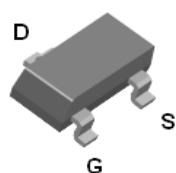


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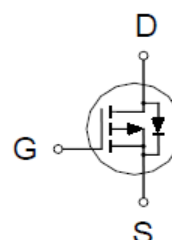
P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	40mΩ @ $V_{GS} = -4.5V$	-4A



SOT-23(S)



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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	± 8	V
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	-4	A
	$T_A = 70\text{ }^{\circ}\text{C}$		-3	
Pulsed Drain Current ¹		I_{DM}	-21	
Power Dissipation	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	0.9	W
	$T_A = 70\text{ }^{\circ}\text{C}$		0.6	
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	$R_{\theta JA}$		126	$^{\circ}\text{C} / \text{W}$

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.

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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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.3	-0.6	-1	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -10V, V_{GS} = 0V, T_J = 55^{\circ}C$			-10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -1.5V, I_D = -1A$		67	100	mΩ
		$V_{GS} = -1.8V, I_D = -2A$		50	71	
		$V_{GS} = -2.5V, I_D = -3.5A$		40	55	
		$V_{GS} = -4.5V, I_D = -3.5A$		33	40	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -3.5A$		17		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$		1157		pF
Output Capacitance	C_{oss}			106		
Reverse Transfer Capacitance	C_{rss}			76		
Total Gate Charge ²	Q_g	$V_{DS} = -10V, V_{GS} = -4.5V, I_D = -3.5A$		11.9		nC
Gate-Source Charge ²	Q_{gs}			1.6		
Gate-Drain Charge ²	Q_{gd}			2.5		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -4.5V$ $I_D \cong -3.5A, R_G = 6\Omega$		22		nS
Rise Time ²	t_r			20		
Turn-Off Delay Time ²	$t_{d(off)}$			59		
Fall Time ²	t_f			13		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICE ($T_J = 25^{\circ}C$)						
Continuous Current	I_S				-0.6	A
Forward Voltage ¹	V_{SD}	$I_F = -3.5A, V_{GS} = 0V$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_F = -3.5A, dI_F/dt = 100A / \mu S$		11.4		nS
Reverse Recovery Charge	Q_{rr}			2.9		nC

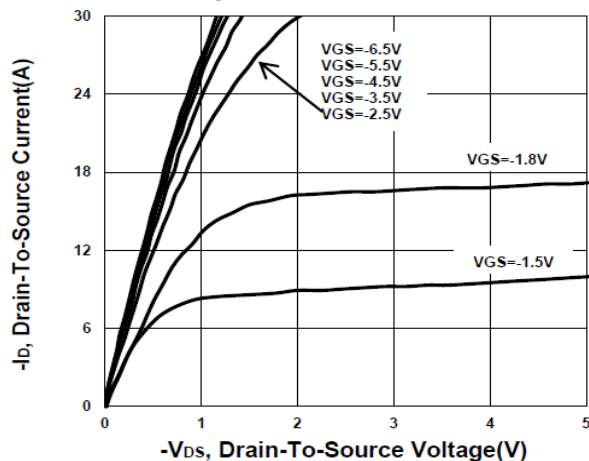
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

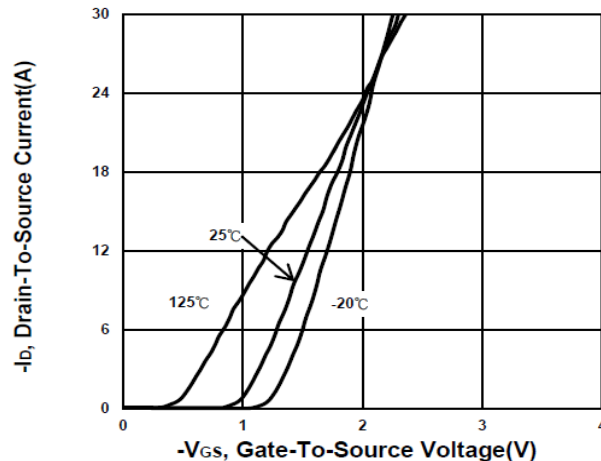
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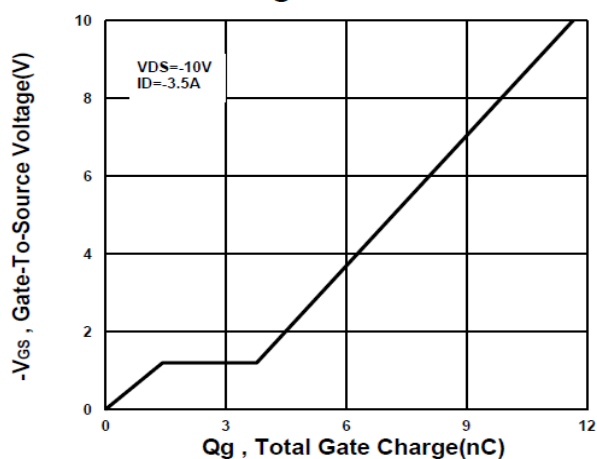
Output Characteristics



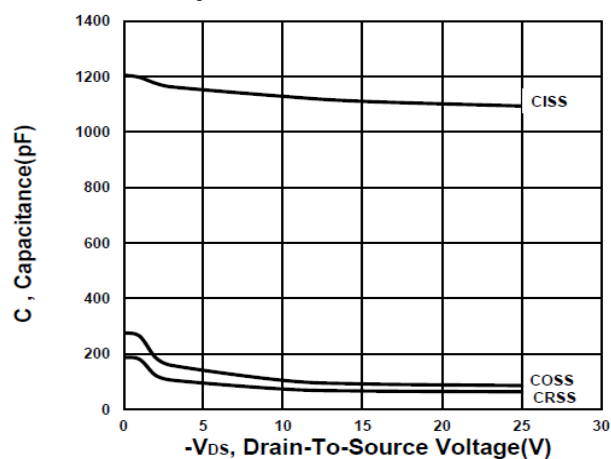
Transfer Characteristics



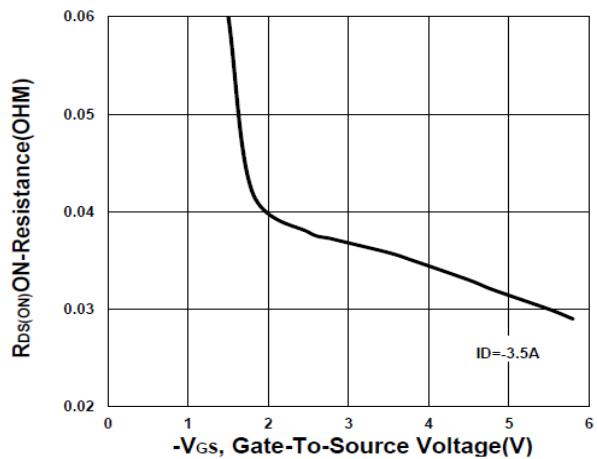
Gate charge Characteristics



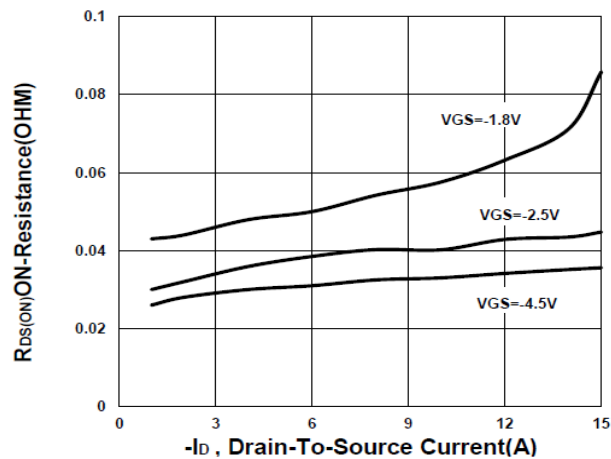
Capacitance Characteristic



On-Resistance VS Gate-To-Source

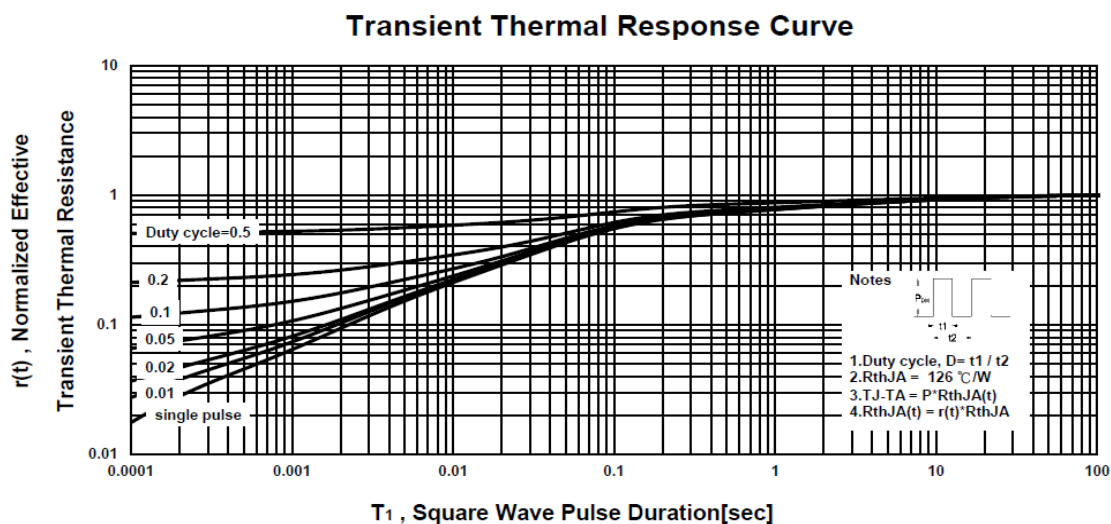
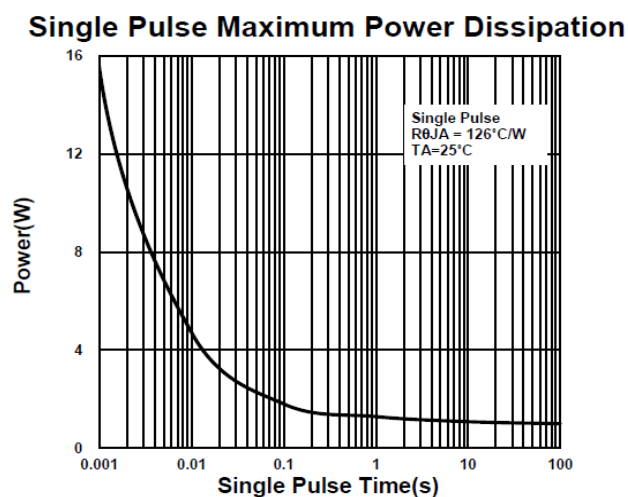
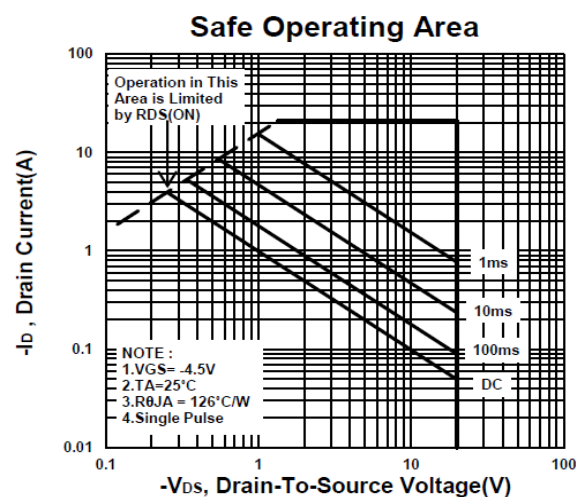
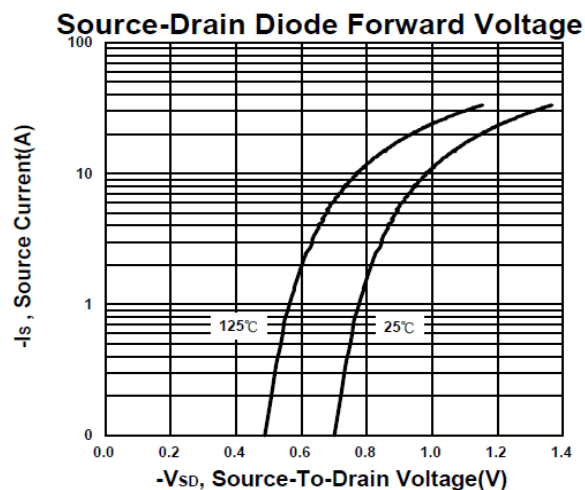
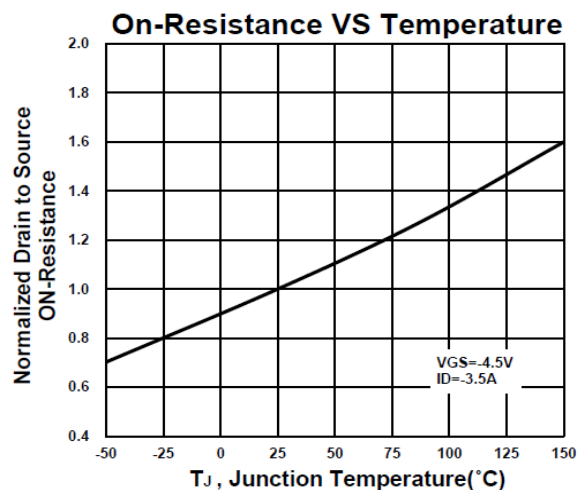


On-Resistance VS Drain Current



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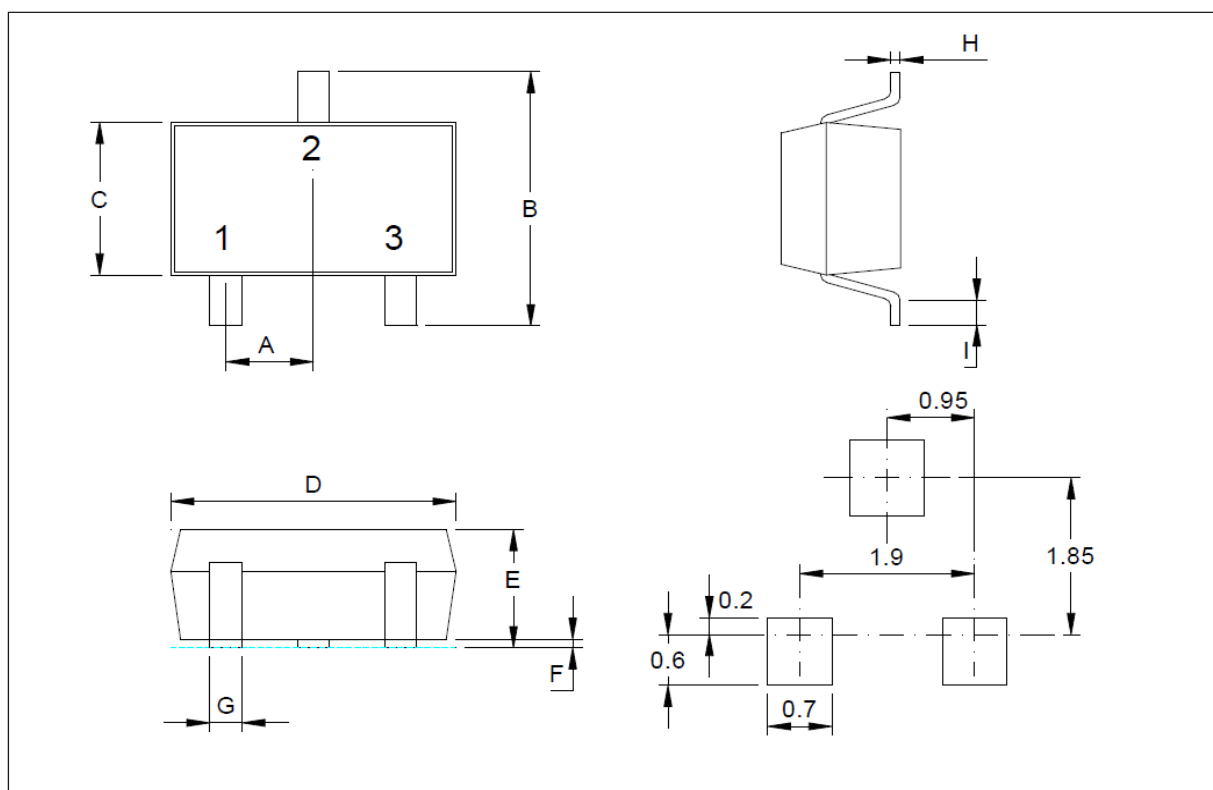
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Package Dimension

SOT-23 (S) MECHANICAL DATA

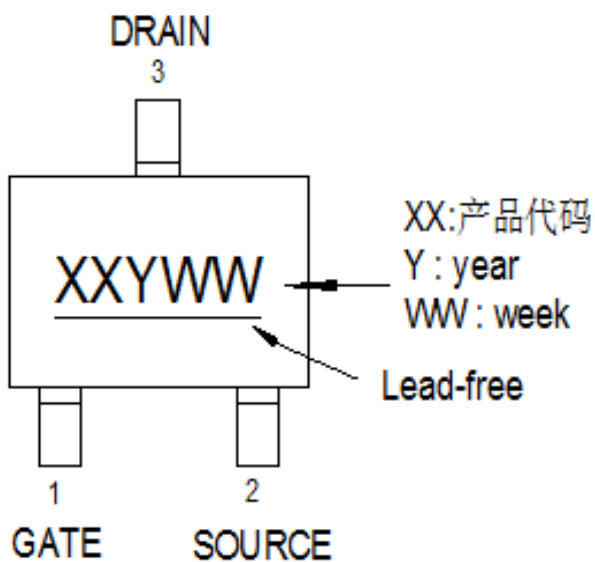
Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.9		1	H	0.08		0.2
B	2.25		2.85	I	0.15		0.6
C	1.2		1.4				
D	2.8		3.04				
E	0.89		1.2				
F	0		0.1				
G	0.3		0.5				



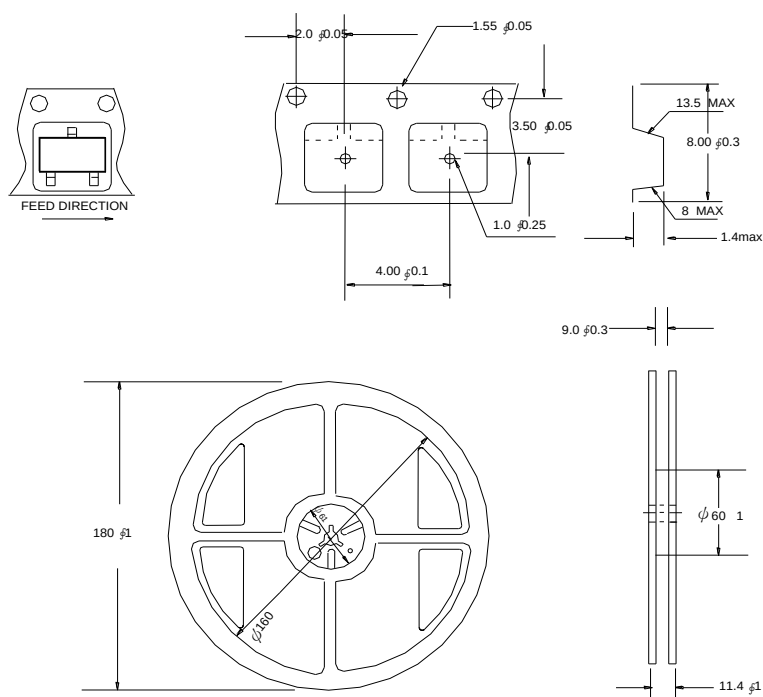
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A. Marking Information (此产品代码为：77)



B. Tape&Reel Information: 3000pcs/Reel



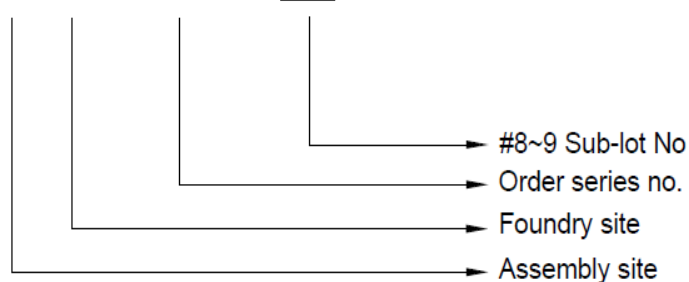
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C. Lot.No. & Date Code rule

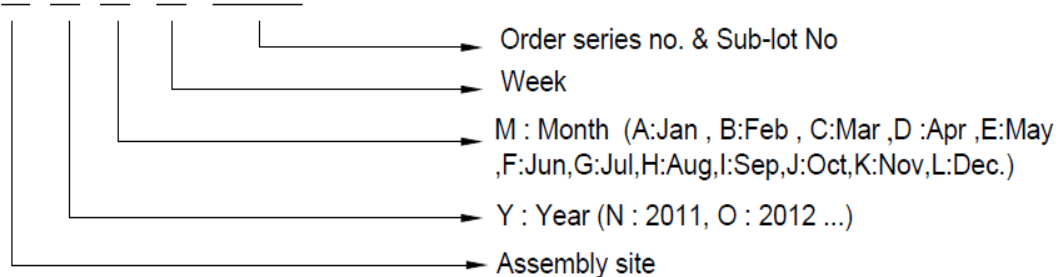
1.LOT.NO.

M N 15M21 03



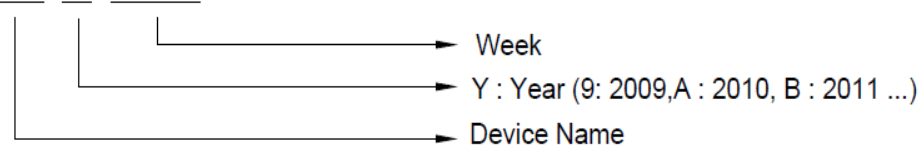
2.Date Code

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