NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

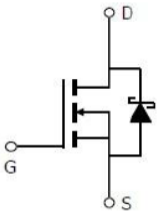
PK610SA

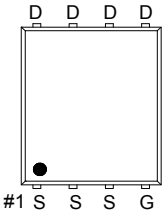
PDFN 5x6P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	2.8mΩ	83A





G. GATE
D. DRAIN
S. SOURCE

RoHS Compliant

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[2]	T_C = 25 °C	I_D	83	A
	T_C = 100 °C		52	
Pulsed Drain Current[1]		I_{DM}	150	
Continuous Drain Current	T_A = 25 °C	I_D	22	
	T_A = 70 °C		18	
Avalanche Current		I_{AS}	37	
Avalanche Energy	L = 0.1mH	E_{AS}	68.5	mJ
Power Dissipation	T_C = 25 °C	P_D	34	W
	T_C = 100 °C		13	
Power Dissipation	T_A = 25 °C	P_D	2.3	W
	T_A = 70 °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]	$R_{\theta JA}$		53	°C / W
Junction-to-Case	$R_{\theta JC}$		3.6	

[1]Pulse width limited by maximum junction temperature.
[2]Package limitation current is 45A
[3]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

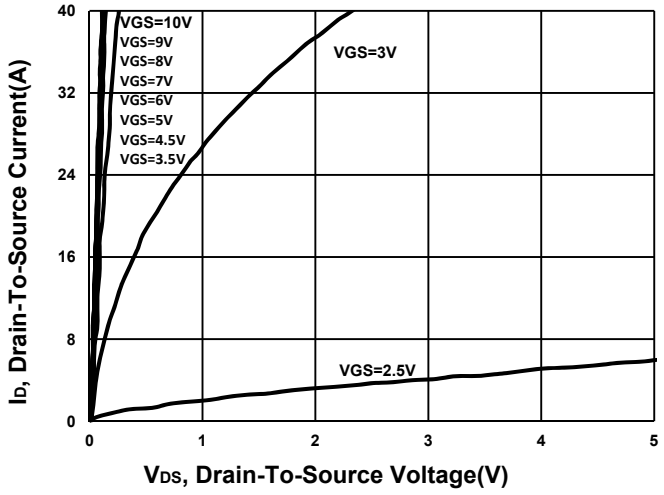
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 1mA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.6	2.3	

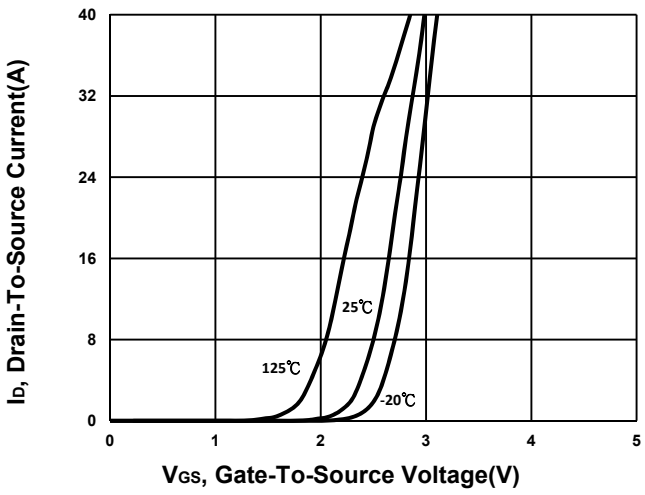
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			0.5	mA
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C			5	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 16A		2.7	3.5	mΩ
		V_{GS} = 10V, I_D = 20A		2	2.8	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		65		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		2030		pF
Output Capacitance	C_{oss}			386		
Reverse Transfer Capacitance	C_{rss}			230		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.5		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 15V , V_{GS} = 10V, I_D = 20A		41		nC
Gate-Source Charge[2]	Q_{gs}			5.5		
Gate-Drain Charge[2]	Q_{gd}			11		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 15V , $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω		30		nS
Rise Time[2]	t_r			22		
Turn-Off Delay Time[2]	$t_{d(off)}$			53		
Fall Time[2]	t_f			21		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				34	A
Forward Voltage[1]	V_{SD}	I_F = 20A, V_{GS} = 0V			1	V
Reverse Recovery Time	t_{rr}	I_F = 20A, dI_F/dt = 100A / μS		15		nS
Reverse Recovery Charge	Q_{rr}			4		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is 45A

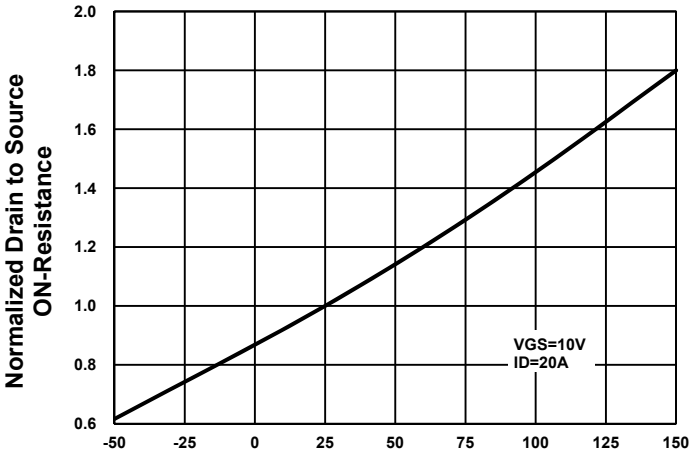
Output Characteristics



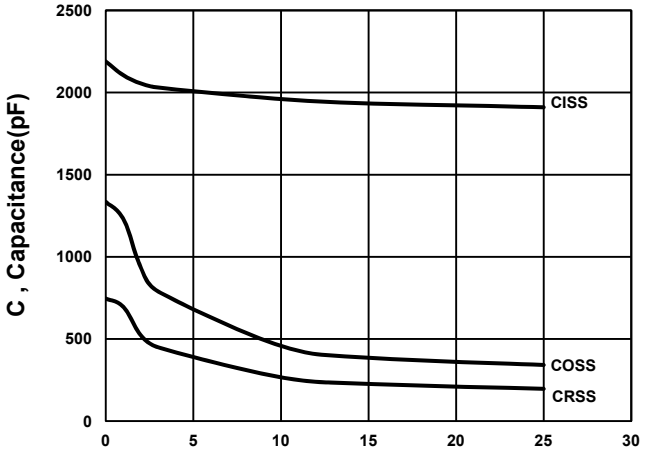
Transfer Characteristics



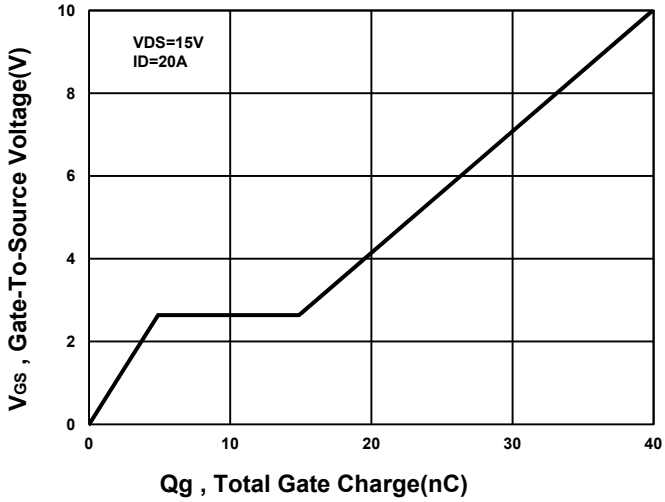
On-Resistance VS Temperature



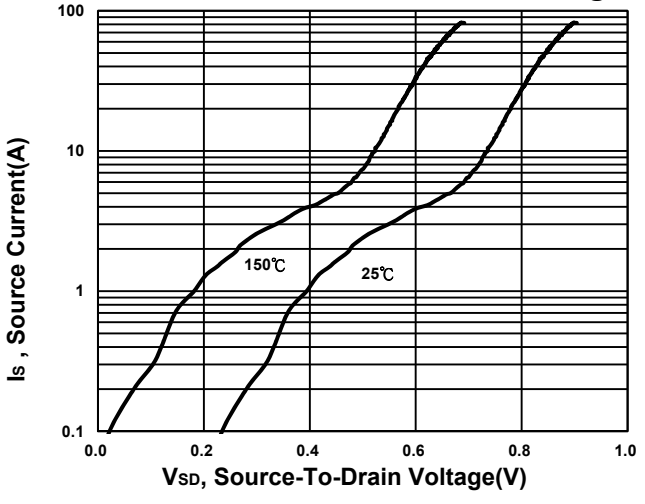
Capacitance Characteristic



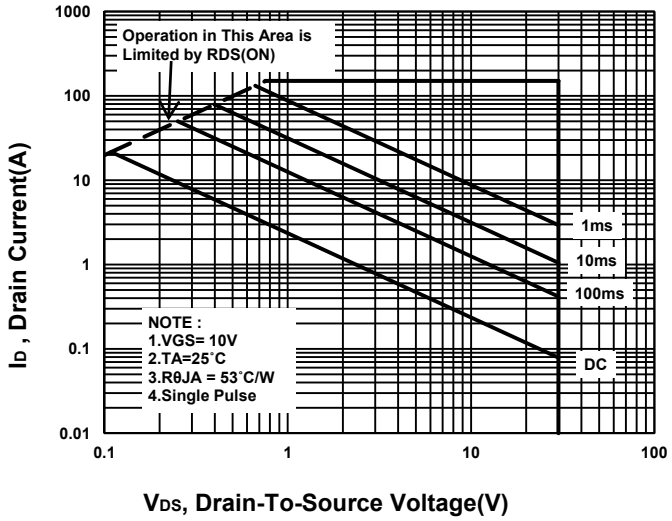
Gate charge Characteristics



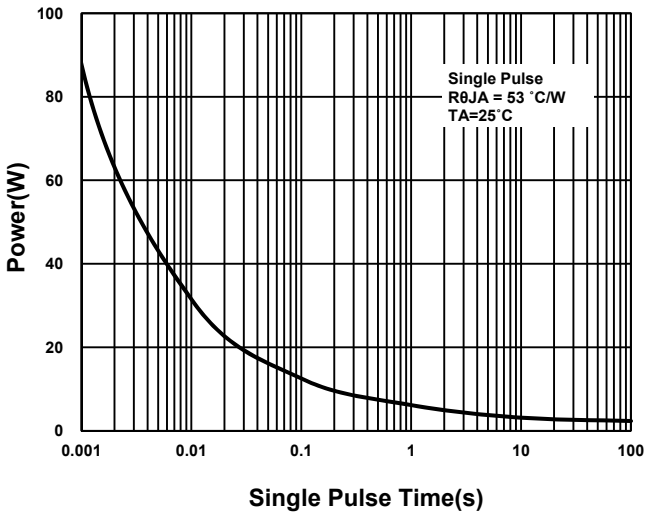
Source-Drain Diode Forward Voltage



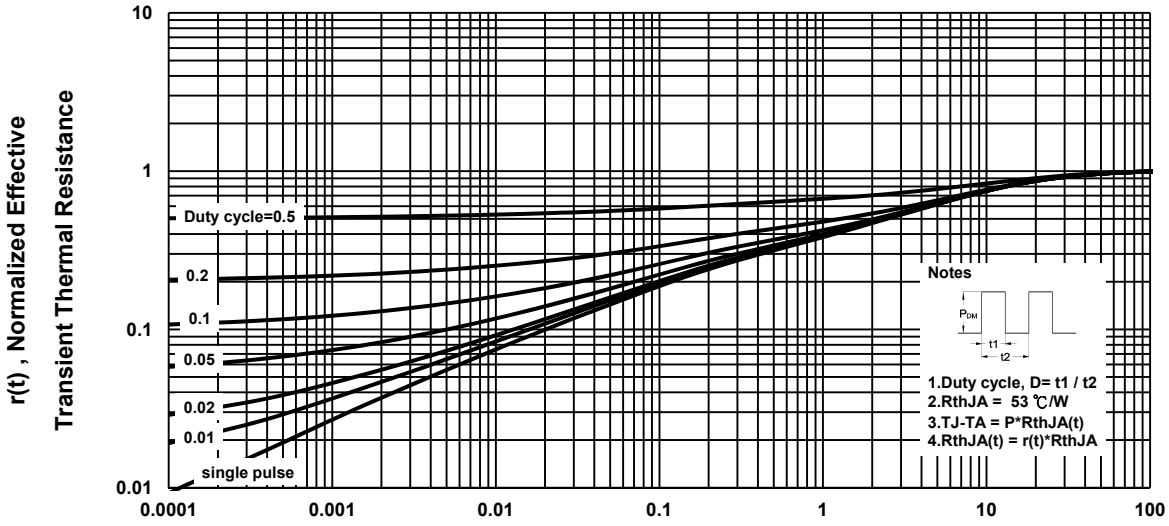
Safe Operating Area



Single Pulse Maximum Power Dissipation



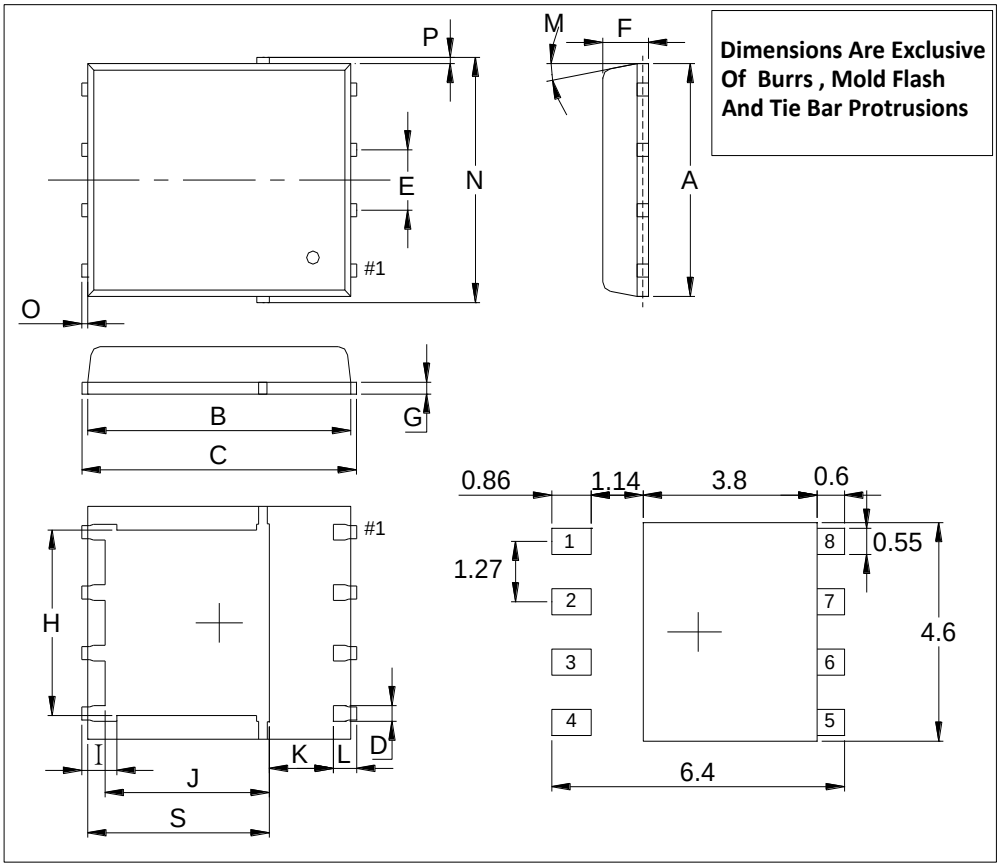
Transient Thermal Response Curve



Package Dimension

PDFN 5x6P MECHANICAL DATA

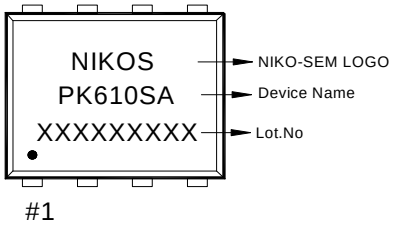
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.34		3.9
B	5.42		5.9	K	0.9		
C	5.9		6.35	L	0.38		0.711
D	0.3		0.51	M	0°		12°
E	1.17	1.27	1.37	N	4.8		5.4
F	0.8	1	1.2	O	0.05		0.36
G	0.15		0.35	P	0.05		0.25
H	3.67		4.31	S	3.73		4.19
I	0.38		0.71				



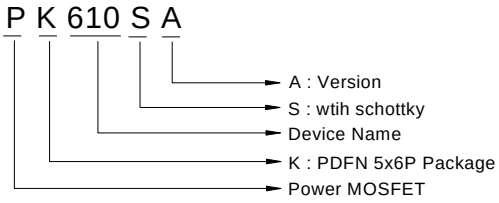
＊因應各家封裝模具不同而外觀略有所差異，不影響電性及 Layout。

Marking Information:(Please see the corresponding data sheet)

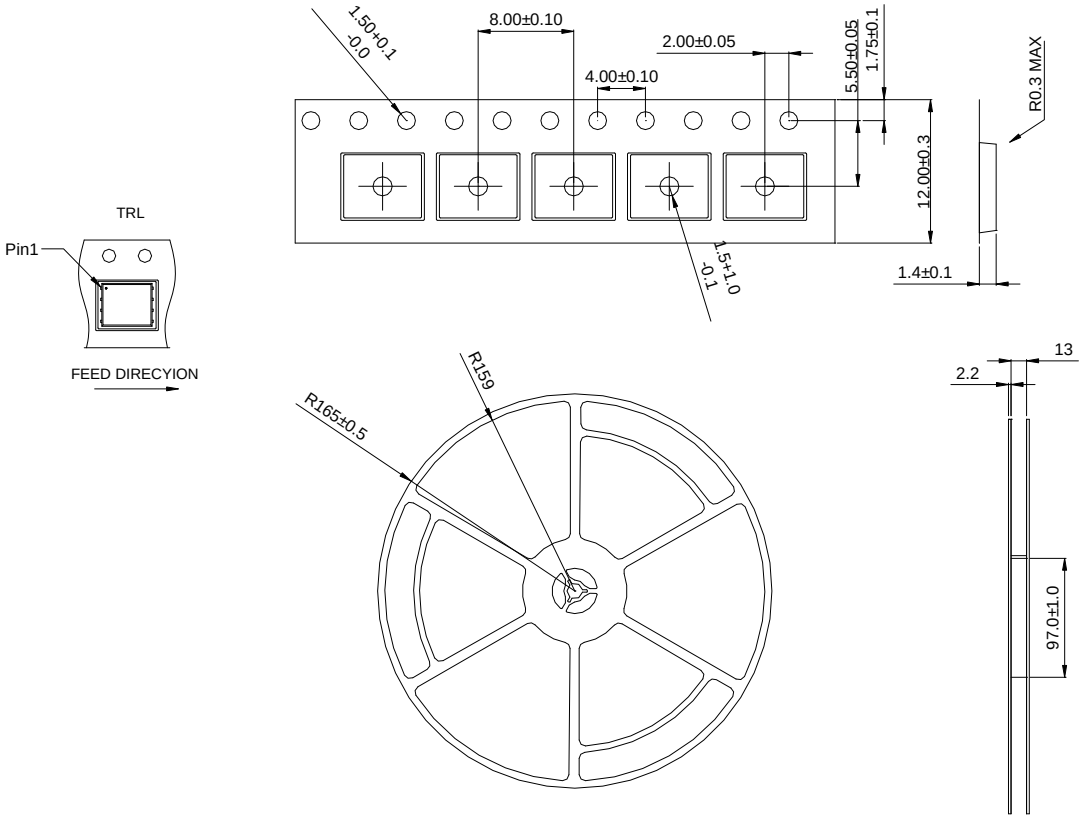
1.Part Marking



2. Part number



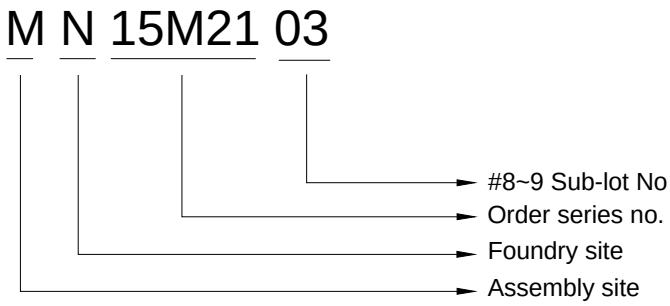
Tape&Reel Information:2500pcs/Reel



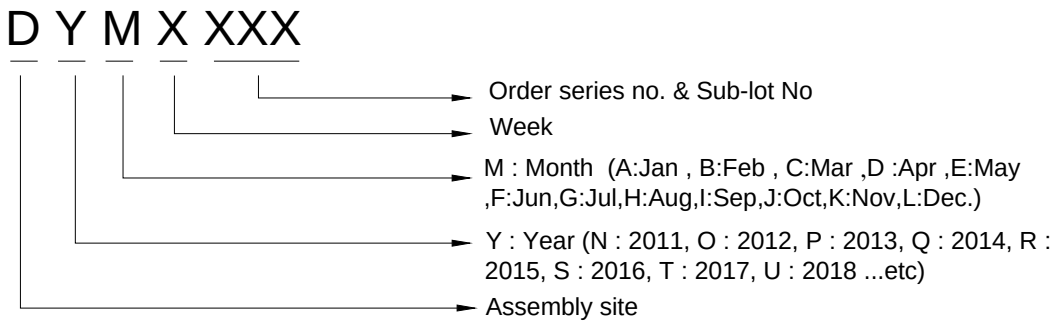
附註:All Dimension in milimeter

Lot.No. & Date Code rule

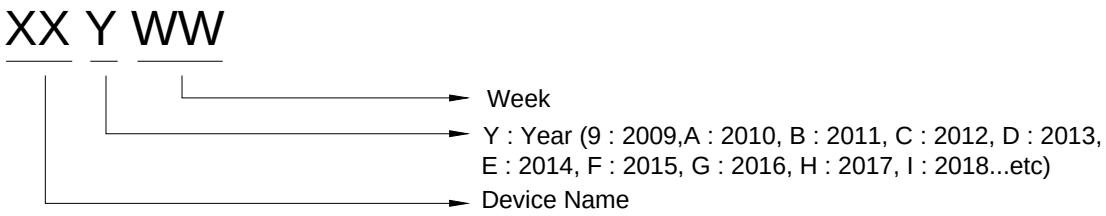
1.LOT.NO.



2.Date Code

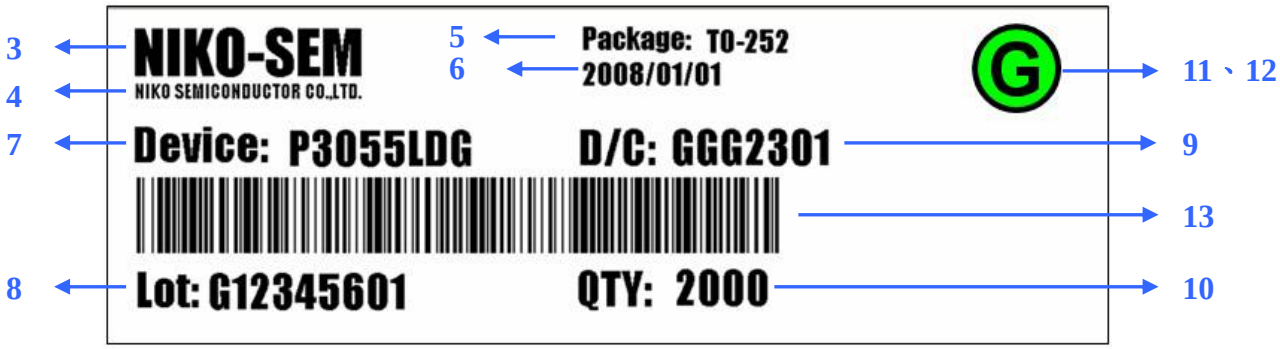


3.Date Code (for Small package)



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) (Or any font capable of being distinguished for Letter O and digital 0, and for G and Q))
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