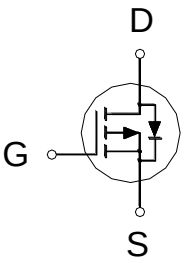
NIKO-SEM

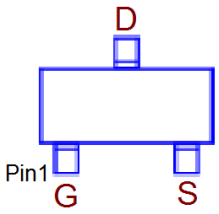
P-Channel Enhancement Mode Field Effect Transistor

PM5C3BA
SOT-23(S)
Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	50mΩ	-4A





G: GATE
D: DRAIN
S: SOURCE

100% UIS Tested
100% Rg Tested

Features
- Pb−Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.

Applications
- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.

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}	±12	V
Continuous Drain Current	T_A = 25 °C	I_D	-4	A
	T_A = 70 °C		-3.2	
Pulsed Drain Current[1]		I_{DM}	-20	
Power Dissipation[3]	T_A = 25 °C	P_D	1.4	W
	T_A = 70 °C		0.9	
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]	t ≦10s	$R_{\theta JA}$		88	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		130	

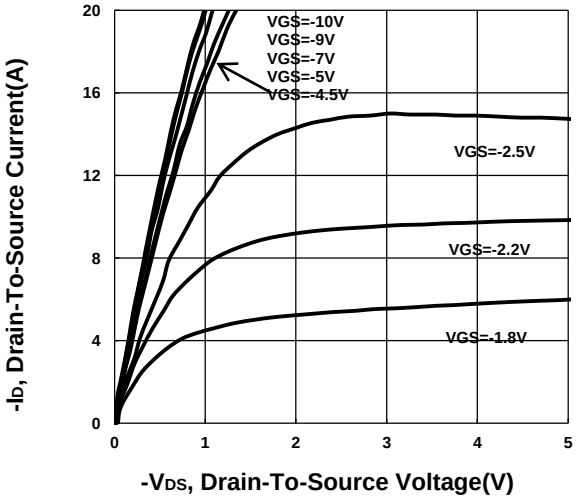
[1]limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
[3]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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

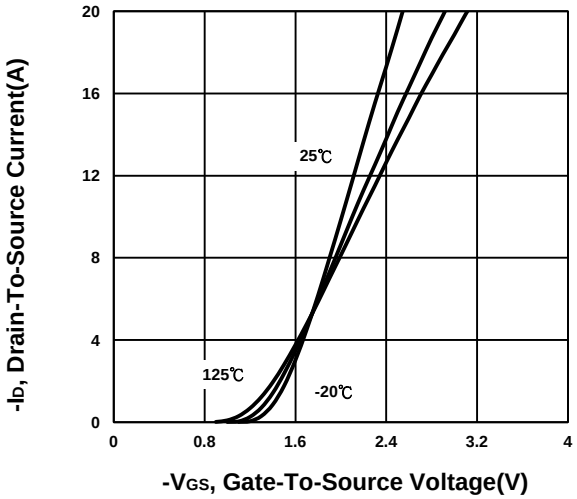
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.6	-0.8	-1.2	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
		V_{DS} = -20V, V_{GS} = 0V, T_J = 70 °C			-10	
Drain-Source On-State Resistance[1]	$R_{DS(on)}$	V_{GS} = -10V, I_D = -3.5A		41	50	mΩ
		V_{GS} = -4.5V, I_D = -3.5A		50	65	
		V_{GS} = -2.5V, I_D = -3.5A		73	120	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -3.5A		9		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -10V, f = 1MHz		425		pF
Output Capacitance	C_{oss}			62		
Reverse Transfer Capacitance	C_{rss}			49		
Total Gate Charge[2]	Qg	V_{DS} = -10V, I_D = -3.5A, V_{GS} = -10V		9.8		nC
Gate-Source Charge[2]	Q_{gs}			0.6		
Gate-Drain Charge[2]	Q_{gd}			1.5		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -10V, I_D ≅ -3.5A V_{GS} = -10V, R_{GEN} =6Ω		5		nS
Rise Time[2]	t_r			25		
Turn-Off Delay Time[2]	$t_{d(off)}$			28		
Fall Time[2]	t_f			38		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-1	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		6.8		nS
Reverse Recovery Charge	Q_{rr}			2.2		nC

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

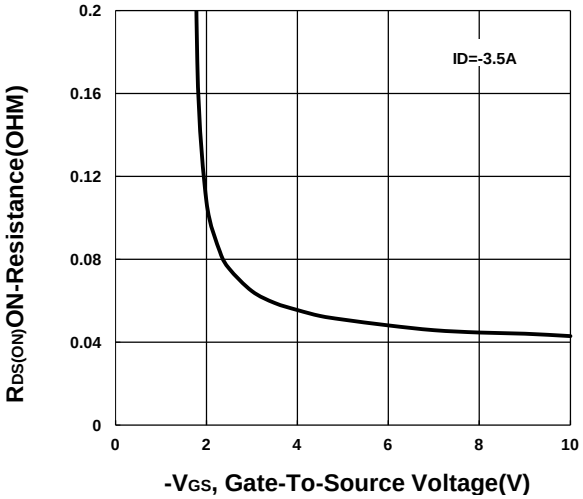
Output Characteristics



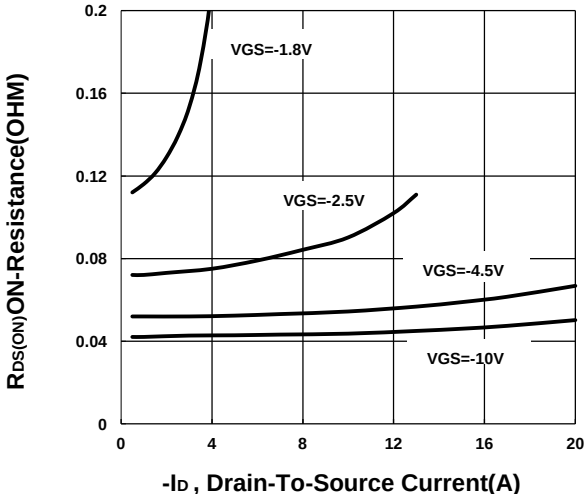
Transfer Characteristics



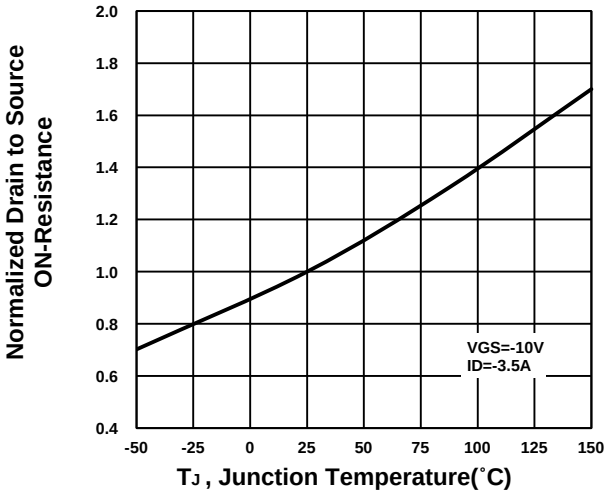
On-Resistance VS Gate-To-Source Voltage



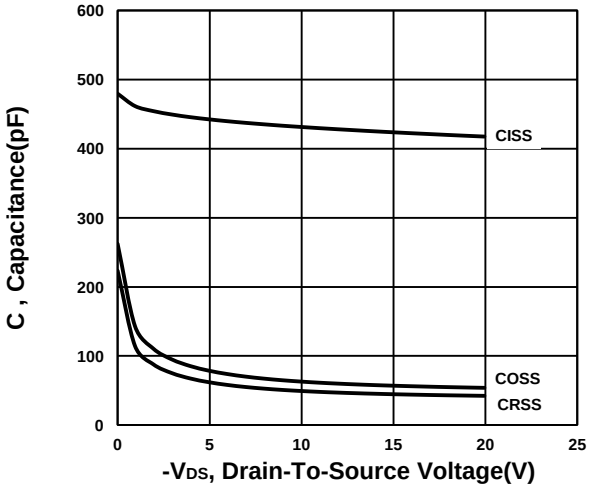
On-Resistance VS Drain Current



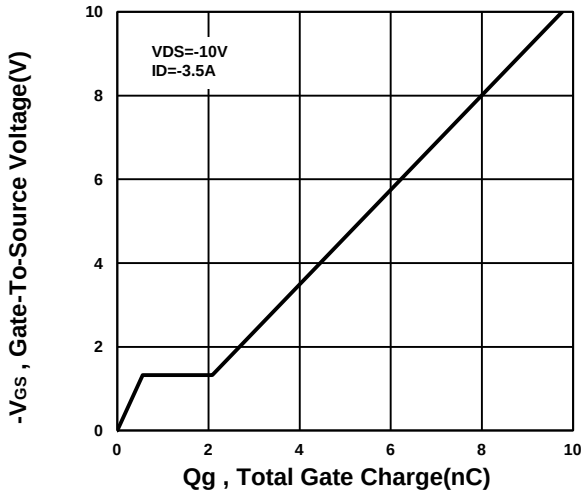
On-Resistance VS Temperature



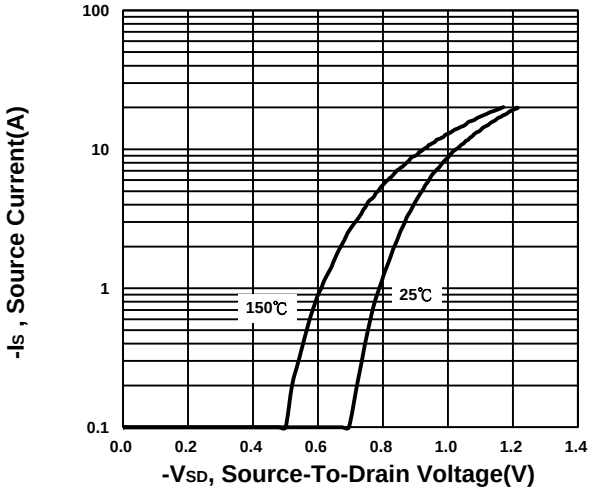
Capacitance Characteristic



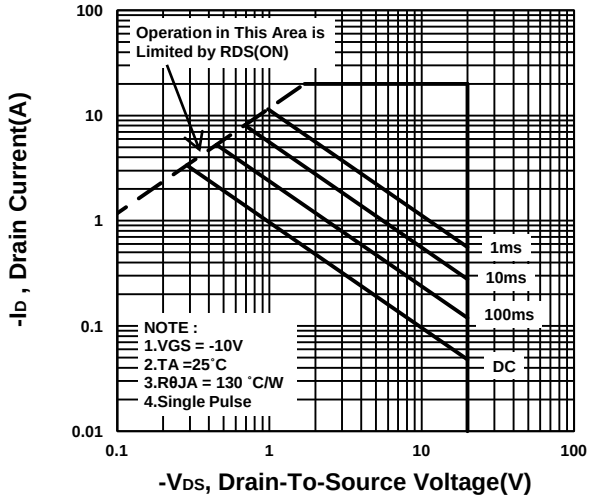
Gate charge Characteristics



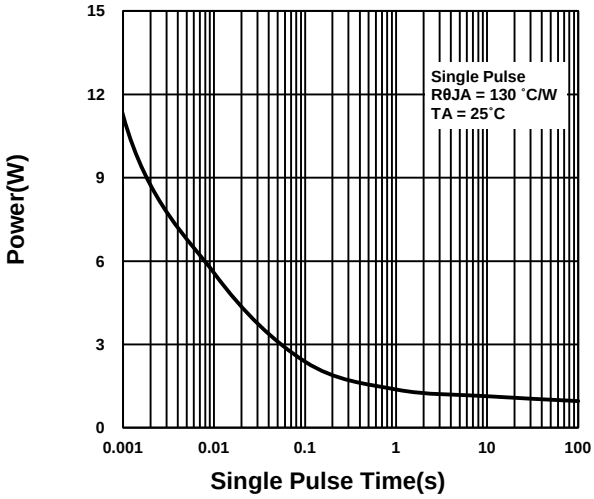
Source-Drain Diode Forward Voltage



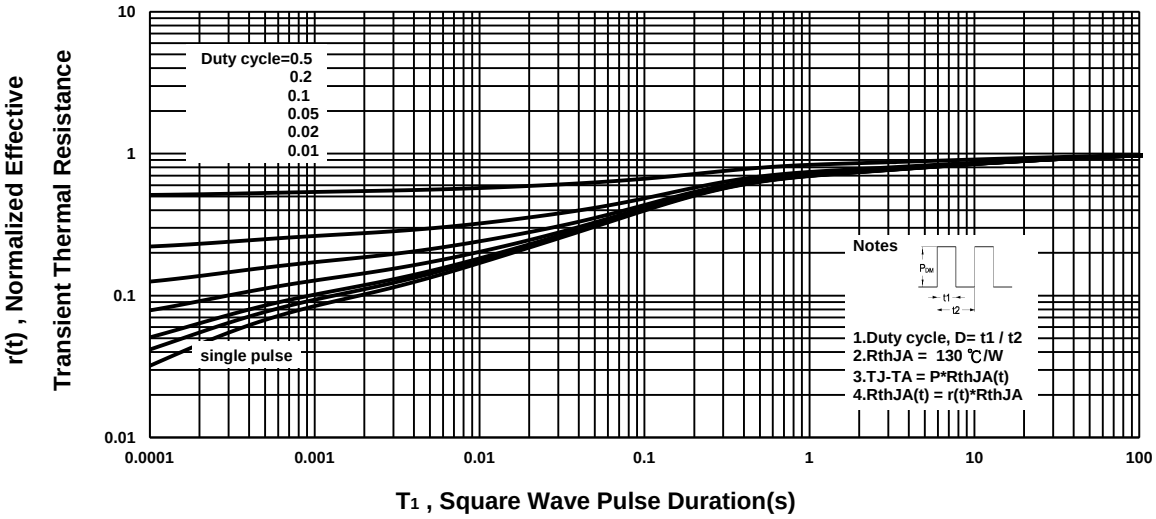
Safe Operating Area



Single Pulse Maximum Power Dissipation



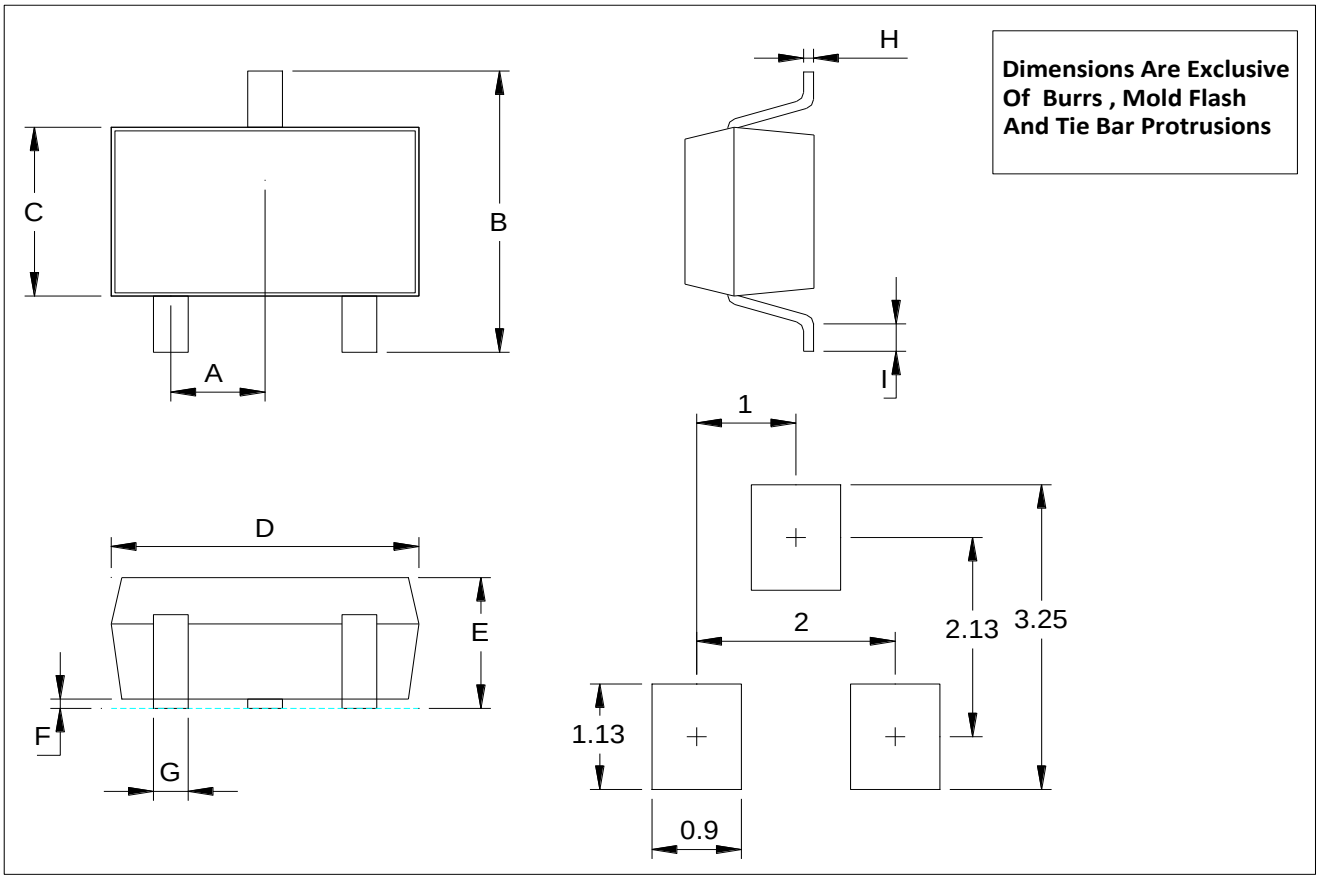
Transient Thermal Response Curve



Package Dimension

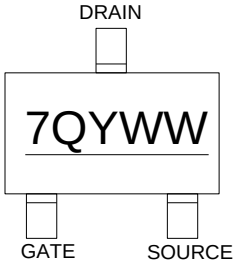
SOT-23 (S) MECHANICAL DATA

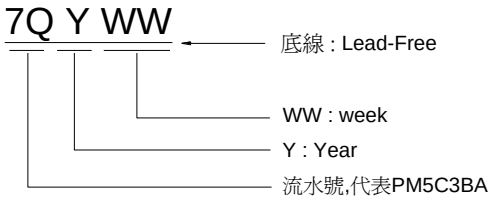
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.89		1.02	H	0.05		0.20
B	2.10		2.64	I	0.2		0.60
C	1.2		1.4				
D	2.8		3.04				
E	0.89		1.20				
F	0		0.1				
G	0.3		0.5				



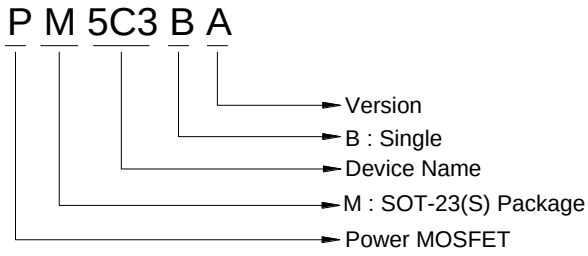
A. Marking Information

1.零件Marking 文字面說明

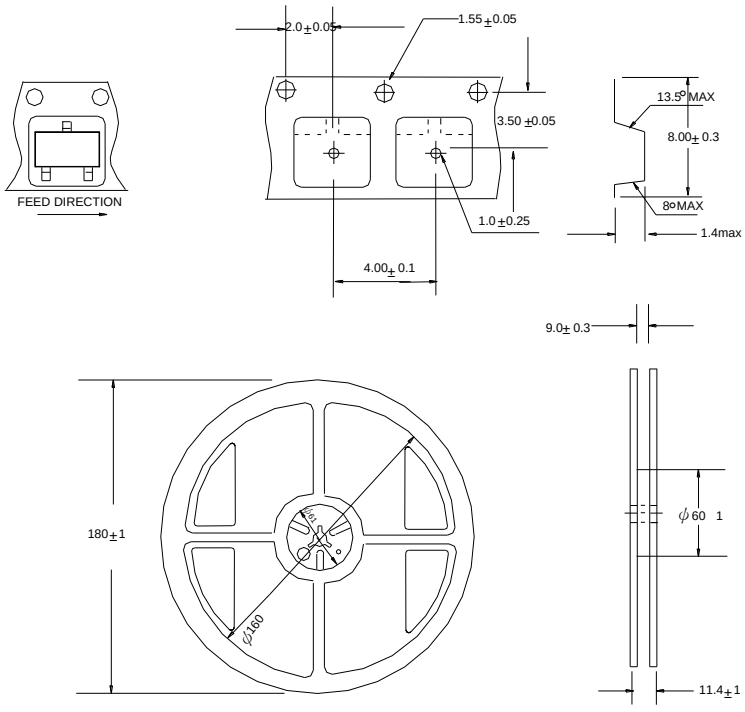




2.零件Part number說明



B. Tape & Reel Information:3000pcs/Reel



附註:All Dimension in millimeter

C. Lot.No. & Date Code rule

1.LOT.NO.

M N 15M21 03

- 03 → #8~9 Sub-lot No
- 15M21 → Order series no.
- N → Foundry site
- M → Assembly site

2.Date Code

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, P : 2013, Q : 2014, R : 2015, S : 2016, T : 2017, U : 2018 ...etc)
- D → Assembly site

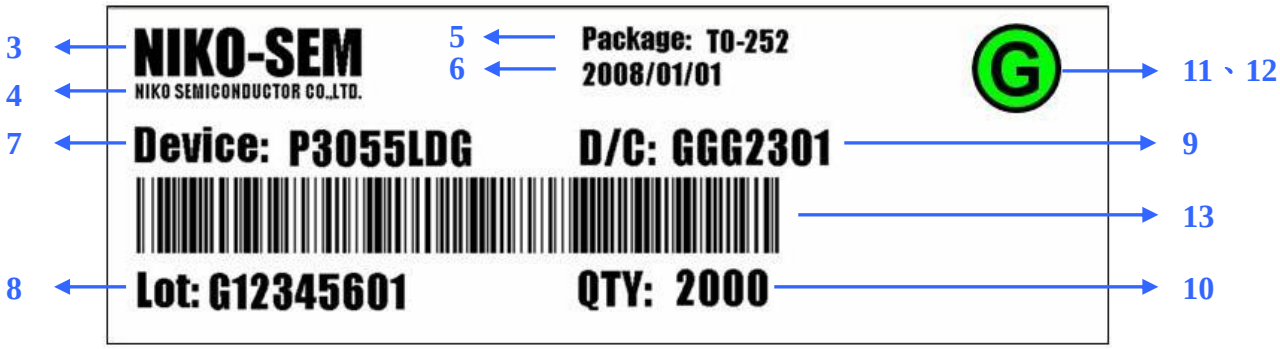
3.Date Code (for Small package)

XX Y WW

- WW → Week
- Y → Y : Year (9 : 2009,A : 2010, B : 2011, C : 2012, D : 2013, E : 2014, F : 2015, G : 2016, H : 2017, I : 2018...etc)
- 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) (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