

PE610SA

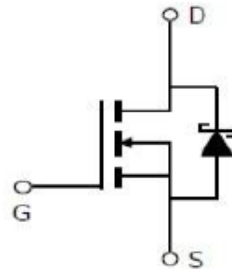
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	3m Ω @ $V_{GS} = 10V$	62A



PDFN 3X3P



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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 ³	$T_C = 25^\circ\text{C}$	I_D	62	A
	$T_C = 100^\circ\text{C}$		39	
	$T_A = 25^\circ\text{C}$		24	
	$T_A = 70^\circ\text{C}$		19	
Pulsed Drain Current ¹		I_{DM}	100	
Avalanche Current		I_{AS}	34	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	57.8	mJ
Power Dissipation ⁴	$T_C = 25^\circ\text{C}$	P_D	20	W
	$T_C = 100^\circ\text{C}$		8	
	$T_A = 25^\circ\text{C}$		3	
	$T_A = 70^\circ\text{C}$		2	
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	$t \leq 10\text{s}$	$R_{\theta JA}$		40	$^\circ\text{C} / \text{W}$
	Steady-State	$R_{\theta JA}$		60	
Junction-to-Case	Steady-State	$R_{\theta JC}$		6	

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 $T_A = 25^\circ\text{C}$.

³Package limitation current is 21A

⁴The Power dissipation is based on $R_{\theta JA} t \leq 10\text{s}$ value.

PE610SA

N-Channel Enhancement Mode MOSFET

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			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		3.1	4	mΩ
		V _{GS} = 10V , I _D = 20A		2.4	3	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 20A		60		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		2100		pF
Output Capacitance	C _{oss}			407		
Reverse Transfer Capacitance	C _{rss}			250		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.4		Ω
Total Gate Charge ²	Q _g (V _{GS} =10V)	V _{DS} = 15V , I _D = 20A		41		nC
	Q _g (V _{GS} =4.5V)			22		
Gate-Source Charge ²	Q _{gs}			5.3		
Gate-Drain Charge ²	Q _{gd}			14		
Turn-On Delay Time ²	t _{d(on)}	V _{DD} = 15V, I _D ≅ 20A, V _{GEN} = 10V, R _G = 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	I _S				20	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		16		nS
Reverse Recovery Charge	Q _{rr}			5		nC

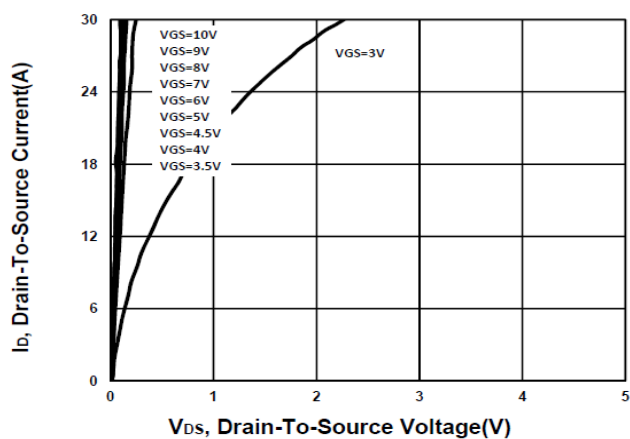
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

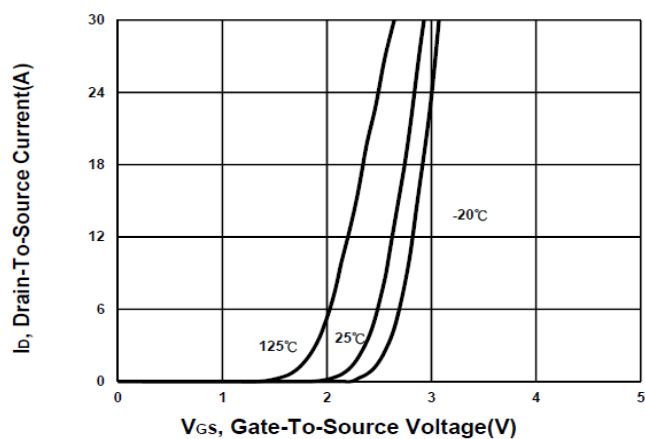
PE610SA

N-Channel Enhancement Mode MOSFET

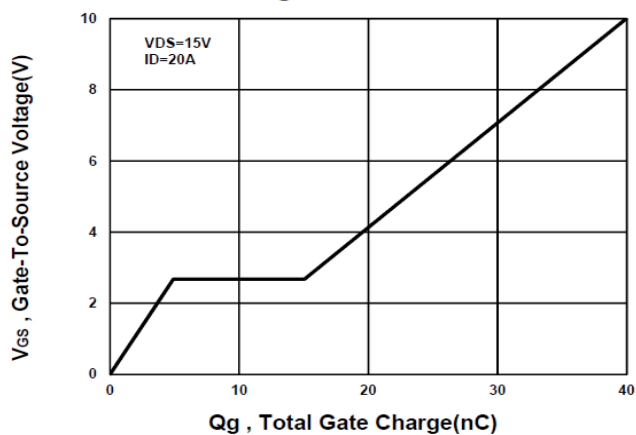
Output Characteristics



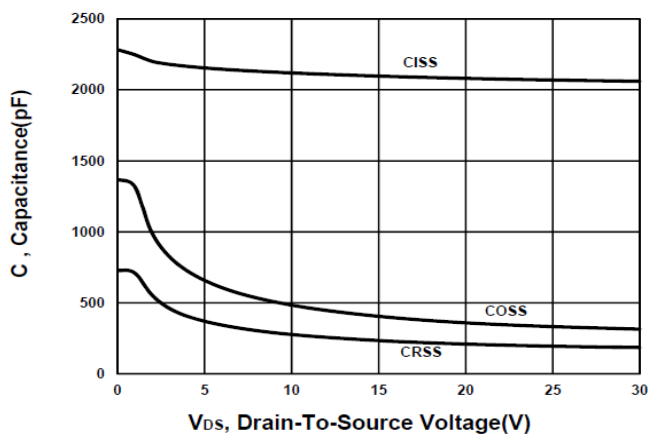
Transfer Characteristics



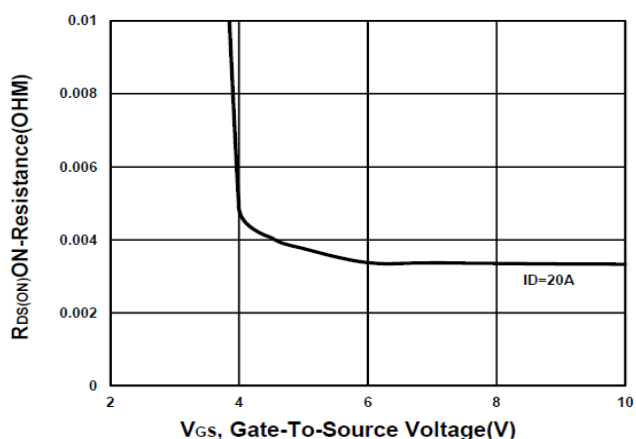
Gate charge Characteristics



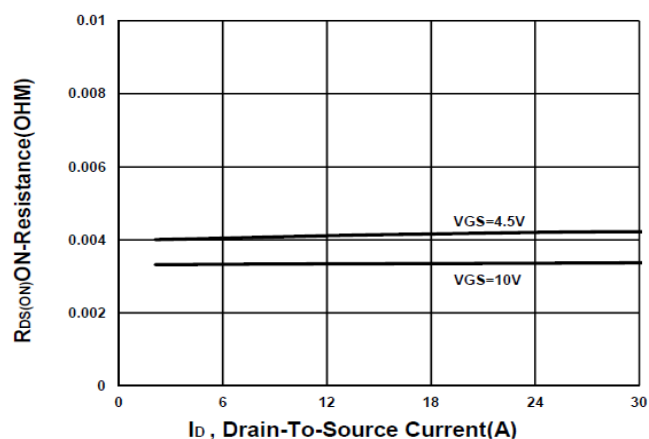
Capacitance Characteristic



On-Resistance VS Gate-To-Source



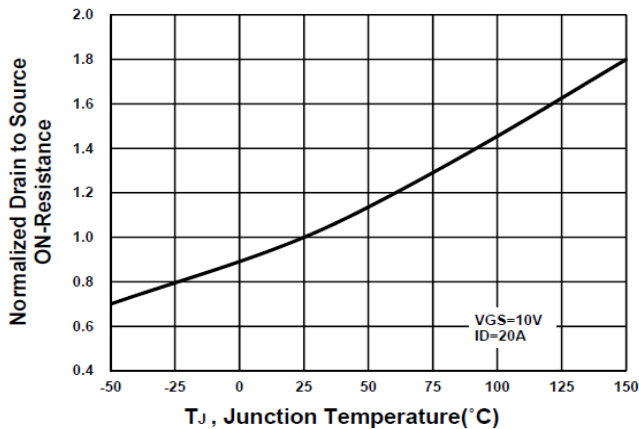
On-Resistance VS Drain Current



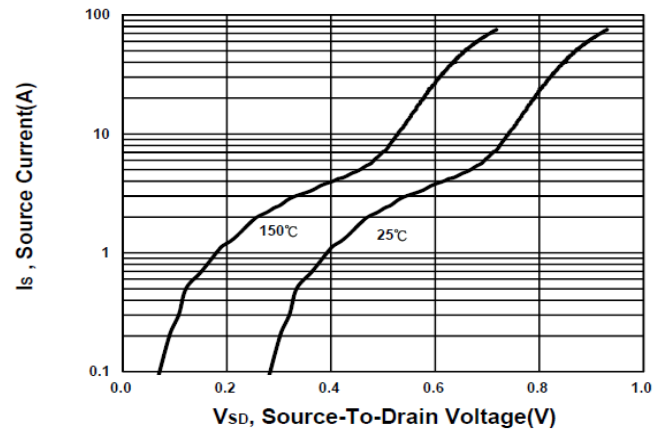
PE610SA

N-Channel Enhancement Mode MOSFET

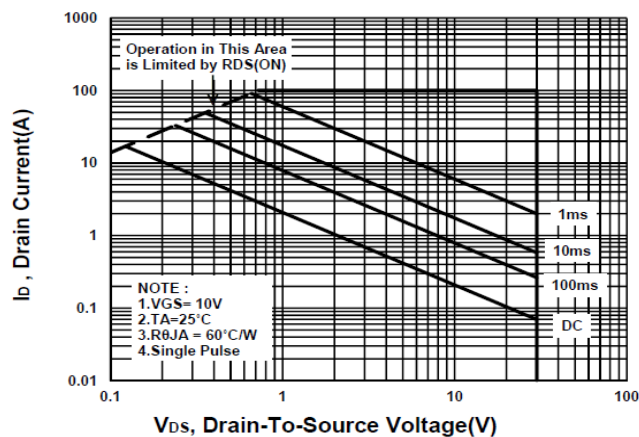
On-Resistance VS Temperature



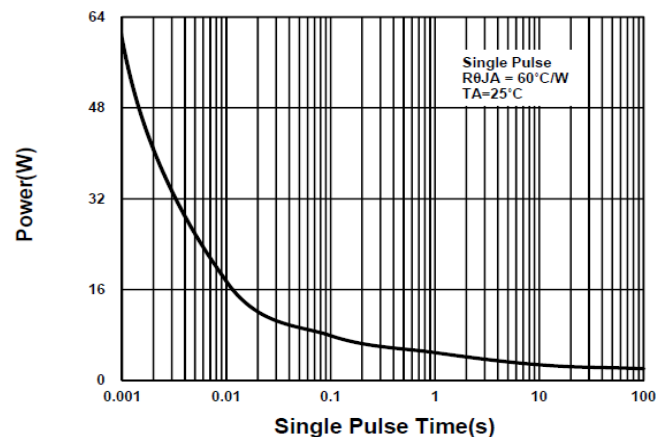
Source-Drain Diode Forward Voltage



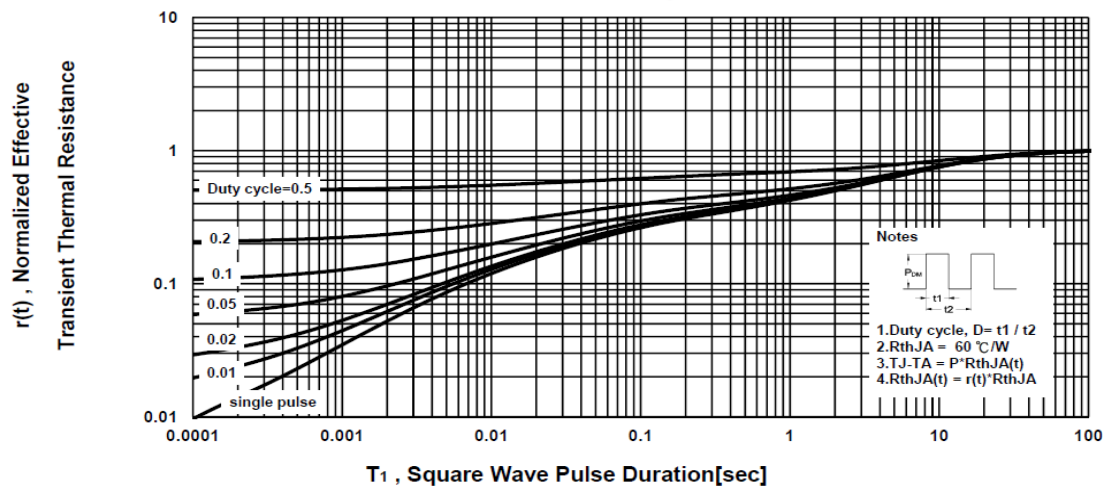
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



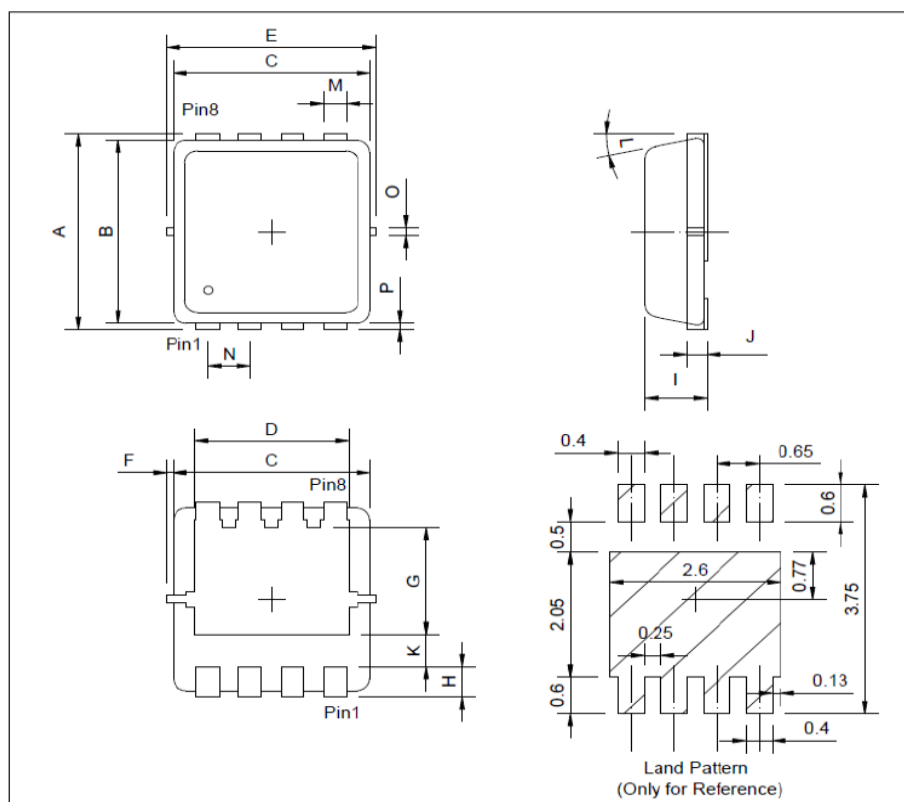
PE610SA

N-Channel Enhancement Mode MOSFET

Package Dimension

PDFN 3x3P MECHANICAL DATA

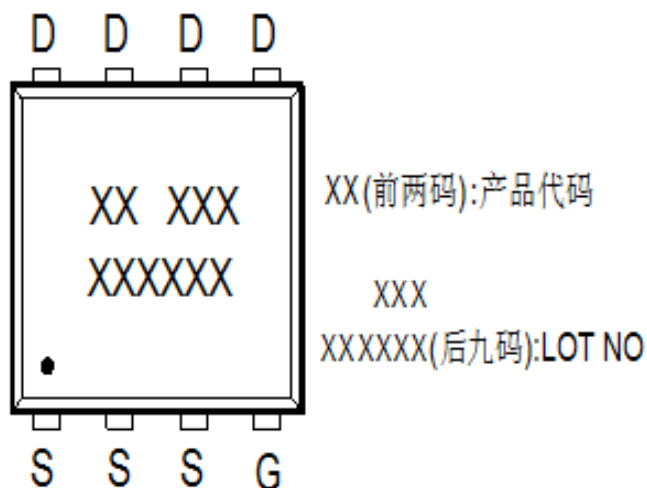
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	3	3.3	3.6	I	0.65	0.8	0.9
B	2.88	3	3.2	J	0.1	0.15	0.25
C	2.9	3	3.25	K	0.59		
D	2.29	2.45	2.69	L	0°	10°	12°
E	3	3.3	3.6	M	0.14	0.3	0.4
F	0	0.1	0.2	N	0.55	0.65	0.75
G	1.35	1.75	2.2	O		0.2	
H	0.15	0.3	0.55	P	0		0.2



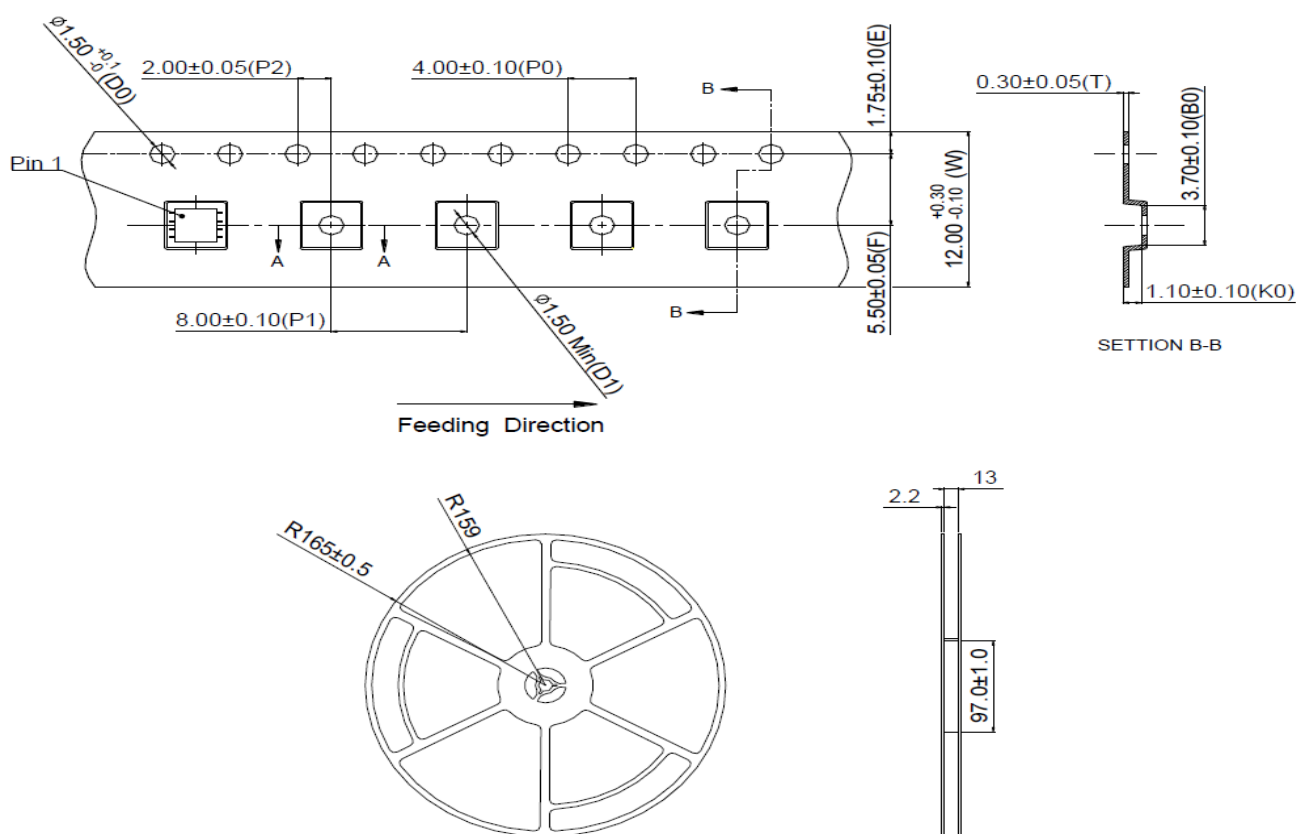
PE610SA

N-Channel Enhancement Mode MOSFET

A. Marking Information(此产品代码为: J8)



B. Tape&Reel Information:5000pcs/Reel



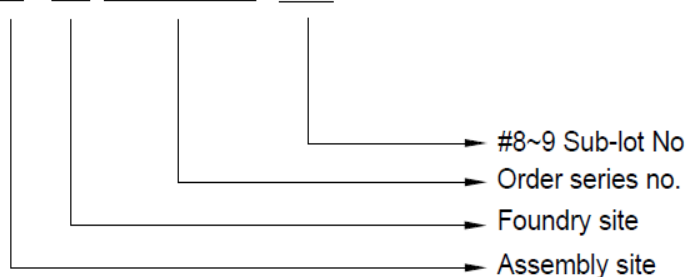
PE610SA

N-Channel Enhancement Mode MOSFET

C. Lot.No. & Date Code rule

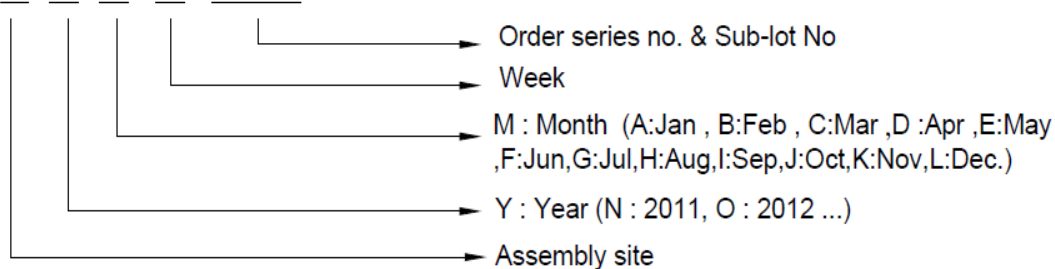
1.LOT.NO.

M N 15M21 03



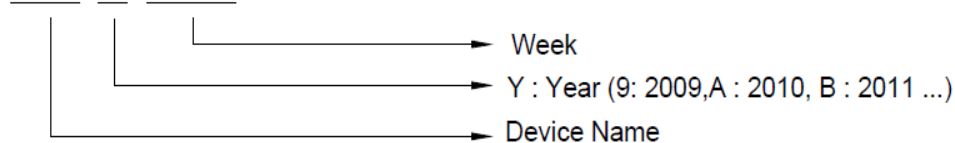
2.Date Code

D Y M X XXX



3.Date Code (for Small package)

XX Y WW



PE610SA

N-Channel Enhancement Mode MOSFET

D.Label rule

标签内容(Label content)



1	Label Size	30 * 90 mm
2	Font style	Times New Roman or Arial (或可区分英文"0"和数字"0", "G"和"Q"的字型即可)
3	Great Power	Height: 4 mm
4	Package	Height: 2 mm
5	Date	Height: 2 mm Shipping date: YYYY/MM/DD, ex. 2008/09/12
6	Device	Height: 3 mm (Max: 16 Digit)
7	Lot	Height: 3 mm (Max: 9 Digit) Sub lot
8	D/C	Height: 3 mm (Max: 7 Digit)
9	QTY	Height: 3 mm (Max: 6 Digit) Thousand mark is no needed
10	Pb Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	 Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
12	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