NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

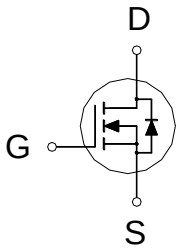
P0470JD

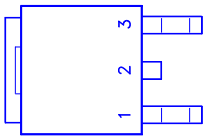
TO-252

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
700V	1.63Ω	4A





1. GATE
2. DRAIN
3. SOURCE

RoHS Compliant

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	700	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current[2]	T_C = 25 ° C	I_D	4	A
	T_C = 100 ° C		2.3	
Pulsed Drain Current[1]		I_{DM}	16	
Avalanche Current[3]		I_{AS}	1	
Avalanche Energy[3]		E_{AS}	22	mJ
Power Dissipation	T_C = 25 ° C	P_D	54	W
	T_C = 100 ° C		22	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	° C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		2.3	° C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

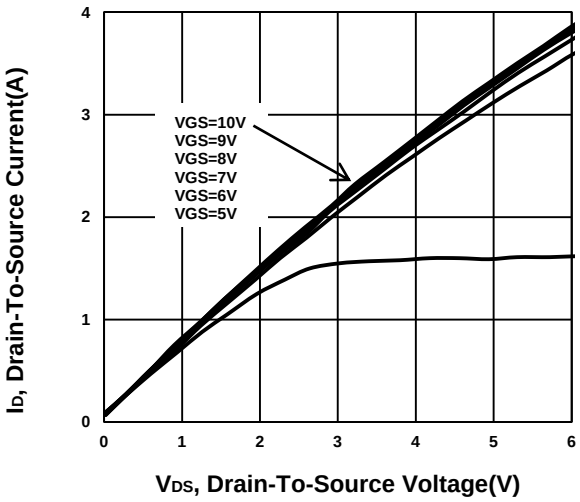
[1]Pulse width limited by maximum junction temperature.
[2]Ensure that the channel temperature does not exceed 150°C.
[3]V_{DD} = 50V , L = 40mH ,starting T_J = 25°C.

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

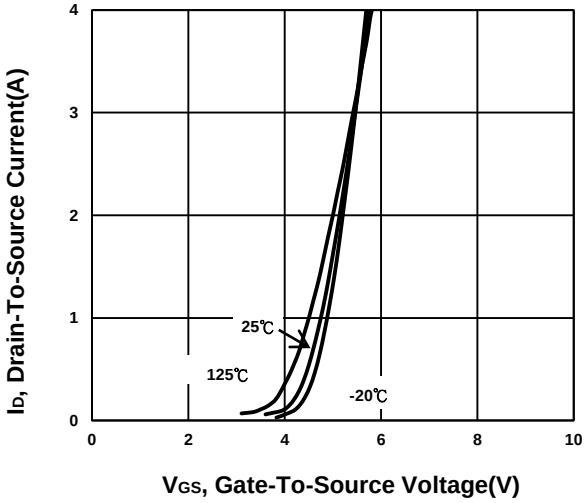
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNITS
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	700			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3.3	4	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 700V, V_{GS} = 0V			1	μA
		V_{DS} = 560V, V_{GS} = 0V, T_J = 100 ° C			10	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 2A		1.4	1.63	Ω
Forward Transconductance[1]	g_{fs}	V_{DS} = 15V, I_D = 2A		2.9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 100V, f = 250KHz		228		pF
Output Capacitance	C_{oss}			22		pF
Reverse Transfer Capacitance	C_{rss}			4.5		pF
Gate Resistance	Rg	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		21		Ω
Total Gate Charge[2]	Q_g	V_{DS} =560V, V_{GS} = 10V, I_D = 2 A		9.8		nC
Gate-Source Charge[2]	Q_{gs}			1.4		nC
Gate-Drain Charge[2]	Q_{gd}			5.1		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 350V, I_D ≅ 2A, V_{GS} = 10V, R_{GEN} =25Ω		15		nS
Rise Time[2]	t_r			29		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			44		nS
Fall Time[2]	t_f			69		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				4	A
Forward Voltage[1]	V_{SD}	I_F = 4A , V_{GS} = 0V			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 2A , dI_F/dt= 100A/μs		191		nS
Reverse Recovery Charge	Q_{rr}			1.1		uC

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

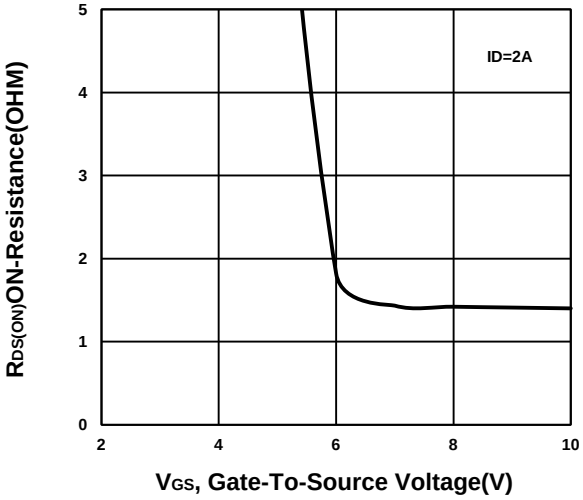
Output Characteristics



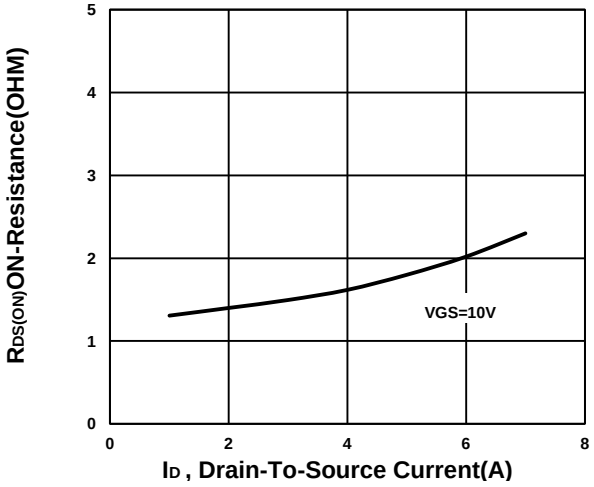
Transfer Characteristics



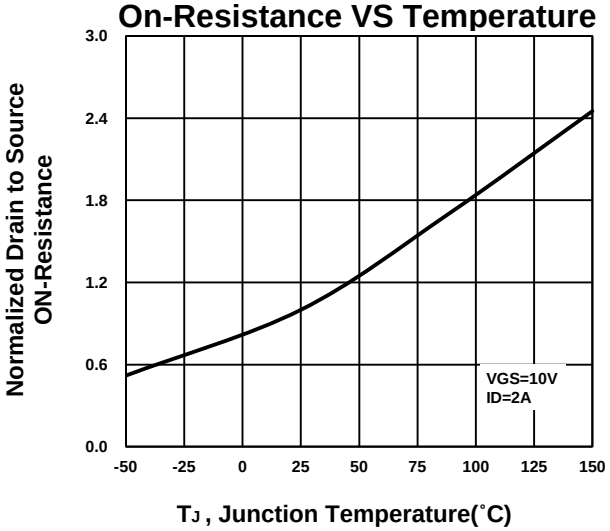
On-Resistance VS Gate-To-Source Voltage



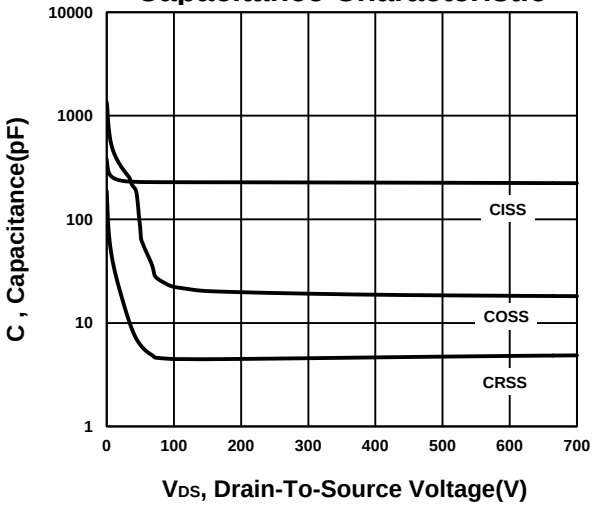
On-Resistance VS Drain Current



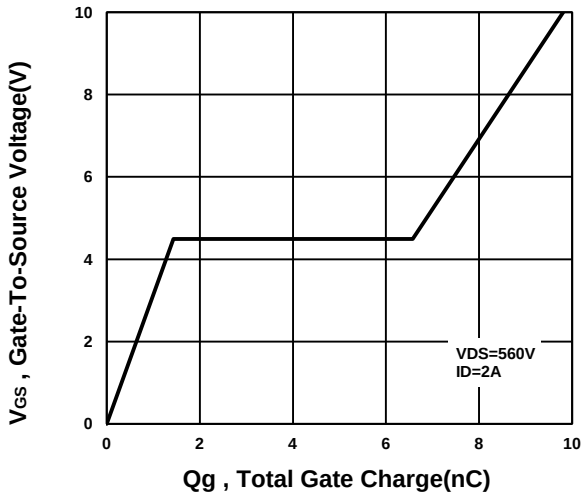
On-Resistance VS Temperature



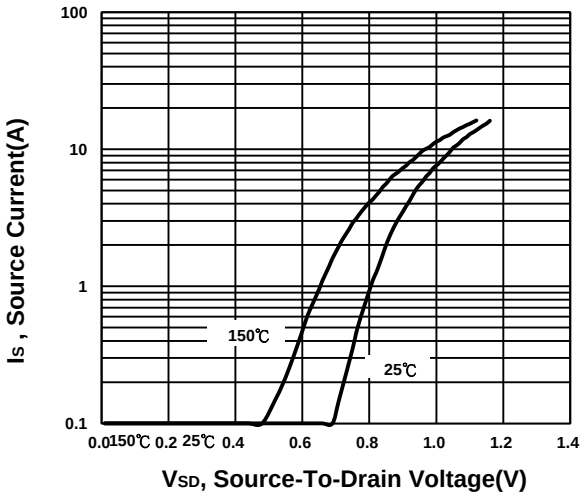
Capacitance Characteristic



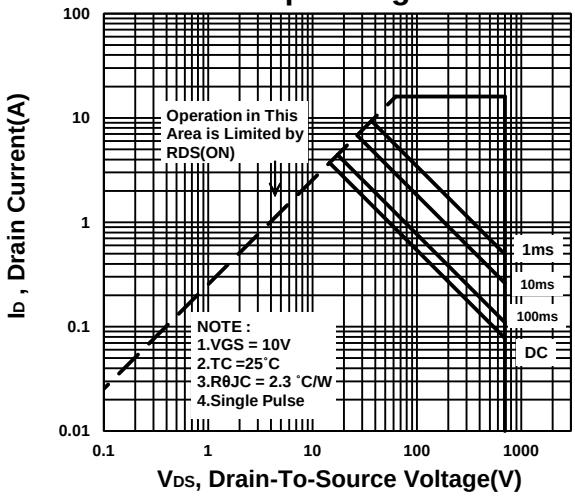
Gate charge Characteristics



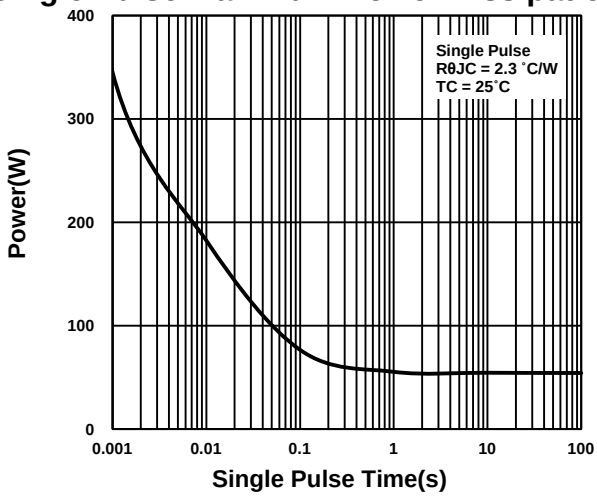
Source-Drain Diode Forward Voltage



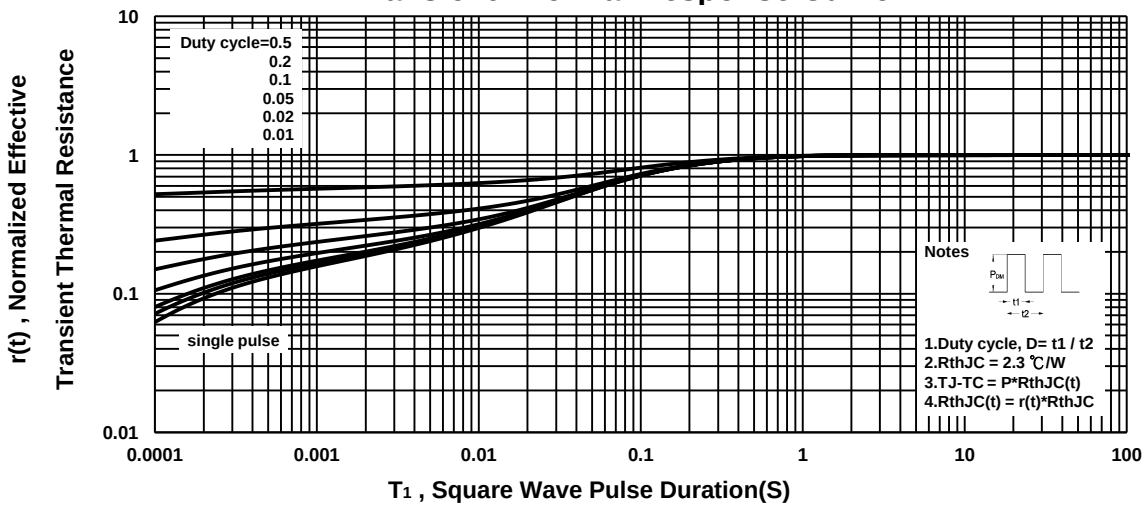
Safe Operating Area



Single Pulse Maximum Power Dissipation



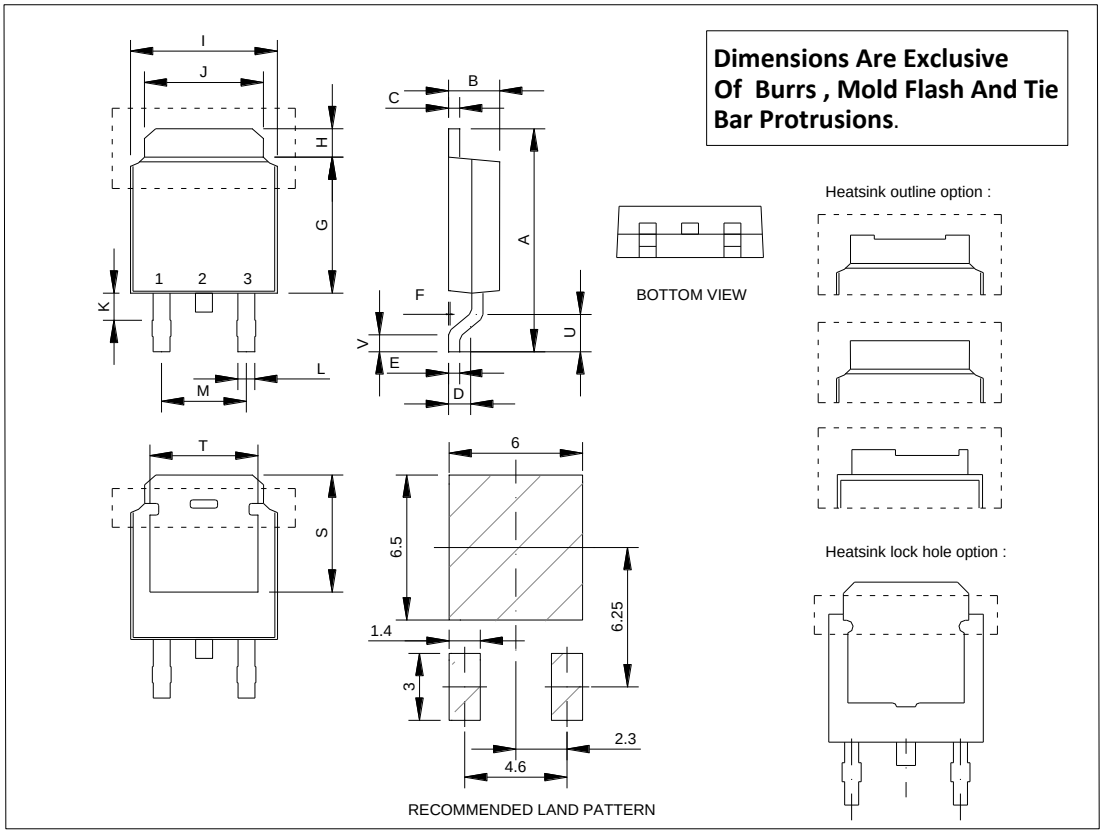
Transient Thermal Response Curve



Package Dimension

TO-252 (DPAK) MECHANICAL DATA

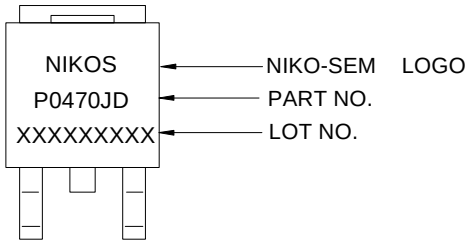
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.4	10	10.41	J	5.04		5.64
B	2.18	2.2	2.5	K	0.15		1.49
C	0.4	0.5	0.61	L	0.5	0.76	0.91
D	0.82	1.2	1.5	M	4.2	4.58	5
E	0.35	0.5	0.65	S	4.57	5.1	5.52
F	0		0.2	T	3.81	4.75	5.24
G	5.4	6.1	6.3	U	1.4		1.78
H	0.5		1.7	V	0.55	1.25	1.78
I	6.35	6.5	6.8				



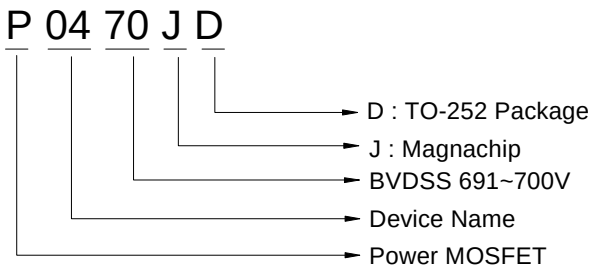
＊因應各家封裝模具不同而外觀略有所差異，不影響電性及 Layout。

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

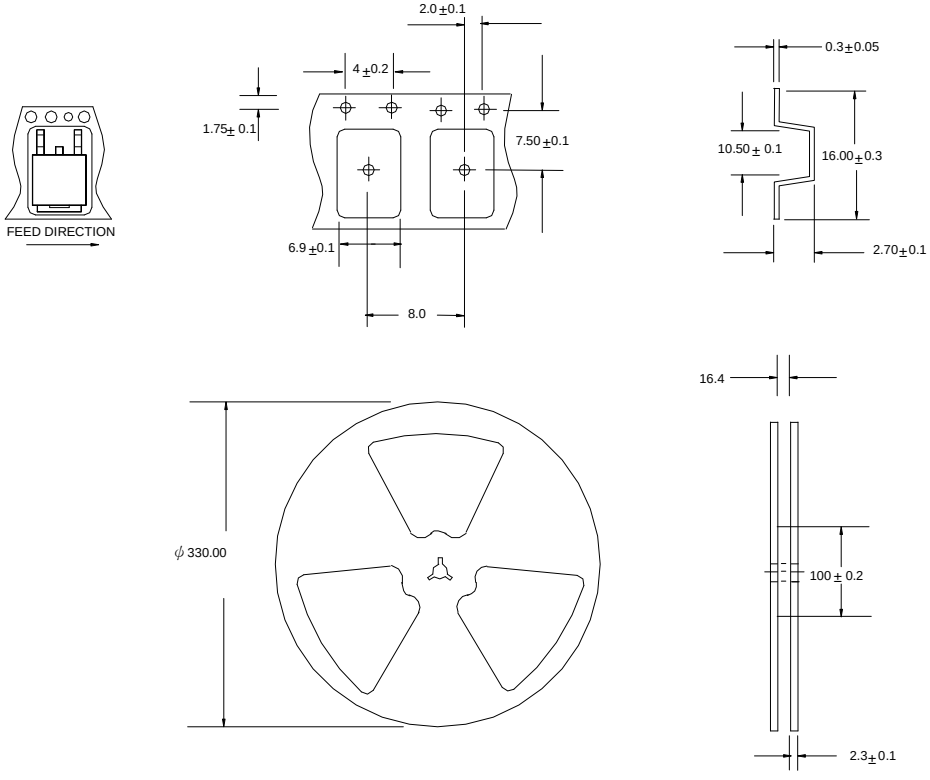
1.零件 Marking 文字面說明(Laser Marking)



2.零件 Part number 說明



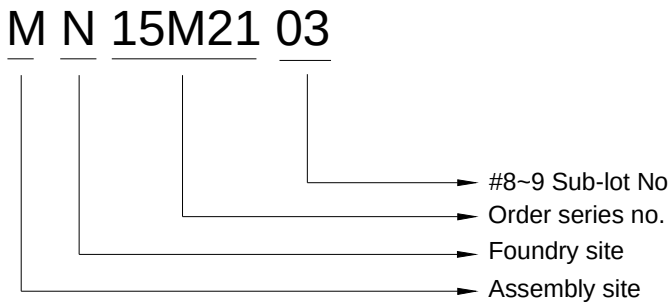
B. Tape&Reel Information:2500pcs/Reel



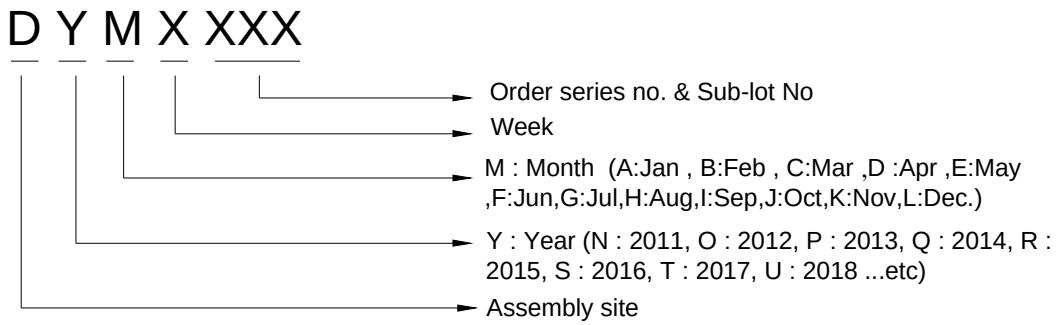
附註:All Dimension in millimeter

C. Lot.No. & Date Code rule

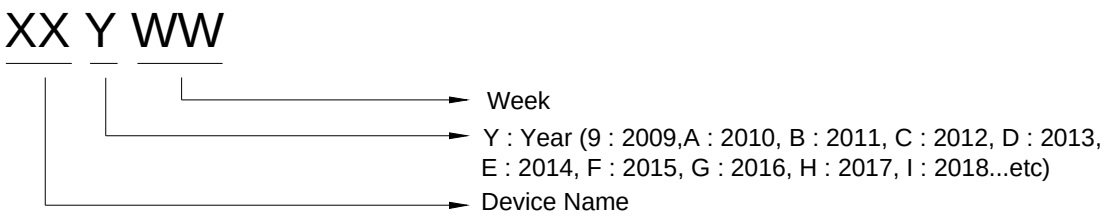
1.LOT.NO.



2.Date Code

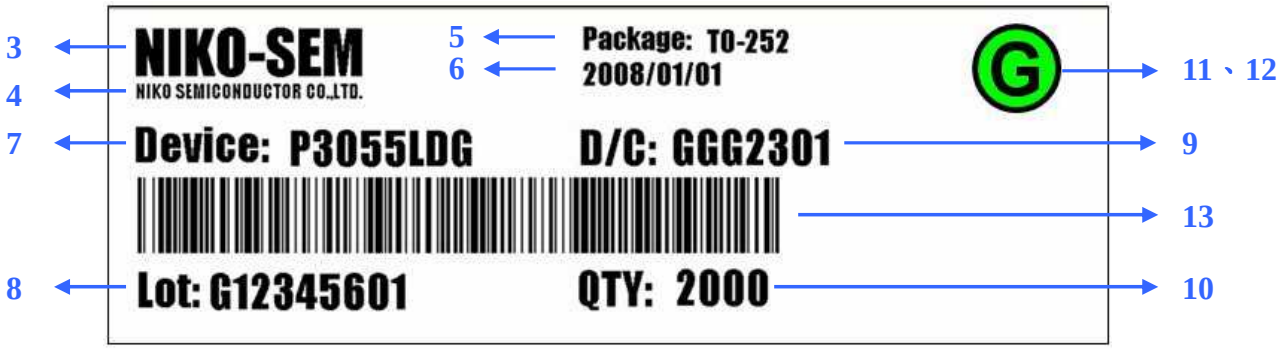


3.Date Code (for Small package)



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) (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