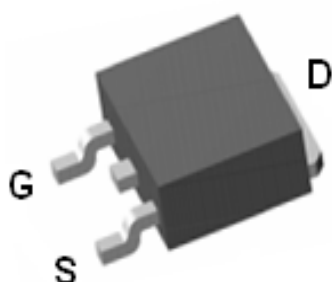


# PD6B2BA

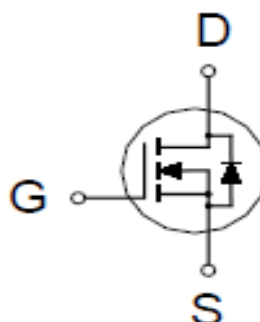
## N-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$           | $I_D$ |
|---------------|------------------------|-------|
| 30V           | 6.2mΩ @ $V_{GS} = 10V$ | 63A   |



TO-252



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                  |                                     | $V_{DS}$       | 30         | V                  |
| Gate-Source Voltage                   |                                     | $V_{GS}$       | ±20        |                    |
| Continuous Drain Current <sup>2</sup> | $T_C = 25\text{ }^{\circ}\text{C}$  | $I_D$          | 63         | A                  |
|                                       | $T_C = 100\text{ }^{\circ}\text{C}$ |                | 40         |                    |
| Pulsed Drain Current <sup>1</sup>     |                                     | $I_{DM}$       | 120        |                    |
| Avalanche Current                     |                                     | $I_{AS}$       | 25         |                    |
| Avalanche Energy                      | $L = 0.1\text{mH}$                  | $E_{AS}$       | 31         | mJ                 |
| Power Dissipation                     | $T_C = 25\text{ }^{\circ}\text{C}$  | $P_D$          | 48         | W                  |
|                                       | $T_C = 100\text{ }^{\circ}\text{C}$ |                | 19         |                    |
| 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 | $R_{\theta JA}$ |         | 62.5    | $^{\circ}\text{C} / \text{W}$ |
| Junction-to-Case    | $R_{\theta JC}$ |         | 2.6     |                               |

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

<sup>2</sup>Package limitation current is 39A.

## PD6B2BA

### N-Channel Enhancement Mode MOSFET

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

| PARAMETER                                                             | SYMBOL            | TEST CONDITIONS                                                | LIMITS |      |           | UNITS      |
|-----------------------------------------------------------------------|-------------------|----------------------------------------------------------------|--------|------|-----------|------------|
|                                                                       |                   |                                                                | MIN    | TYP  | MAX       |            |
| STATIC                                                                |                   |                                                                |        |      |           |            |
| Drain-Source Breakdown Voltage                                        | $V_{(BR)DSS}$     | $V_{GS} = 0V, I_D = 250\mu A$                                  | 30     |      |           | V          |
| Gate Threshold Voltage                                                | $V_{GS(th)}$      | $V_{DS} = V_{GS}, I_D = 250\mu A$                              | 1.3    | 1.6  | 2.3       |            |
| Gate-Body Leakage                                                     | $I_{GSS}$         | $V_{DS} = 0V, V_{GS} = \pm 20V$                                |        |      | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current                                       | $I_{DSS}$         | $V_{DS} = 24V, V_{GS} = 0V$                                    |        |      | 1         | $\mu A$    |
|                                                                       |                   | $V_{DS} = 20V, V_{GS} = 0V, T_J = 125^\circ C$                 |        |      | 10        |            |
| Drain-Source On-State Resistance <sup>1</sup>                         | $R_{DS(ON)}$      | $V_{GS} = 4.5V, I_D = 15A$                                     |        | 5.7  | 9         | m $\Omega$ |
|                                                                       |                   | $V_{GS} = 10V, I_D = 20A$                                      |        | 4.7  | 6.2       |            |
| Forward Transconductance <sup>1</sup>                                 | $g_{fs}$          | $V_{DS} = 5V, I_D = 20A$                                       |        | 75   |           | S          |
| DYNAMIC                                                               |                   |                                                                |        |      |           |            |
| Input Capacitance                                                     | $C_{iss}$         | $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$                          |        | 992  |           | pF         |
| Output Capacitance                                                    | $C_{oss}$         |                                                                |        | 189  |           |            |
| Reverse Transfer Capacitance                                          | $C_{rss}$         |                                                                |        | 122  |           |            |
| Gate Resistance                                                       | $R_g$             | $V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$                           |        | 2    |           | $\Omega$   |
| Total Gate Charge <sup>2</sup>                                        | $Q_{g(VGS=10V)}$  | $V_{DS} = 15V, I_D = 20A$                                      |        | 22   |           | nC         |
|                                                                       | $Q_{g(VGS=4.5V)}$ |                                                                |        | 12   |           |            |
| Gate-Source Charge <sup>2</sup>                                       | $Q_{gs}$          |                                                                |        | 2.3  |           |            |
| Gate-Drain Charge <sup>2</sup>                                        | $Q_{gd}$          |                                                                |        | 7.2  |           |            |
| Turn-On Delay Time <sup>2</sup>                                       | $t_{d(on)}$       | $V_{DS} = 15V, I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$ |        | 13   |           | nS         |
| Rise Time <sup>2</sup>                                                | $t_r$             |                                                                |        | 46   |           |            |
| Turn-Off Delay Time <sup>2</sup>                                      | $t_{d(off)}$      |                                                                |        | 37   |           |            |
| Fall Time <sup>2</sup>                                                | $t_f$             |                                                                |        | 44   |           |            |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ( $T_J = 25^\circ C$ ) |                   |                                                                |        |      |           |            |
| Continuous Current <sup>3</sup>                                       | $I_S$             |                                                                |        |      | 40        | A          |
| Forward Voltage <sup>1</sup>                                          | $V_{SD}$          | $I_F = 20A, V_{GS} = 0V$                                       |        |      | 1.2       | V          |
| Reverse Recovery Time                                                 | $t_{rr}$          | $I_F = 20A, dI_F/dt = 100A / \mu S$                            |        | 11.5 |           | nS         |
| Reverse Recovery Charge                                               | $Q_{rr}$          |                                                                |        | 2    |           | nC         |

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

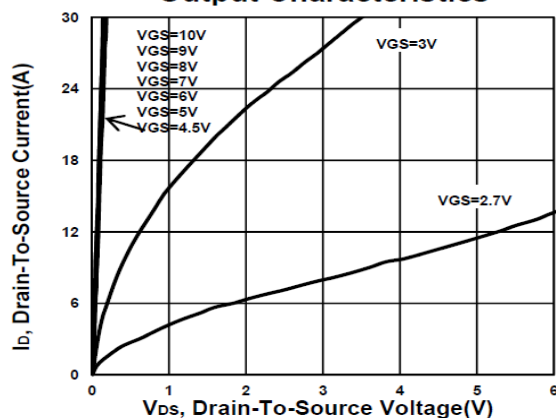
<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Package limitation current is 39A.

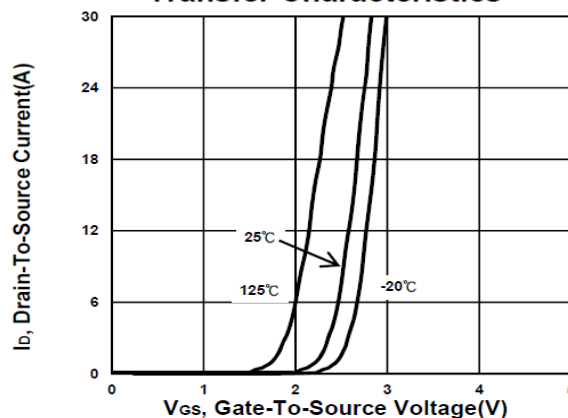
## PD6B2BA

### N-Channel Enhancement Mode MOSFET

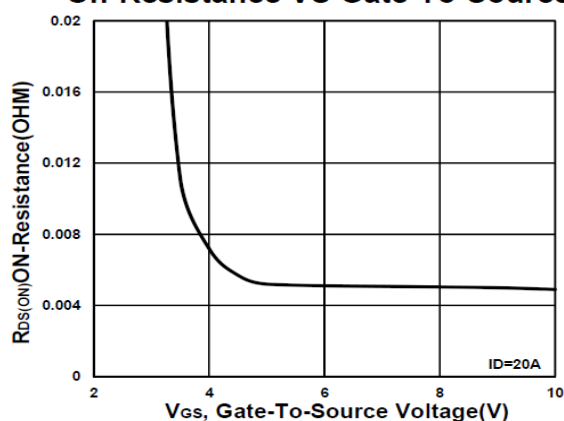
**Output Characteristics**



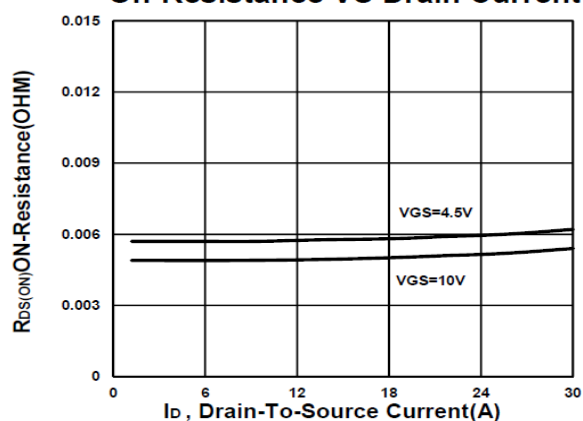
**Transfer Characteristics**



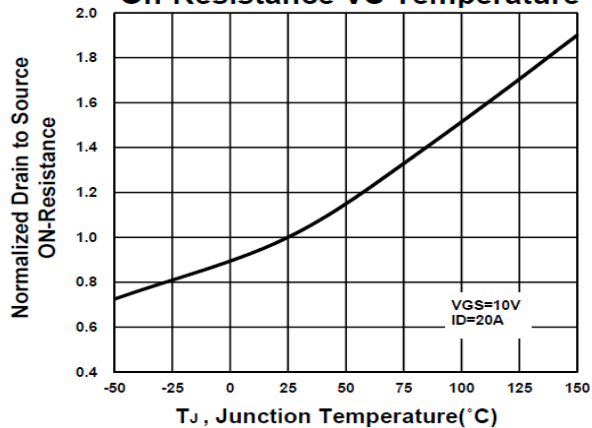
**On-Resistance VS Gate-To-Source**



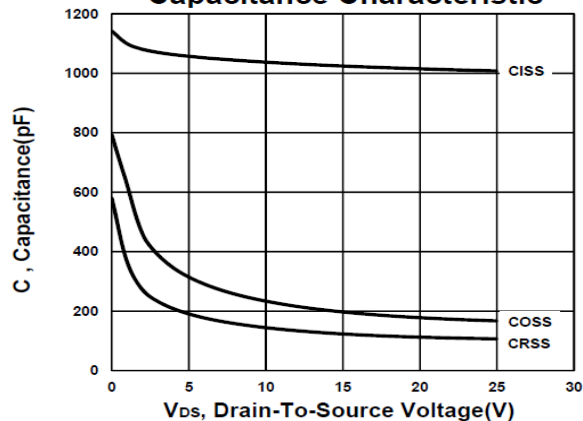
**On-Resistance VS Drain Current**



**On-Resistance VS Temperature**



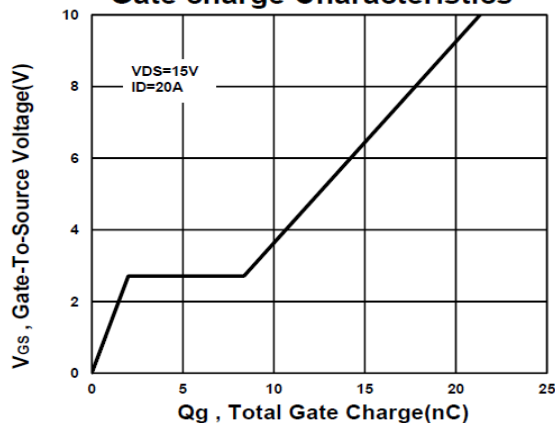
**Capacitance Characteristic**



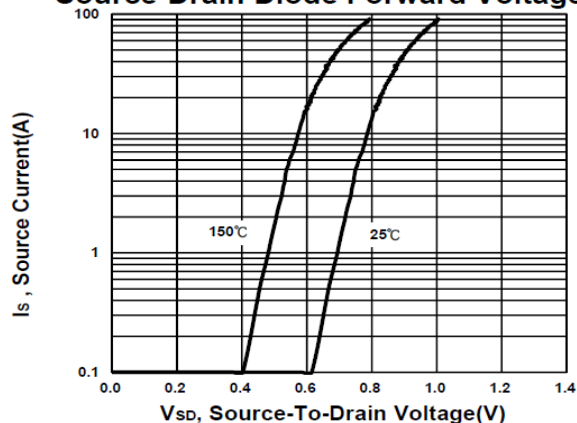
## PD6B2BA

### N-Channel Enhancement Mode MOSFET

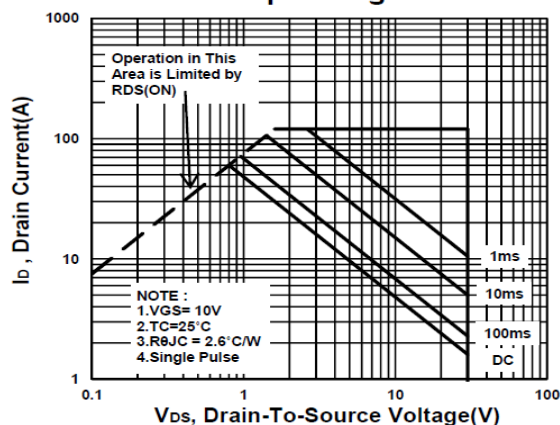
**Gate charge Characteristics**



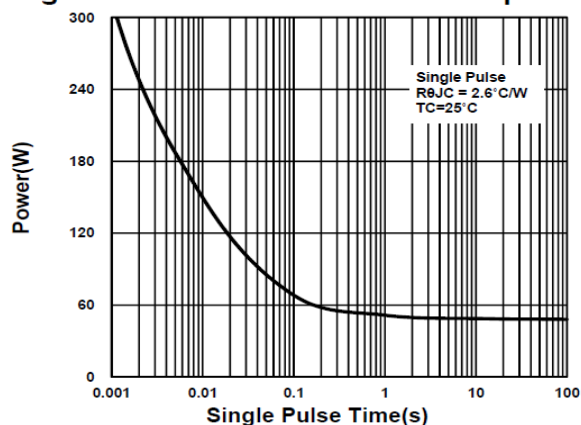
**Source-Drain Diode Forward Voltage**



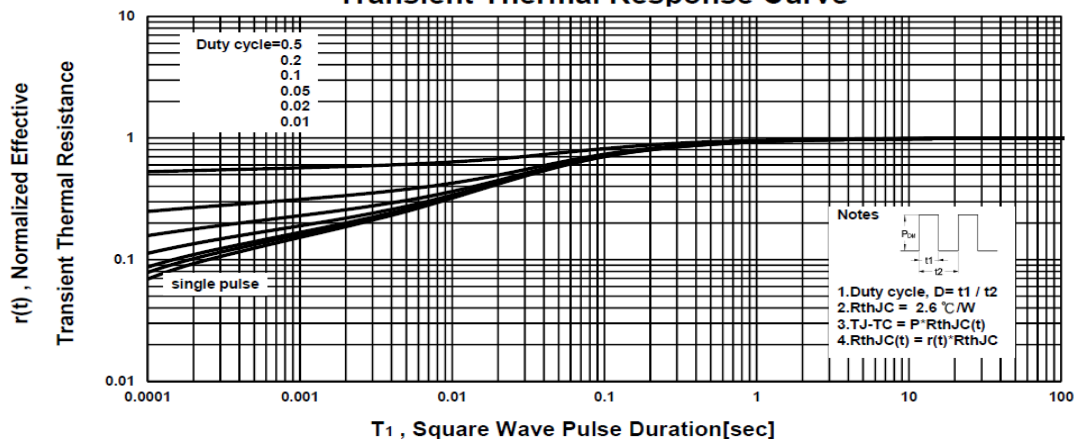
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**



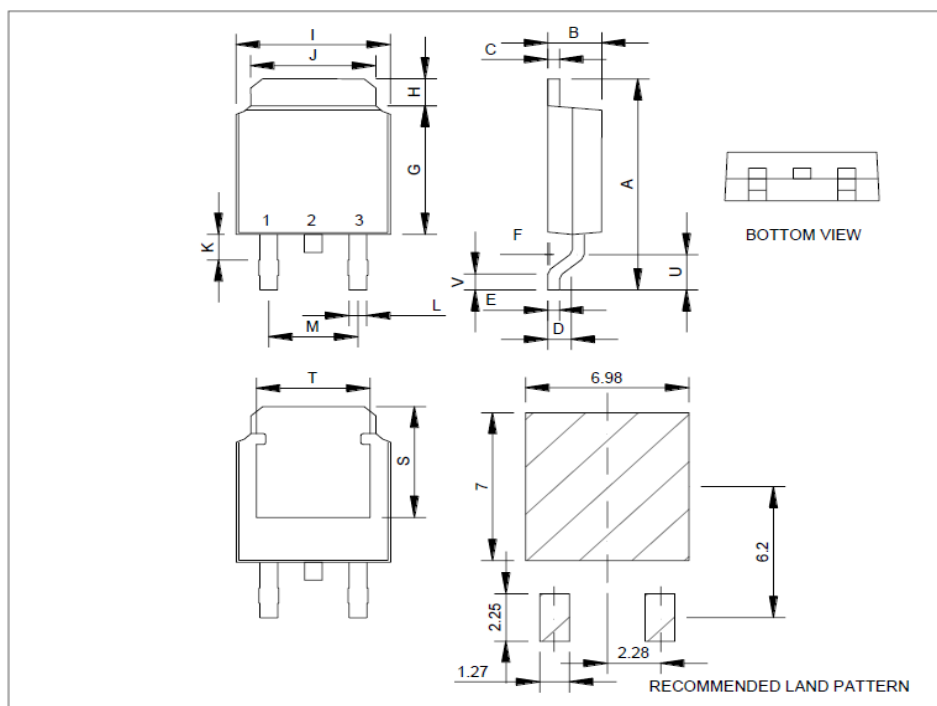
## PD6B2BA

### N-Channel Enhancement Mode MOSFET

#### Package Dimension

#### TO-252 (DPAK) MECHANICAL DATA

| Dimension | mm   |      |       | Dimension | mm   |      |      |
|-----------|------|------|-------|-----------|------|------|------|
|           | Min. | Typ. | Max.  |           | Min. | Typ. | Max. |
| A         | 8.9  | 10   | 10.41 | J         | 4.8  |      | 5.64 |
| B         | 2.1  | 2.2  | 2.4   | K         | 0.15 |      | 1.1  |
| C         | 0.4  | 0.5  | 0.61  | L         | 0.4  | 0.76 | 0.89 |
| D         | 0.82 | 1.2  | 1.5   | M         | 4.2  | 4.58 | 5    |
| E         | 0.4  | 0.5  | 0.61  | S         | 4.9  | 5.1  | 5.3  |
| F         | 0    |      | 0.2   | T         | 4.6  | 4.75 | 5.44 |
| G         | 5.3  | 6.1  | 6.3   | U         | 1.4  |      | 1.78 |
| H         | 0.9  |      | 1.7   | V         | 0.55 | 1.25 | 1.7  |
| I         | 6.3  | 6.5  | 6.8   |           |      |      |      |

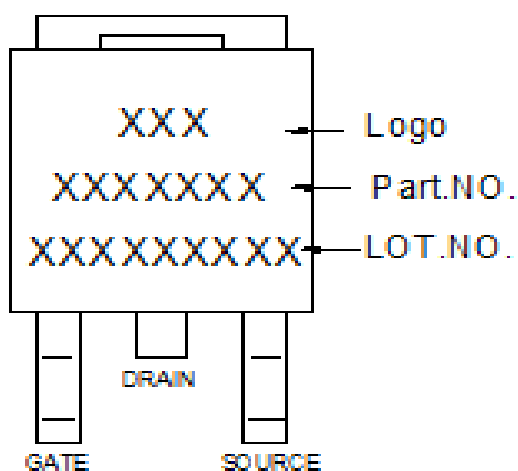


\*因为各家封装厂模具不同而外观略有所差异，不影响电性及Layout。

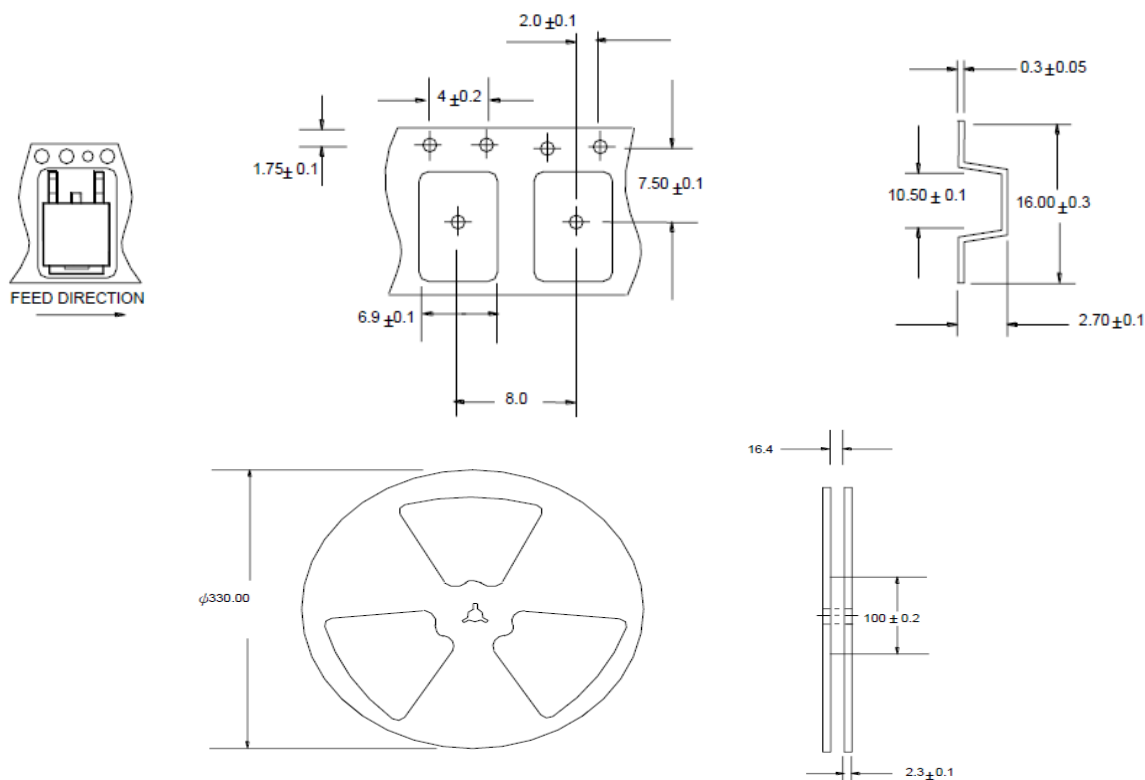
## PD6B2BA

### N-Channel Enhancement Mode MOSFET

#### A. Marking Information



#### B. Tape&Reel Information:2500pcs/Reel

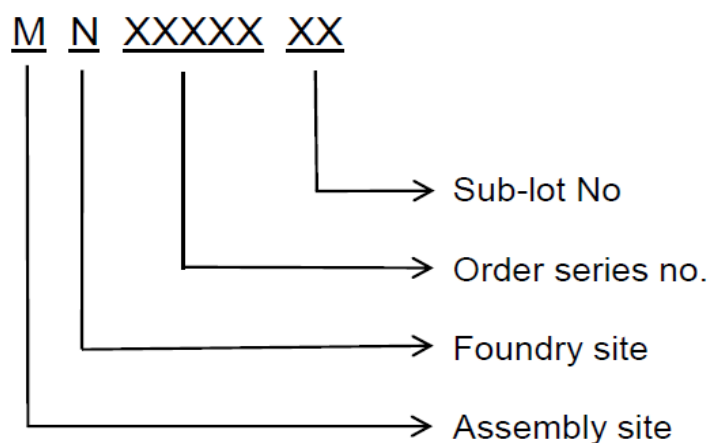


## PD6B2BA

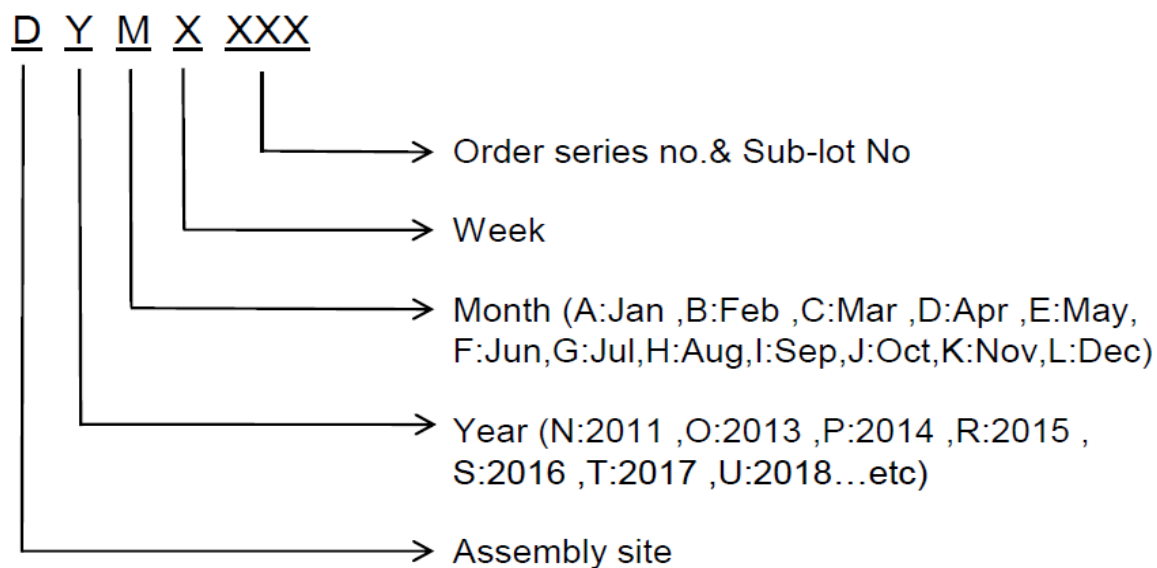
### N-Channel Enhancement Mode MOSFET

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

##### 1.Lot No.



##### 2.Date Code



## PD6B2BA

### N-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 |