NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

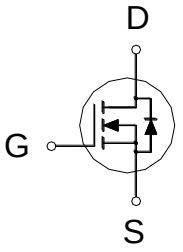
PA410BD

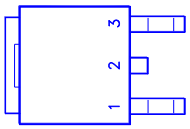
TO-252

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	140mΩ	10A





RoHS Compliant

1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	10	A
	T_C = 100 °C		7	
Pulsed Drain Current[1]		I_{DM}	30	
Avalanche Current		I_{AS}	10	
Avalanche Energy	L = 0.1mH	E_{AS}	5	mJ
Power Dissipation	T_C = 25 °C	P_D	35	W
	T_C = 100 °C		14	
Junction & Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3.5	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1]Pulse width limited by maximum junction temperature.

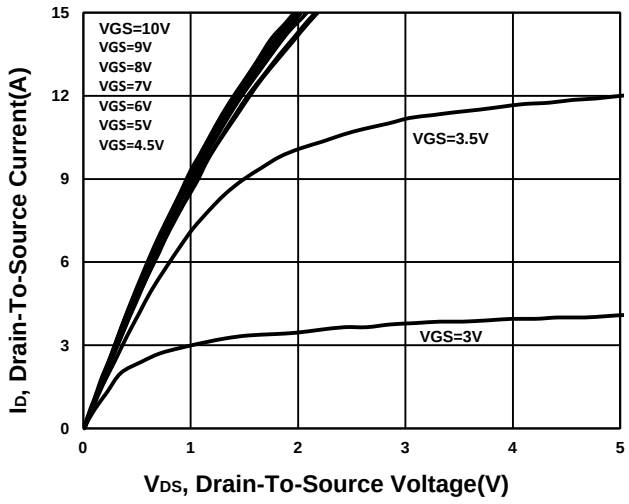
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.9	2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 80V , V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 125 °C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 5A		103	170	mΩ
		V_{GS} = 10V , I_D = 5A		93	140	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 5A		13		S

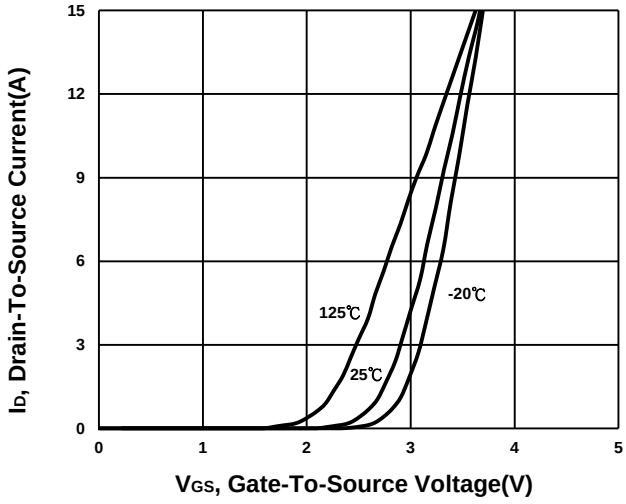
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		330		pF
Output Capacitance	C_{oss}			50		
Reverse Transfer Capacitance	C_{rss}			22		
Total Gate Charge[2]	Q_g	V_{GS} = 10V, V_{DS} = 50V, I_D = 5A		8.6		nC
Gate-Source Charge[2]	Q_{gs}			1.2		
Gate-Drain Charge[2]	Q_{gd}			3.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V, $I_D \cong$ 5A, V_{GS} = 10V, R_{GEN} =6Ω		22		nS
Rise Time[2]	t_r			60		
Turn-Off Delay Time[2]	$t_{d(off)}$			30		
Fall Time[2]	t_f			40		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				10	A
Forward Voltage[1]	V_{SD}	I_F = 5A, V_{GS} = 0V			1.1	V
Reverse Recovery Time	t_{rr}	I_F = 5A, dI_F/dt = 100A / μS		25		nS
Reverse Recovery Charge	Q_{rr}			25		nC

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

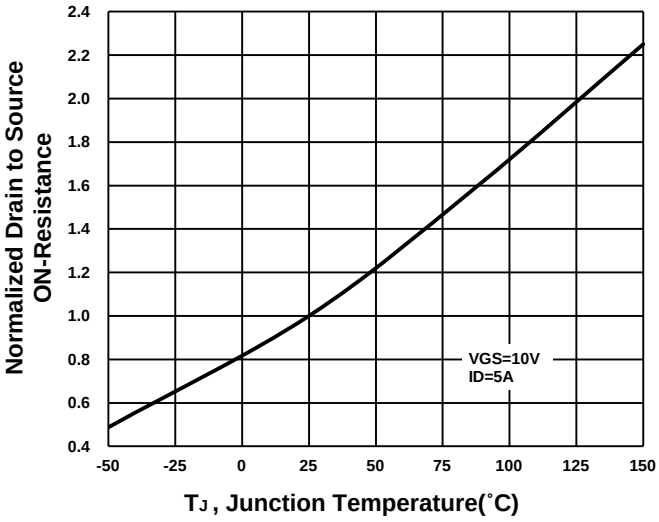
Output Characteristics



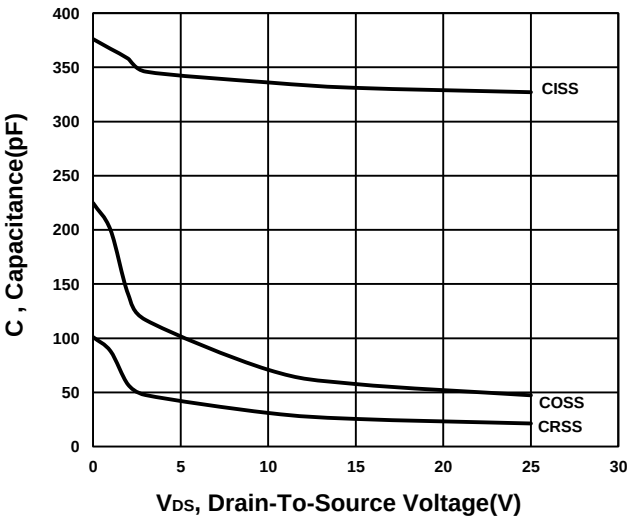
Transfer Characteristics



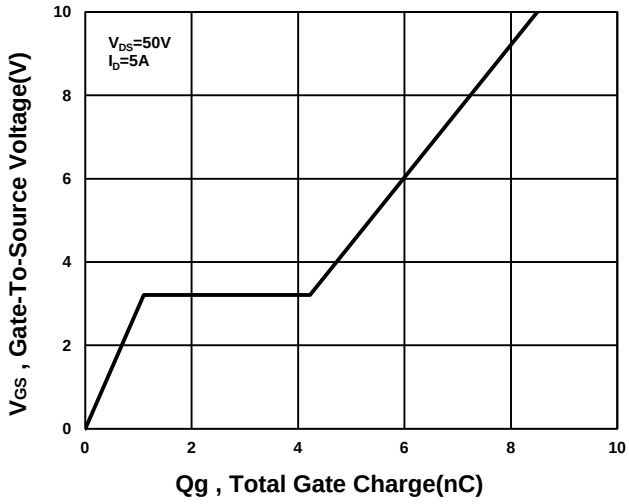
On-Resistance VS Temperature



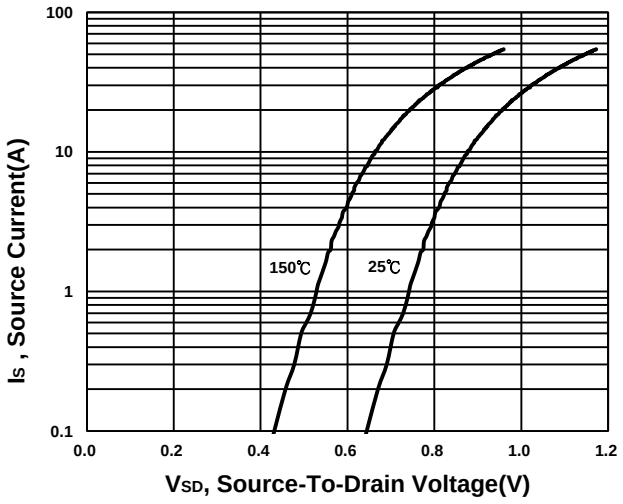
Capacitance Characteristic



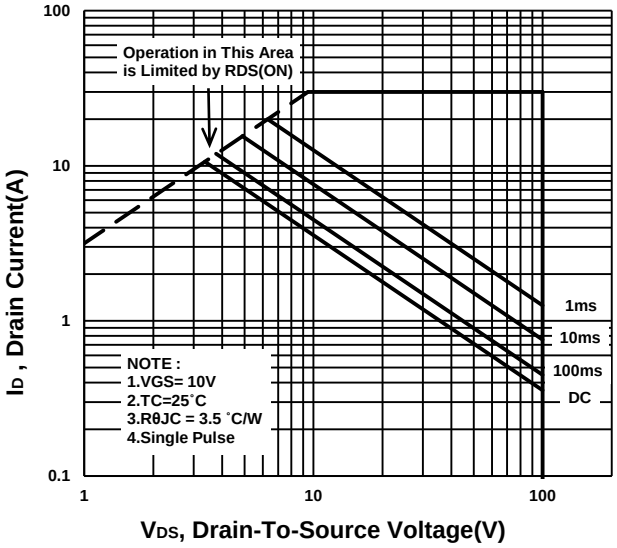
Gate charge Characteristics



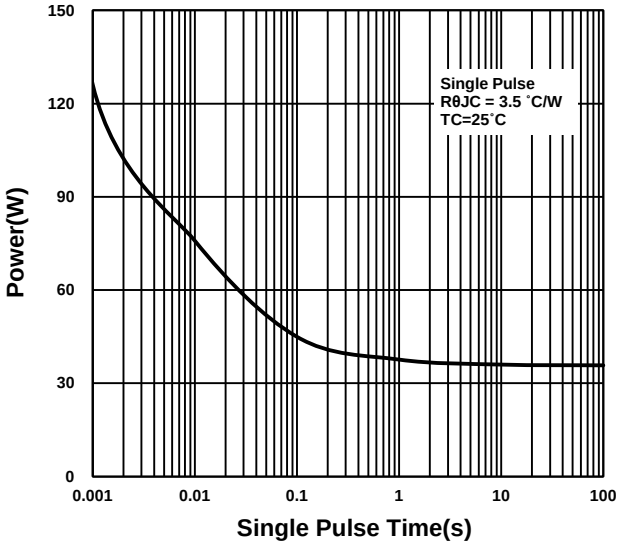
Source-Drain Diode Forward Voltage



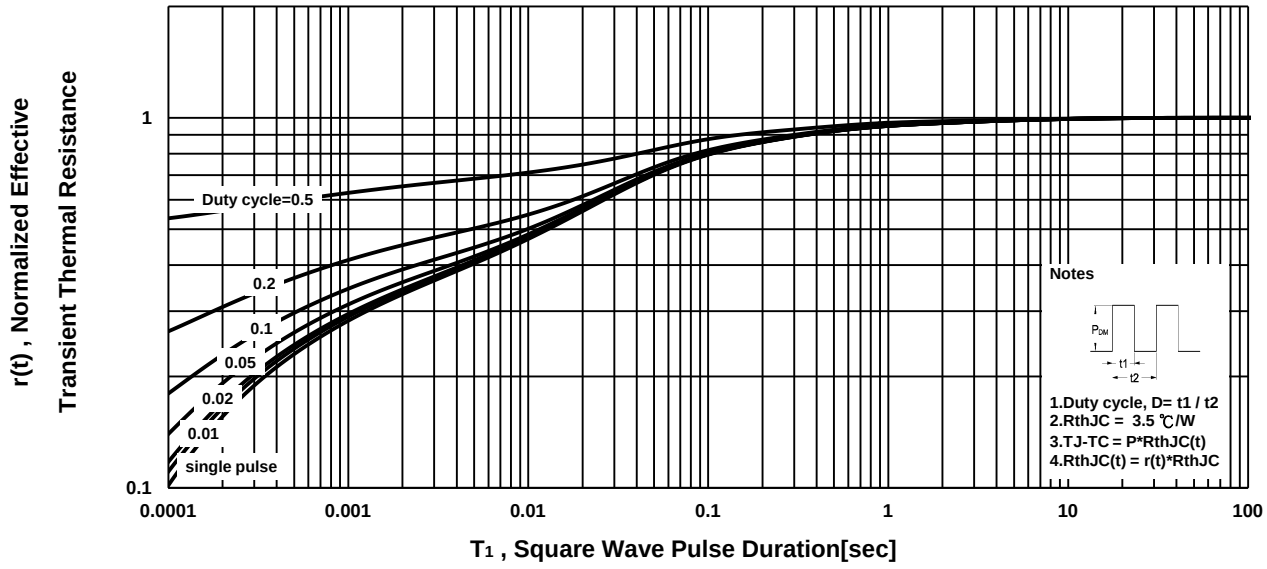
Safe Operating Area



Single Pulse Maximum Power Dissipation



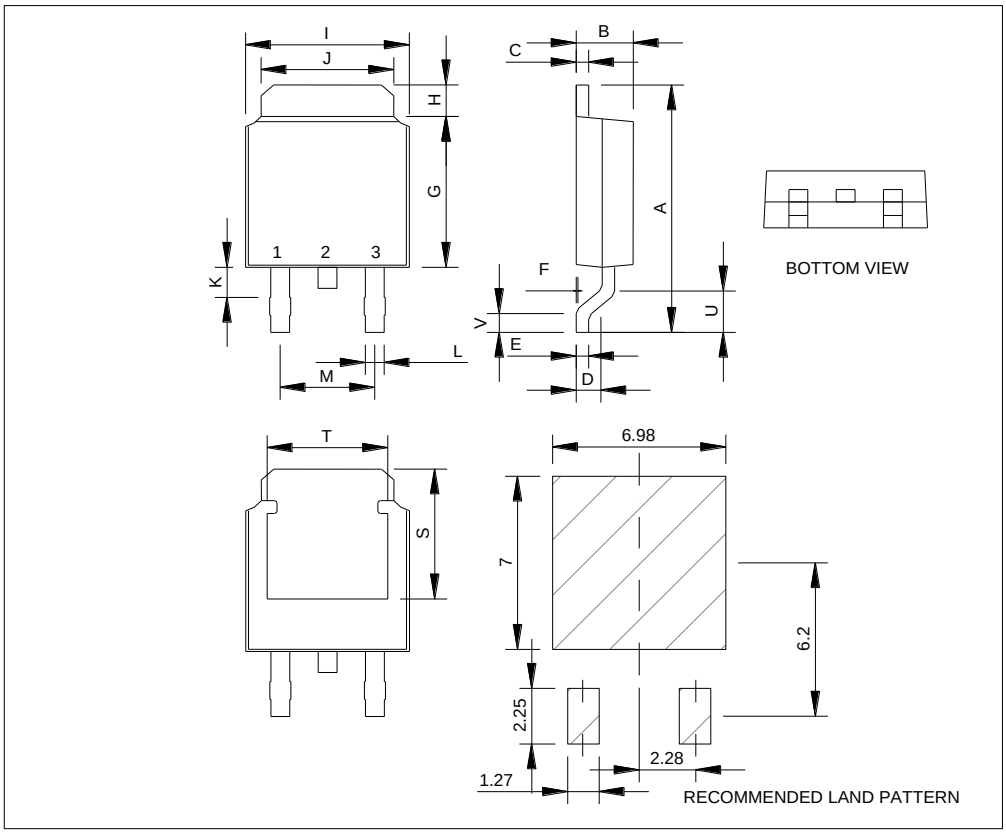
Transient Thermal Response Curve



Package Dimension

TO-252 (DPAK) MECHANICAL DATA

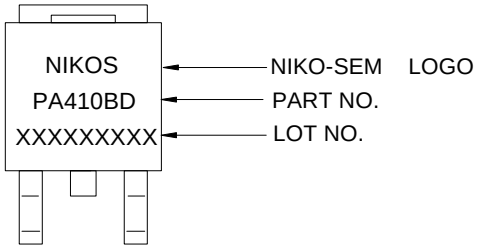
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	8.9	10	10.41	J	4.8		5.64
B	2.1	2.2	2.4	K	0.15		1.1
C	0.4	0.5	0.61	L	0.4	0.76	0.89
D	0.82	1.2	1.5	M	4.2	4.58	5
E	0.4	0.5	0.61	S	4.9	5.1	5.3
F	0		0.2	T	4.6	4.75	5.44
G	5.3	6.1	6.3	U	1.4		1.78
H	0.9		1.7	V	0.55	1.25	1.7
I	6.3	6.5	6.8				



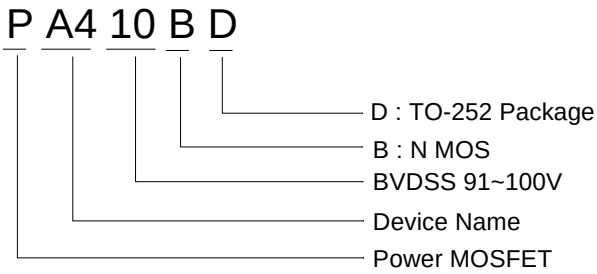
＊因應各家封裝模具不同而外觀略有所差異，不影響電性及 Layout。

A. Marking Information:(Please see the corresponding data sheet)

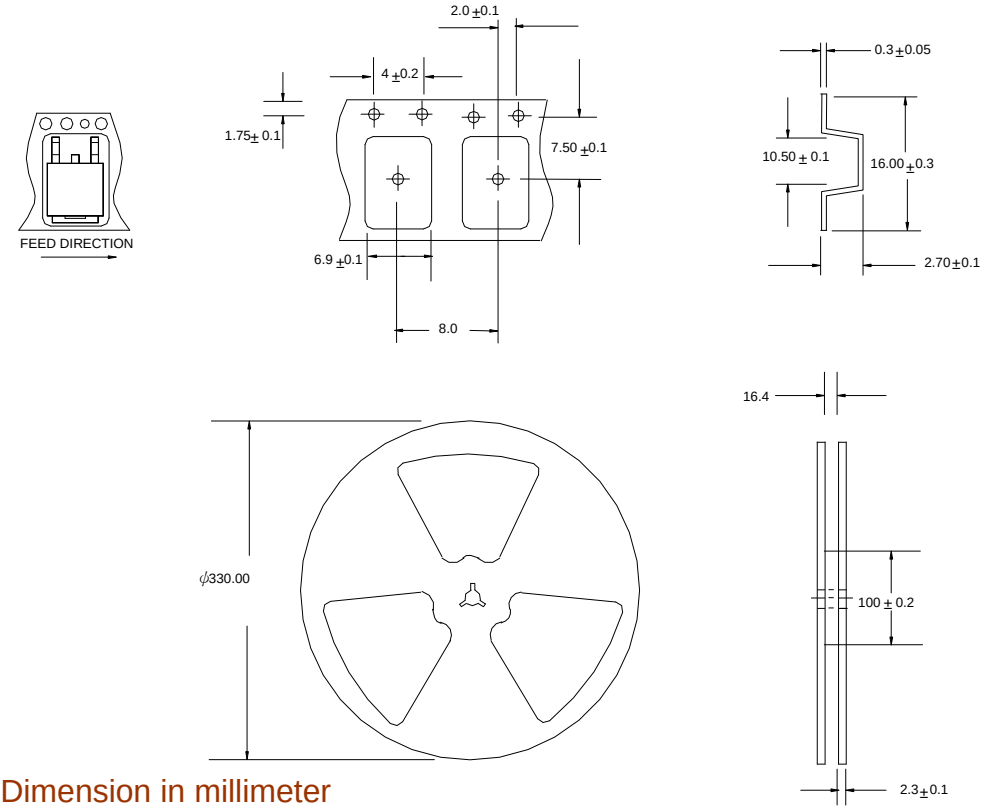
1.零件 Marking 文字面說明(Laser Marking)



2.零件 Part number 說明



B. Tape&Reel Information:2000pcs/Reel



附註:All Dimension in millimeter

C. Lot.No. & Date Code rule

1.LOT.NO.說明

M N 15M21 03

- 03 → #8~9 Sub-lot No
- 15M21 → Order series no.　英文開頭：無鹵素　數字開頭：無鉛
- N → Foundry sit
  Mosel採購單- E　Mosel委工單- N
  Episil採購單- A　Episil委工單- B
  VIS採購單- C　VIS委工單- D
- M → M : Assembly site

2.Date Code 說明

D Y M X XXX

- XXX → Order series no. & Sub-lot No
- X → Week
- M → M : Month (A:Jan , B:Feb , C:Mar ,D :Apr ,E:May ,F:Jun,G:Jul,H:Aug,I:Sep,J:Oct,K:Nov,L:Dec.)
- Y → Y : Year (N : 2011, O : 2012 ...)
- D → D : Assembly site

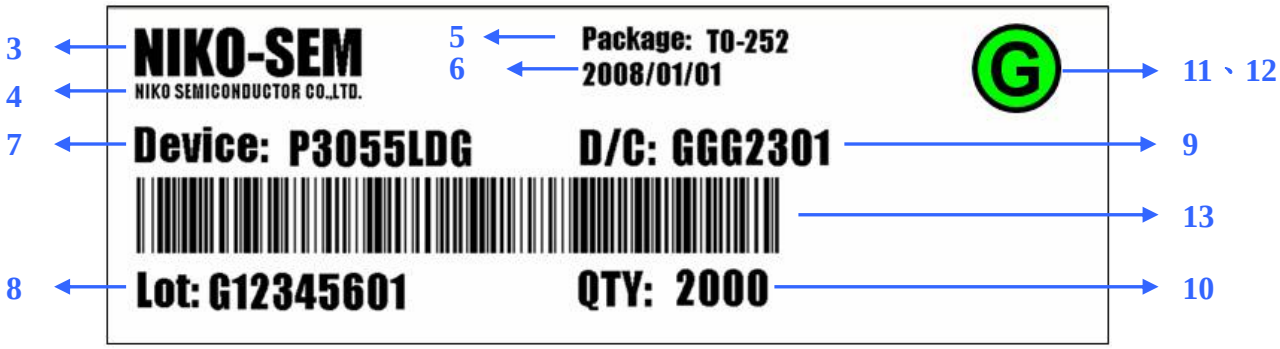
3.Date Code 說明(小Package適用)

XX Y WW

- WW → Week
- Y → Y : Year (9: 2009,A : 2010, B : 2011 ...)
- XX → Device Name

D. Label rule

標籤內容 (Label content)



1	Label Size	30 * 90 mm
2	Font style	Times New Roman or Arial (或可區分英文"O"和數字"0"，"G 和"Q"的字型即可)
3	NIKO-SEM	Height: 4 mm
4	NIKO SEMICONDUCTOR CO., LTD.	Height: 1 mm
5	Package	Height: 2 mm
6	Date	Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12
7	Device	Height: 3 mm (Max: 16 Digit) Device Name not including Rev.
8	Lot	Height: 3 mm (Max: 9 Digit) Sub lot
9	D/C	Height: 3 mm (Max: 7 Digit)
10	QTY	Height: 3 mm (Max: 6 Digit) Thousand mark is no needed
11	Pb Free label	Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
12	Halogen Free label	Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
13	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