UNIKC Semiconductor

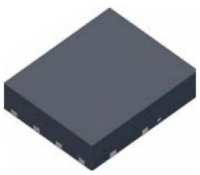
RoHS Compliant

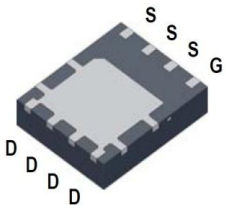
PK5A1BA

P-Channel Logic Level Enhancement Mode MOSFET

PRODUCT SUMMARY

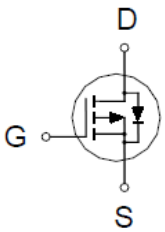
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	6mΩ @V_{GS} = -4.5V	-48A





PDFN 5x6P

100% UIS Tested
100% Rg Tested



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current	T_C = 25 °C	I_D	-48	A
	T_C = 100 °C		-30	
	T_A = 25 °C		-18	
	T_A = 70 °C		-14.5	
Pulsed Drain Current[1]		I_{DM}	-100	
Avalanche Current		I_{AS}	-39	
Avalanche Energy	L = 0.1mH	E_{AS}	76	mJ
Power Dissipation[3]	T_C = 25 °C	P_D	25	W
	T_C = 100 °C		10	
	T_A = 25 °C		3.5	
	T_A = 70 °C		2.2	
Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$		35	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		52	
Junction-to-Case	Steady-State	$R_{\theta JC}$		5	

[1]Pulse width limited by maximum junction temperature.

[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.The value in any given application depends on the user's specific board design.

[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.45	-0.6	-0.9	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±8V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16V, V_{GS} = 0V			-1	μA
		V_{DS} = -10V, V_{GS} = 0V , T_J = 125 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -3.5A		4.7	6	mΩ
		V_{GS} = -2.5V, I_D = -3.5A		5.8	8	
		V_{GS} = -1.8V, I_D = -3.5A		7.4	11	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -3.5A		43		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		5731		pF
Output Capacitance	C_{oss}			542		
Reverse Transfer Capacitance	C_{rss}			420		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		3		Ω
Total Gate Charge[2]	Q_g	V_{DS} = -10V, V_{GS} = -4.5V , I_D = -3.5A		64		nC
Gate-Source Charge[2]	Q_{gs}			6.5		
Gate-Drain Charge[2]	Q_{gd}			11.2		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -10V, I_D ≅ -3.5A, V_{GS} = -4.5V, R_{GS} = 6Ω		35		nS
Rise Time[2]	t_r			53		
Turn-Off Delay Time[2]	$t_{d(off)}$			187		
Fall Time[2]	t_f			105		

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SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-19	A
Forward Voltage[1]	V_{SD}	I_F = -3.5A, V_{GS} = 0V			-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -3.5A, dI_F/dt = 100A / μS		41		nS
Reverse Recovery Charge	Q_{rr}			26		nC

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

[2]Independent of operating temperature.

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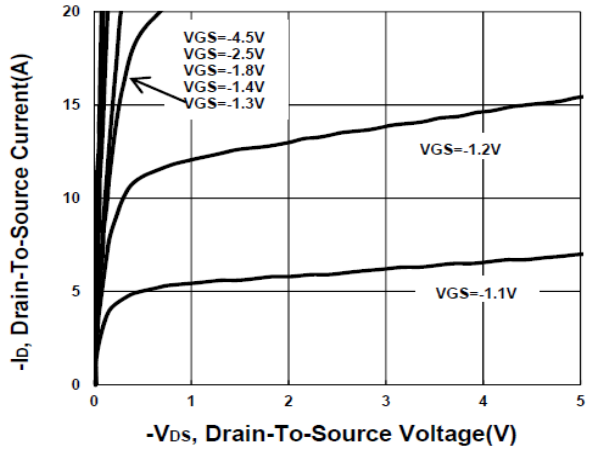
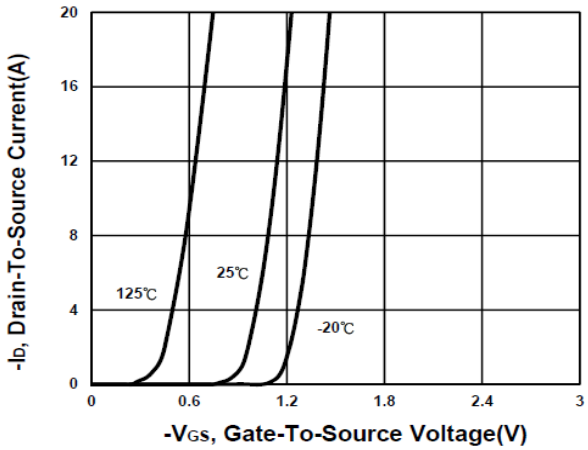
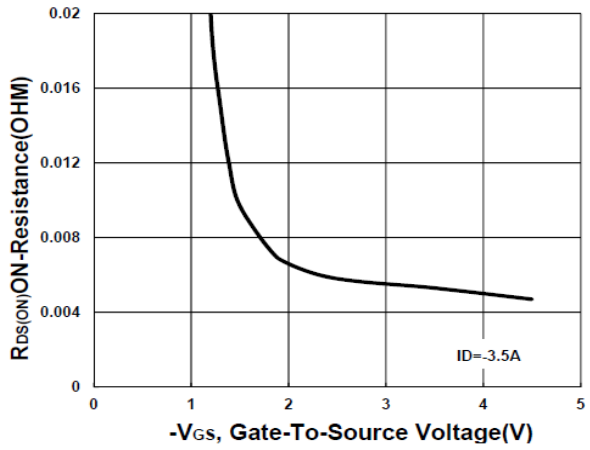
Output Characteristics



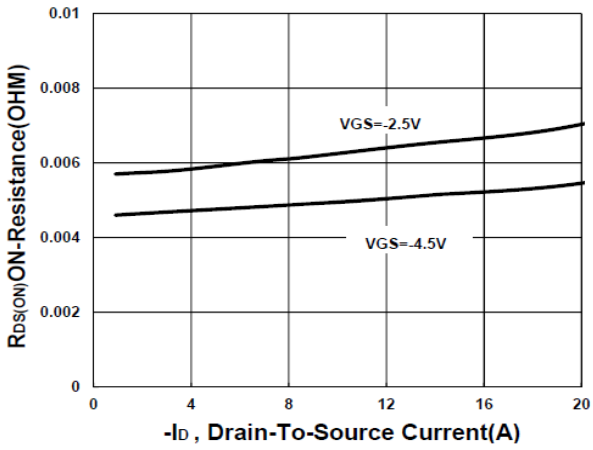
Transfer Characteristics



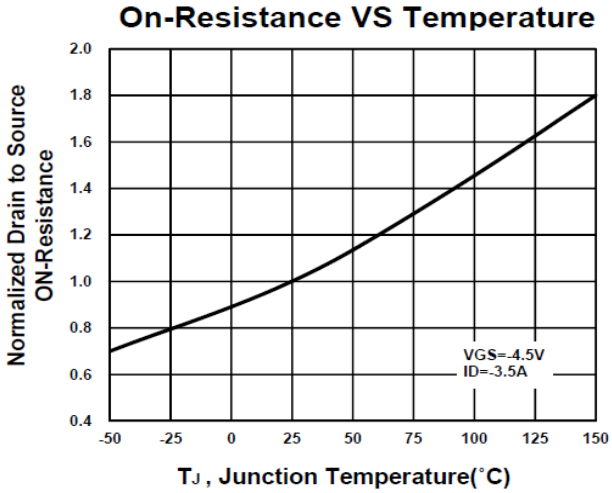
On-Resistance VS Gate-To-Source



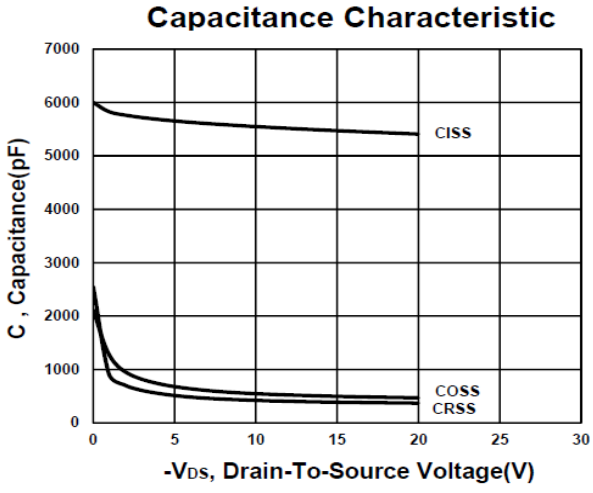
On-Resistance VS Drain Current



On-Resistance VS Temperature



Capacitance Characteristic



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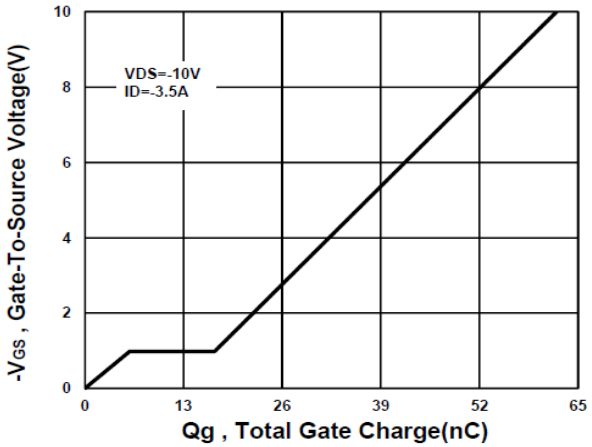
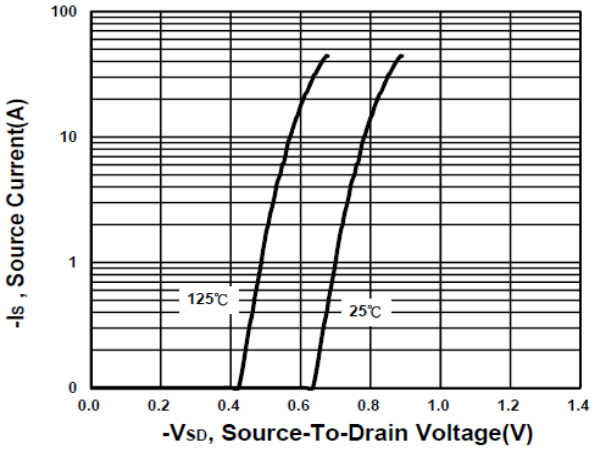
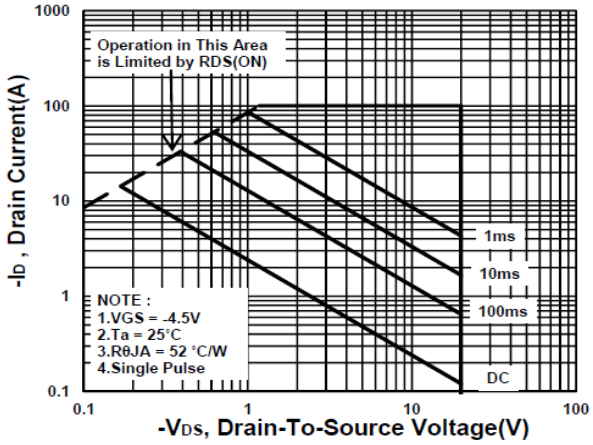
Gate charge Characteristics



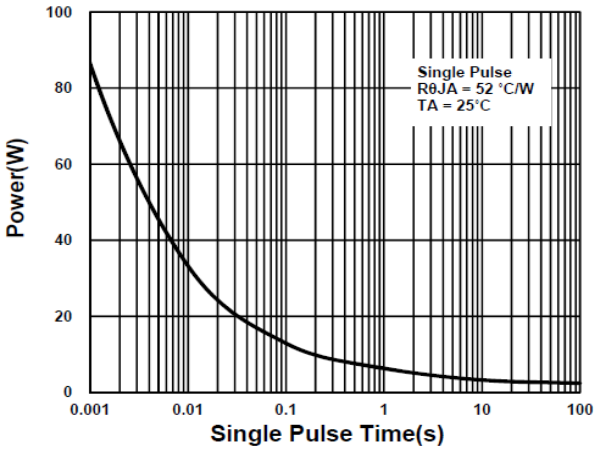
Source-Drain Diode Forward Voltage



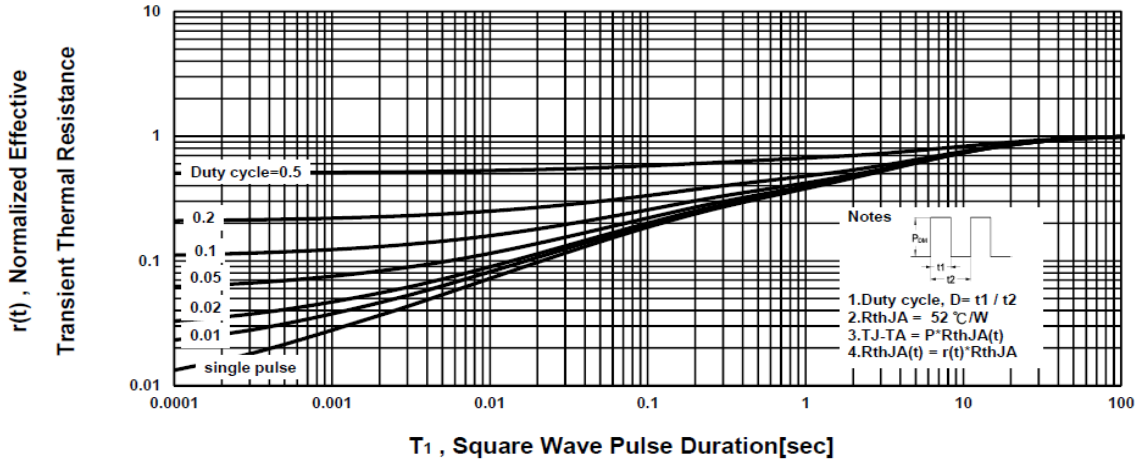
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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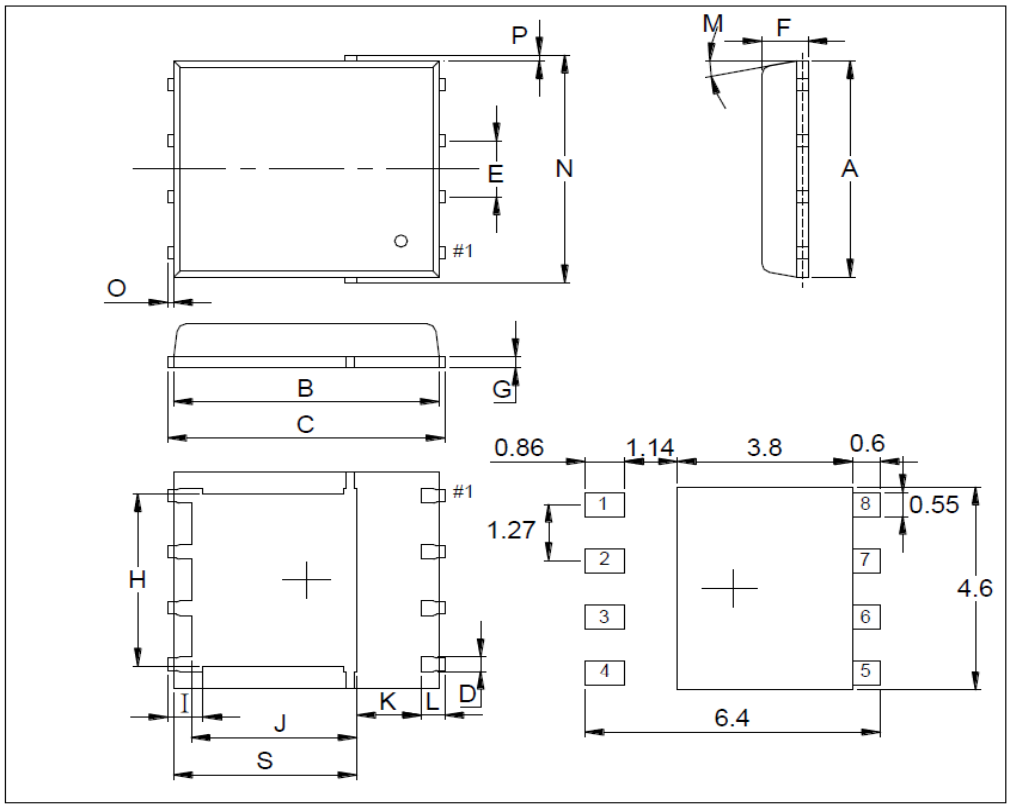
Package Dimension

PDFN 5x6P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.34		3.9
B	5.42		5.9	K	0.9		
C	5.9		6.35	L	0.38		0.711
D	0.3		0.51	M	0°		12°
E	1.17	1.27	1.37	N	4.8		5.4
F	0.8	1	1.2	O	0.05		0.36
G	0.15		0.35	P	0.05		0.25
H	3.67		4.31	S	3.73		4.19
I	0.38		0.71				



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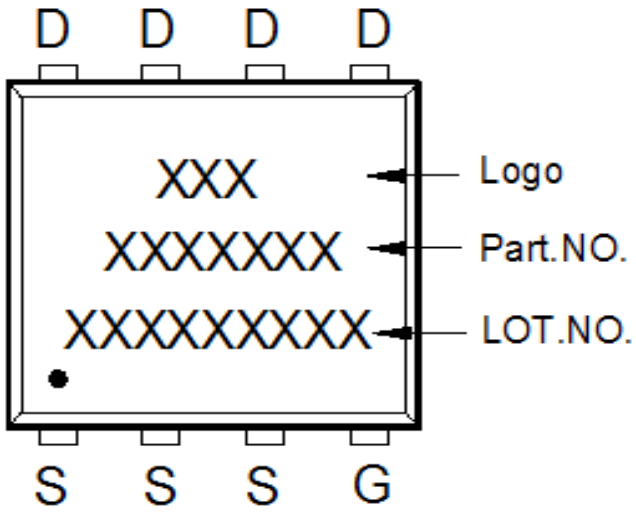
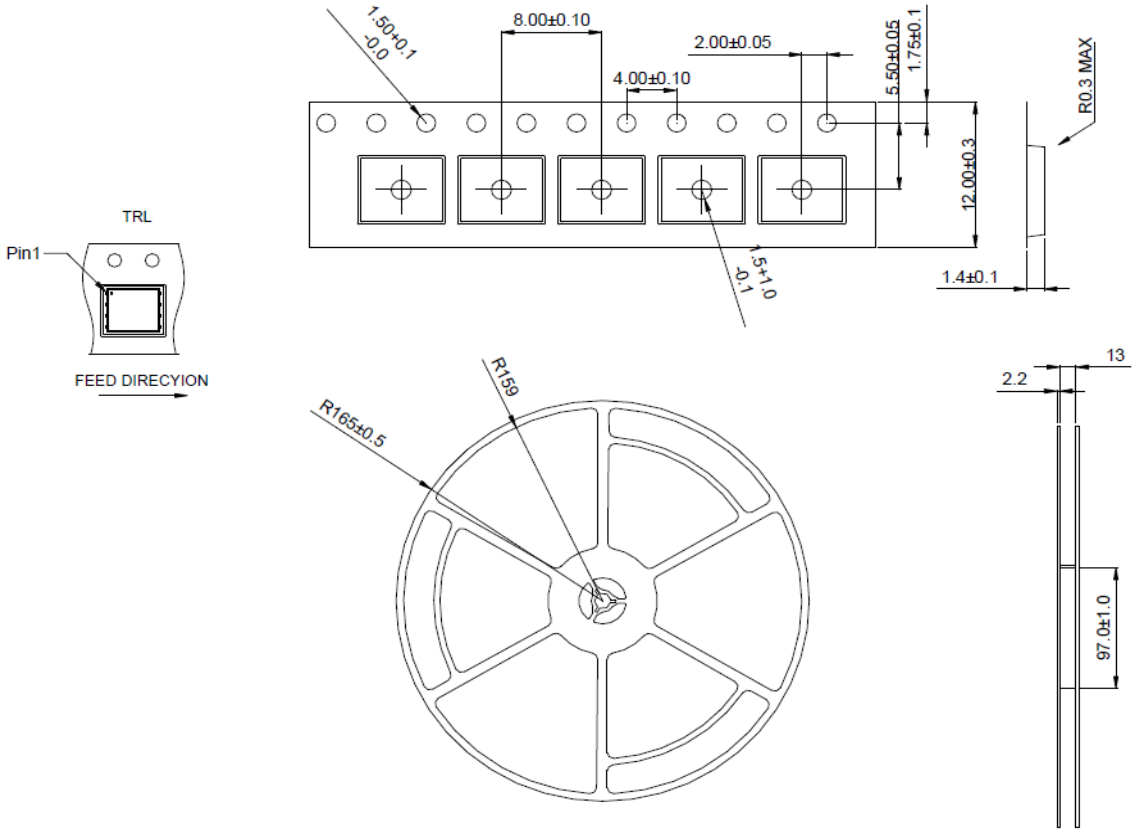
A. Marking Information



B. Tape&Reel Information:3000pcs/Reel



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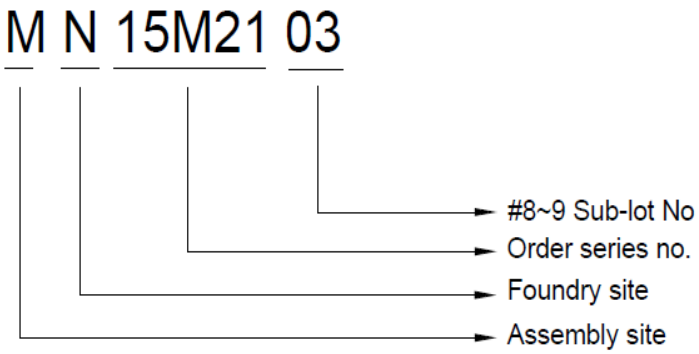
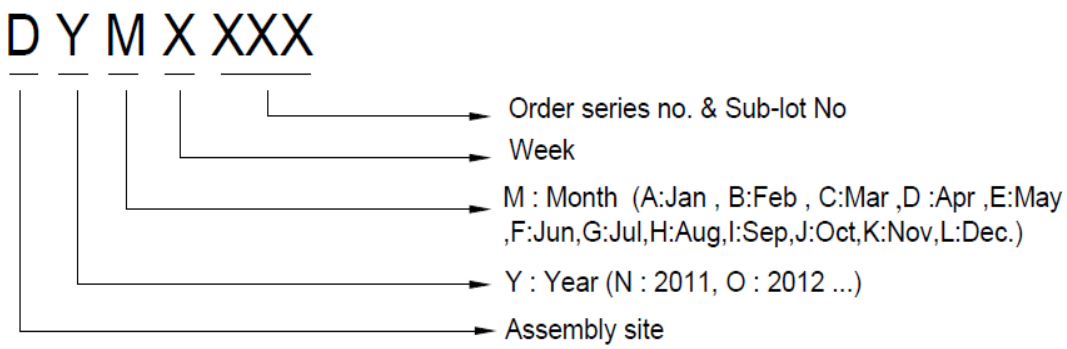
C. Lot.No. & Date Code rule

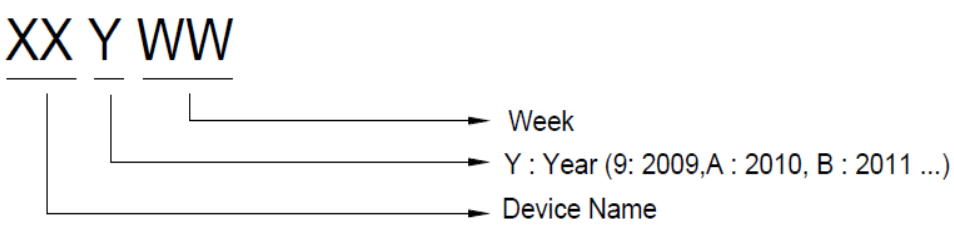
1.LOT.NO.



2.Date Code



3.Date Code (for Small package)



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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”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	Pb Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	G 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