UNIKC
Semiconductor

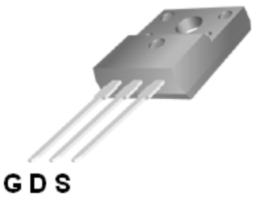
RoHS
Compliant

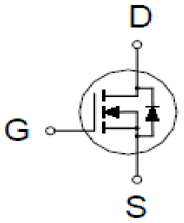
P0610BTF

N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
100V	6.5mΩ @V_{GS} = 10V	66A





TO-220F

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_C = 25 °C	I_D	66	A
	T_C = 100 °C		41	
Pulsed Drain Current[1]		I_{DM}	200	
Avalanche Current		I_{AS}	40	
Avalanche Energy	L = 1mH	E_{AS}	832	mJ
Power Dissipation	T_C = 25 °C	P_D	62.5	W
	T_C = 100 °C		25	
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	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

[1] Pulse width limited by maximum junction temperature.

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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 = 250μA	100			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} = 80V, V_{GS} = 0V			1	μA
		V_{DS} = 80V, V_{GS} = 0V, T_J = 125 ° C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 20A		6	8	mΩ
		V_{GS} = 10V , I_D = 20A		5.4	6.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A		133		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		6300		pF
Output Capacitance	C_{oss}			744		
Reverse Transfer Capacitance	C_{rss}			219		
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} = 50V,I_D = 20A		120		nC
	$Q_g(V_{GS}=4.5V)$			63		
Gate-Source Charge[2]	Q_{gs}			19.5		
Gate-Drain Charge[2]	Q_{gd}			38		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = 50V , $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω		21		nS
Rise Time[2]	t_r			61		
Turn-Off Delay Time[2]	$t_{d(off)}$			54		
Fall Time[2]	t_f			58		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				52	A
Forward Voltage[1]	V_{SD}	I_F = 20A, V_{GS} = 0V			1.2	V
Diode Reverse Recovery Time	t_{rr}	I_F=20A,dI_F/dt = 100A / μS		65		nS
Diode Reverse Recovery Charge	Q_{rr}			176		uC

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

[2] Independent of operating temperature.

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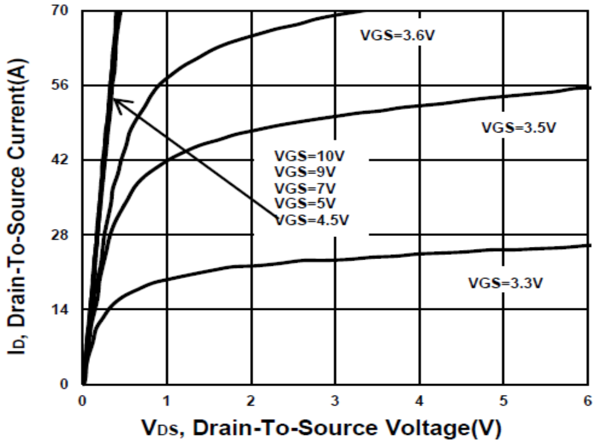
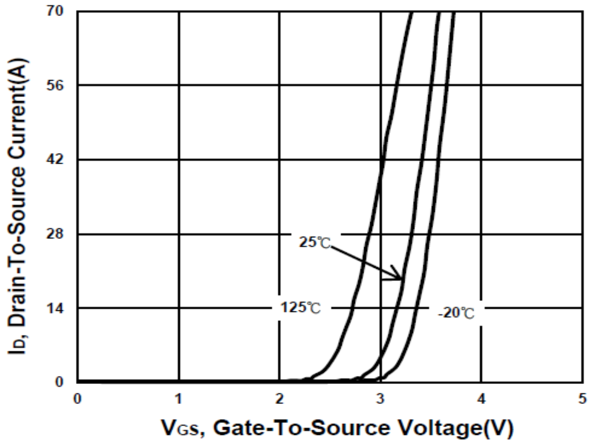
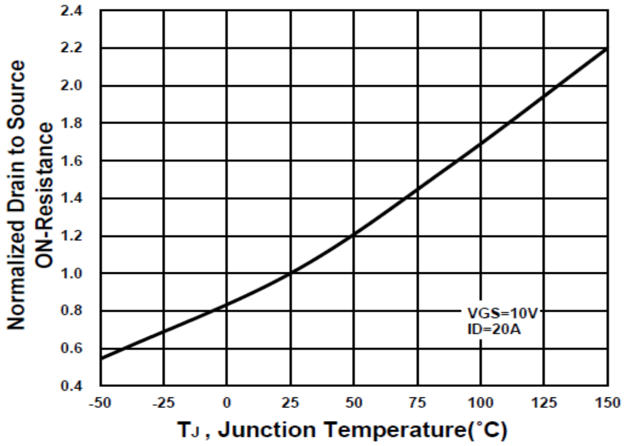
Output Characteristics



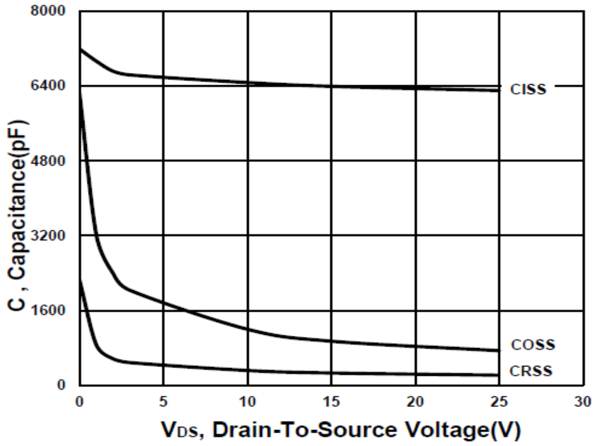
Transfer Characteristics



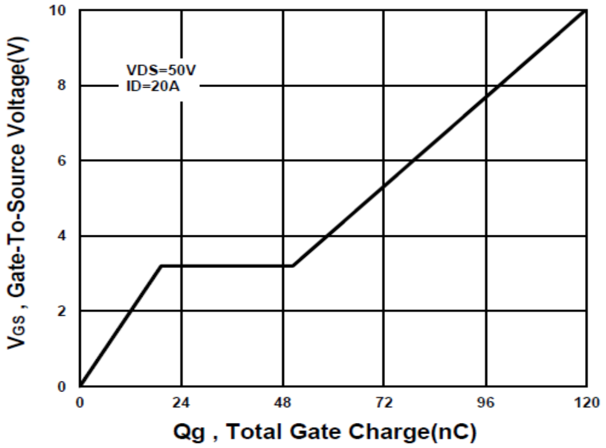
On-Resistance VS Temperature



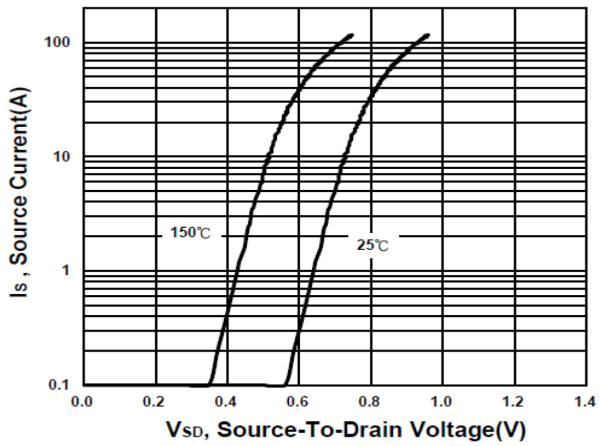
Capacitance Characteristic

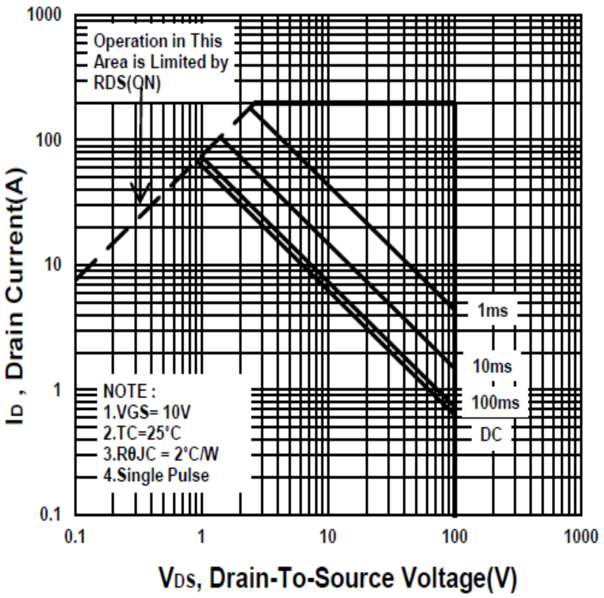


Gate charge Characteristics

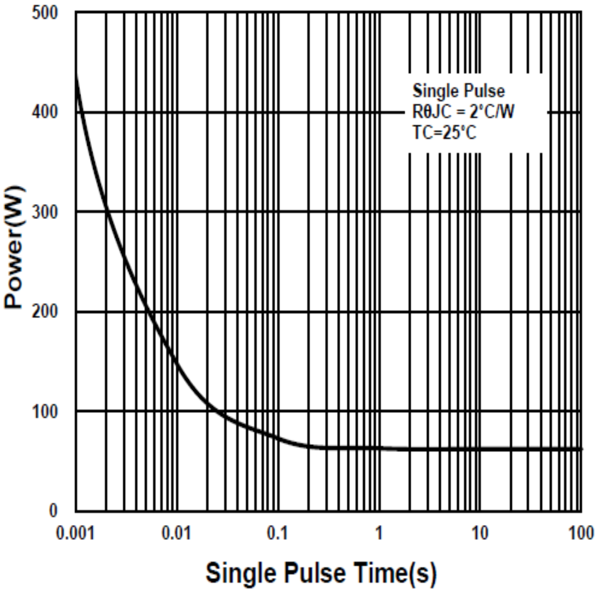


Source-Drain Diode Forward Voltage

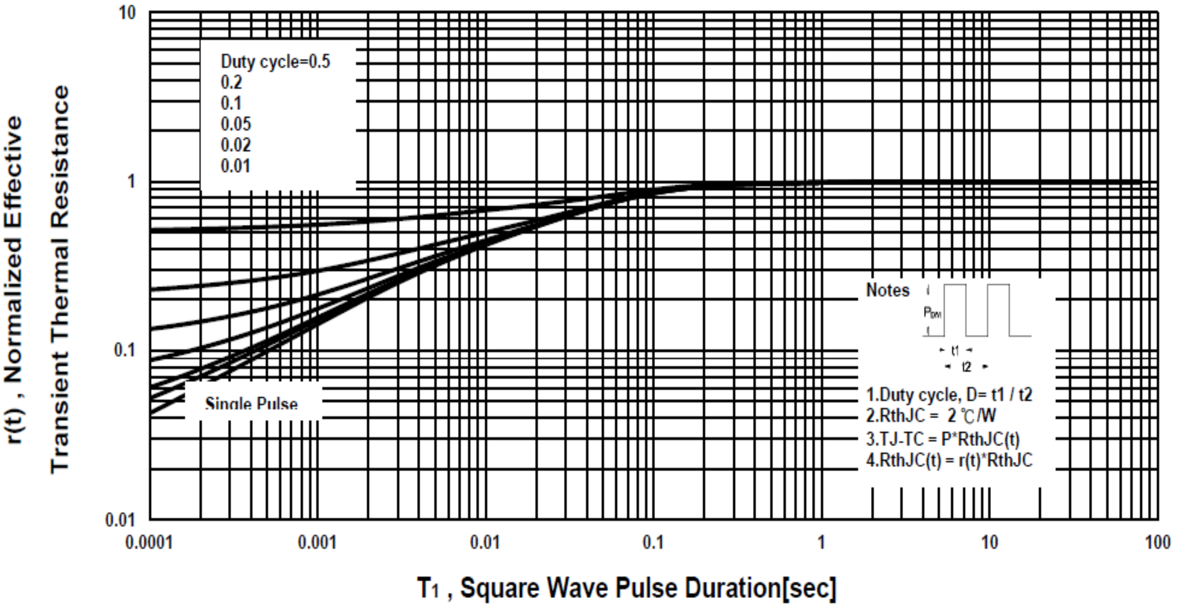




Safe Operating Area



Single Pulse Maximum Power Dissipation

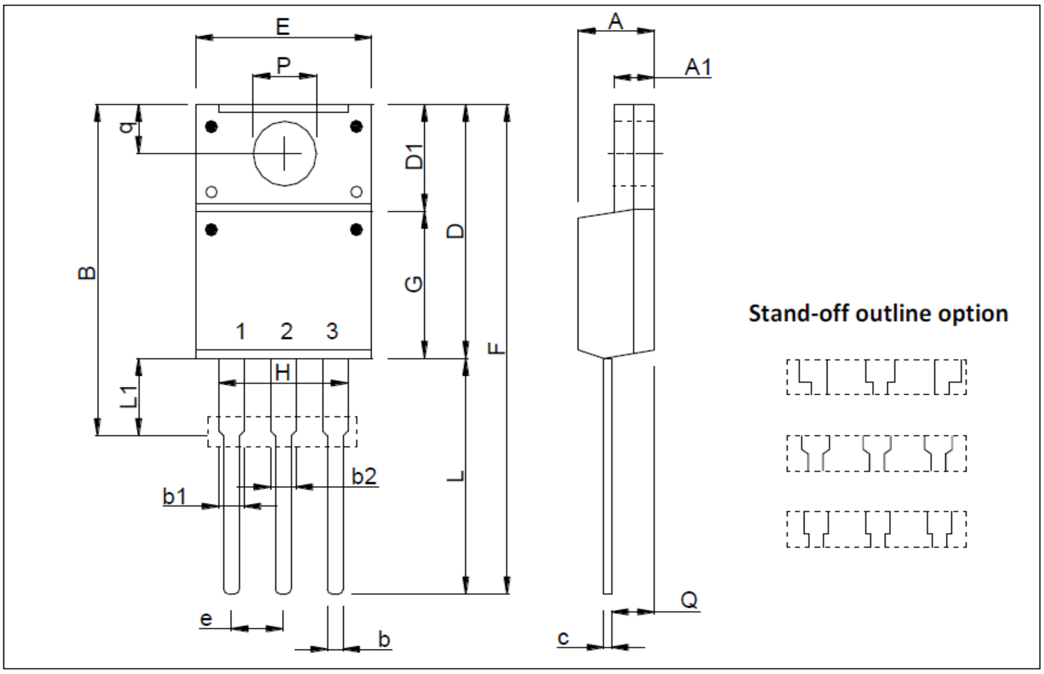


Transient Thermal Response Curve

Package Dimension

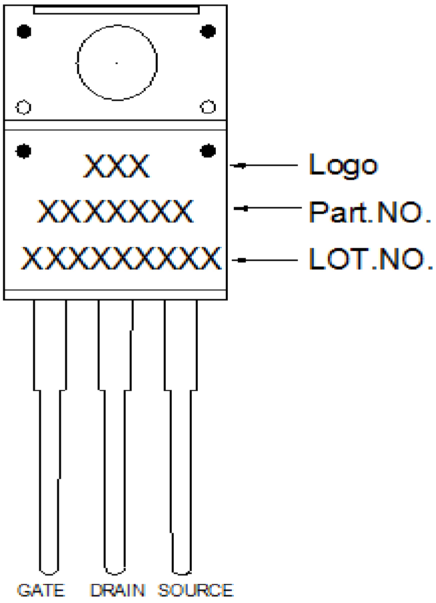
TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.4		4.93	e	2.34		2.74
A1	2.34		3.1	F	27.2		30.6
B	18.8		20	G	7.7		9.39
b	0.65		1	H	6.18		6.82
b1	0.93		1.6	L	12.7		14.2
b2	0.95		1.6	L1	2.88		3.7
c	0.4		1	P	2.98		3.7
D	13.5		16.4	Q	2.3		2.96
D1	6.48		6.95	q	3.1		3.8
E	9.8		10.4				

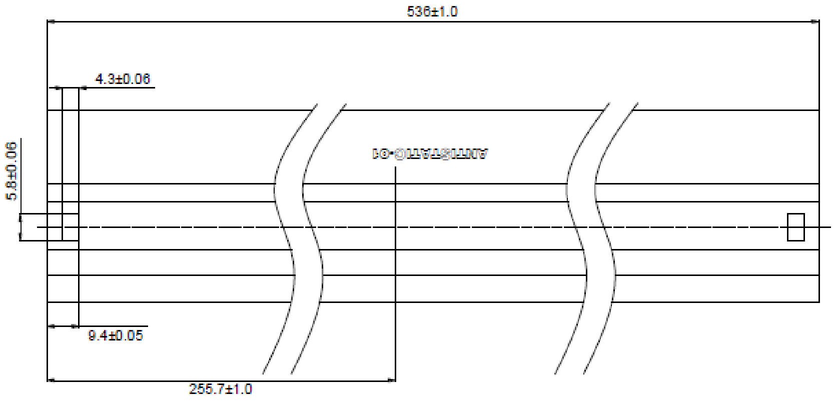


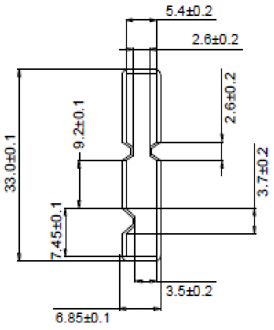
*因各家封装模具不同而外观略有所差异，不影响电性及Layout。

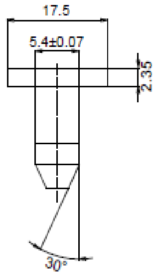
A. Marking Information

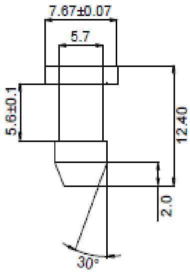


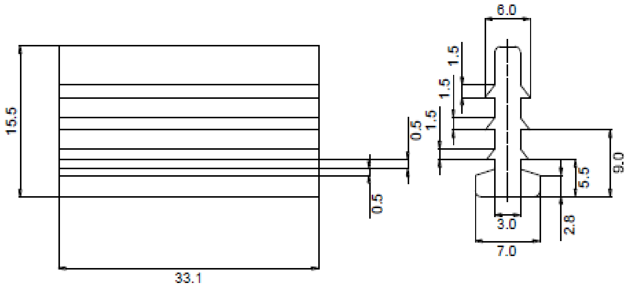
B. Tape&Reel Information:50pcs/Tube(2000pcs/Box)





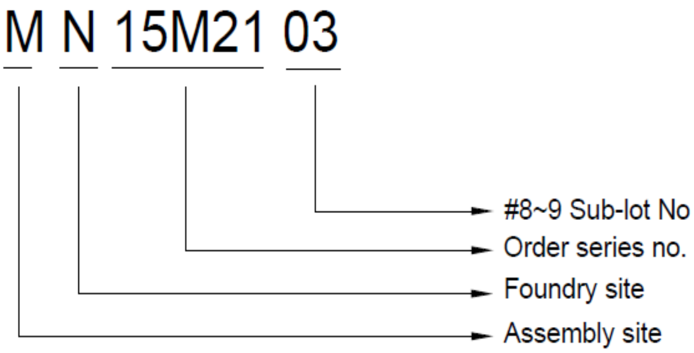




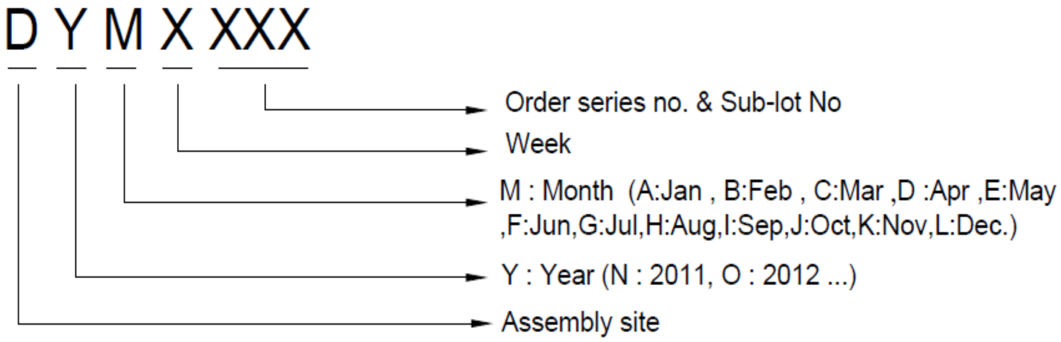


C. Lot.No. & Date Code rule

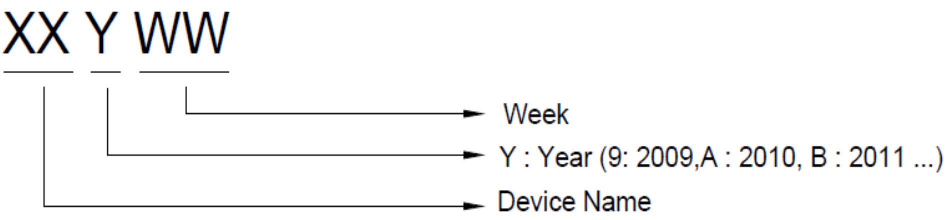
1.LOT.NO.



2.Date Code



3.Date Code (for Small package)



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”O”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	Pb Diameter: 1 cm bottom color: Green Font color: Black Font style: Arial
11	Halogen Free label	G 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