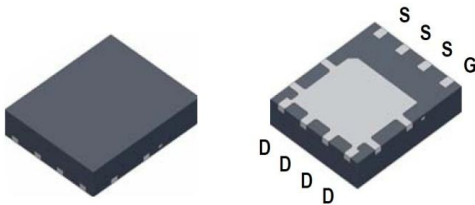


PK608BA

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | I_D |
|---------------|------------------------|-------|
| 40V | 3.5mΩ @ $V_{GS} = 10V$ | 87A |



PDFN 5X6P

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

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|--|-----------------------|----------------|------------|-------|
| Drain-Source Voltage | | V_{DS} | 40 | V |
| Gate-Source Voltage | | V_{GS} | ±20 | V |
| Continuous Drain Current ² | $T_c = 25\text{ °C}$ | I_D | 87 | A |
| | $T_c = 100\text{ °C}$ | | 55 | |
| Pulsed Drain Current ¹ | | I_{DM} | 150 | |
| Continuous Drain Current | $T_A = 25\text{ °C}$ | I_D | 20 | |
| | $T_A = 70\text{ °C}$ | | 15.6 | |
| Avalanche Current | | I_{AS} | 49 | |
| Avalanche Energy | $L = 0.1\text{mH}$ | E_{AS} | 120 | mJ |
| Power Dissipation | $T_c = 25\text{ °C}$ | P_D | 50 | W |
| | $T_c = 100\text{ °C}$ | | 20 | |
| Power Dissipation | $T_A = 25\text{ °C}$ | P_D | 2.4 | W |
| | $T_A = 70\text{ °C}$ | | 1.5 | |
| Operating Junction & Storage Temperature Range | | T_J, T_{stg} | -55 to 150 | °C |

THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|----------------------------------|-----------------|---------|---------|--------|
| Junction-to-Ambient ³ | $R_{\theta JA}$ | | 50.2 | °C / W |
| Junction-to-Case | $R_{\theta JC}$ | | 2.5 | |

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 51A.

³The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25\text{ °C}$.

PK608BA

N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS (T_J = 25 °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 = 250μA | 40 | | | V | |
| Gate Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 1.3 | 1.75 | 2.3 | | |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0V, V _{GS} = ±20V | | | ±100 | nA | |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 40V, V _{GS} = 0V | | | 1 | μA | |
| | | V _{DS} = 32V, V _{GS} = 0V, T _J = 55 °C | | | 10 | | |
| Drain-Source On-State Resistance ¹ | R _{DS(ON)} | V _{GS} = 4.5V, I _D = 15A | | 3 | 4.6 | mΩ | |
| | | V _{GS} = 10V, I _D = 20A | | 2.6 | 3.5 | | |
| Forward Transconductance ¹ | g _{fs} | V _{DS} = 5V, I _D = 20A | | 136 | | S | |
| DYNAMIC | | | | | | | |
| Input Capacitance | C _{iss} | V _{GS} = 0V, V _{DS} = 20V, f = 1MHz | | 3884 | | pF | |
| Output Capacitance | C _{oss} | | | 441 | | | |
| Reverse Transfer Capacitance | C _{rss} | | | 329 | | | |
| Gate Resistance | R _g | V _{GS} = 0V, V _{DS} = 0V, f = 1MHz | | 1.1 | | Ω | |
| Total Gate Charge ² | Q _g | V _{GS} = 10V | V _{DS} = 20V, V _{GS} = 10V, I _D = 20A | 77 | | nC | |
| | | V _{GS} = 4.5V | | 40 | | | |
| Gate-Source Charge ² | Q _{gs} | 11 | | | | | |
| Gate-Drain Charge ² | Q _{gd} | 19 | | | | | |
| Turn-On Delay Time ² | t _{d(on)} | I _D ≅ 20A, V _{GS} = 10V, R _{GEN} = 6Ω | | 25 | | | nS |
| Rise Time ² | t _r | | | 18 | | | |
| Turn-Off Delay Time ² | t _{d(off)} | | 65 | | | | |
| Fall Time ² | t _f | | 18 | | | | |
| SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C) | | | | | | | |
| Continuous Current | I _S | | | | 38 | A | |
| Forward Voltage ¹ | V _{SD} | I _F = 20A, V _{GS} = 0V | | | 1.3 | V | |
| Reverse Recovery Time | t _{rr} | I _F = 20A, di _F /dt = 100A / μS | | 25 | | nS | |
| Reverse Recovery Charge | Q _{rr} | | | 19 | | nC | |

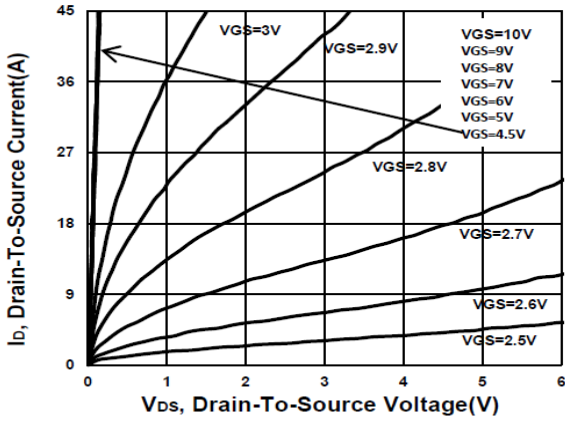
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

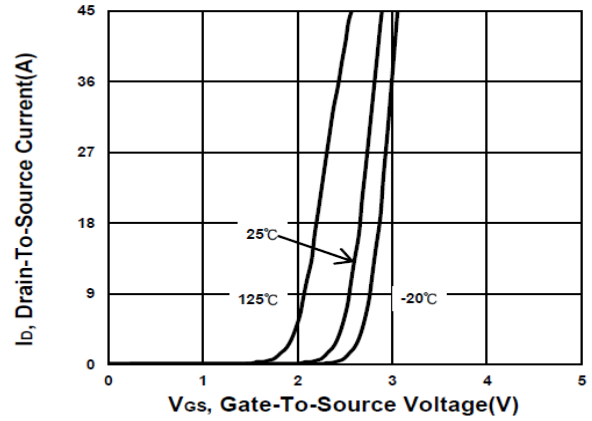
PK608BA

N-Channel Enhancement Mode MOSFET

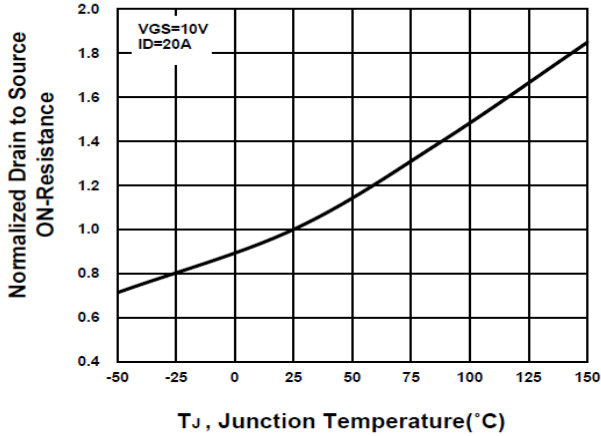
Output Characteristics



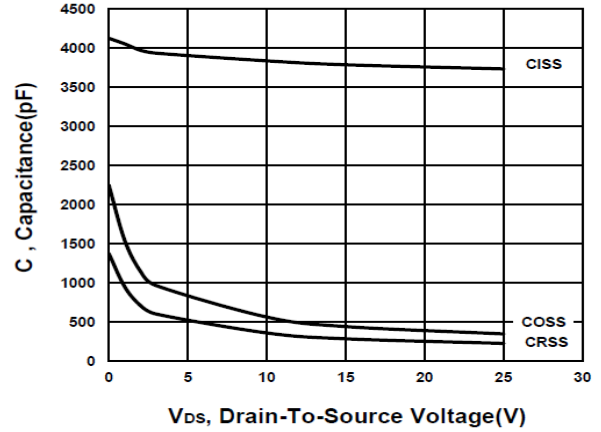
Transfer Characteristics



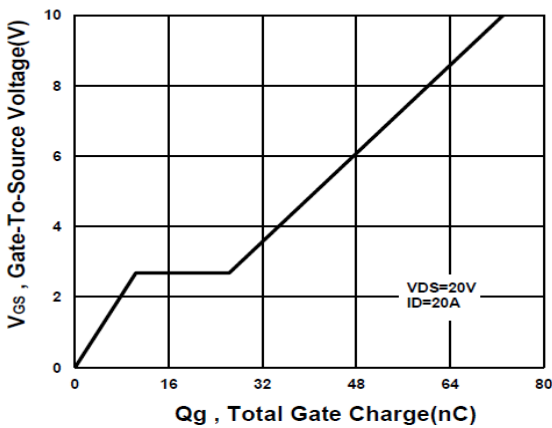
On-Resistance VS Temperature



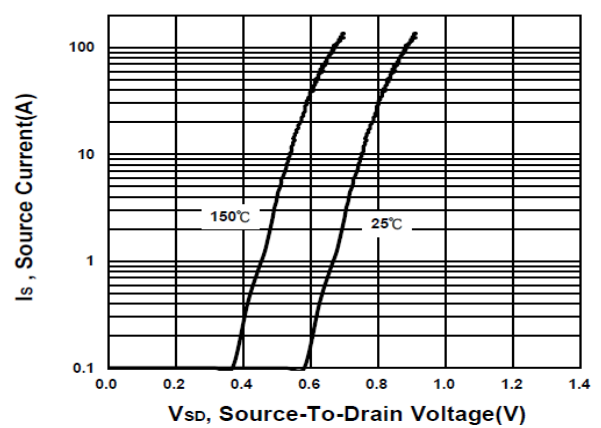
Capacitance Characteristic



Gate charge Characteristics



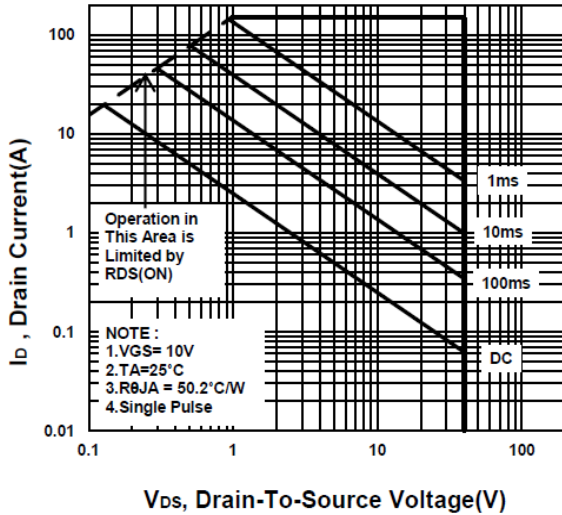
Source-Drain Diode Forward Voltage



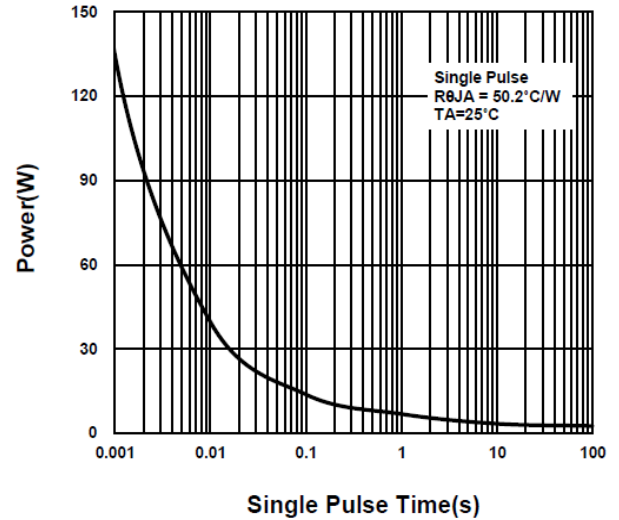
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N-Channel Enhancement Mode MOSFET

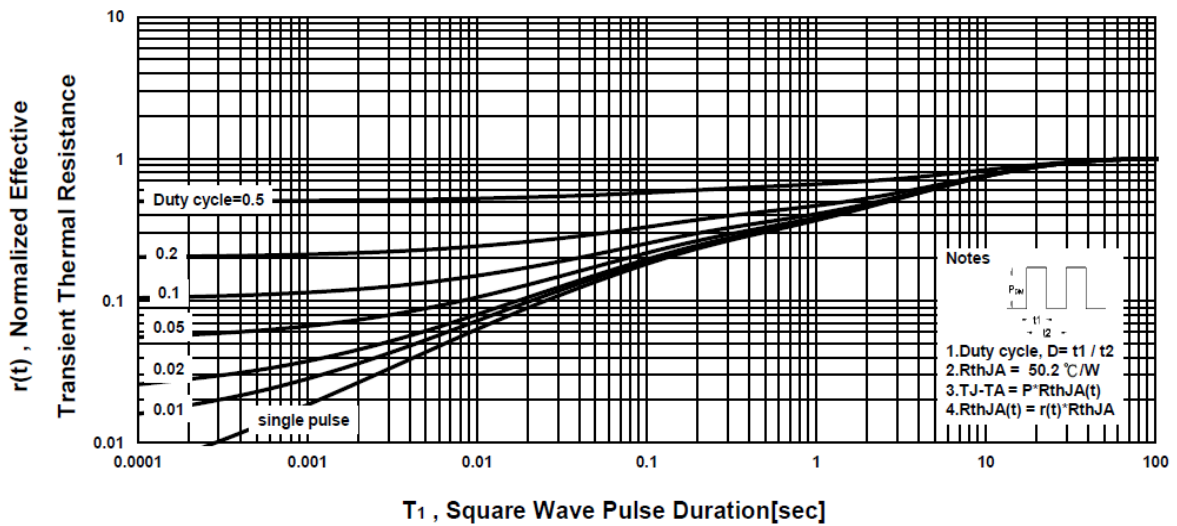
Safe Operating Area



Single Pulse Maximum Power Dissipation



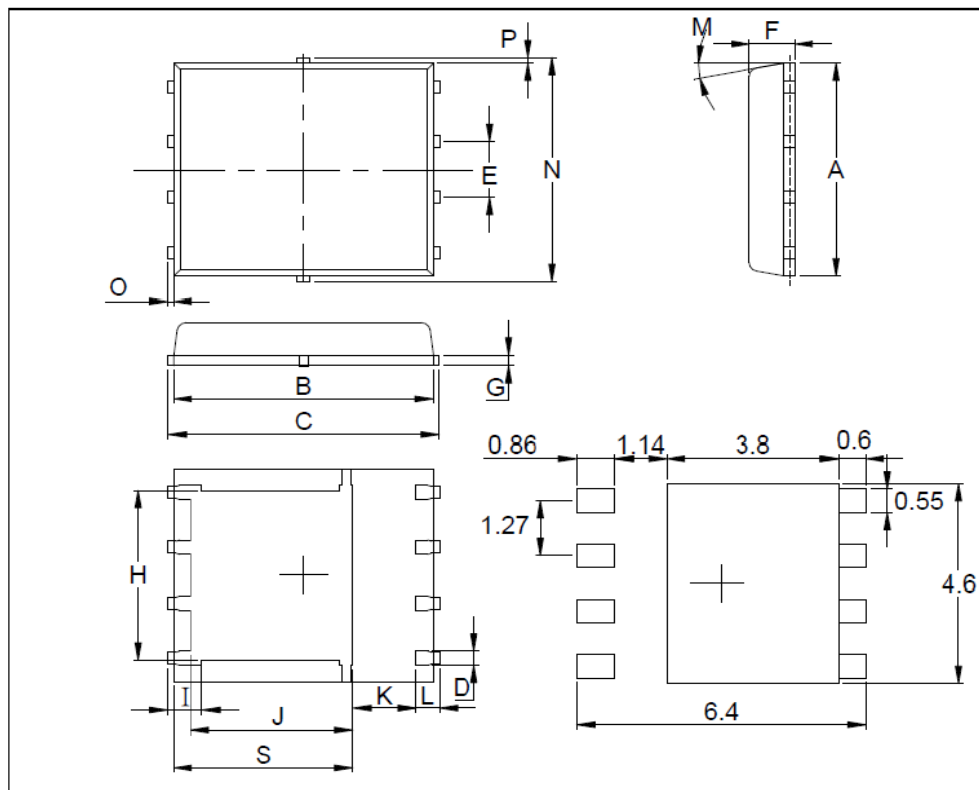
Transient Thermal Response Curve



PK608BA
N-Channel Enhancement Mode MOSFET

PDFN 5x6P MECHANICAL DATA

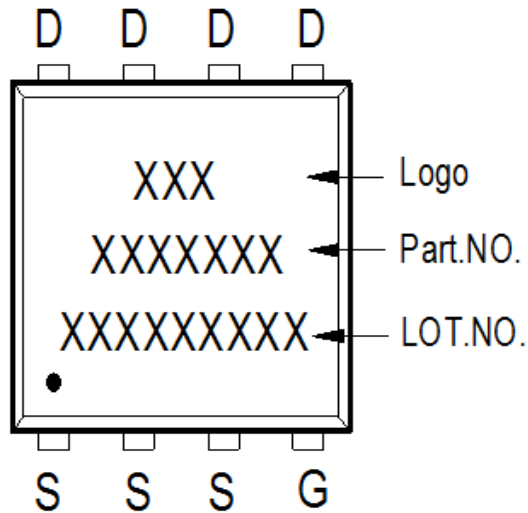
| Dimension | mm | | | Dimension | mm | | |
|-----------|------|------|------|-----------|------|------|-------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 4.8 | | 5.15 | J | 3.33 | | 3.78 |
| B | 5.44 | | 5.9 | K | 0.9 | | |
| C | 5.9 | | 6.35 | L | 0.35 | | 0.712 |
| D | 0.33 | | 0.51 | M | 0° | | 12° |
| E | | 1.27 | | N | 4.8 | | 5.5 |
| F | 0.8 | | 1.25 | O | 0.05 | | 0.3 |
| G | 0.15 | | 0.34 | P | 0.06 | | 0.2 |
| H | 3.61 | | 4.31 | S | 3.69 | | 4.19 |
| I | 0.35 | | 0.71 | | | | |



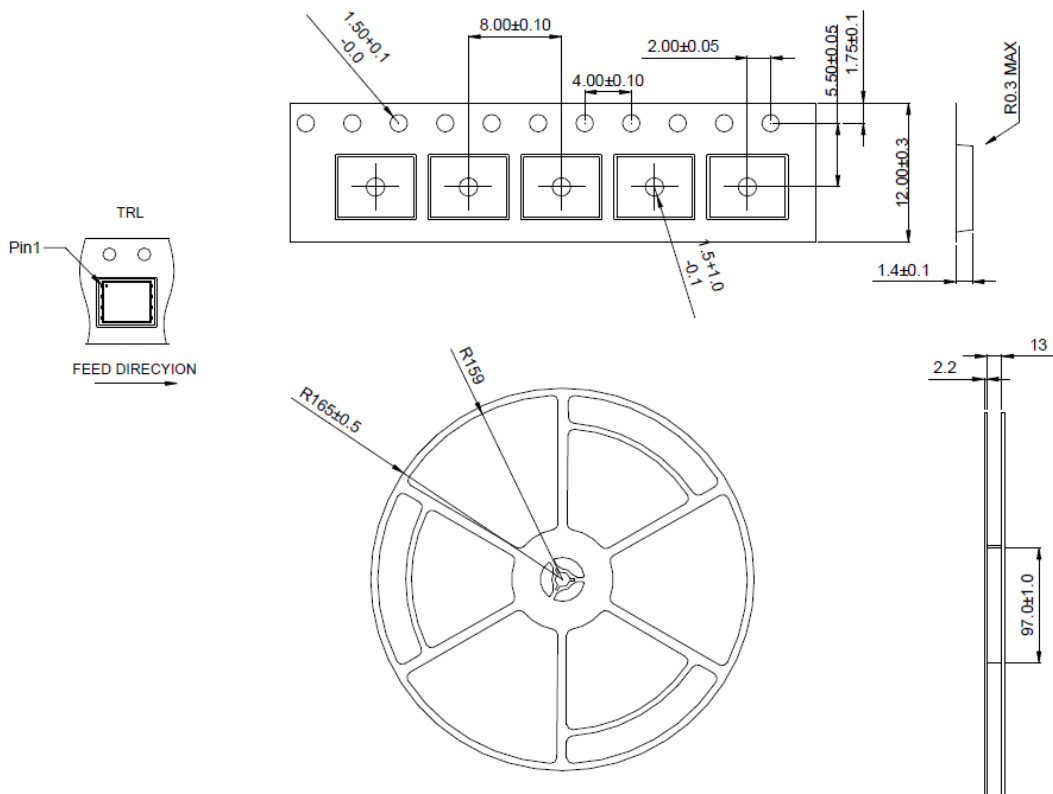
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N-Channel Enhancement Mode MOSFET

A. Marking Information



B. Tape & Reel Information: 3000pcs/Reel

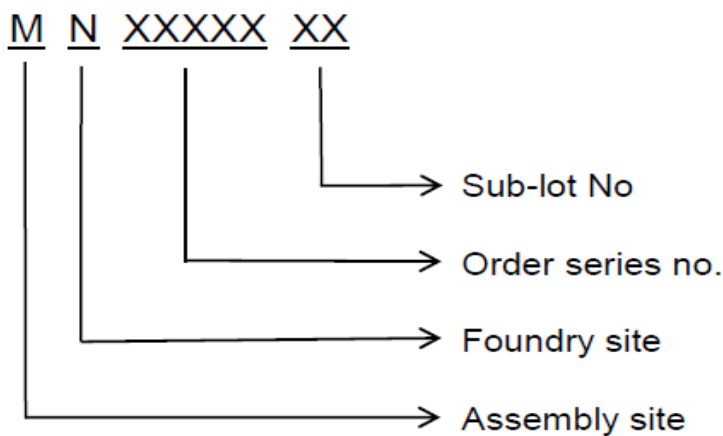


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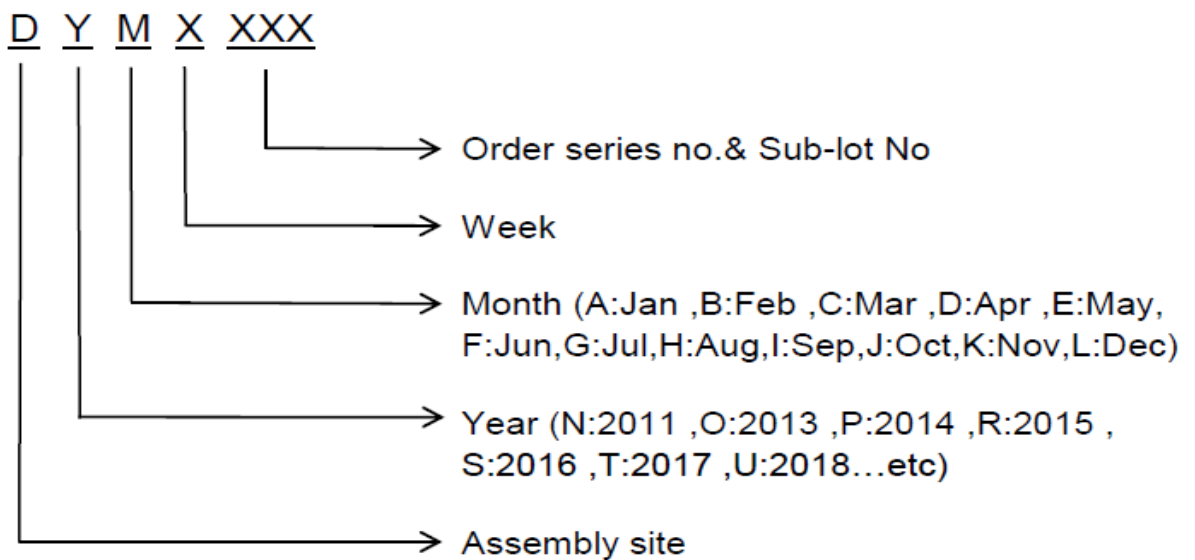
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C. Lot No.&Date Code rule

1.Lot No.



2.Date Code





PK608BA

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 (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 bottom color: White Font color: Black Font style: Arial |
| 11 | Halogen Free label |  Diameter: 10 mm bottom color: Green Font color: Black Font style: Arial |
| 12 | Scan information | Device / Lot / D/C / QTY , Insert "/" between every parts. for example: P3055LDG/G12345601/GGG2301/2000 DPI (Dots per inch): Over 300 dpi Code : Code 128 Height: 6 mm at least |