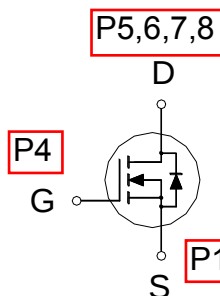
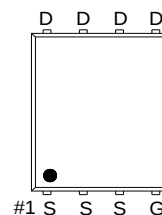


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	8m Ω	42A


Pin Define


G. GATE
D. DRAIN
S. SOURCE


ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25\text{ }^\circ\text{C}$	I_D	42	A
	$T_C = 100\text{ }^\circ\text{C}$		26.6	
Pulsed Drain Current ¹		I_{DM}	100	
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	11	
	$T_A = 70\text{ }^\circ\text{C}$		9	
Avalanche Current		I_{AS}	33.7	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	56.8	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	31	W
	$T_C = 100\text{ }^\circ\text{C}$		12.5	
Power Dissipation	$T_A = 25\text{ }^\circ\text{C}$	P_D	2.3	W
	$T_A = 70\text{ }^\circ\text{C}$		1.5	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ²	$R_{\theta JA}$		54	$^\circ\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		4	

¹Pulse width limited by maximum junction temperature.

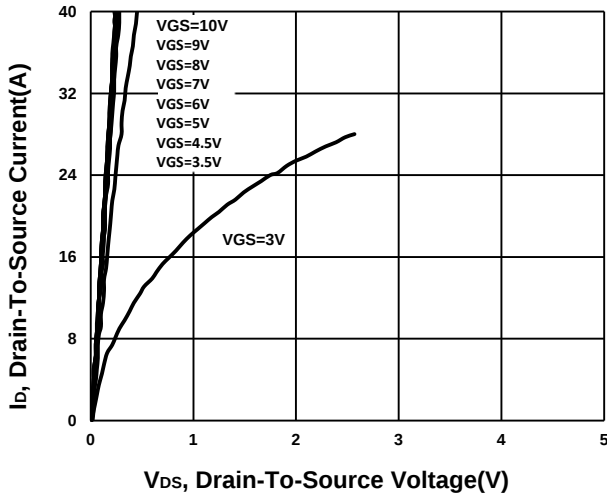
²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25\text{ }^\circ\text{C}$.

ELECTRICAL CHARACTERISTICS ($T_J = 25\text{ }^{\circ}\text{C}$, Unless Otherwise Noted)

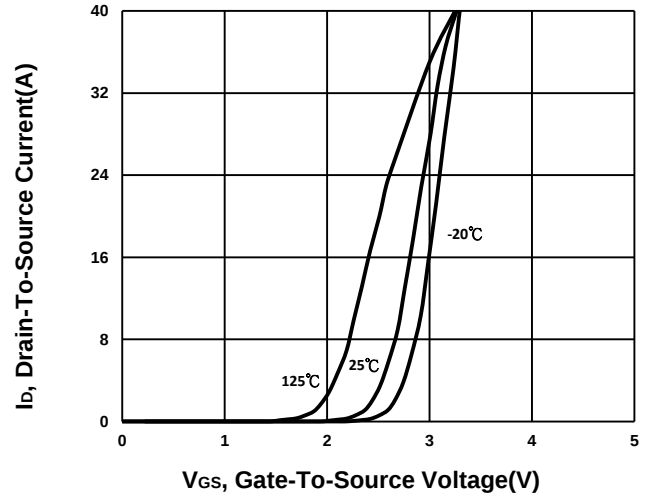
PARAMETER	SYMBOL		TEST CONDITIONS	LIMITS			UNIT
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	V _{(BR)DSS}		V _{GS} = 0V, I _D = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}		V _{DS} = V _{GS} , I _D = 250μA	1.3	1.8	2.3	
Gate-Body Leakage	I _{GSS}		V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}		V _{DS} = 32V, V _{GS} = 0V			1	μA
			V _{DS} = 30V, V _{GS} = 0V, T _J = 55 °C			10	
Drain-Source On-State Resistance ¹	R _{DS(ON)}		V _{GS} = 4.5V, I _D = 11A		6.4	12	mΩ
			V _{GS} = 10V, I _D = 11A		5.5	8	
Forward Transconductance ¹	g _{fs}		V _{DS} = 5V, I _D = 11A		55		S
DYNAMIC							
Input Capacitance	C _{iss}		V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		1672		pF
Output Capacitance	C _{oss}				206		
Reverse Transfer Capacitance	C _{rss}				124		
Gate Resistance	R _g		V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.3		Ω
Total Gate Charge ²	Q _g	V _{GS} = 10V	V _{DS} = 15V, V _{GS} = 10V, I _D = 11A		34		nC
		V _{GS} = 4.5V			18		
Gate-Source Charge ²	Q _{gs}				5.1		
Gate-Drain Charge ²	Q _{gd}				8.3		
Turn-On Delay Time ²	t _{d(on)}		V _{DS} = 15V , I _D ≅ 11A, V _{GS} = 10V, R _{GEN} =6Ω		25		nS
Rise Time ²	t _r				11		
Turn-Off Delay Time ²	t _{d(off)}				41		
Fall Time ²	t _f				12		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)							
Continuous Current	I _S					24	A
Forward Voltage ¹	V _{SD}		I _F = 11A, V _{GS} = 0V			1.3	V
Reverse Recovery Time	t _{rr}		I _F = 11A, dI _F /dt = 100A / μS		19.5		nS
Reverse Recovery Charge	Q _{rr}				9.4		nC

¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.

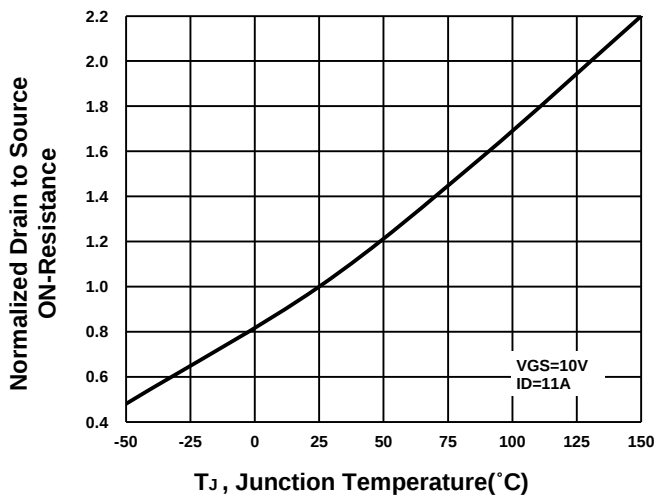
Output Characteristics



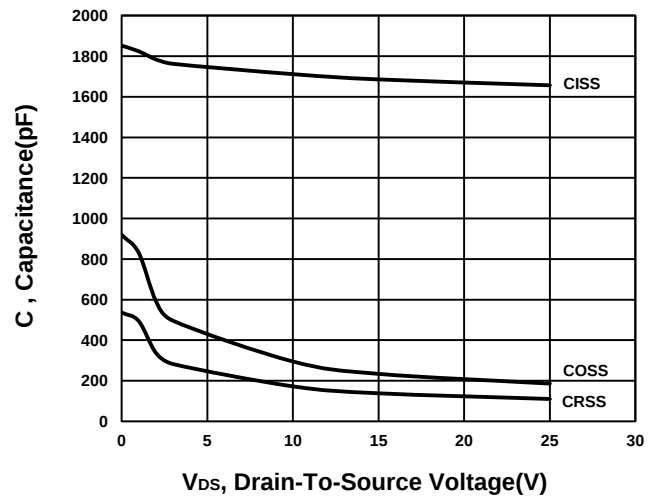
Transfer Characteristics



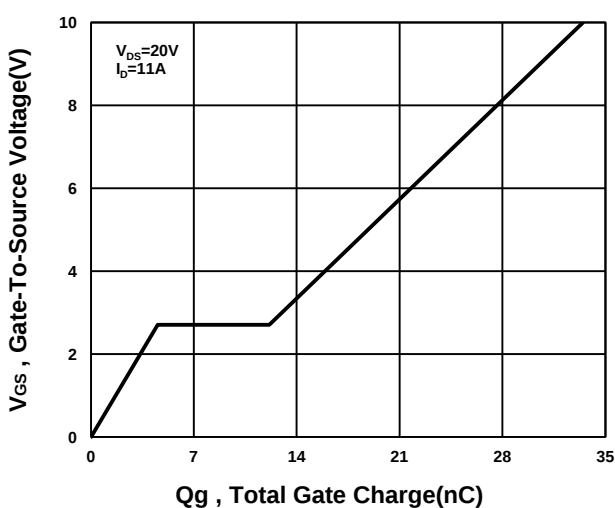
On-Resistance VS Temperature



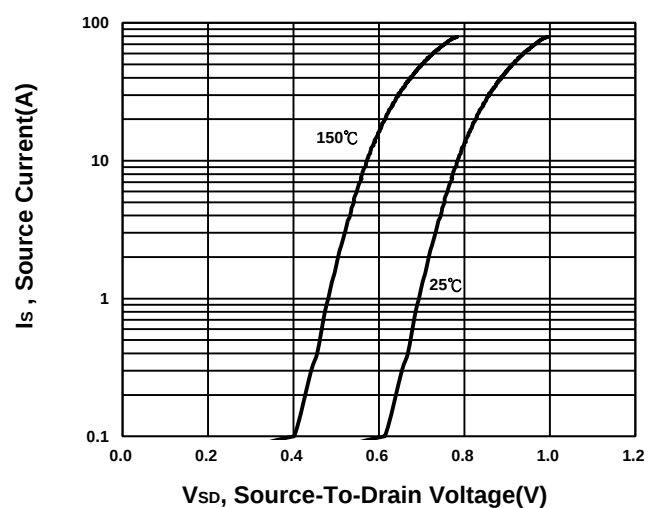
Capacitance Characteristic



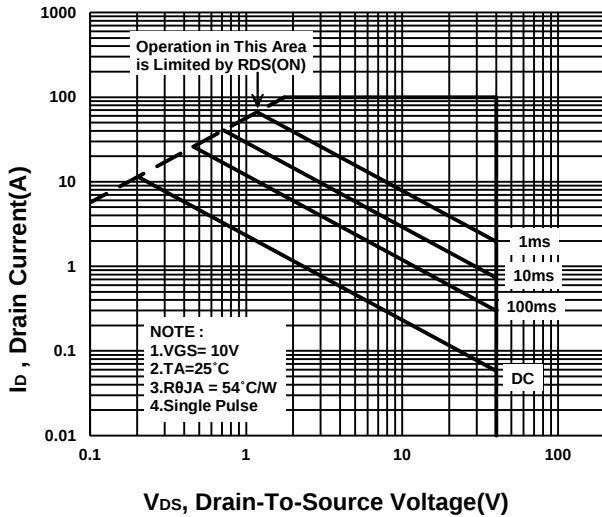
Gate charge Characteristics



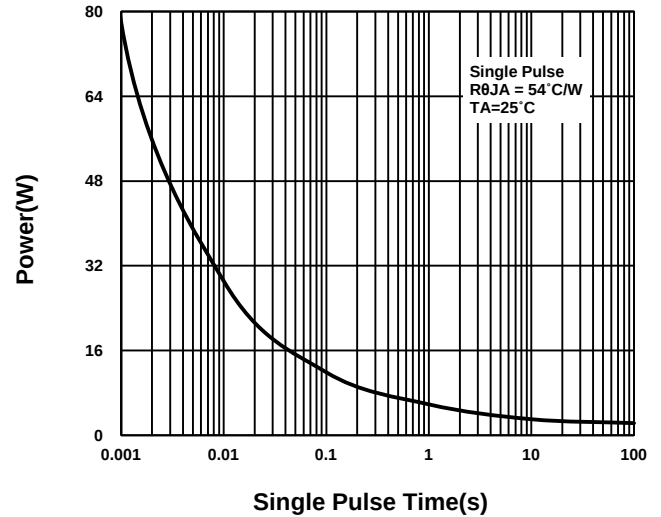
Source-Drain Diode Forward Voltage



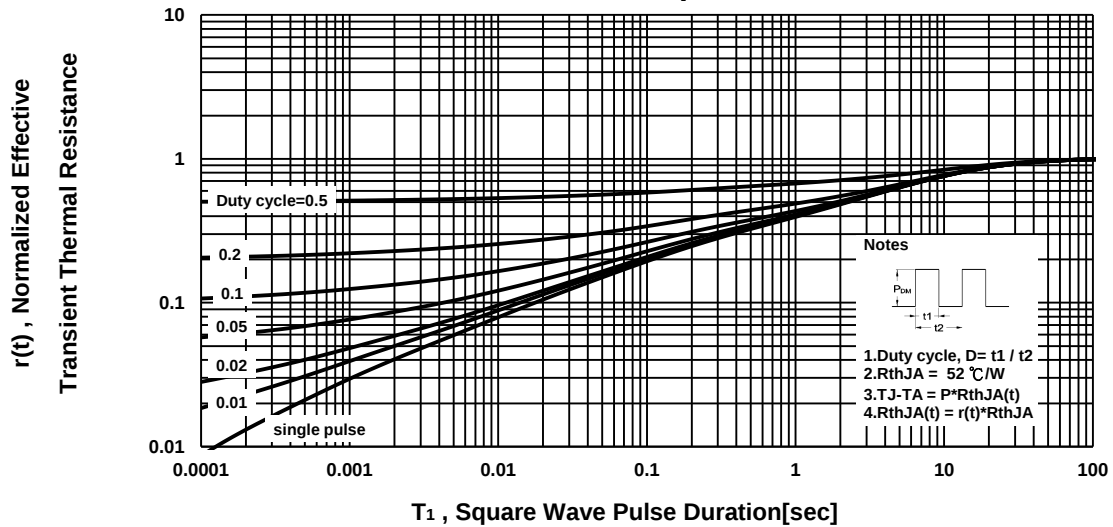
Safe Operating Area



Single Pulse Maximum Power Dissipation



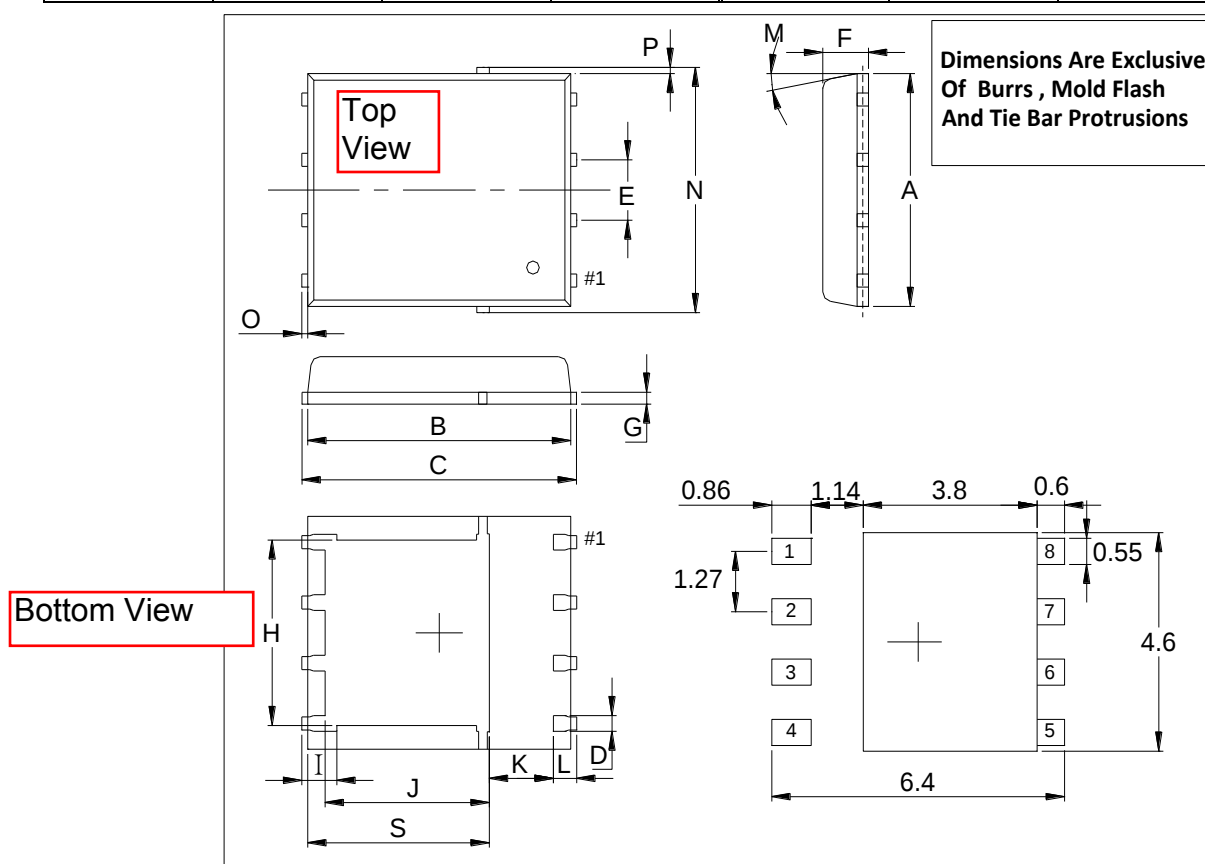
Transient Thermal Response Curve



Package Dimension

PDFN 5x6P MECHANICAL DATA

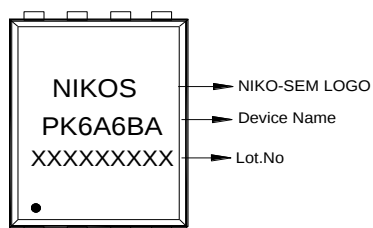
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.34		3.9
B	5.42		5.9	K	0.9		
C	5.9		6.35	L	0.38		0.711
D	0.3		0.51	M	0°		12°
E	1.17	1.27	1.37	N	4.8		5.4
F	0.8	1	1.2	O	0.05		0.36
G	0.15		0.35	P	0.05		0.25
H	3.67		4.31	S	3.73		4.19
I	0.38		0.71				



* 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。

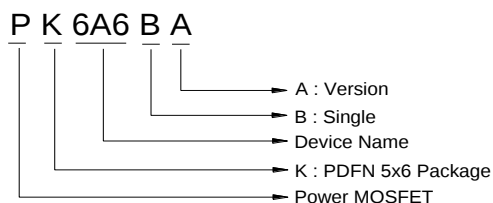
Marking Information:(Please see the corresponding data sheet)

1.零件Marking 文字面說明

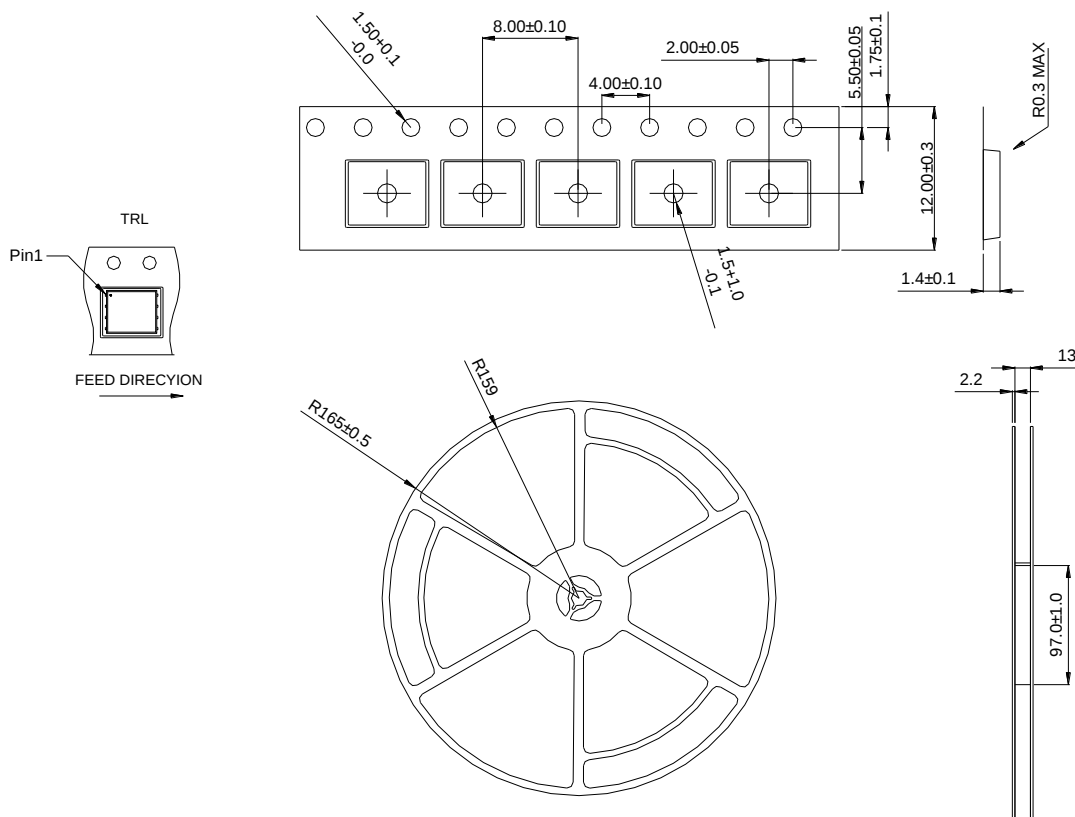


#1

2.零件 Part number 說明



Tape&Reel Information:3000pcs/Reel



附註:All Dimension in milimeter

Lot.No. & Date Code rule

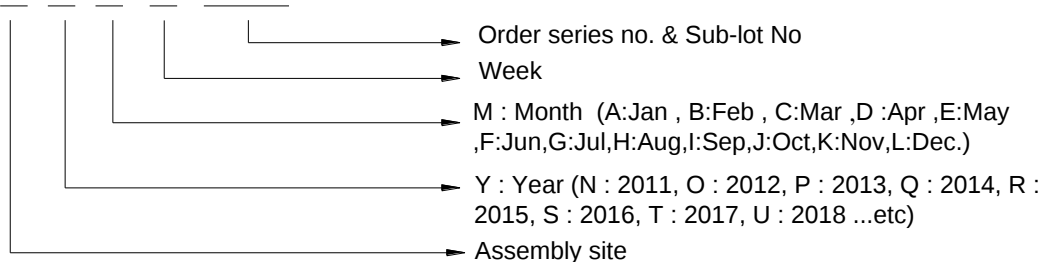
1.LOT.NO.

M N 15M21 03



2.Date Code

D Y M X XXX



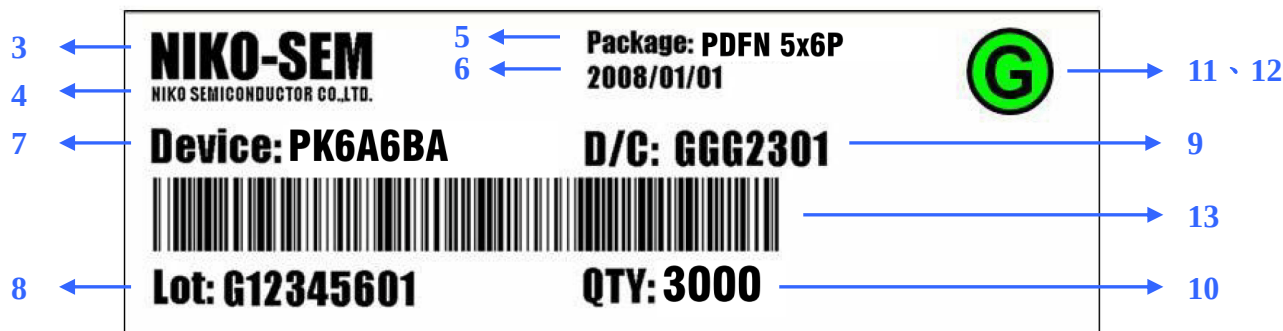
3.Date Code (for Small package)

XX Y WW



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

RELIABILITY TEST REPORT

PACKAGE TYPE : PDFN 5X6P

DEVICES : PK6A6BA HF

MSL LEVEL : 1

<i>SECTION HEAD</i>	<i>ORIGIATOR</i>	<i>DATE</i>
<i>David Lee</i>	<i>Cena Lin</i>	<i>2015/04/15</i>

1.0 Purpose

To qualify the reliability of HF PDFN 5X6P (PK6A6BA) package with MSL level 1.

2.0 Test Procedure

2.1 Pre-condition

I . External visual examination	40x
II . Bake	125℃,24 hrs
III . Soaking	85℃/85%RH, 168hrs
IV . Submitting to IR re-flow	260+0/-5℃ 3cycles

Note: sample size: 539 ea

2.2 Reliability Test Item

Test description	Condition	Time Point	S.S
TCT	-65℃~150℃	250 cycles	77
PCT	121℃ 100%RH.2 atm	168 hrs	77
THT	85℃,85%RH	168 hrs	77
HTRB	Vs=Vg=0V,Vd=SPEC Limit*80% ,150℃	1000 hrs	77
HTGB	Vs=Vd=0V,Vg=SPEC Limit,150℃	1000 hrs	77
HAST	130℃ 85%RH	96 hrs	77
HTST	150℃	1000 hrs	77
RSH	380℃	10 seconds	30

3.0 Visual & Test Inspection

Reliability Test Item	Test Results	Judgment
Pre-condition	0/539	PASS
Temperature Cycle Test (TCT)	0/77	PASS
Pressure Cooker Test (PCT)	0/77	PASS
Temperature and Humidity Test (THT)	0/77	PASS
High Temperature Reverse Bias (HTRB)	0/77	PASS
High Temperature Gate Bias (HTGB)	0/77	PASS
High Acceleration Temperature & Humidity Stress Test (HAST)	0/77	PASS
High Temperature Storage Life (HTST)	0/77	PASS
Resistance to Soldering Heat (RSH)	0/30	PASS

4.0 Conclusion

4.1 There is no obvious external defect found and passed in function test for these samples.

4.2 The package of HF PDFN 5X6P(PK6A6BA) passed the Reliability Test.