UNIKC Semiconductor

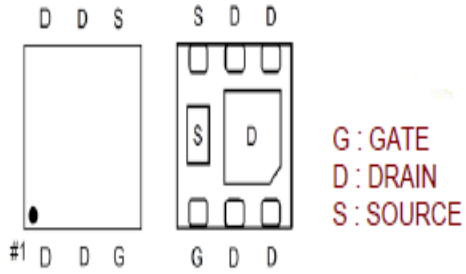
RoHS Compliant

P1603BEX

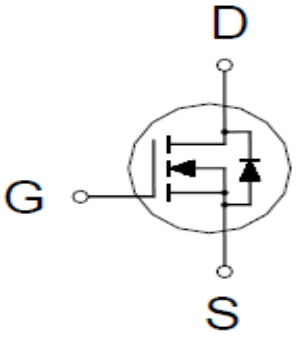
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D[3]
30V	16mΩ @V_{GS} = 10V	24A



PDFN 2X2S



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[3]	T_C = 25 °C	I_D	24	A
	T_C = 100 °C		15	
	T_A = 25 °C		8	
	T_A= 70 °C		6.3	
Pulsed Drain Current[1]		I_{DM}	60	
Avalanche Current		I_{AS}	20.5	
Avalanche Energy	L = 0.1mH	E_{AS}	21	mJ
Power Dissipation	T_C = 25 °C	P_D	15	W
	T_C = 100 °C		6	
	T_A = 25 °C		1.7	
	T_A = 70 °C		1	
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[2]	$R_{\theta JA}$		73	°C / W
Junction-to-Case	$R_{\theta JC}$		8	

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper.

[3]Package limitation current is 18A.

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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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.5	2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 8A		16.4	25	mΩ
		V_{GS} = 10V, I_D = 8A		13.3	16	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 8A		37		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		513		pF
Output Capacitance	C_{oss}			94		
Reverse Transfer Capacitance	C_{rss}			66		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2.6		Ω
Total Gate Charge[2]	Q_g(V_{GS}= 10V)	V_{DS} = 15V , I_D = 8A		13		nC
	Q_g(V_{GS}= 4.5V)			7.2		
Gate-Source Charge[2]	Q_{gs}			1.2		
Gate-Drain Charge[2]	Q_{gd}			4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD}= 15V, I_D ≅ 8A, V_{GEN} = 10V, R_G= 6Ω		12		nS
Rise Time[2]	t_r			11		
Turn-Off Delay Time[2]	$t_{d(off)}$			25		
Fall Time[2]	t_f			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				15	A
Forward Voltage[1]	V_{SD}	I_F = 8A, V_{GS} = 0V		0.8	1	V
Reverse Recovery Time	t_{rr}	I_F = 8A, dI_F/dt = 100A / μS		11.3		nS
Reverse Recovery Charge	Q_{rr}			2.5		nC

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

[2]Independent of operating temperature.

[3]Package limitation current is 18A.

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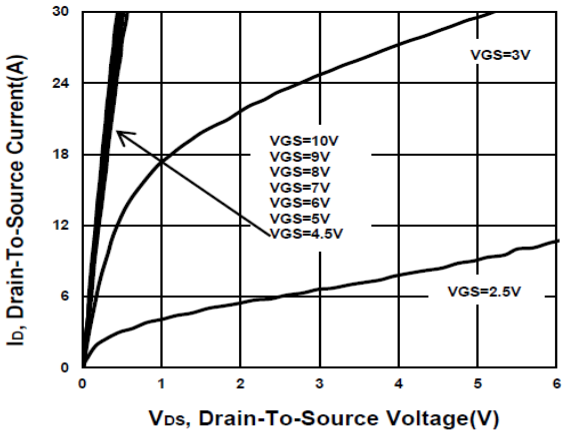
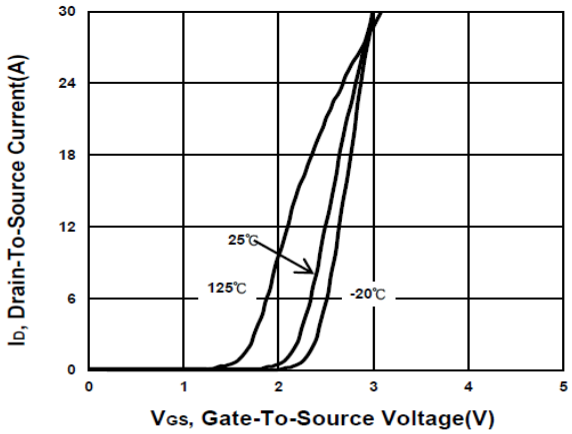
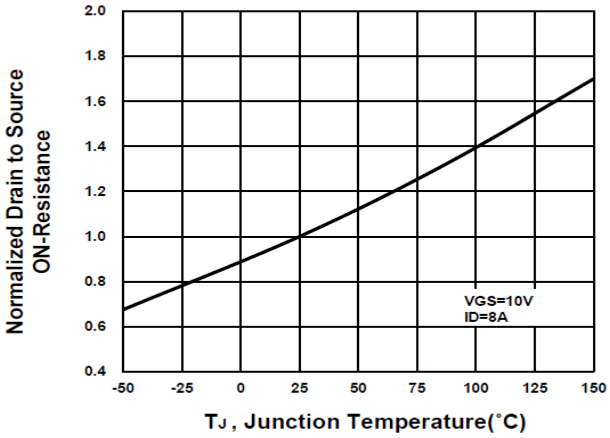
Output Characteristics



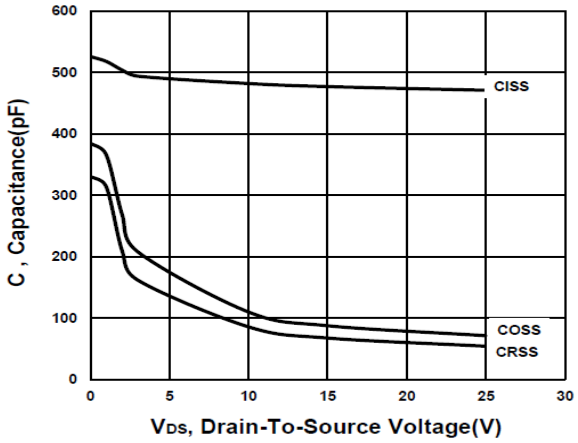
Transfer Characteristics



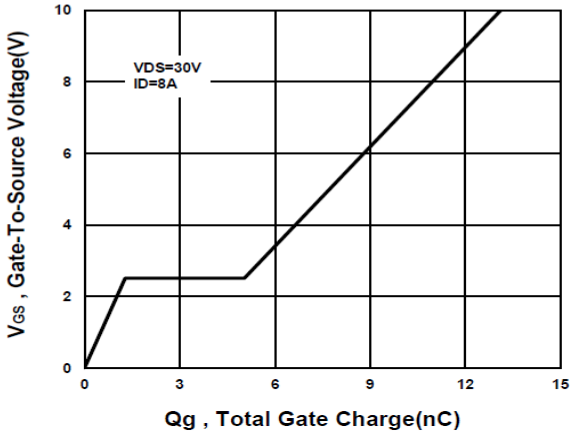
On-Resistance VS Temperature



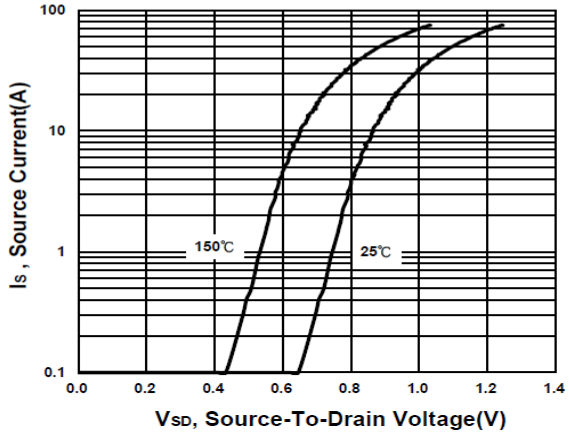
Capacitance Characteristic



Gate charge Characteristics



Source-Drain Diode Forward Voltage



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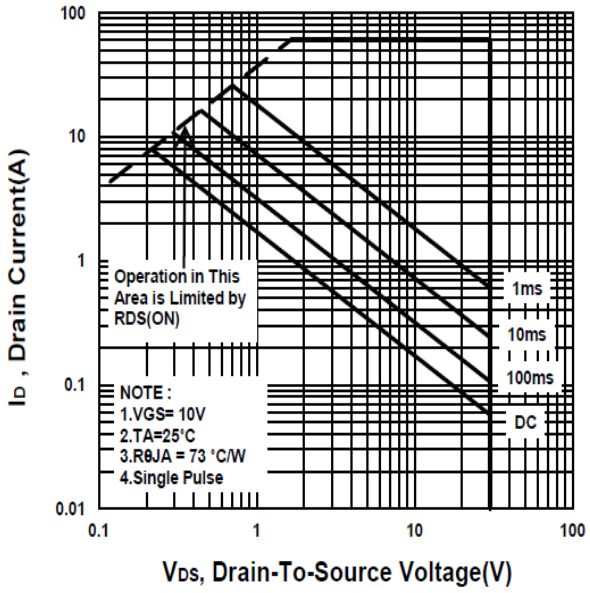
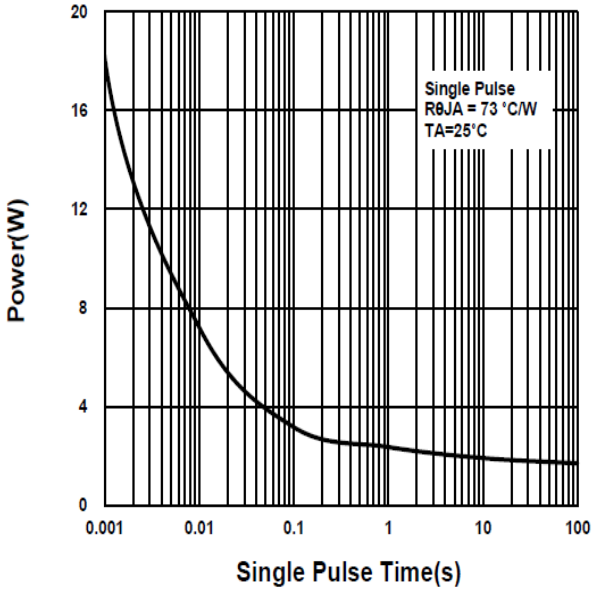
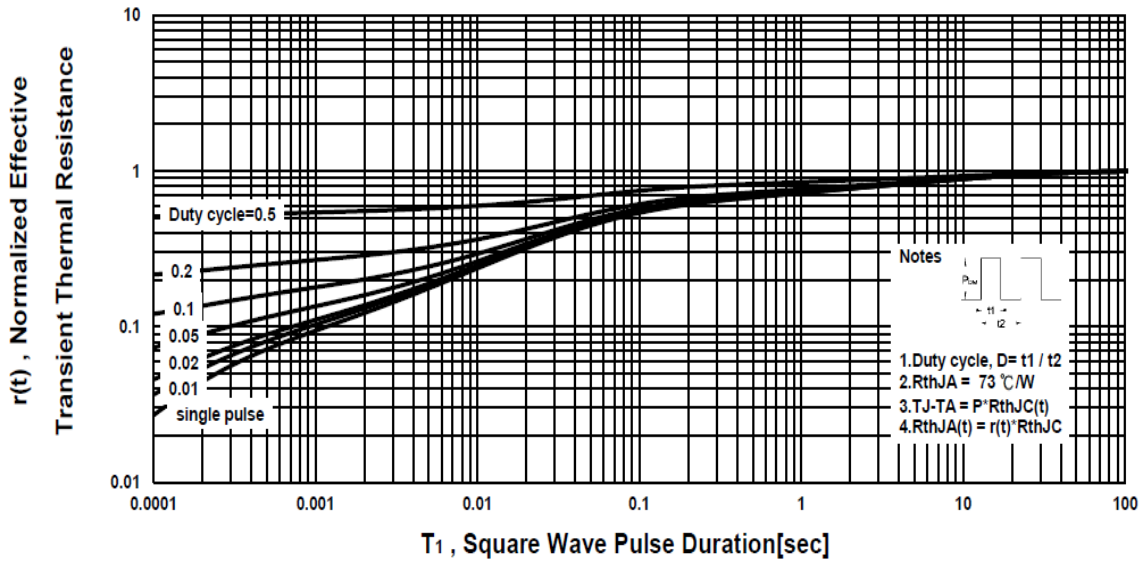
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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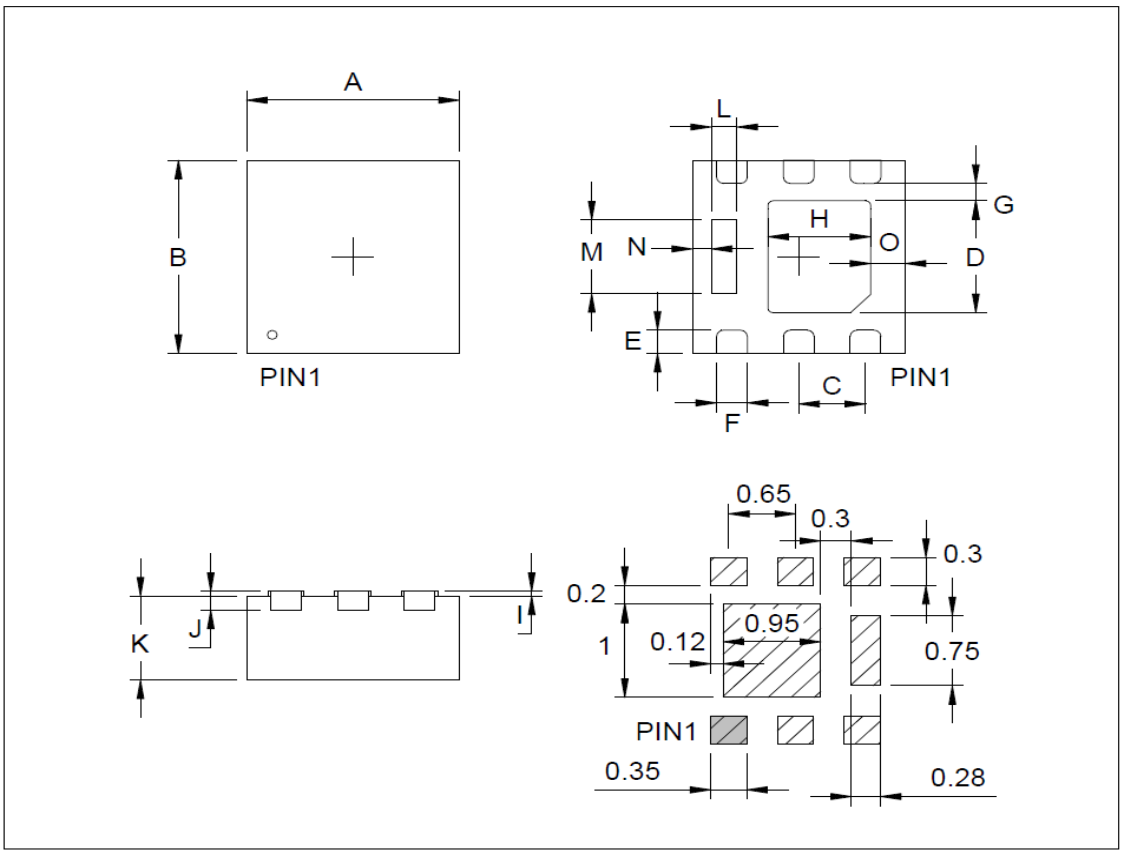
Package Dimension

PDFN 2x2S MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	1.9		2.1	I	0		0.05
B	1.9		2.1	J		0.203	
C	0.55	0.65	0.75	K	0.55		0.8
D	0.85		1.25	L	0.2		0.4
E	0.174	0.25	0.326	M	0.46		0.85
F	0.25		0.35	N		0.15	
G		0.2		O		0.23	
H	0.8		1.15				



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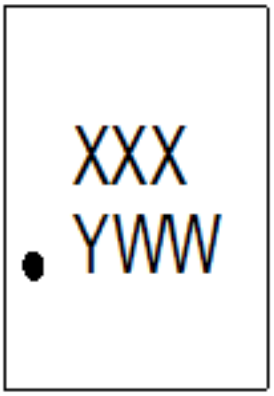
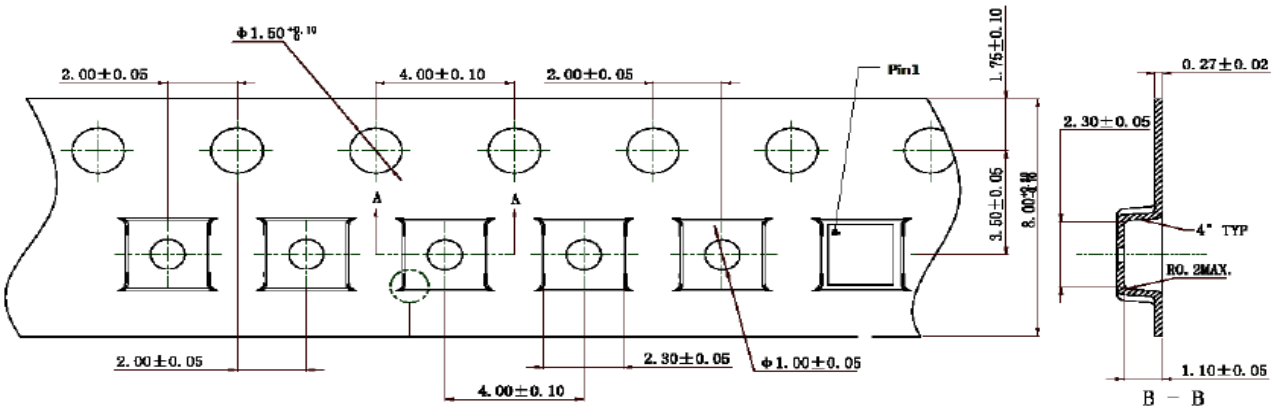
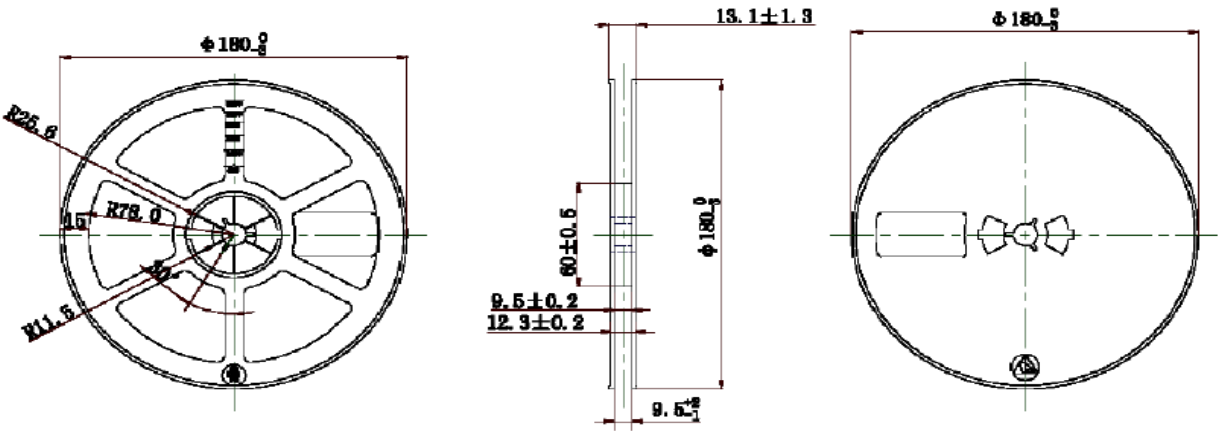
A. Marking Information(此产品代码为：B4)



XX(前两码):产品代码
X:封装厂代码
Y:year
WW:week

B. Tape&Reel Information:3000pcs/Reel





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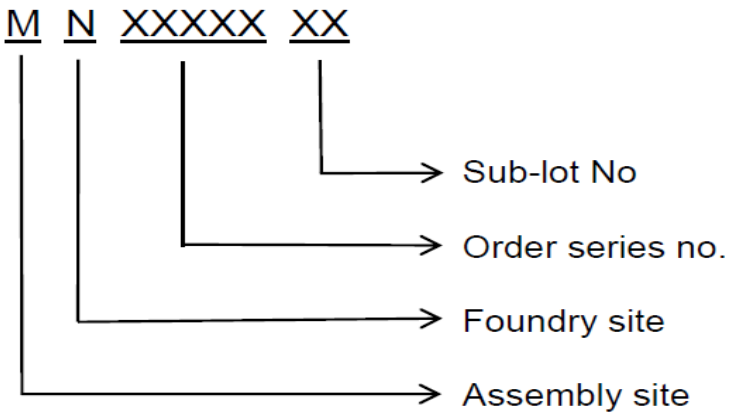
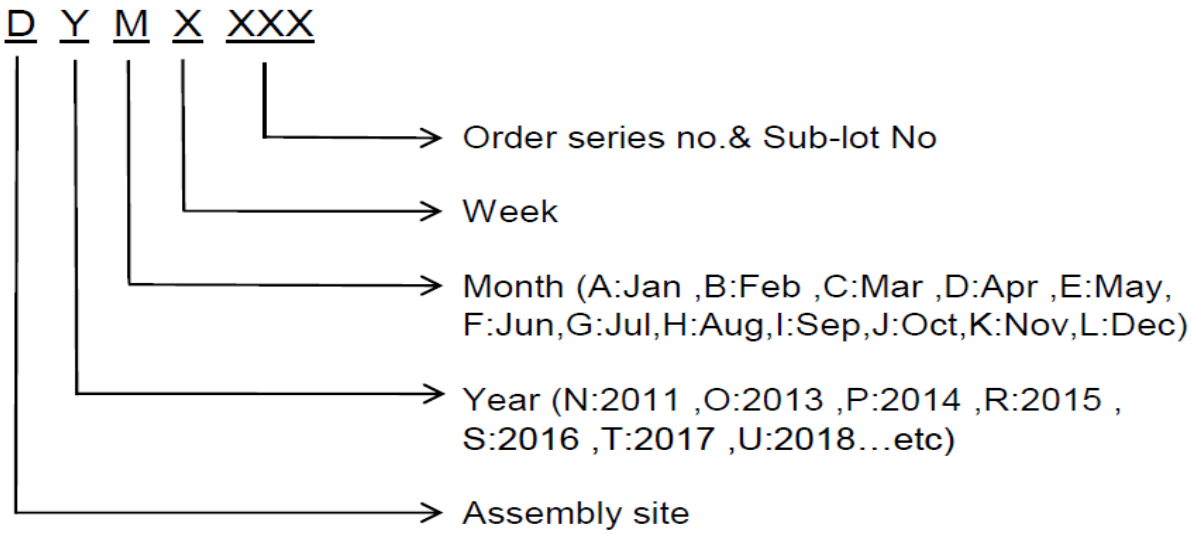
C. Lot No.&Date Code rule

1.Lot No.



2.Date Code



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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”O”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 Font color: Black Font style: Arial
11	Halogen Free label	Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
12	Scan info	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