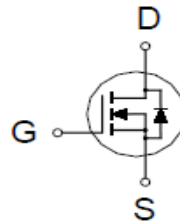
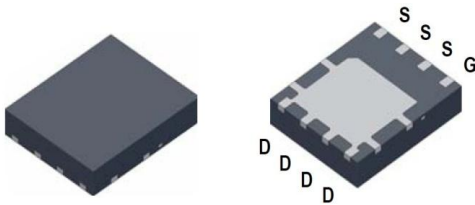


# PK5E6BA

## N-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
30V	6mΩ @ $V_{GS} = 10V$	52A



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

PDFN 5X6P

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		$V_{DS}$	30	V
Gate-Source Voltage		$V_{GS}$	±25	V
Continuous Drain Current <sup>4</sup>	$T_C = 25\text{ °C}$	$I_D$	52	A
	$T_C = 100\text{ °C}$		33	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	120	
Continuous Drain Current	$T_A = 25\text{ °C}$	$I_D$	19	
	$T_A = 70\text{ °C}$		15	
Avalanche Current		$I_{AS}$	33	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	54	mJ
Power Dissipation	$T_C = 25\text{ °C}$	$P_D$	31	W
	$T_C = 100\text{ °C}$		12.5	
Power Dissipation <sup>3</sup>	$T_A = 25\text{ °C}$	$P_D$	4	W
	$T_A = 70\text{ °C}$		2.7	
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 <sup>2</sup>	$t \leq 10\text{s}$	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient <sup>2</sup>	Steady-State	$R_{\theta JA}$		51	
Junction-to-Case	Steady-State	$R_{\theta JC}$		4	

<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  $T_A = 25\text{ °C}$ .

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

<sup>4</sup>Package limitation current is 35A.

# PK5E6BA

## N-Channel Enhancement Mode MOSFET

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS	
			MIN	TYP	MAX		
<b>STATIC</b>							
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.3	1.5	2.3		
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±25V			±100	nA	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	μA	
		V <sub>DS</sub> = 20V, 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> = 4.5V, I <sub>D</sub> = 8.8A		5.4	9	mΩ	
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 11A		3.5	6		
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 5V, I <sub>D</sub> = 11A		36		S	
<b>DYNAMIC</b>							
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		1009		pF	
Output Capacitance	C <sub>oss</sub>			327			
Reverse Transfer Capacitance	C <sub>rss</sub>			195			
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		1.6		Ω	
Total Gate Charge <sup>2</sup>	Q <sub>g</sub>	V <sub>GS</sub> = 10V	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 10V, I <sub>D</sub> = 11A		23	nC	
		V <sub>GS</sub> = 4.5V			13		
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			2			
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			7.6			
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>	I <sub>D</sub> ≅ 11A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = 6Ω			23		nS
Rise Time <sup>2</sup>	t <sub>r</sub>				25		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			50			
Fall Time <sup>2</sup>	t <sub>f</sub>			21			
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>							
Continuous Current	I <sub>S</sub>				25	A	
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 11A, V <sub>GS</sub> = 0V			1.2	V	
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 11A, di <sub>F</sub> /dt = 100A / μS		21		nS	
Reverse Recovery Charge	Q <sub>rr</sub>				7.8		nC

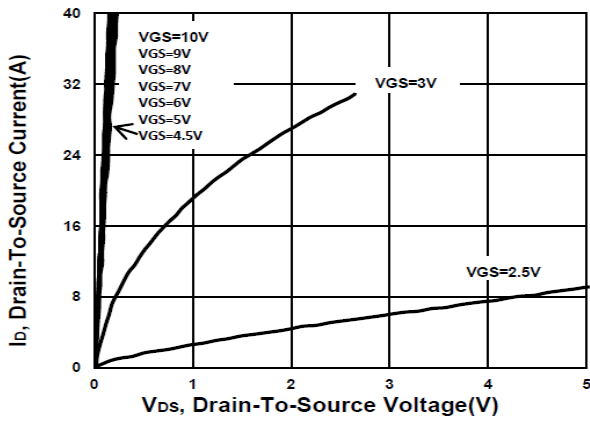
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

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

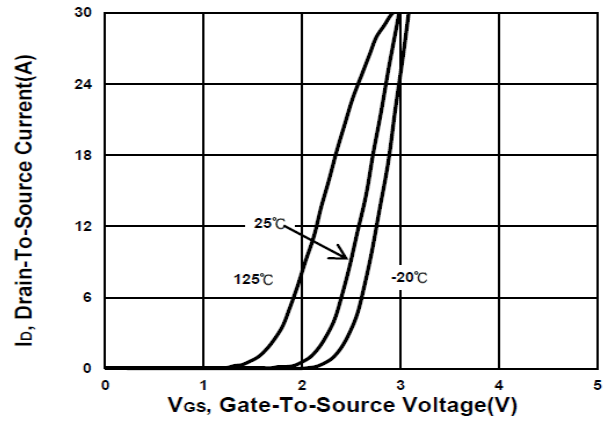
# PK5E6BA

## N-Channel Enhancement Mode MOSFET

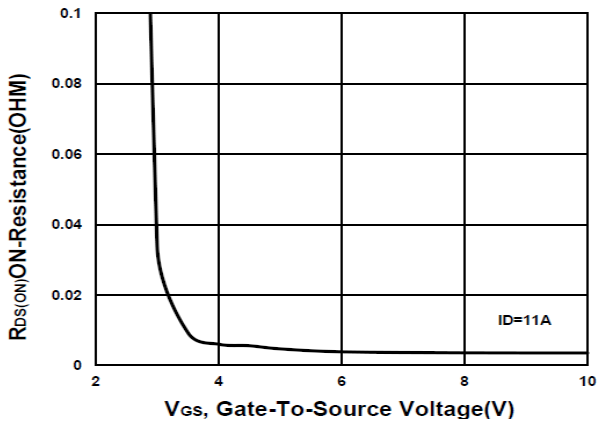
**Output Characteristics**



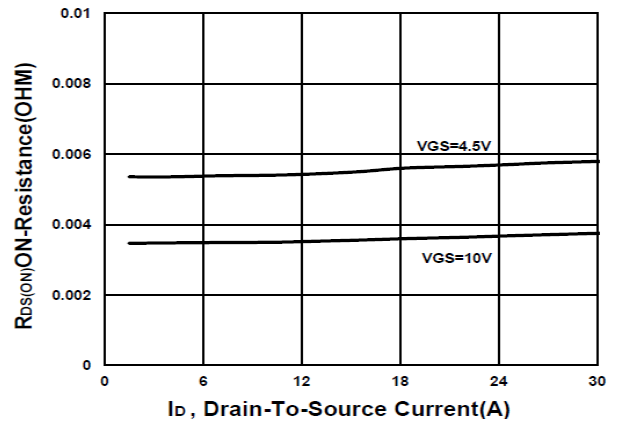
**Transfer Characteristics**



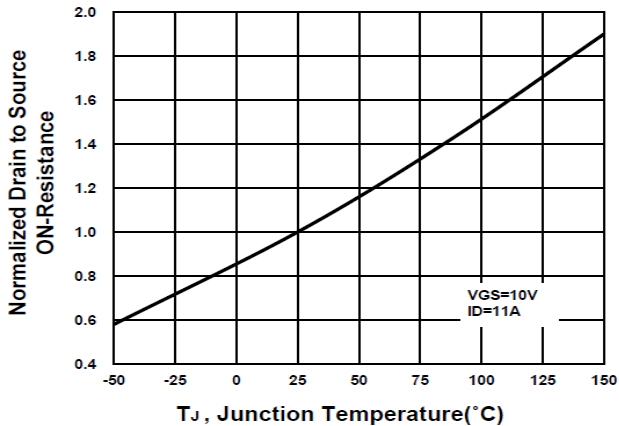
**On-Resistance VS Gate-To-Source**



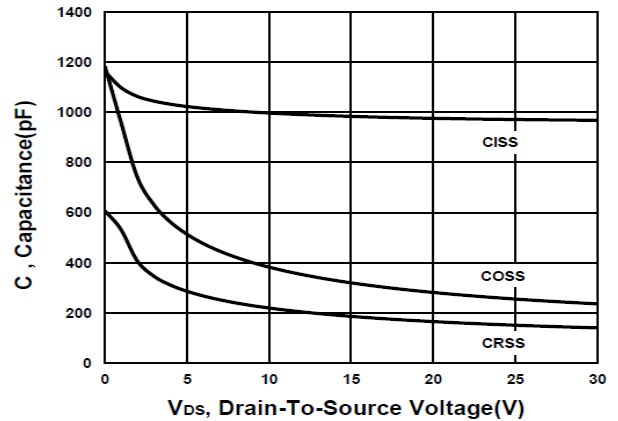
**On-Resistance VS Drain Current**



**On-Resistance VS Temperature**



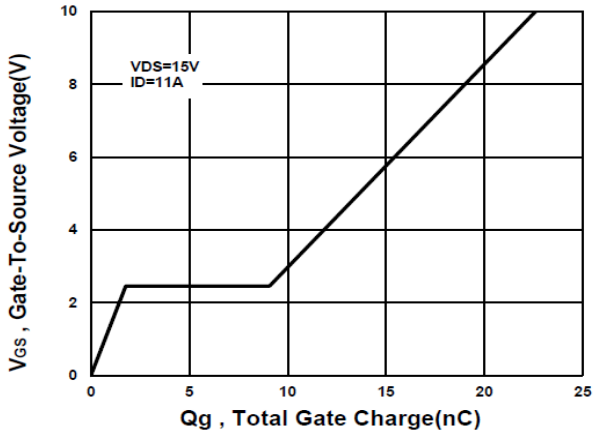
**Capacitance Characteristic**



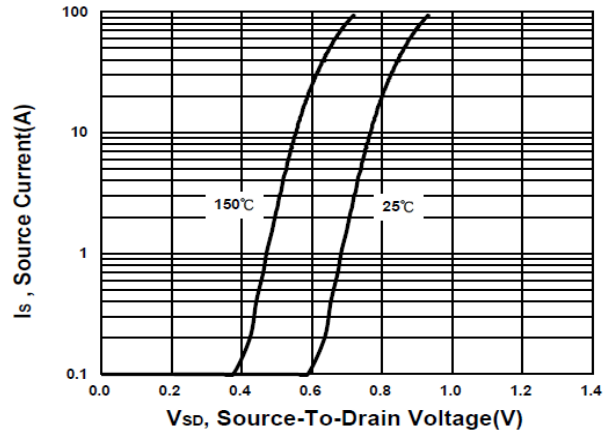
# PK5E6BA

## N-Channel Enhancement Mode MOSFET

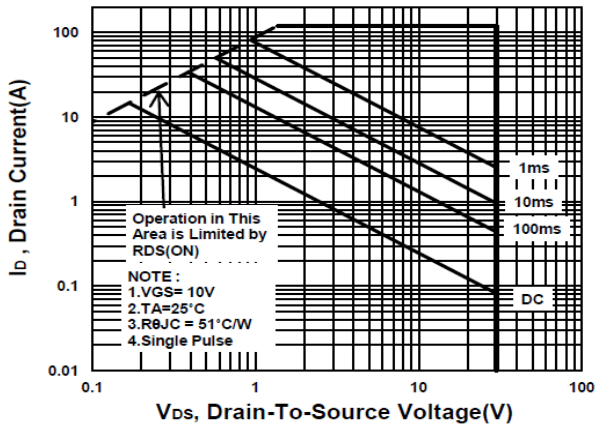
**Gate charge Characteristics**



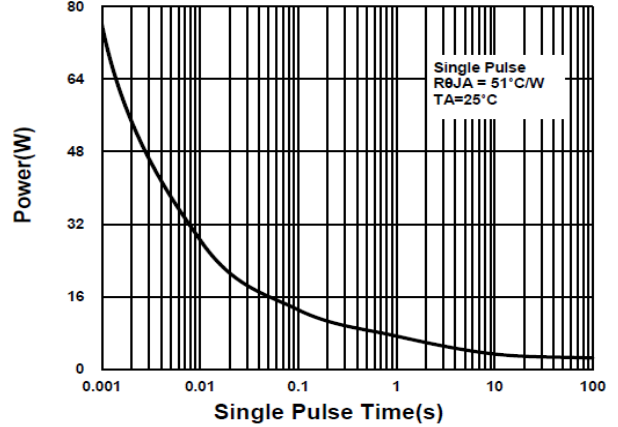
**Source-Drain Diode Forward Voltage**



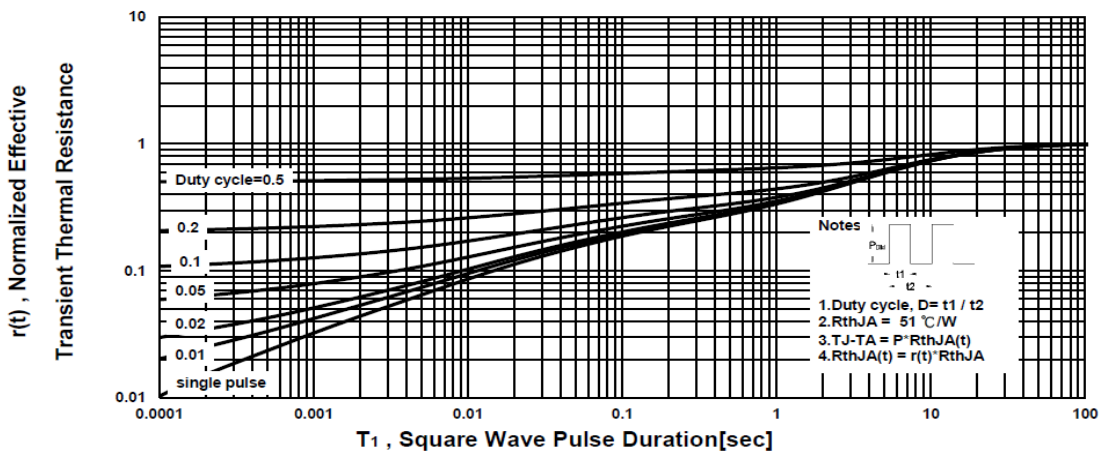
**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

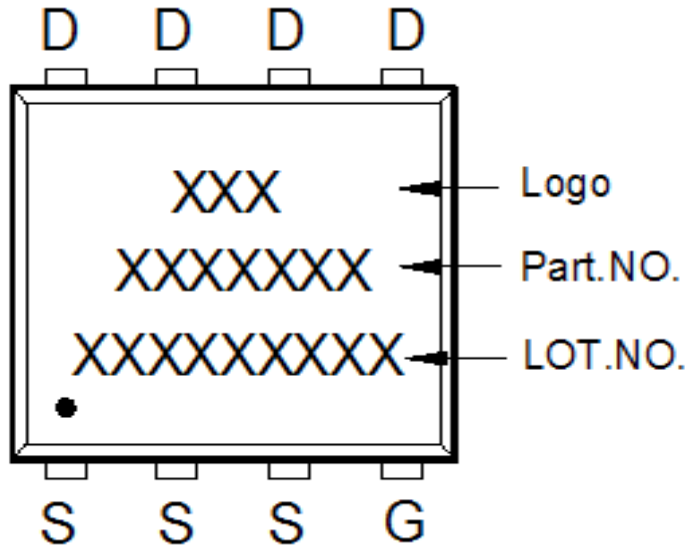




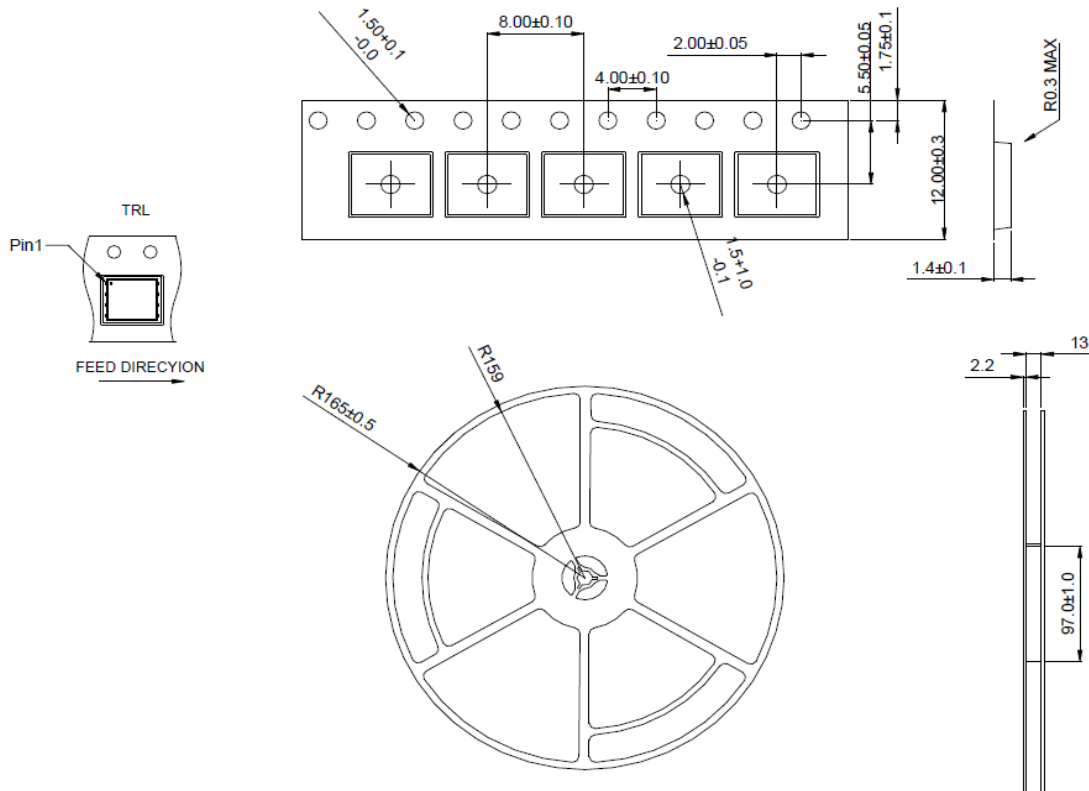
# PK5E6BA

## N-Channel Enhancement Mode MOSFET

### A. Marking Information



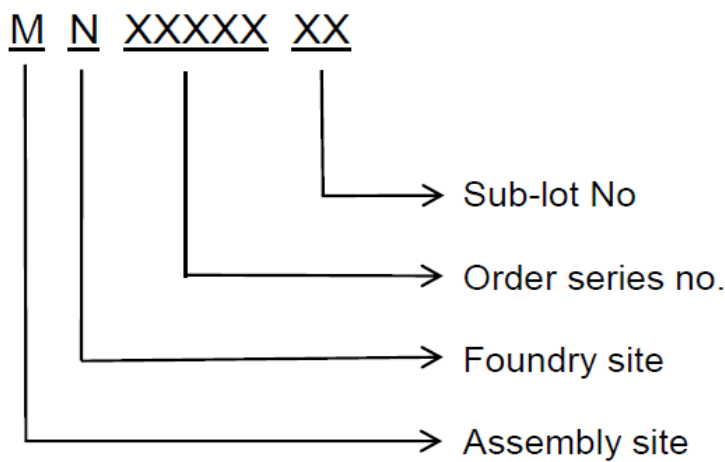
### B. Tape & Reel Information: 3000pcs/Reel



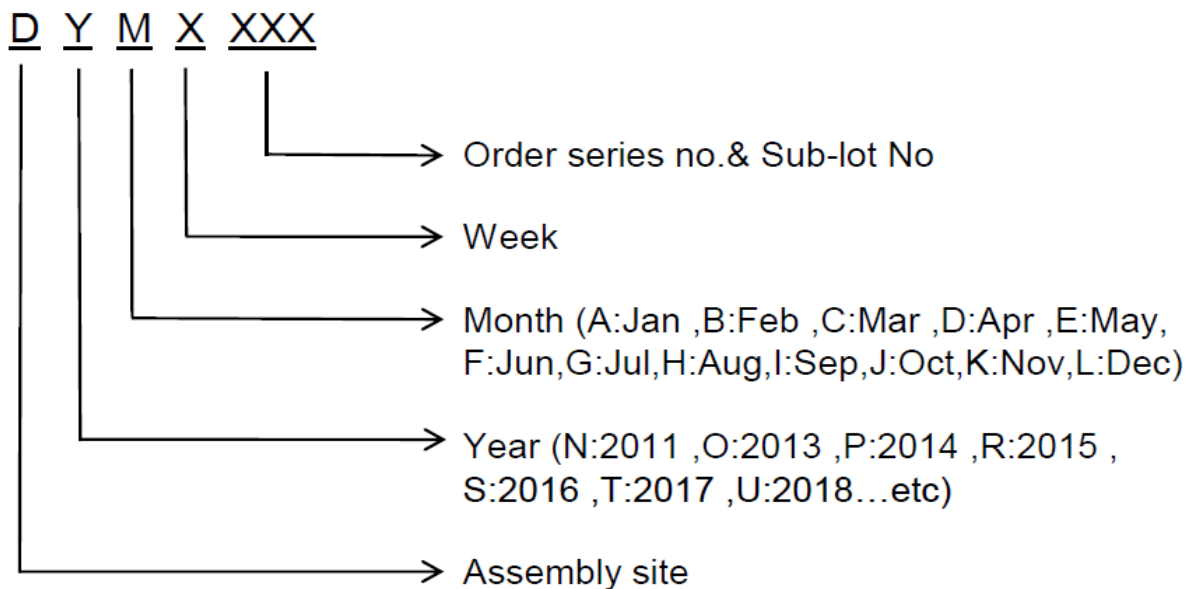
**PK5E6BA**  
**N-Channel Enhancement Mode MOSFET**

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

1.Lot No.



2.Date Code





## PK5E6BA

### 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