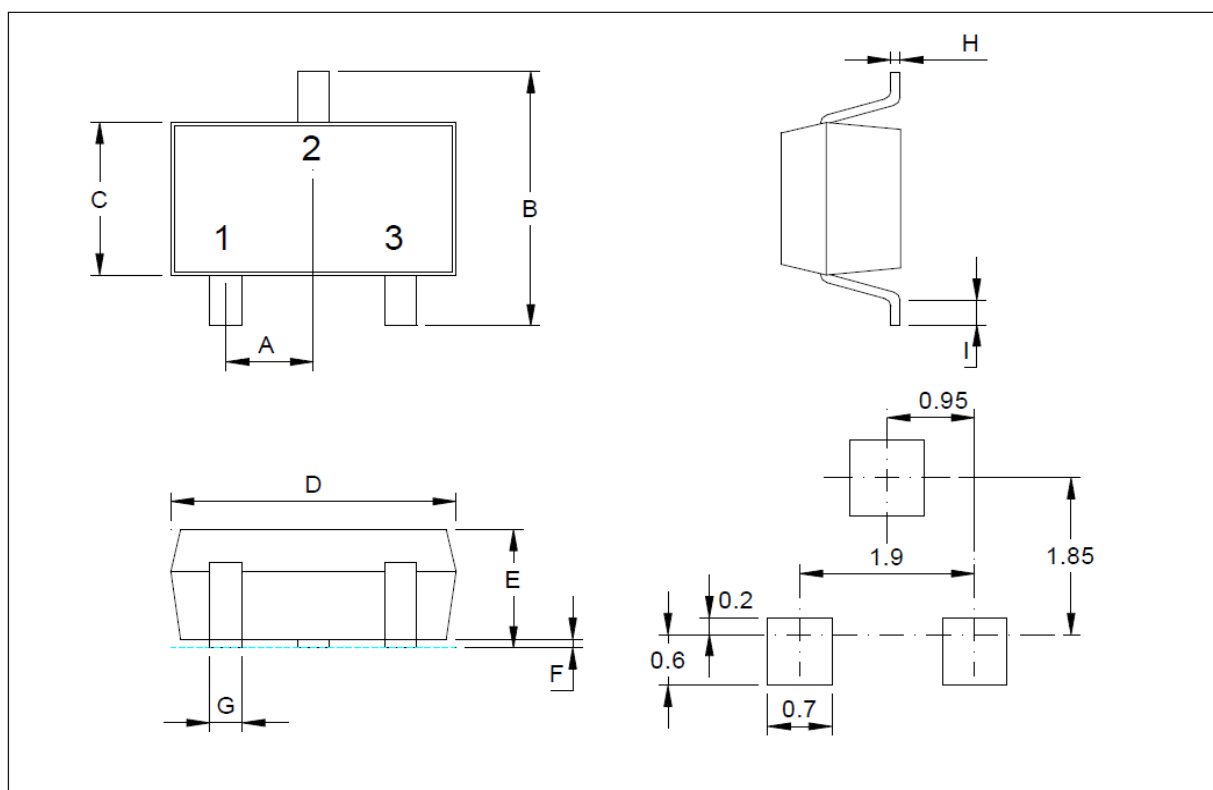
## PM515BA

### P-Channel Enhancement Mode MOSFET

#### Package Dimension

#### SOT-23 (S) MECHANICAL DATA

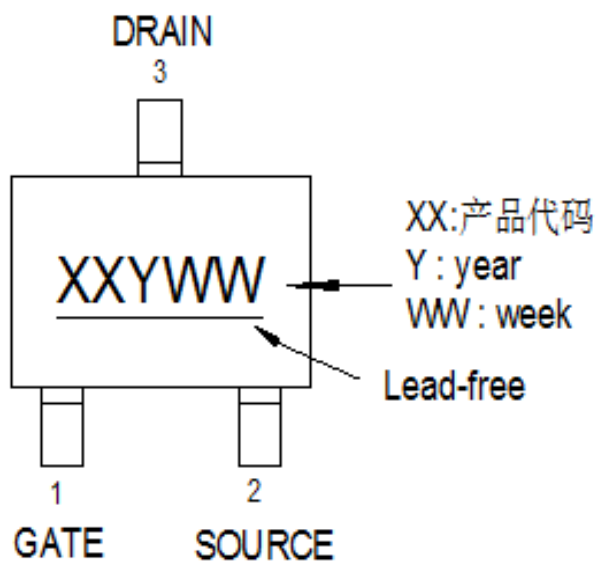
| Dimension | mm   |      |      | Dimension | mm   |      |      |
|-----------|------|------|------|-----------|------|------|------|
|           | Min. | Typ. | Max. |           | Min. | Typ. | Max. |
| A         | 0.9  |      | 1    | H         | 0.08 |      | 0.2  |
| B         | 2.25 |      | 2.85 | I         | 0.15 |      | 0.6  |
| C         | 1.2  |      | 1.4  |           |      |      |      |
| D         | 2.8  |      | 3.04 |           |      |      |      |
| E         | 0.89 |      | 1.2  |           |      |      |      |
| F         | 0    |      | 0.1  |           |      |      |      |
| G         | 0.3  |      | 0.5  |           |      |      |      |



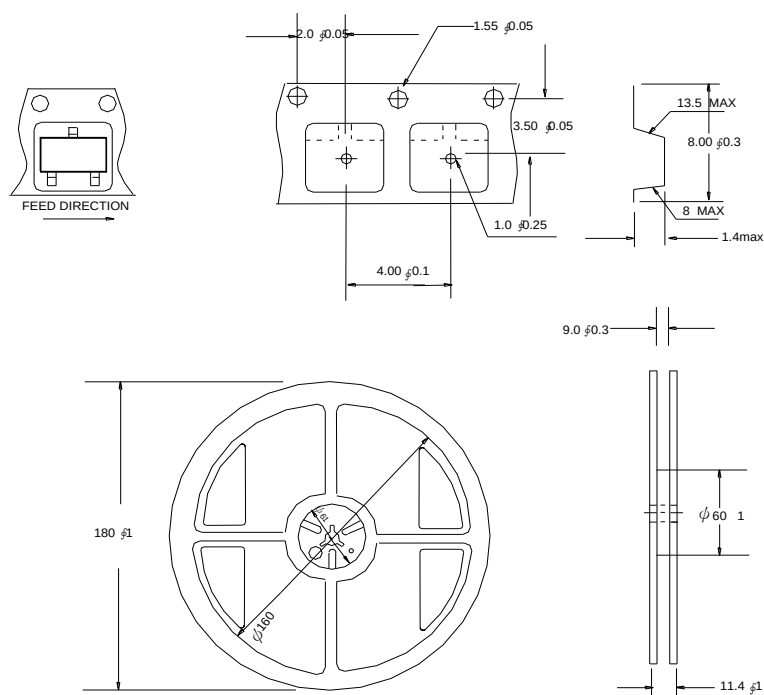
## PM515BA

### P-Channel Enhancement Mode MOSFET

#### A. Marking Information ( 此产品代码为：7B )



#### B. Tape&Reel Information:3000pcs/Reel

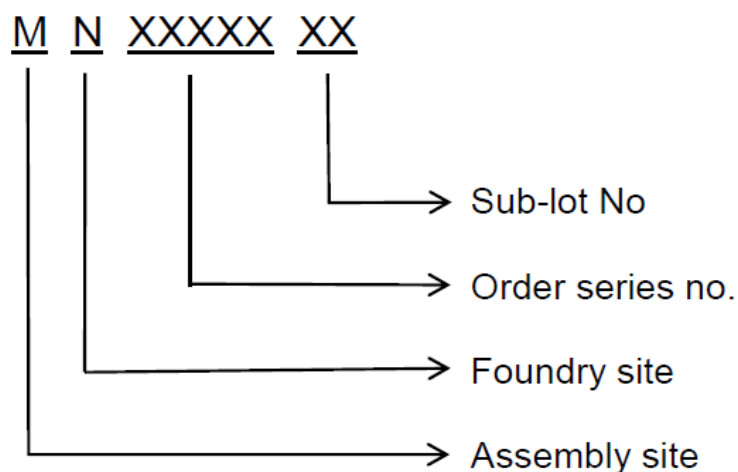


## PM515BA

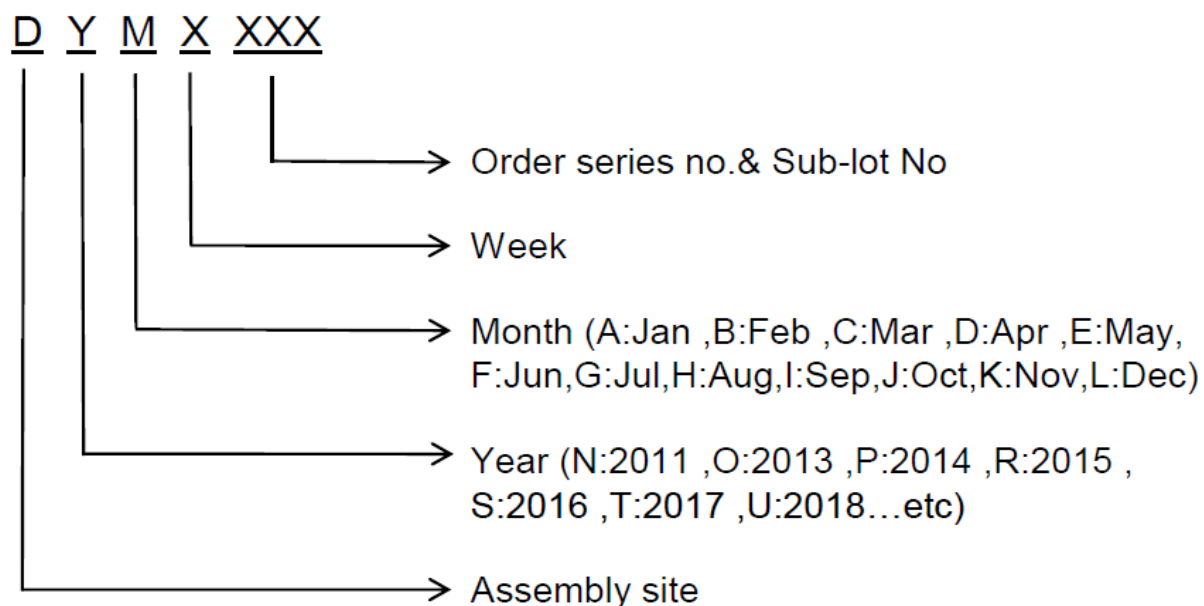
### P-Channel Enhancement Mode MOSFET

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

##### 1.Lot No.



##### 2.Date Code



## PM515BA

### P-Channel Enhancement Mode MOSFET

#### D.Label rule

标签内容(Label content)



|    |                    |                                                                                                                                                                                            |
|----|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Label Size         | 30 * 90 mm                                                                                                                                                                                 |
| 2  | Font style         | Times New Roman or Arial<br>(或可区分英文"0"和数字"0", "G"和"Q"的字型即可)                                                                                                                                |
| 3  | U-NIKC             | Height: 4 mm                                                                                                                                                                               |
| 4  | Package            | Height: 2 mm                                                                                                                                                                               |
| 5  | Date               | Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12                                                                                                                                     |
| 6  | Device             | Height: 3 mm (Max: 16 Digit)                                                                                                                                                               |
| 7  | Lot                | Height: 3 mm (Max: 9 Digit) Sub lot                                                                                                                                                        |
| 8  | D/C                | Height: 3 mm (Max: 7 Digit)                                                                                                                                                                |
| 9  | QTY                | Height: 3 mm (Max: 6 Digit) Thousand mark is no needed                                                                                                                                     |
| 10 | RoHS label         |  long axis: 12 mm minor axis: 6 mm<br>bottom color: White<br>Font color: Black Font style: Arial        |
| 11 | Halogen Free label |  Diameter: 10 mm bottom color: Green<br>Font color: Black Font style: Arial                             |
| 12 | Scan information   | 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 |