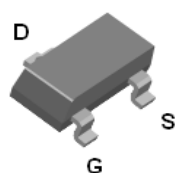


# PM597BA

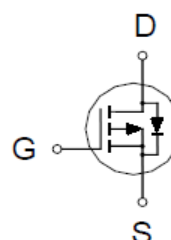
## P-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$                    | $I_D$ |
|---------------|---------------------------------|-------|
| -20V          | 43m $\Omega$ @ $V_{GS} = -4.5V$ | -4.5A |



SOT-23(S)



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

| PARAMETERS/TEST CONDITIONS                     |                                    | SYMBOL         | LIMITS     | UNITS              |
|------------------------------------------------|------------------------------------|----------------|------------|--------------------|
| Gate-Source Voltage                            |                                    | $V_{GS}$       | $\pm 12$   | V                  |
| Continuous Drain Current                       | $T_A = 25\text{ }^{\circ}\text{C}$ | $I_D$          | -4.5       | A                  |
|                                                | $T_A = 70\text{ }^{\circ}\text{C}$ |                | -3.6       |                    |
| Pulsed Drain Current <sup>1</sup>              |                                    | $I_{DM}$       | -16        |                    |
| Power Dissipation <sup>3</sup>                 | $T_A = 25\text{ }^{\circ}\text{C}$ | $P_D$          | 1.4        | W                  |
|                                                | $T_A = 70\text{ }^{\circ}\text{C}$ |                | 0.9        |                    |
| Operating 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> | $t \leq 10s$ | $R_{\theta JA}$ |         | 90      | $^{\circ}\text{C} / \text{W}$ |
| Junction-to-Ambient <sup>2</sup> | Steady-State | $R_{\theta JA}$ |         | 130     |                               |

<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.

<sup>3</sup>The Power dissipation is based on  $R_{\theta JA}$   $t \leq 10s$  value.

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## 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           | -0.7                                                                                           | -0.8 | -1.3 |       |
| Gate-Body Leakage                                                         | I <sub>GSS</sub>                       | V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±12V                          |                                                                                                |      | ±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> = 55 °C |                                                                                                |      | -10  |       |
| Drain-Source On-State Resistance <sup>1</sup>                             | R <sub>DS(ON)</sub>                    | V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -3.5A                       |                                                                                                | 40   | 58   | mΩ    |
|                                                                           |                                        | V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.5A                       |                                                                                                | 30   | 43   |       |
| Forward Transconductance <sup>1</sup>                                     | g <sub>fs</sub>                        | V <sub>DS</sub> = -5V, I <sub>D</sub> = -3.5A                         |                                                                                                | 16   |      | S     |
| DYNAMIC                                                                   |                                        |                                                                       |                                                                                                |      |      |       |
| Input Capacitance                                                         | C <sub>iss</sub>                       | V <sub>GS</sub> = 0V, V <sub>DS</sub> = -10V, f = 1MHz                |                                                                                                | 801  |      | pF    |
| Output Capacitance                                                        | C <sub>oss</sub>                       |                                                                       |                                                                                                | 115  |      |       |
| Reverse Transfer Capacitance                                              | C <sub>rss</sub>                       |                                                                       |                                                                                                | 92   |      |       |
| Total Gate Charge <sup>2</sup>                                            | Q <sub>g</sub> (V <sub>GS</sub> =4.5V) | V <sub>DS</sub> = -10V,V <sub>GS</sub> = -4.5V,I <sub>D</sub> = -3.5A |                                                                                                | 8.7  |      | nC    |
|                                                                           | Q <sub>g</sub> (V <sub>GS</sub> =2.5V) |                                                                       |                                                                                                | 5.4  |      |       |
| Gate-Source Charge <sup>2</sup>                                           | Q <sub>gs</sub>                        |                                                                       |                                                                                                | 1.2  |      |       |
| Gate-Drain Charge <sup>2</sup>                                            | Q <sub>gd</sub>                        |                                                                       |                                                                                                | 2.6  |      |       |
| Turn-On Delay Time <sup>2</sup>                                           | t <sub>d(on)</sub>                     |                                                                       | V <sub>DD</sub> = -10V, V <sub>GS</sub> = -4.5V<br>I <sub>D</sub> ≅ -3.5A, R <sub>G</sub> = 6Ω |      | 19   |       |
| Rise Time <sup>2</sup>                                                    | t <sub>r</sub>                         |                                                                       |                                                                                                | 30   |      |       |
| Turn-Off Delay Time <sup>2</sup>                                          | t <sub>d(off)</sub>                    |                                                                       |                                                                                                | 55   |      |       |
| Fall Time <sup>2</sup>                                                    | t <sub>f</sub>                         |                                                                       |                                                                                                | 20   |      |       |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE ( T <sub>J</sub> = 25 °C ) |                                        |                                                                       |                                                                                                |      |      |       |
| Continuous Current                                                        | I <sub>S</sub>                         |                                                                       |                                                                                                |      | -1   | A     |
| Forward Voltage <sup>1</sup>                                              | V <sub>SD</sub>                        | I <sub>F</sub> = -3.5A, V <sub>GS</sub> = 0V                          |                                                                                                |      | -1.3 | V     |
| Reverse Recovery Time                                                     | t <sub>rr</sub>                        | I <sub>F</sub> = -3.5A, dI <sub>F</sub> /dt = 100A / μS               |                                                                                                | 24   |      | nS    |
| Reverse Recovery Charge                                                   | Q <sub>rr</sub>                        |                                                                       |                                                                                                | 6    |      | nC    |

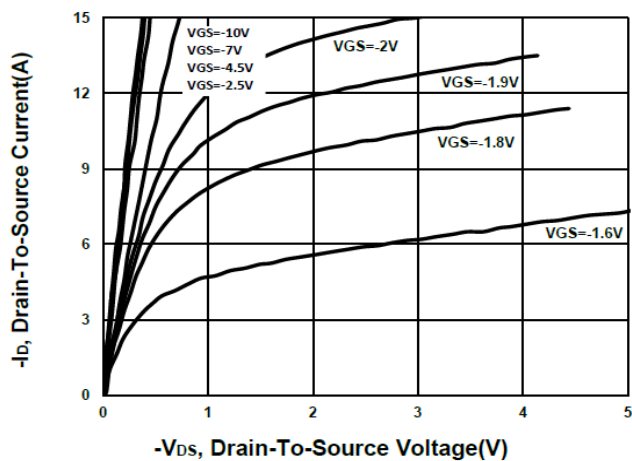
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

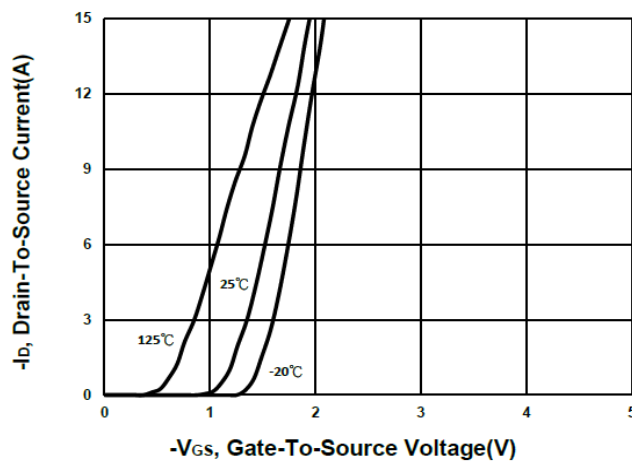
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## P-Channel Enhancement Mode MOSFET

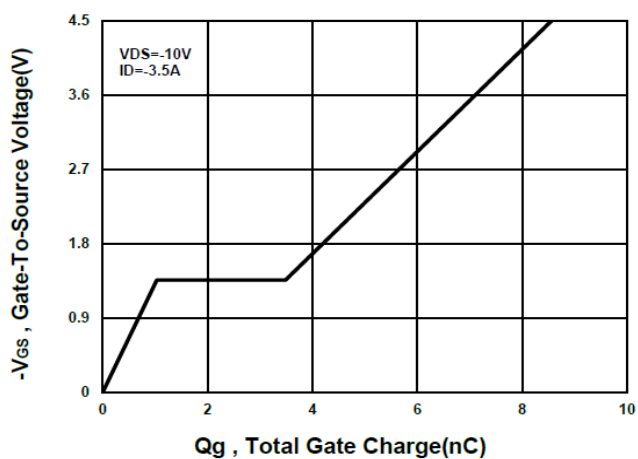
**Output Characteristics**



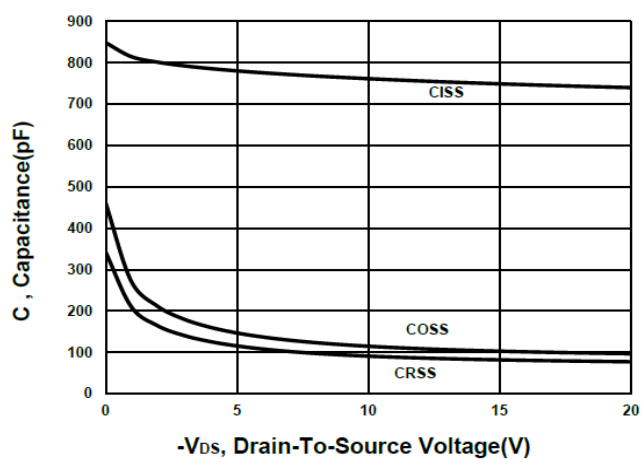
**Transfer Characteristics**



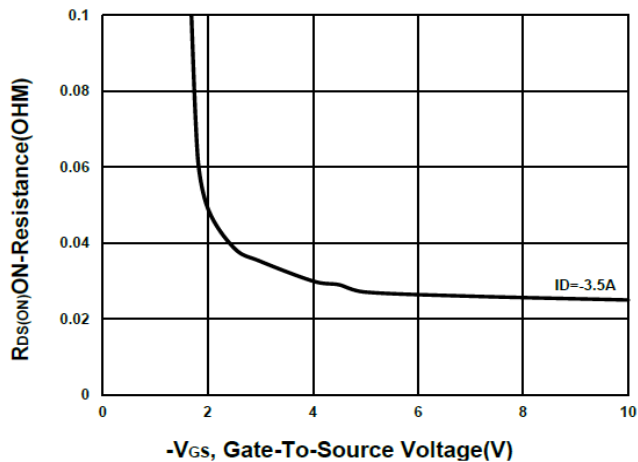
**Gate charge Characteristics**



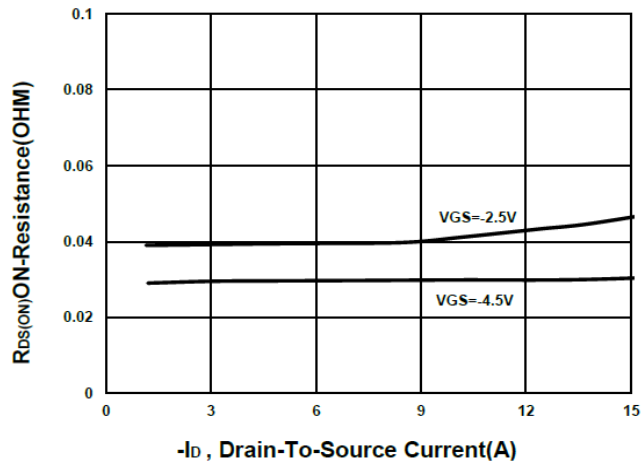
**Capacitance Characteristic**



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



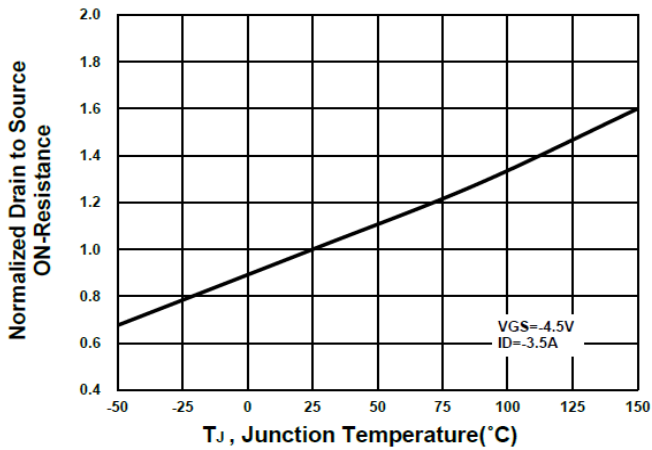
**On-Resistance VS Drain Current**



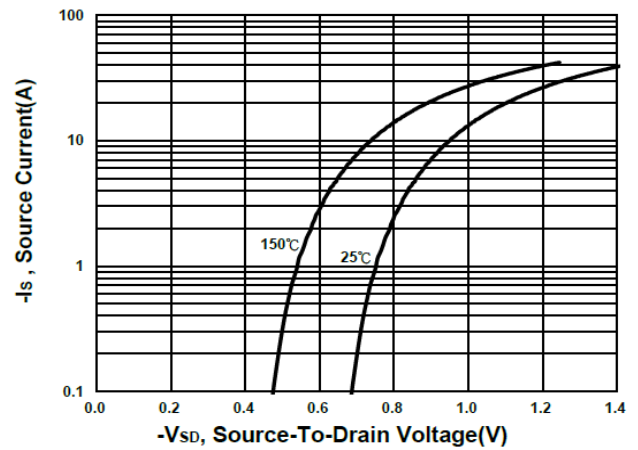
## PM597BA

### P-Channel Enhancement Mode MOSFET

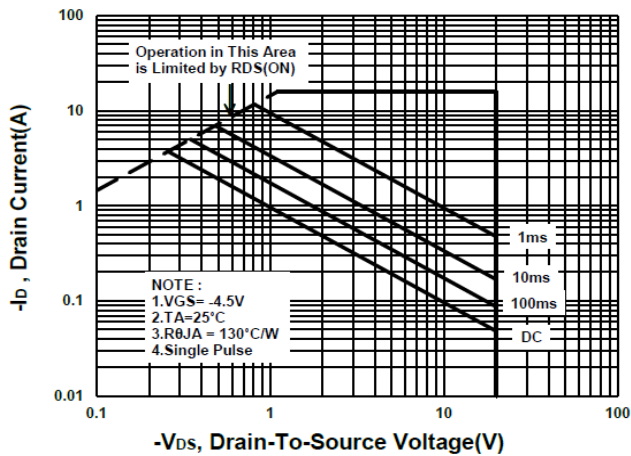
**On-Resistance VS Temperature**



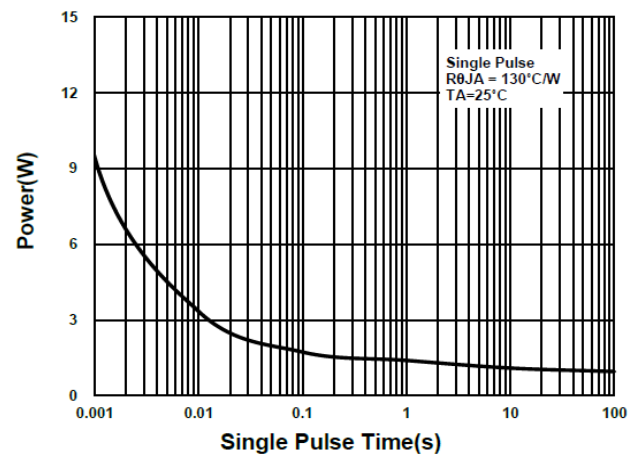
**Source-Drain Diode Forward Voltage**



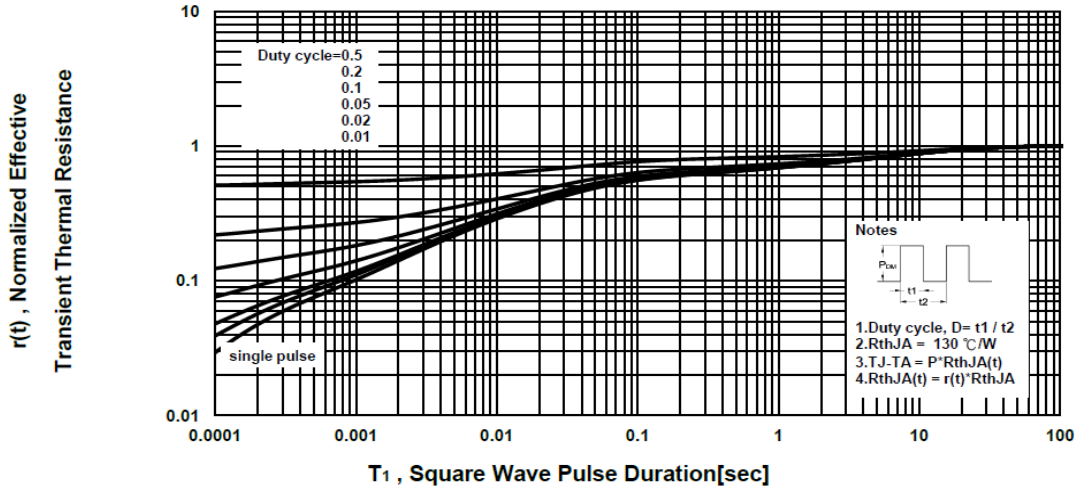
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



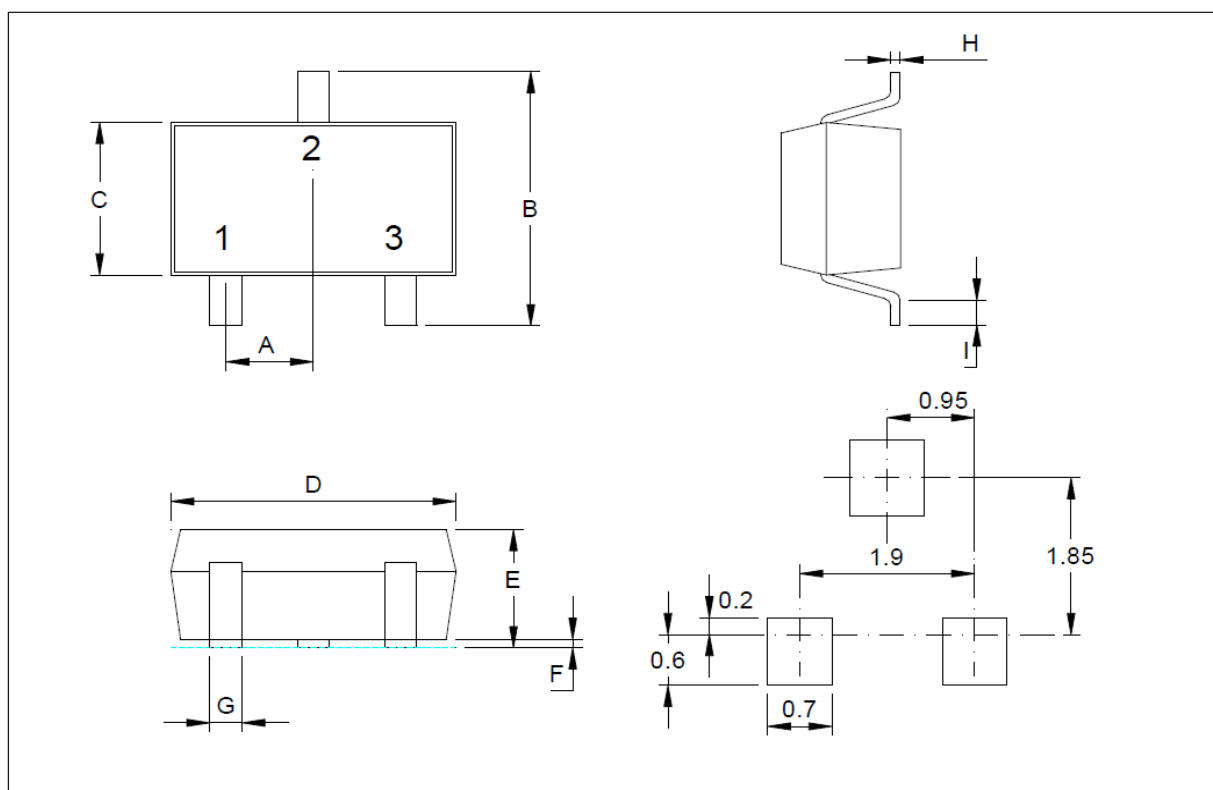
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### P-Channel Enhancement Mode MOSFET

#### Package Dimension

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

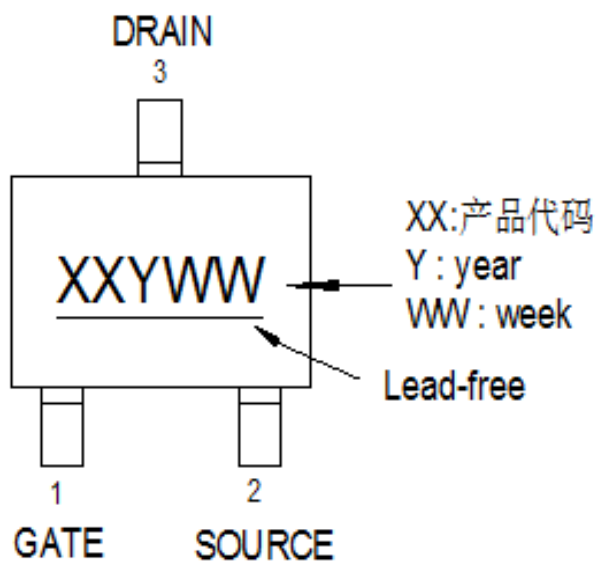
| Dimension | mm   |      |      | Dimension | mm   |      |      |
|-----------|------|------|------|-----------|------|------|------|
|           | Min. | Typ. | Max. |           | Min. | Typ. | Max. |
| A         | 0.9  |      | 1    | H         | 0.08 |      | 0.2  |
| B         | 2.25 |      | 2.85 | 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  |           |      |      |      |



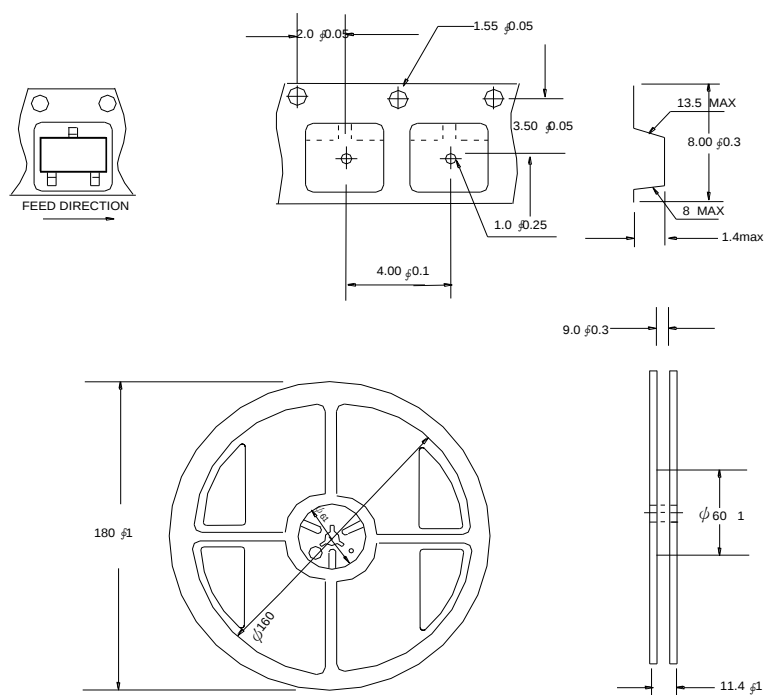
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### P-Channel Enhancement Mode MOSFET

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



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



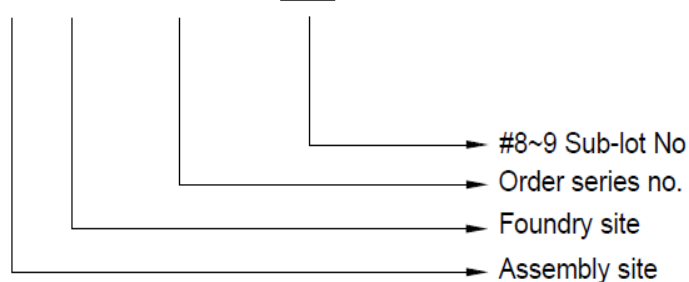
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### P-Channel Enhancement Mode MOSFET

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

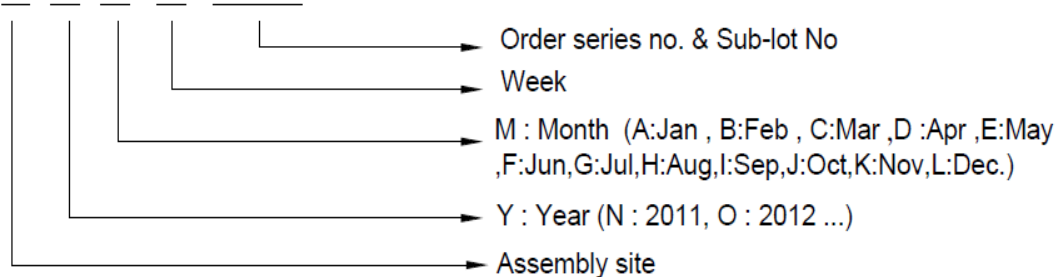
##### 1.LOT.NO.

M N 15M21 03



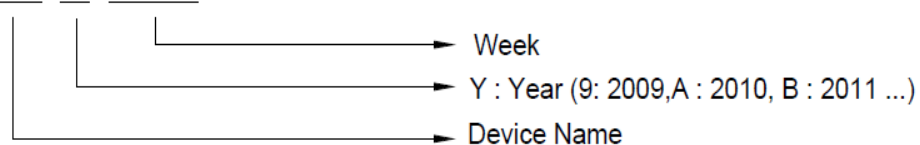
##### 2.Date Code

D Y M X XXX



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

XX Y WW



## PM597BA

### 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  | Great Power        | 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 | Pb Free label      |  Diameter: 1 cm bottom color: Green<br>Font color: Black Font style: Arial                              |
| 11 | Halogen Free label |  Diameter: 1 cm bottom color: Green<br>Font color: Black Font style: Arial                              |
| 12 | 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 |