Features

- Input Voltage up to 24V
- MOSFET Turn on Resistor RSS(ON) =35mohm(Max)@Vgs=4.5V
- Drain to Drain MOSFET Module
- With ESD Protection
- Continuous Current=5A
- Green Product (RoHS, Lead-Free, Halogen-Free Compliant)

General Description

The GS95A9CS-R drain to drain connected MOSFET module provides an integrated solution with small dimension for battery pack of Mobile phone and electronic bracelet application.

Applications

- Mobile phone
- Electronic Bracelet

Typical Application

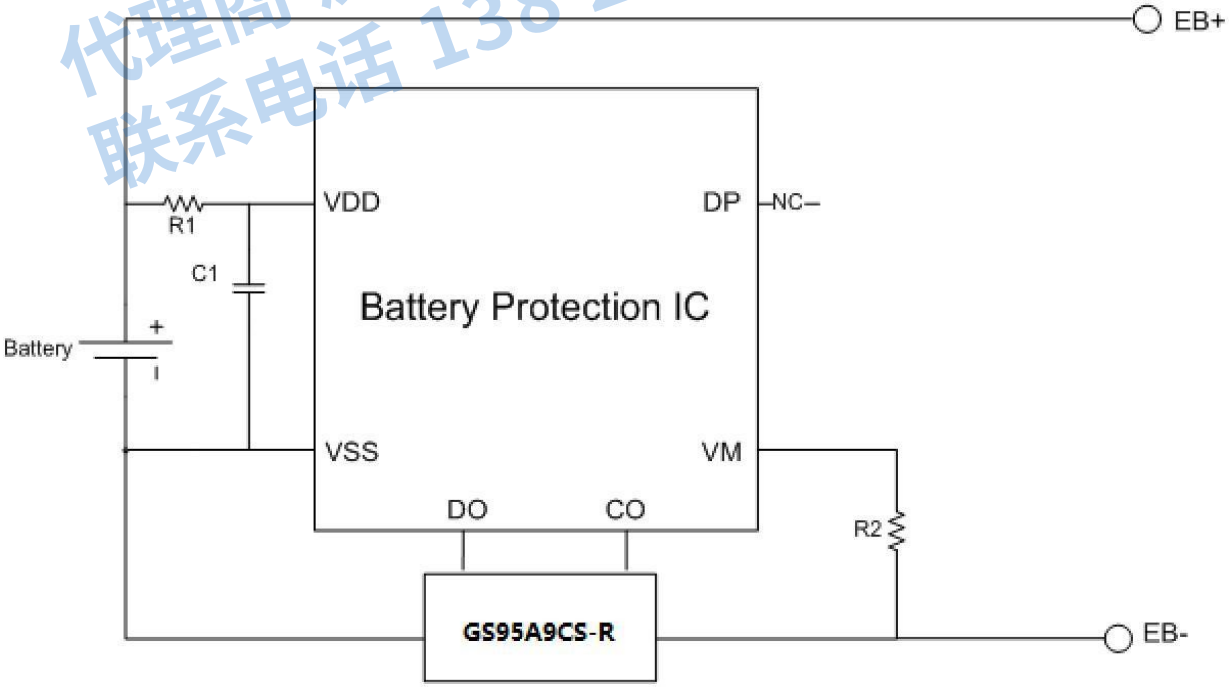


Figure 1 Application of GS95A9CS-R used in battery pack

Function Block Diagram

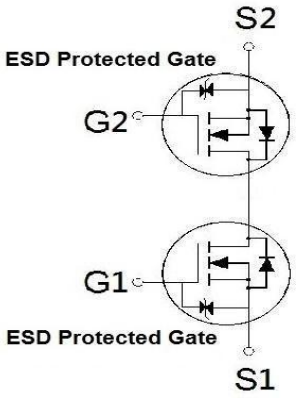


Figure 2 Function Block Diagram

Pin Configuration

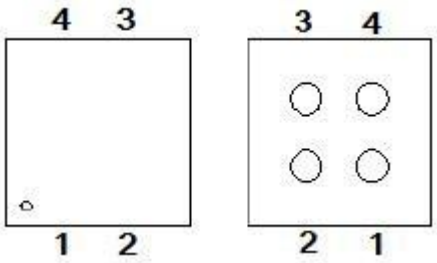


Figure 3 WLCSP 1.1 x 1.1

Pin Descriptions

No.	Name	I/O type	Description
1	S1	I/O	Source1
2	G1	I	Gate1
3	G2	I	Gate2
4	S2	I/O	Source2

Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

PARAMETER / TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Source-Source Voltage	V_{SSS}	24	V
Gate-Source Voltage	V_{GSS}	±12	V
Continuous Source Current	I_S	5	A
Pulsed Source Current[1]	I_{SP}	50	A
Total Dissipation[2]	P_T	1.6	W
Thermal Resistance[2]	$R_{\theta JA}$	60	℃/W
Operating Junction & Storage Temperature Range	Tj & Tstg	-55~150	°C

[1]PW≤10μs, duty cycle≤1%.

[2]When mounted on 1in^2 FR-4 board.

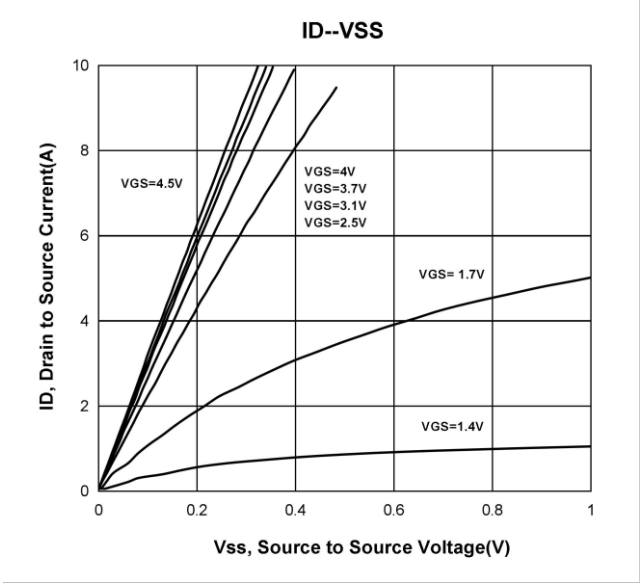
Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

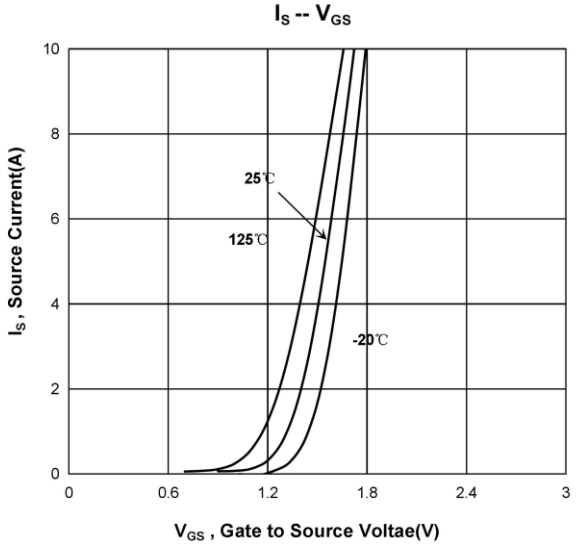
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Source-Source Breakdown Voltage	$V_{(BR)SSS}$	V_{GS} = 0V, I_S =1mA	24			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{SS} = 10V , I_S = 1mA	0.7	1.1	1.5	V
Gate-Source Leakage	I_{GSS}	V_{SS} = 0V, V_{GS} = ±8V			±10	uA
		V_{SS} = 0V, V_{GS} = ±5V			±2	uA
Zero Gate Voltage Source Current	I_{SSS}	V_{SS} = 20V , V_{GS} = 0V			1	uA
Source -Source On-State Resistance[1]	$R_{SS(ON)}$	V_{GS} = 4.5V, I_S = 3A	26	32	35	mΩ
		V_{GS} = 4V, I_S = 3A	27	34	41	mΩ
		V_{GS} = 3.7V, I_S = 3A	28	35	42	mΩ
		V_{GS} = 3.1V, I_S = 3A	30	40	48	mΩ
		V_{GS} = 2.5V, I_S = 3A	36	50	58	mΩ
Forward Transconductance[1]	g_{fs}	V_{SS} = 5V, I_S = 3A		19		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 12V, f = 1MHz		440		pF
Output Capacitance	C_{oss}			80		pF

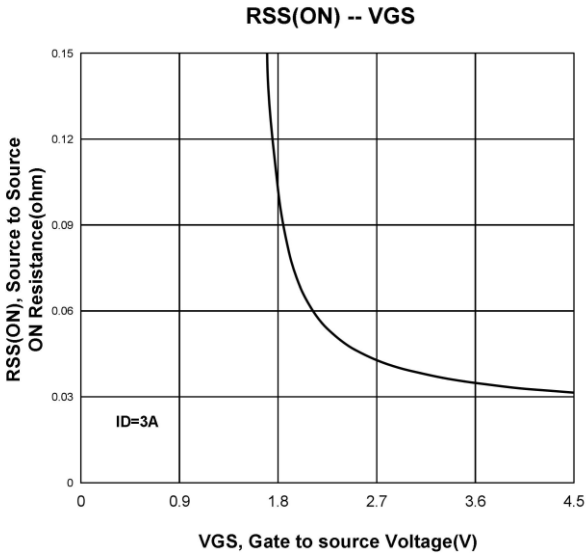
Reverse Transfer Capacitance	C_{rss}			55		
Total Gate Charge[2]	Q_g	V_{SS} = 12V , V_{GS} = 4.5V， I_S =2A		4.8		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{SS} = 12V, $I_S \cong$ 2A,V_{GS} = 4.5V		13		nS
Rise Time[2]	t_r			39		
Turn-Off Delay Time[2]	$t_{d(off)}$			24		
Fall Time[2]	t_f			47		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Forward Source-Source Voltage[1]	V_F	I_S = 2A, V_{GS} = 0V		0.77	1.2	V

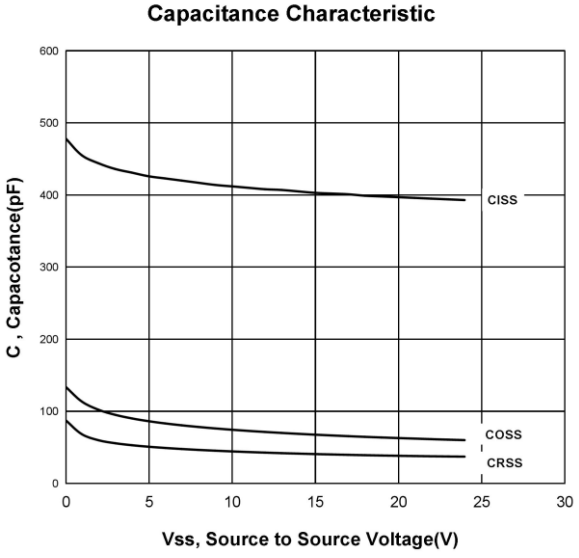
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

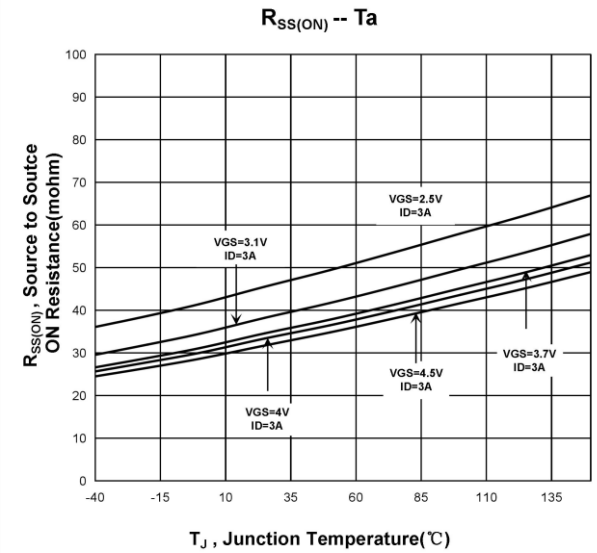
[2]Independent of operating temperature.

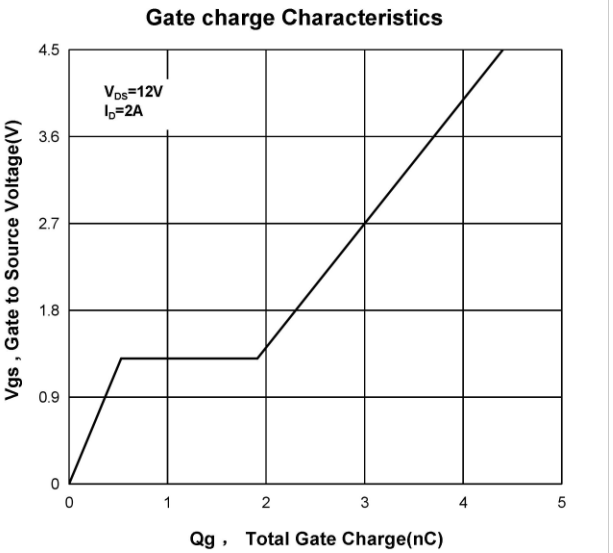

ID--VSS
ID, Drain to Source Current(A)
Vss, Source to Source Voltage(V)
VGS=4.5V
VGS=4V
VGS=3.7V
VGS=3.1V
VGS=2.5V
VGS= 1.7V
VGS=1.4V
0
2
4
6
8
10
0
0.2
0.4
0.6
0.8
1

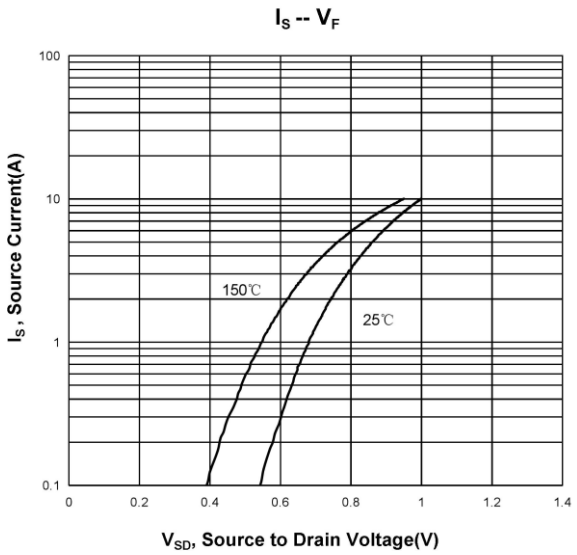

I_S -- V_{GS}
I_S, Source Current(A)
V_{GS} , Gate to Source Voltae(V)
25℃
125℃
-20℃
0
2
4
6
8
10
0
0.6
1.2
1.8
2.4
3

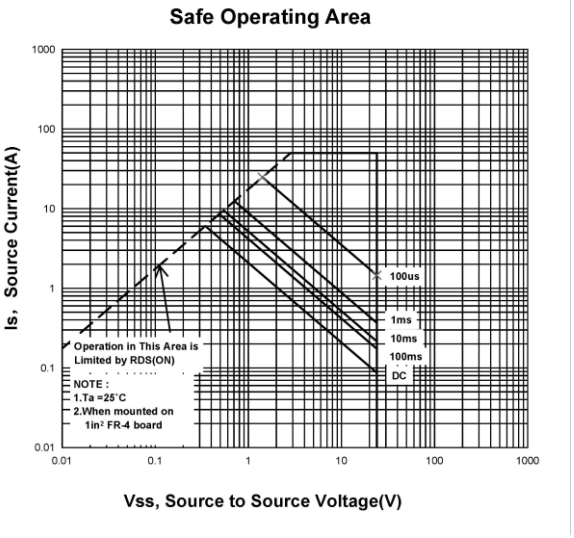

RSS(ON) -- VGS
RSS(ON), Source to Source ON Resistance(ohm)
VGS, Gate to source Voltage(V)
ID=3A
0
0.03
0.06
0.09
0.12
0.15
0
0.9
1.8
2.7
3.6
4.5


Capacitance Characteristic
C , Capacotance(pF)
Vss, Source to Source Voltage(V)
CISS
COSS
CRSS
0
100
200
300
400
500
600
0
5
10
15
20
25
30

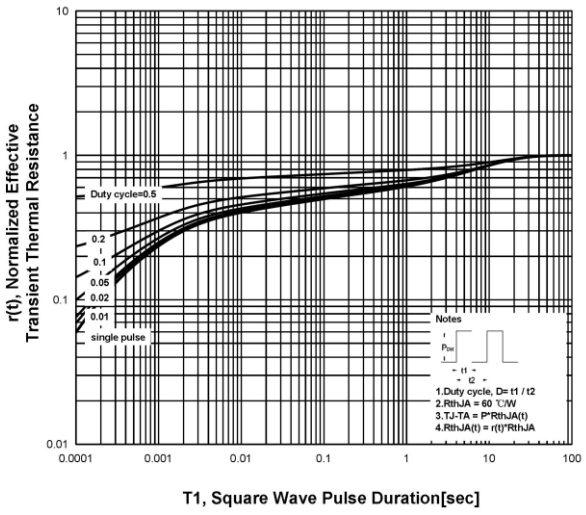

$R_{SS(ON)}$ -- Ta
$R_{SS(ON)}$, Source to Soutce ON Resistance(mohm)
VGS=2.5V ID=3A
VGS=3.1V ID=3A
VGS=3.7V ID=3A
VGS=4.5V ID=3A
VGS=4V ID=3A
T_J , Junction Temperature(℃)


Gate charge Characteristics
V_{DS}=12V
I_D=2A
Vgs , Gate to Source Voltage(V)
Qg , Total Gate Charge(nC)

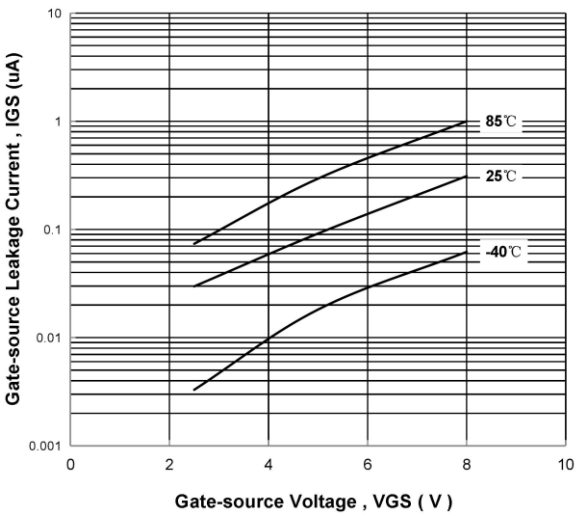

I_S -- V_F
I_S , Source Current(A)
150℃
25℃
V_{SD}, Source to Drain Voltage(V)


Safe Operating Area
Is, Source Current(A)
100us
1ms
10ms
100ms
DC
Operation in This Area is Limited by RDS(ON)
NOTE :
1.Ta =25°C
2.When mounted on 1in² FR-4 board
Vss, Source to Source Voltage(V)

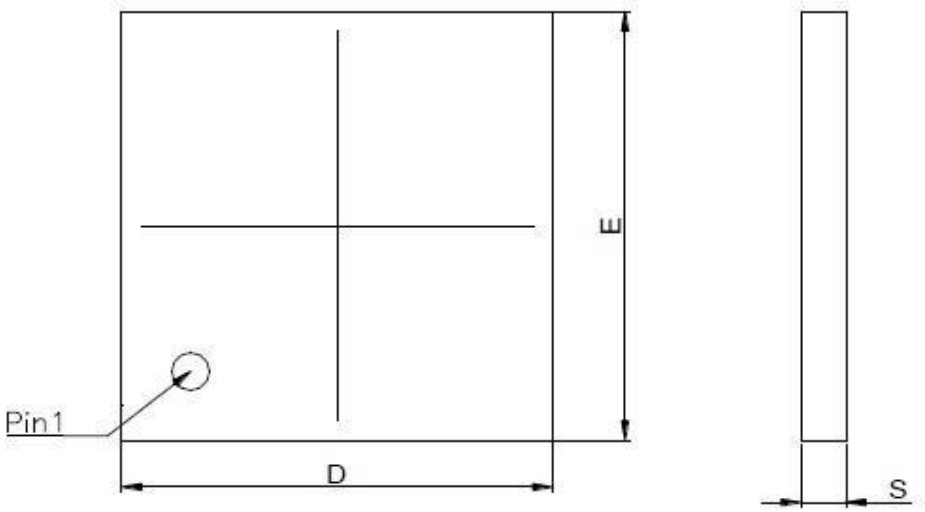
Transient Thermal Response Curve

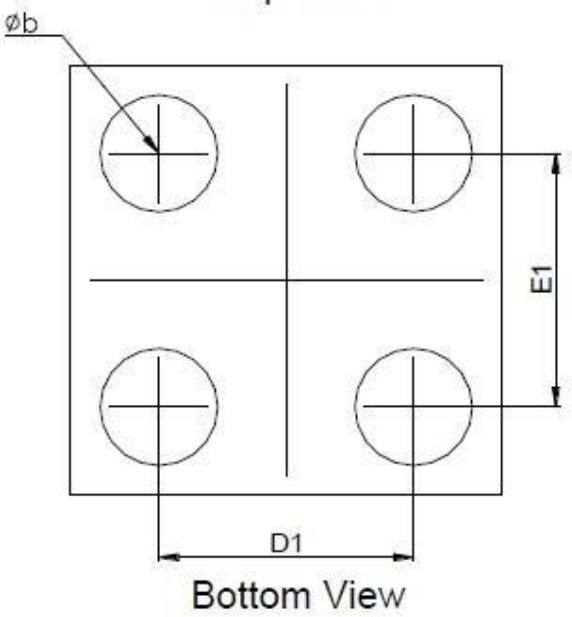


IGS - VGS



Package Dimensions, WLCSP 1.1x1.1





Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
Φb		0.3	
D	1.05	1.1	1.15
D1		0.65	
E	1.05	1.1	1.15
E1		0.65	
S	0.095	0.115	0.135

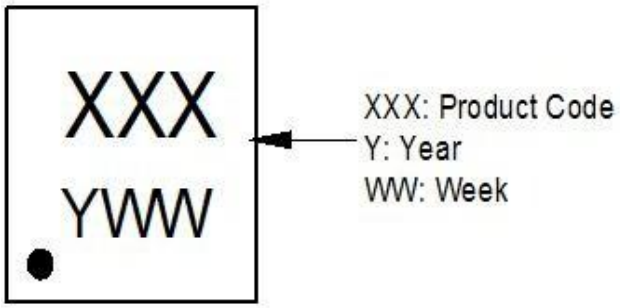
Note

1.Min.: Minimum dimension specified.

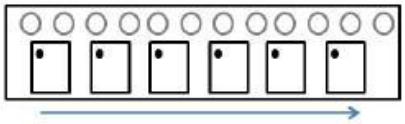
2.Max.: Maximum dimension specified.

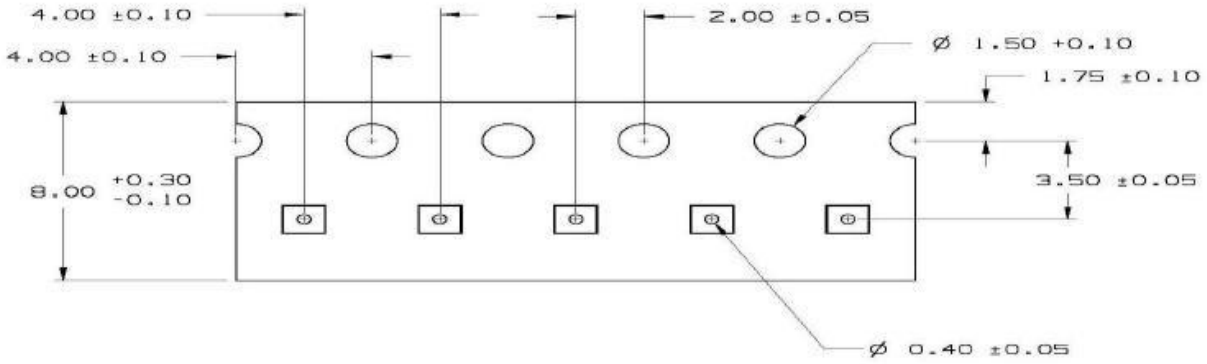
3.Typ.: Type. Typical dimension specified for reference.

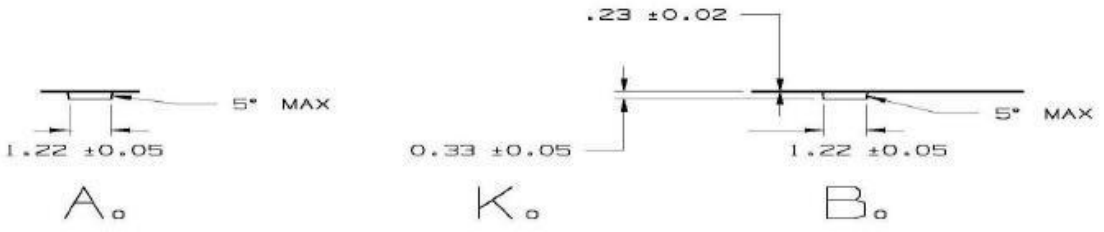
A. Marking Information(Product Code： A22)

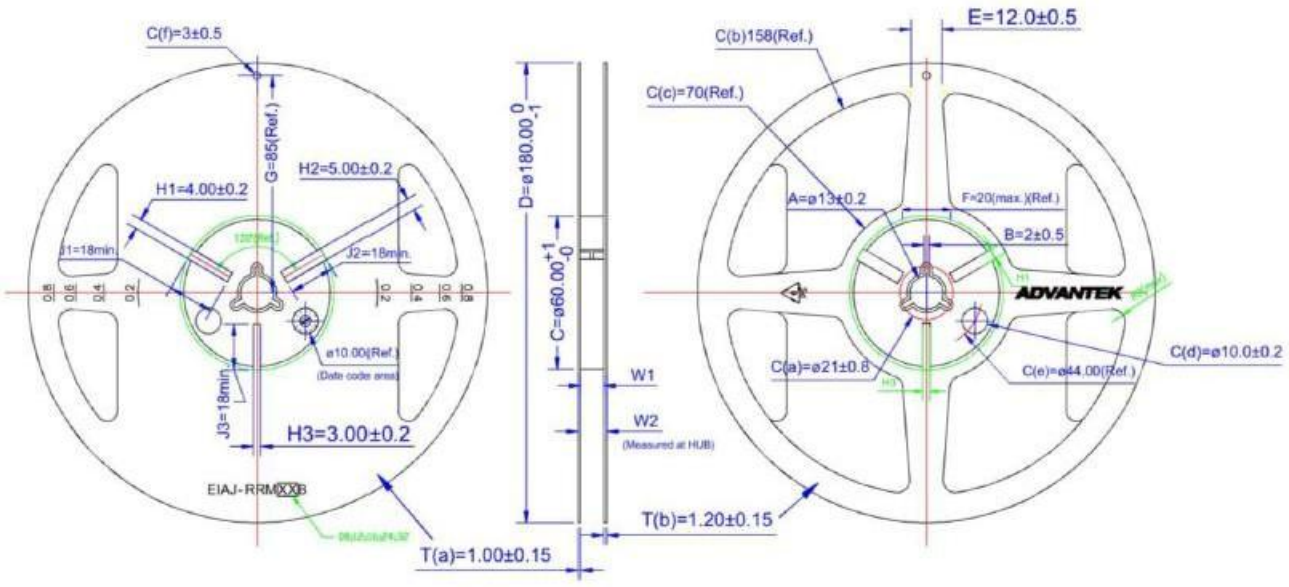


B. Tape&Reel Information:5000pcs/Reel





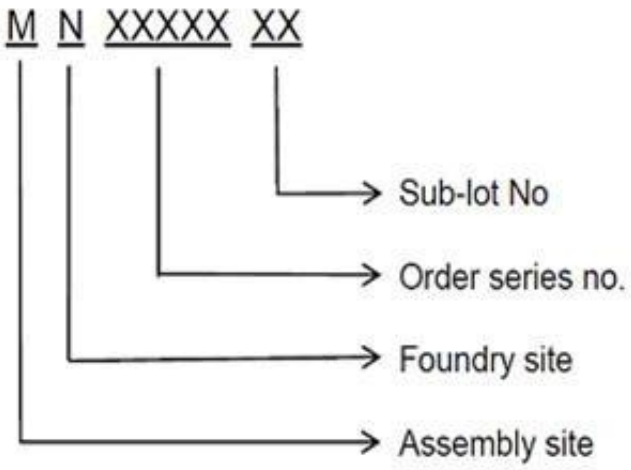




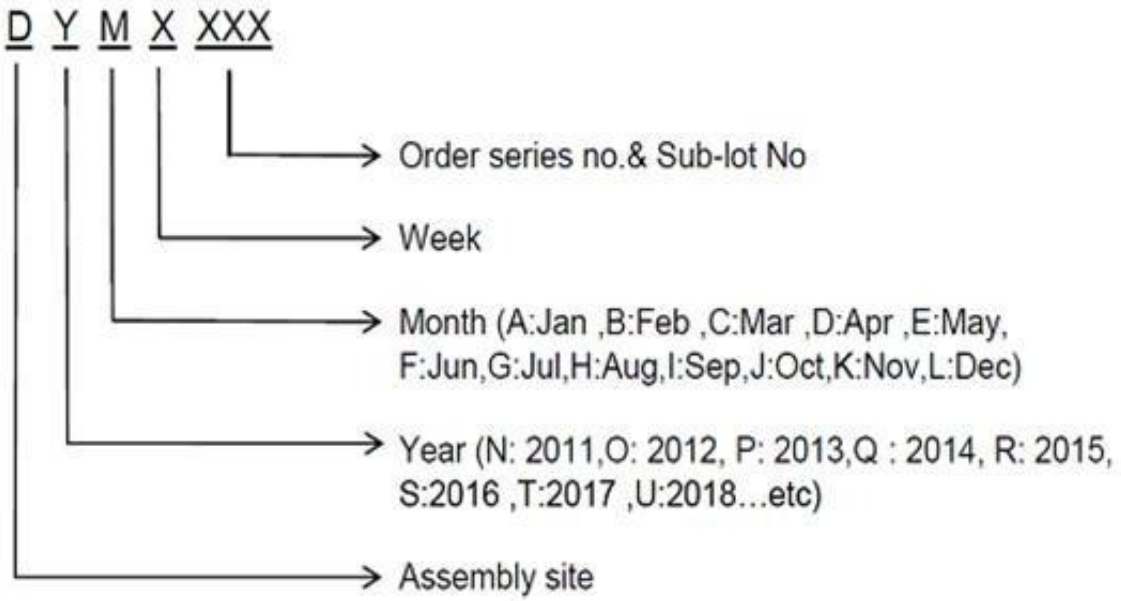
Note：All Dimension in millimeter

C. Lot No. & Date Code Rule

1.Lot No.



2.Date Code



D.Label rule

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	U-NIKC	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	RoHS label	RoHS long axis: 12 mm minor axis:6 mm bottom color: White Font color: Black Font style: Arial
11	Halogen Free label	G Diameter: 10 mm bottom color: Green Font color: Black Font style: Arial
12	Scan information	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

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