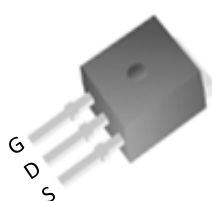


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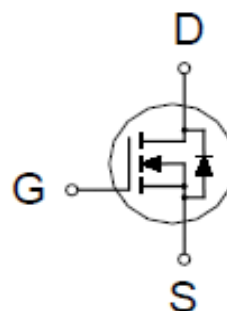
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
60V	10mΩ @ $V_{GS} = 10V$	66A



TO-251(S)



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current ²	$T_C = 25\text{ °C}$	I_D	66	A
	$T_C = 100\text{ °C}$		42	
Pulsed Drain Current ¹		I_{DM}	150	
Avalanche Current		I_{AS}	38.5	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	74	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	96	W
	$T_C = 100\text{ °C}$		38	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.3	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 30A

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.8	2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
		$V_{DS} = 40V, V_{GS} = 0V, T_J = 125^{\circ}C$			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 20A$		8.1	13	m Ω
		$V_{GS} = 10V, I_D = 20A$		6.8	10	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 10V, I_D = 20A$		60		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 25V, f = 1MHz$		1920		pF
Output Capacitance	C_{oss}			215		
Reverse Transfer Capacitance	C_{rss}			140		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		0.7		Ω
Total Gate Charge ²	$Q_g(V_{GS}=10V)$	$V_{DS} = 30V, I_D = 20A$		42		nC
	$Q_g(V_{GS}=4.5V)$			23		
Gate-Source Charge ²	Q_{gs}			6		
Gate-Drain Charge ²	Q_{gd}			12		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 30V,$ $I_D \cong 20A, R_{GEN} = 6\Omega$		29		nS
Rise Time ²	t_r			31		
Turn-Off Delay Time ²	$t_{d(off)}$			51		
Fall Time ²	t_f			31		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^{\circ}C$)						
Continuous Current ³	I_S				66	A
Forward Voltage ¹	V_{SD}	$I_F = 20A, V_{GS} = 0V$			1.3	V
Diode Reverse Recovery Time	t_{rr}	$I_F = 20A, dI/dt = 100A / \mu S$		26		nS
Diode Reverse Recovery Charge	Q_{rr}			19		nC

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

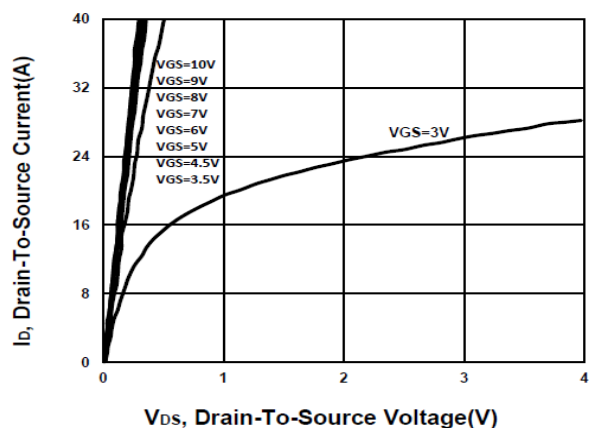
²Independent of operating temperature.

³Package limitation current is 30A.

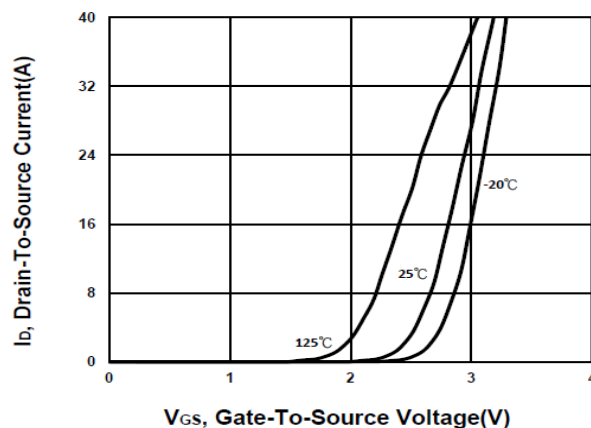
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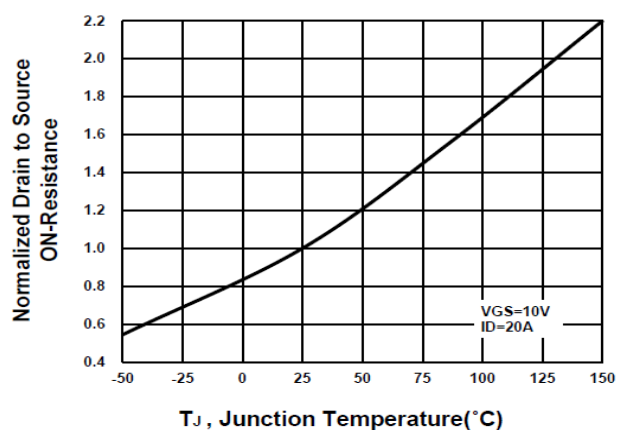
Output Characteristics



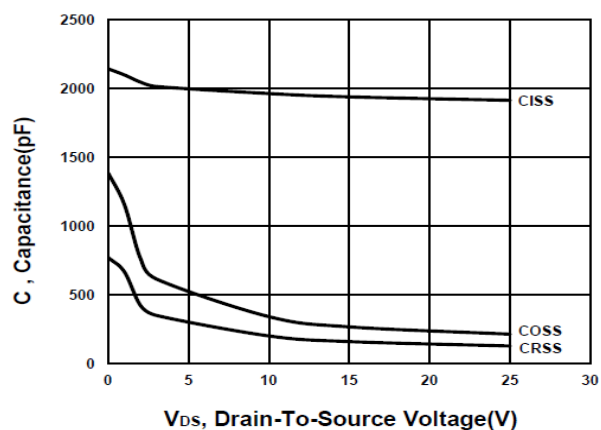
Transfer Characteristics



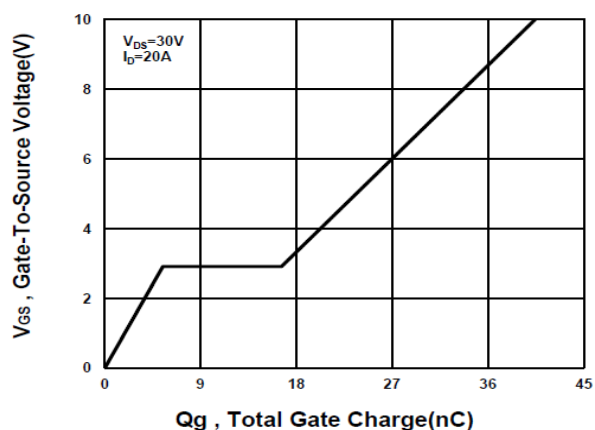
On-Resistance VS Temperature



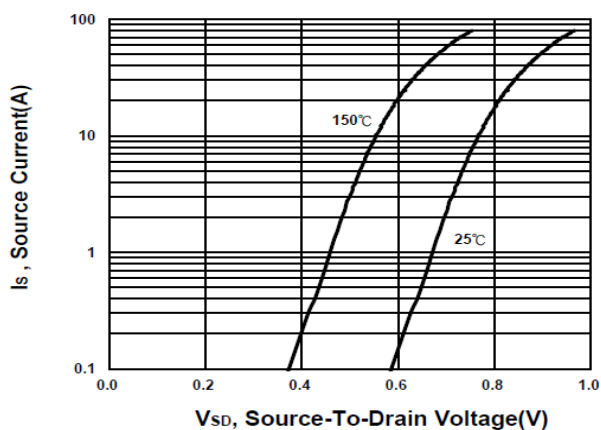
Capacitance Characteristic



Gate charge Characteristics



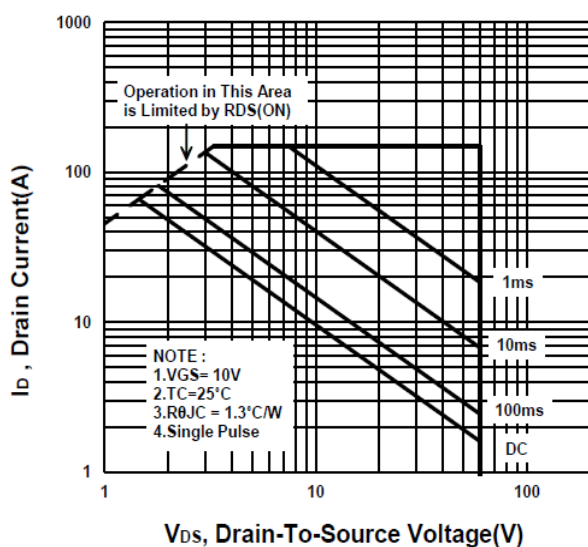
Source-Drain Diode Forward Voltage



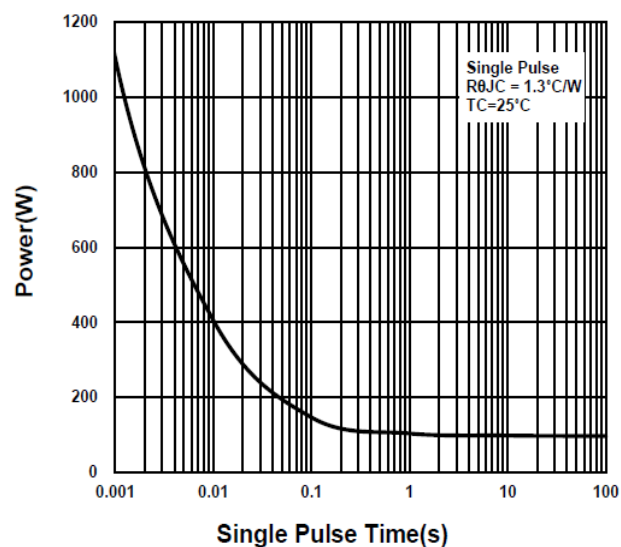
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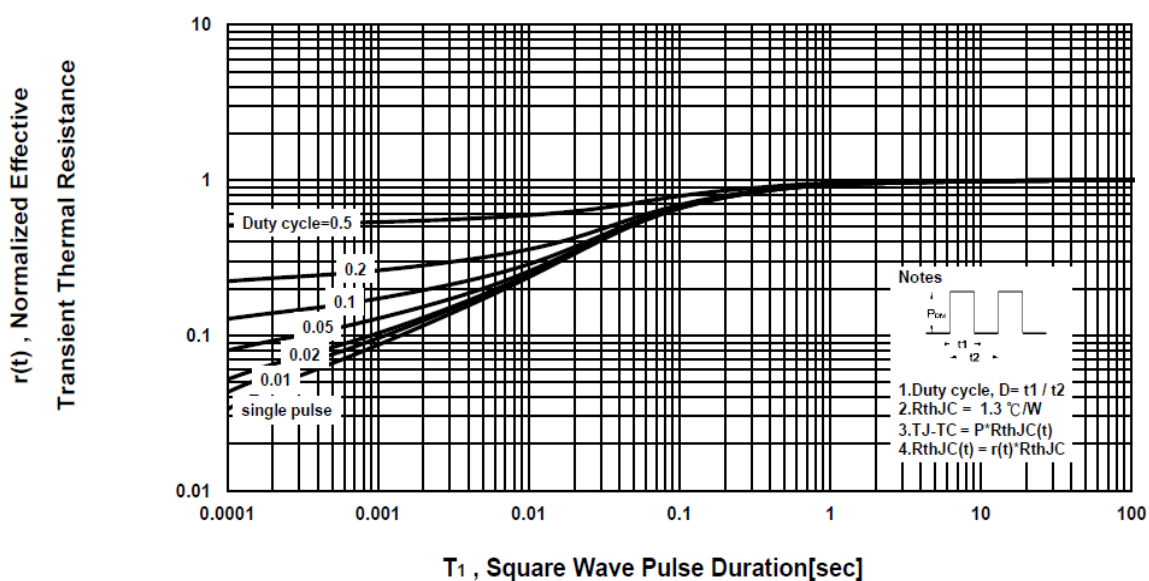
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



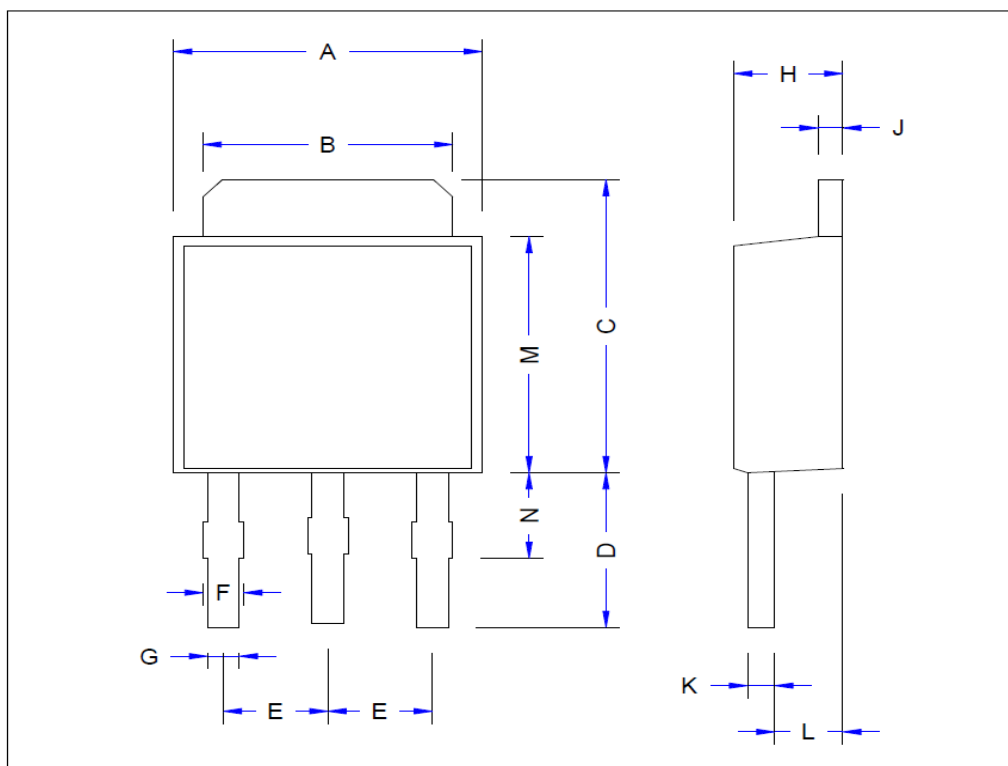
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Package Dimension

TO-251 (IS) MECHANICAL DATA

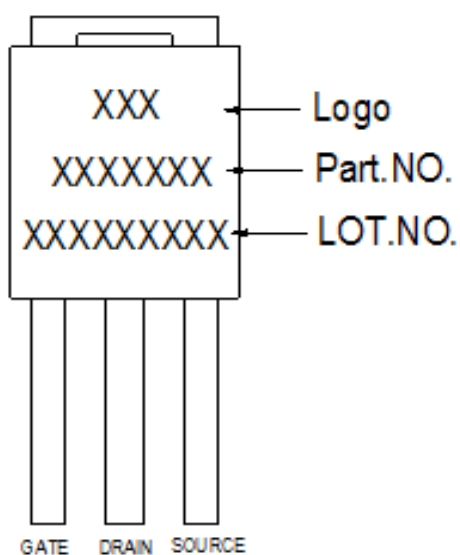
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	6.3	6.6	6.8	H	2.1	2.3	2.5
B	4.8	5.3	5.5	J	0.4	0.5	0.6
C	6.7		7.57	K	0.35	0.5	0.65
D	3	3.5	4.5	L	0.9		1.5
E		2.3		M	5.3		6.22
F	0.6	0.9	1.1	N	1.4	1.6	2.1
G	0.4		0.89				



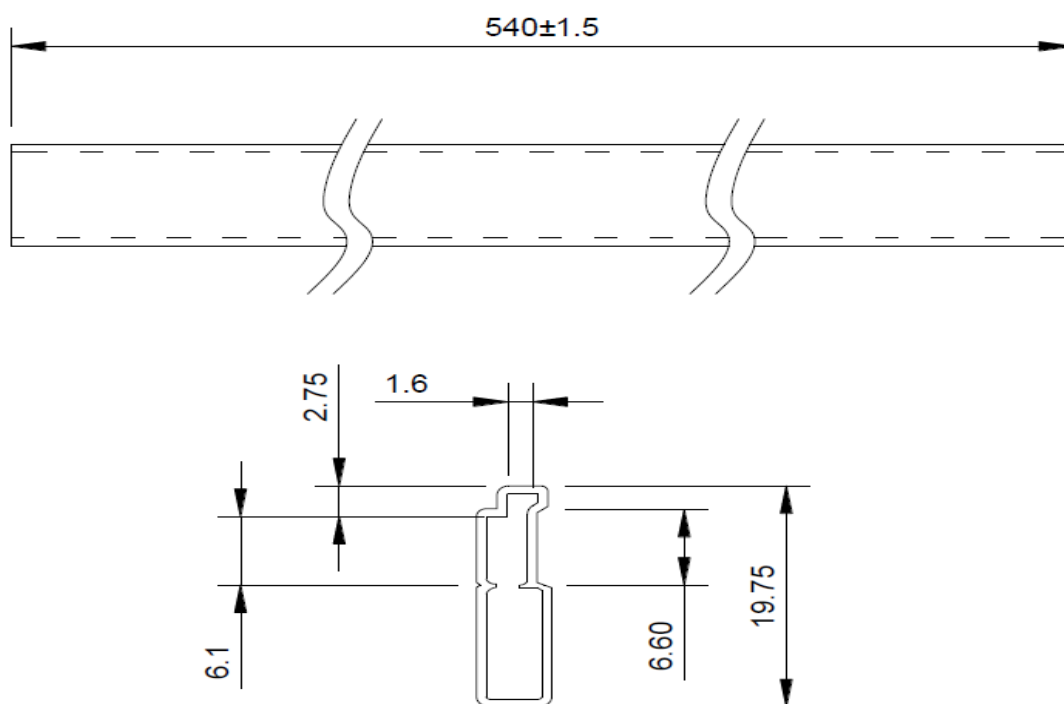
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A. Marking Information



B. Tape&Reel Information:75pcs/Tube



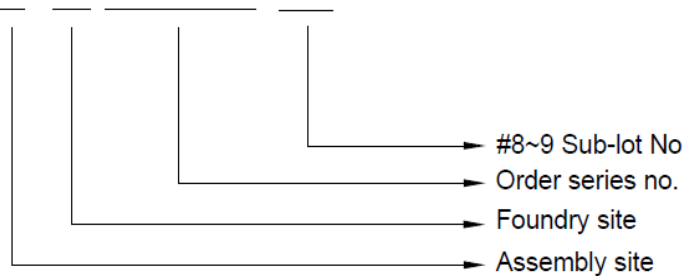
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C. Lot.No. & Date Code rule

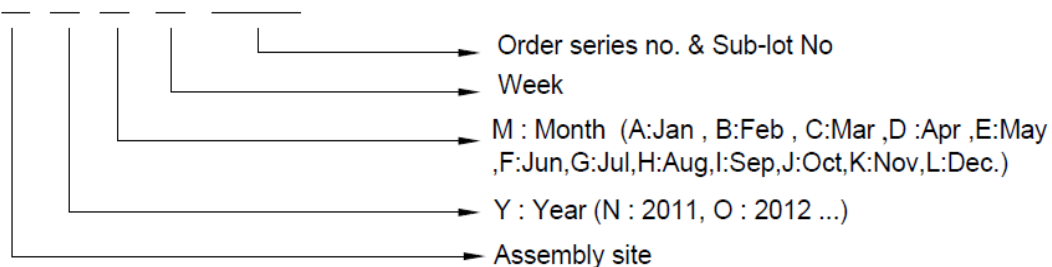
1.LOT.NO.

M N 15M21 03



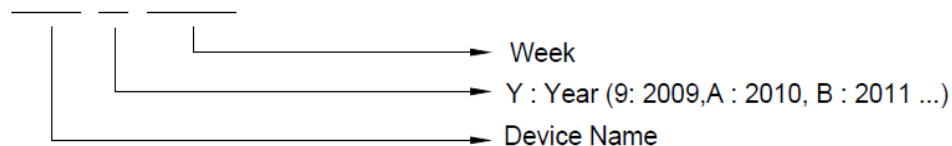
2.Date Code

D Y M X XXX



3.Date Code (for Small package)

XX Y WW



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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