Features

- Input Voltage up to 24V
- MOSFET Turn on Resistor RSS(ON) =18mohm(Max)@Vgs=4.5V
- Drain to Drain MOSFET Module
- With ESD Protection
- Continuous Current=9A
- Green Product (RoHS, Lead-Free, Halogen-Free Compliant)

General Description

The GS95A0CS-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

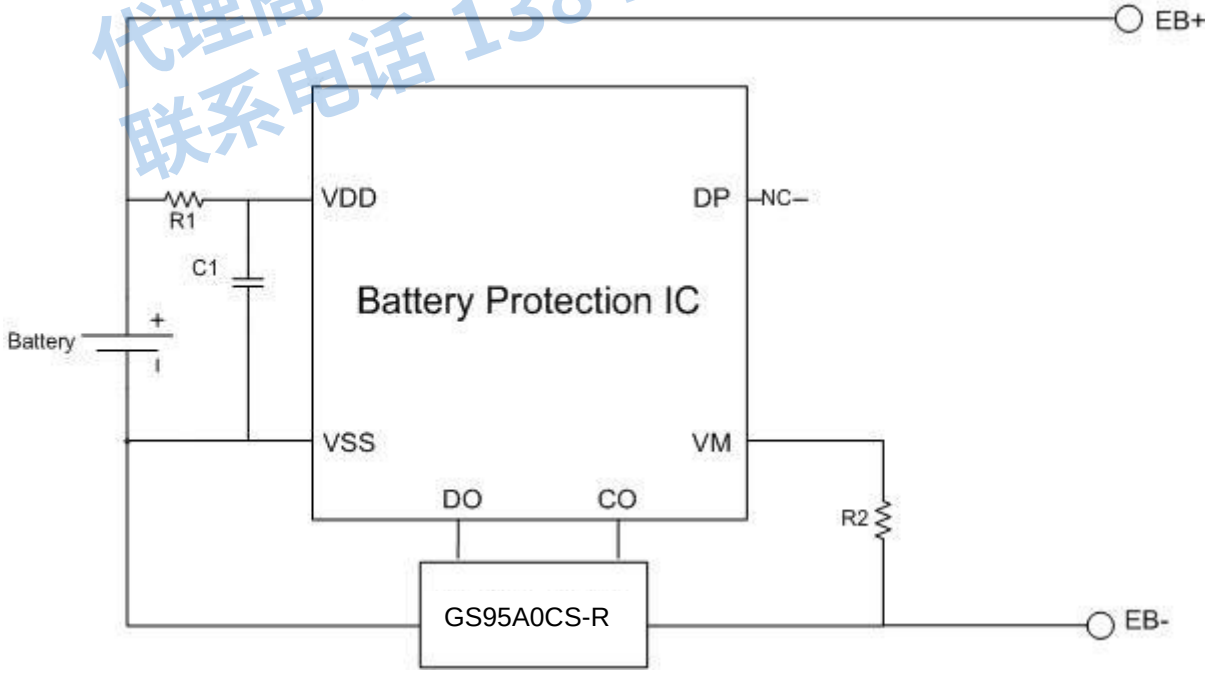


Figure 1 Application of GS95A0CS-R used in battery pack

Function Block Diagram

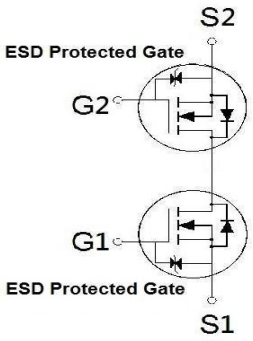


Figure 2 Function Block Diagram

Pin Configuration

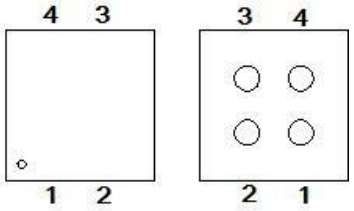


Figure 3 WLCSP 1.8x1.8

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	9	A
Pulsed Source Current[1]	I_{SP}	60	A
Total Dissipation	P_T	1.6	W
Thermal Resistance[2]	$R_{\theta JA}$	71.6	℃/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.

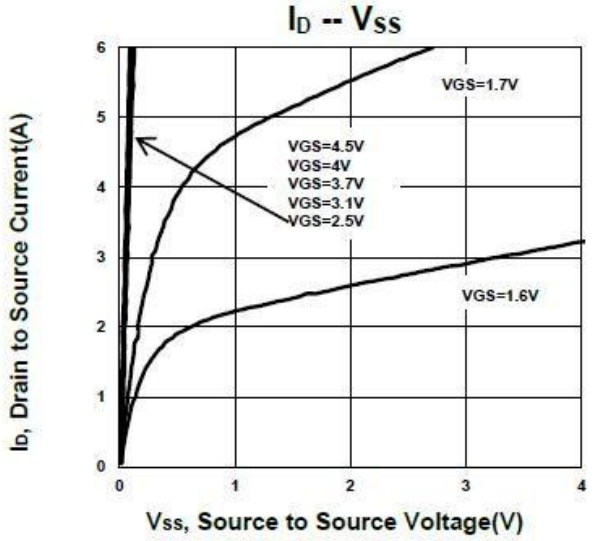
Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

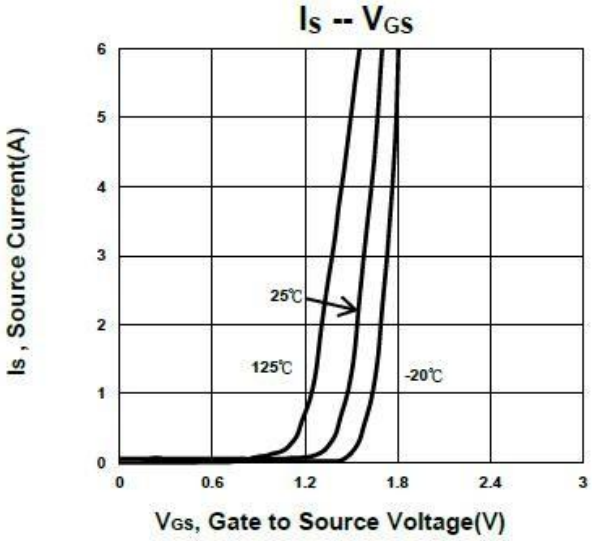
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Source-Source Breakdown Voltage	$V_{(BR)SSS}$	V_{GS} = 0V, I_S =1mA	24			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{SS} = 10V , I_S = 1mA	0.6	0.9	1.3	V
Gate-Source Leakage	I_{GSS}	V_{SS} = 0V, V_{GS} = ±8V			±10	uA
		V_{SS} = 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	10.7	15	18	mΩ
		V_{GS} = 4V, I_S = 3A	10.9	15.6	19	mΩ
		V_{GS} = 3.7V, I_S = 3A	11.3	16.3	20	mΩ
		V_{GS} = 3.1V, I_S = 3A	12.4	17.7	23.5	mΩ
		V_{GS} = 2.5V, I_S = 3A	14.8	21.5	30	mΩ
Forward Transconductance[1]	Gfs	V_{SS} = 5V, I_S=3A		7.2		S
DYNAMIC						

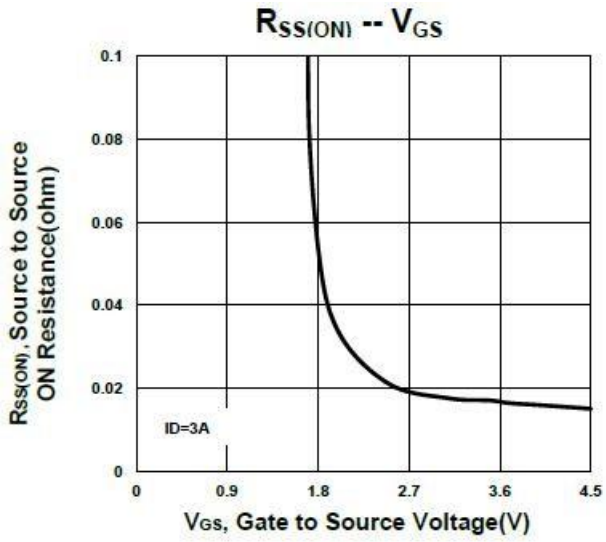
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 12V, f = 1MHz		1500		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			160		
Total Gate Charge[2]	Q_g	V_{SS} = 12V , V_{GS} = 4.5V， I_S = 2A		16.7		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{SS} = 12V, $I_S \cong$ 2A,V_{GS} = 4.5V		28		nS
Rise Time[2]	t_r			45		
Turn-Off Delay Time[2]	$t_{d(off)}$			49		
Fall Time[2]	t_f			29		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Forward Source-Source Voltage[1]	V_F	I_S = 2A, V_{GS} = 0V		0.75	1.2	V

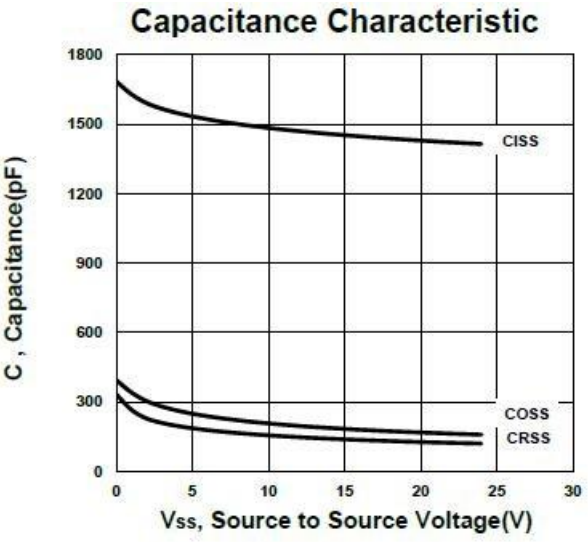
[1]Pulse test :Pulse Width ≦300usec, Duty Cycle≦2%.

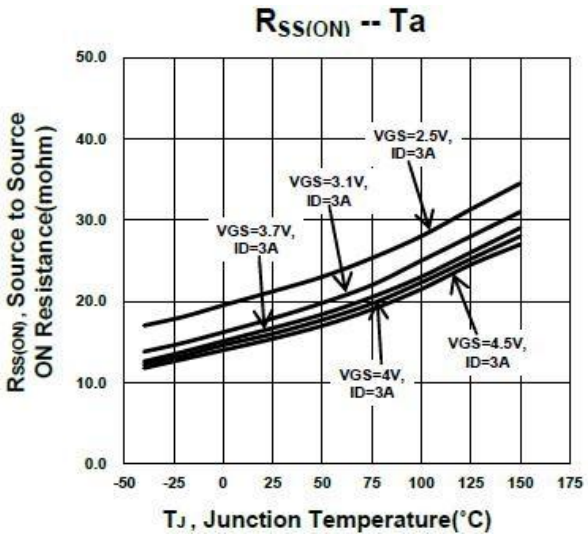
[2]Independent of operating temperature.

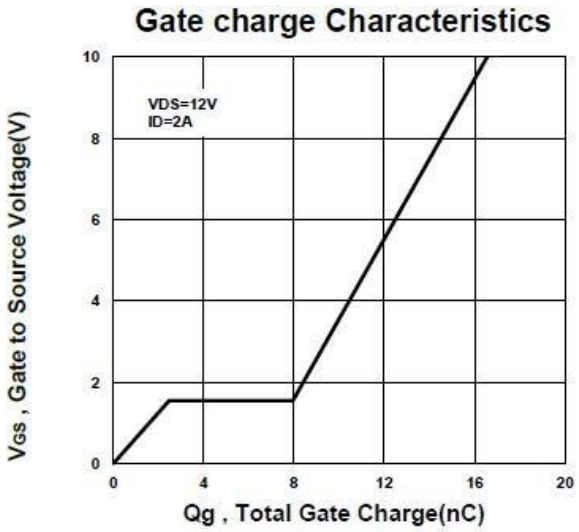

ID -- VSS
ID, Drain to Source Current(A)
VSS, Source to Source Voltage(V)
VGS=1.7V
VGS=4.5V
VGS=4V
VGS=3.7V
VGS=3.1V
VGS=2.5V
VGS=1.6V

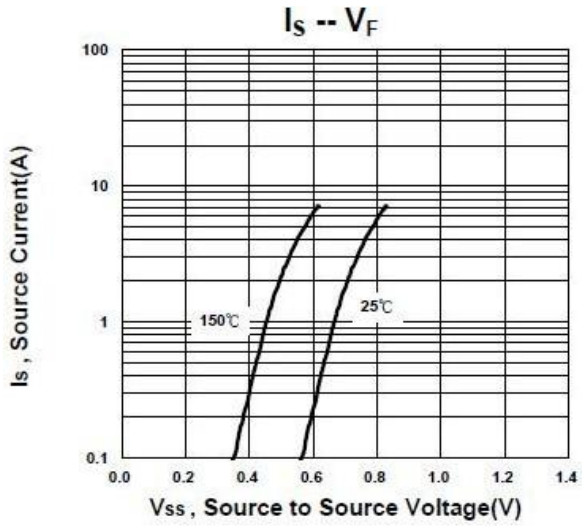

IS -- VGS
IS , Source Current(A)
VGS, Gate to Source Voltage(V)
25℃
125℃
-20℃

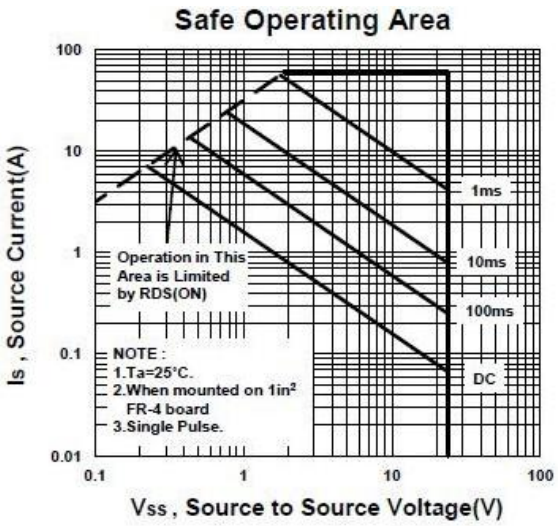

RSS(ON) -- VGS
RSS(ON), Source to Source ON Resistance(ohm)
VGS, Gate to Source Voltage(V)
ID=3A

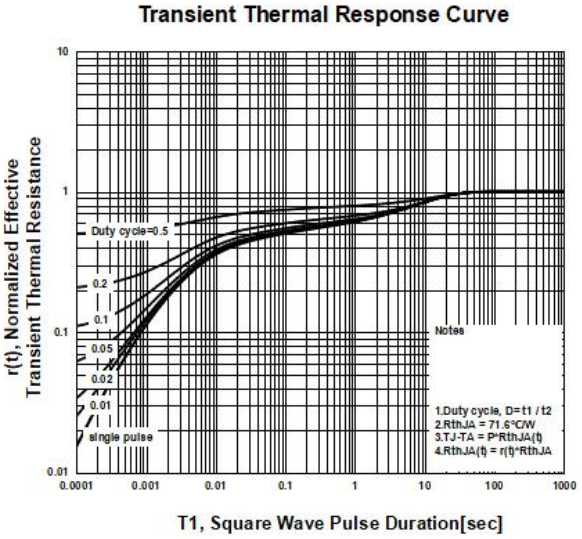

Capacitance Characteristic
C , Capacitance(pF)
Vss, Source to Source Voltage(V)
CISS
COSS
CRSS

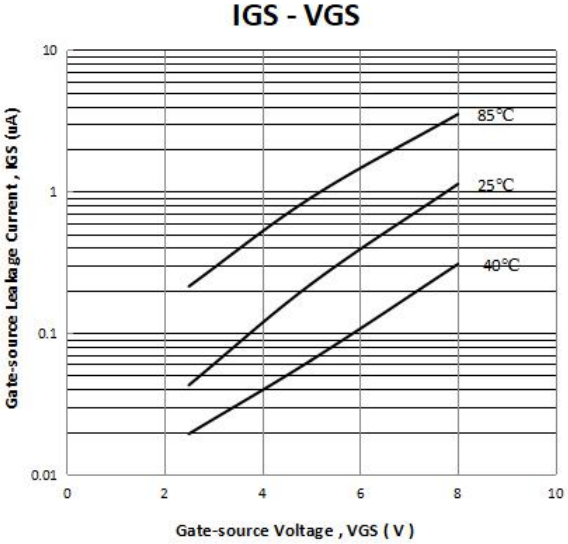

RSS(ON) -- Ta
RSS(ON), Source to Source ON Resistance(mohm)
50.0
40.0
30.0
20.0
10.0
0.0
-50 -25 0 25 50 75 100 125 150 175
TJ , Junction Temperature(°C)
VGS=2.5V, ID=3A
VGS=3.1V, ID=3A
VGS=3.7V, ID=3A
VGS=4.5V, ID=3A
VGS=4V, ID=3A


Gate charge Characteristics
VGS , Gate to Source Voltage(V)
10
8
6
4
2
0
0 4 8 12 16 20
Qg , Total Gate Charge(nC)
VDS=12V
ID=2A

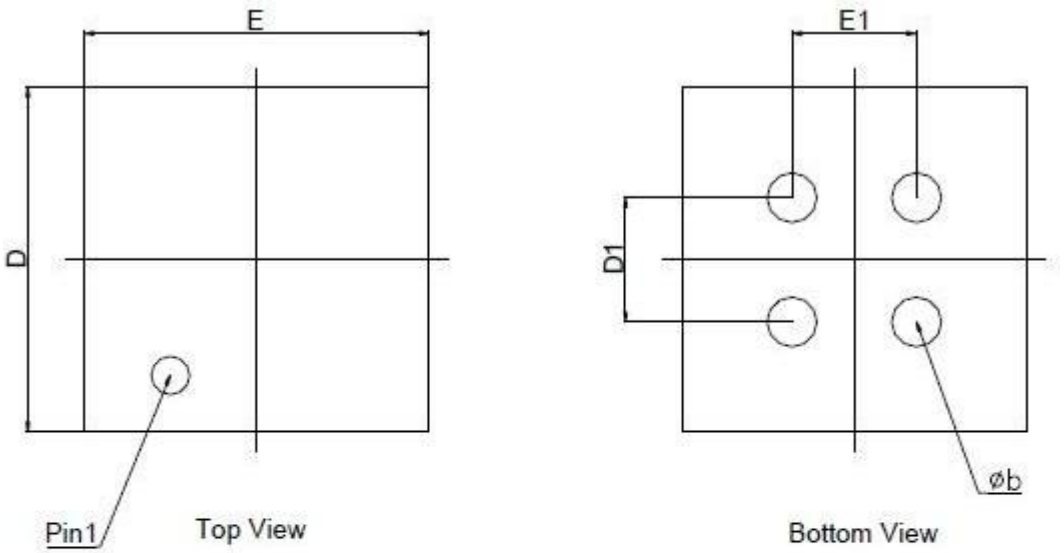

Is -- VF
Is , Source Current(A)
100
10
1
0.1
0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4
Vss , Source to Source Voltage(V)
150℃
25℃


Safe Operating Area
Is , Source Current(A)
100
10
1
0.1
0.01
0.1 1 10 100
Vss , Source to Source Voltage(V)
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
3.Single Pulse.


Transient Thermal Response Curve
r(t), Normalized Effective Transient Thermal Resistance
10
1
0.1
0.01
Duty cycle=0.5
0.2
0.1
0.05
0.02
0.01
single pulse
Notes
1.Duty cycle, D=t1 / t2
2.RthJA = 71.6°C/W
3.TJ-TA = P*RthJA(t)
4.RthJA(t) = r(t)*RthJA
0.0001
0.001
0.01
0.1
1
10
100
1000
T1, Square Wave Pulse Duration[sec]


IGS - VGS
Gate-source Leakage Current , IGS (uA)
10
1
0.1
0.01
85℃
25℃
40℃
0
2
4
6
8
10
Gate-source Voltage , VGS (V)

Package Dimensions, WLCSP 1.8x1.8



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.18		0.22
øb		0.26	
D	1.75	1.8	1.85
D1		0.65	
E	1.75	1.8	1.85
E1		0.65	

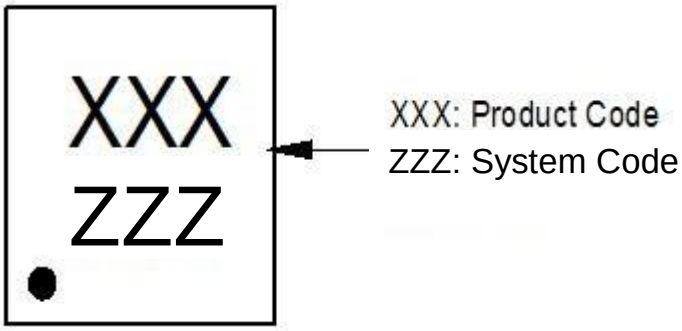
Note

1.Min.: Minimum dimension specified.

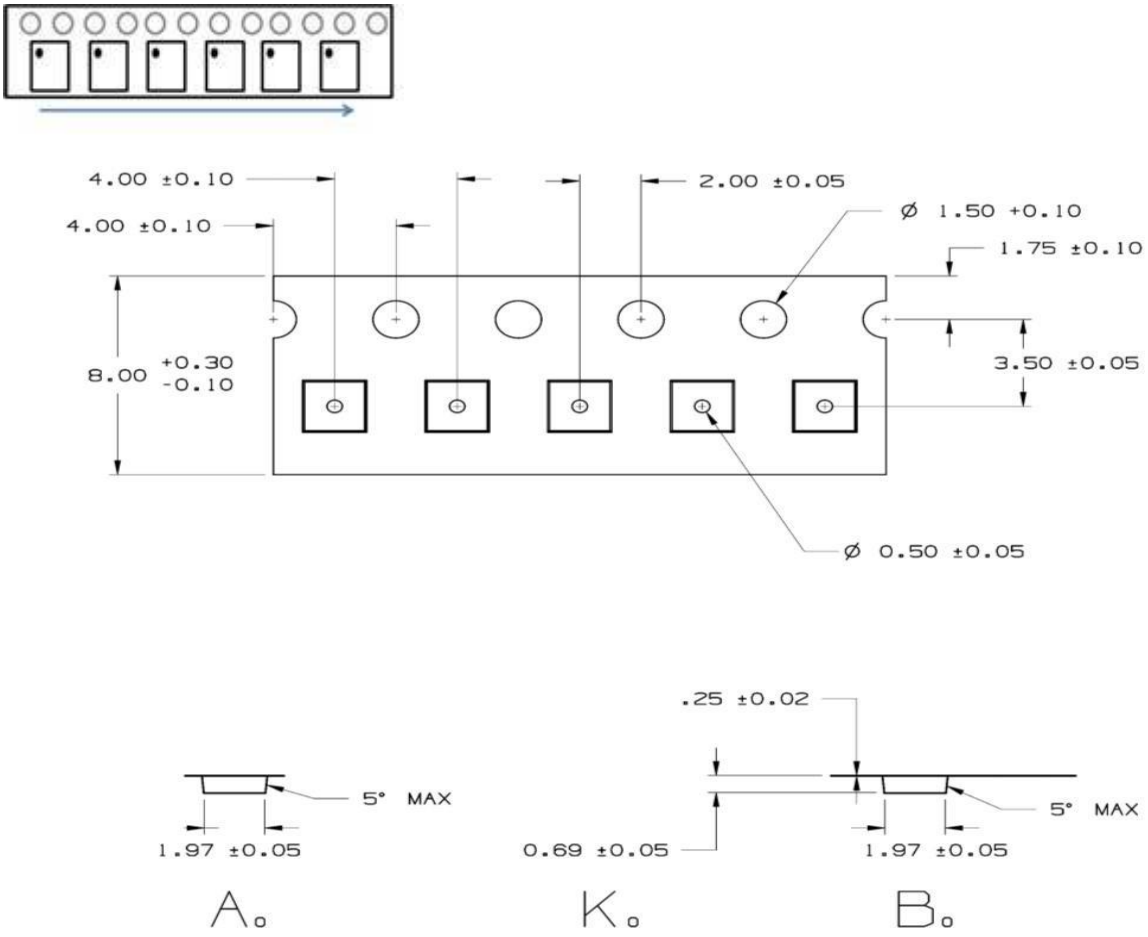
2.Max.: Maximum dimension specified.

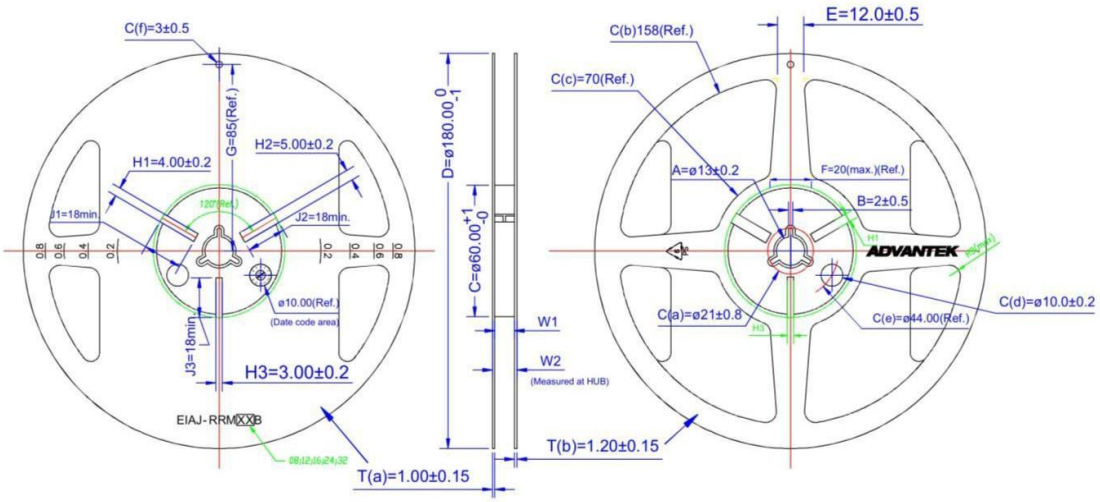
3.Typ.: Type. Typical dimension specified for reference.

A. Marking Information(Product Code： A04)



B. Tape&Reel Information:3000pcs/Reel

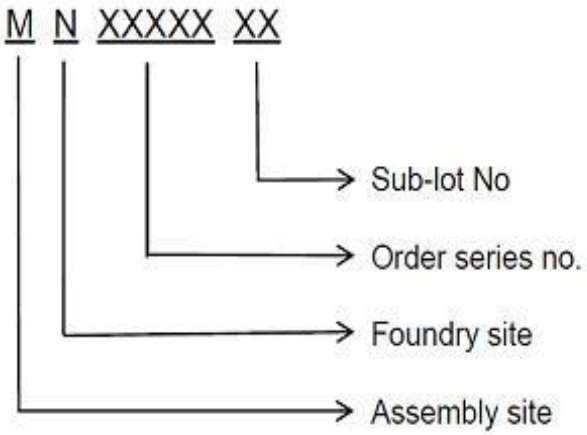




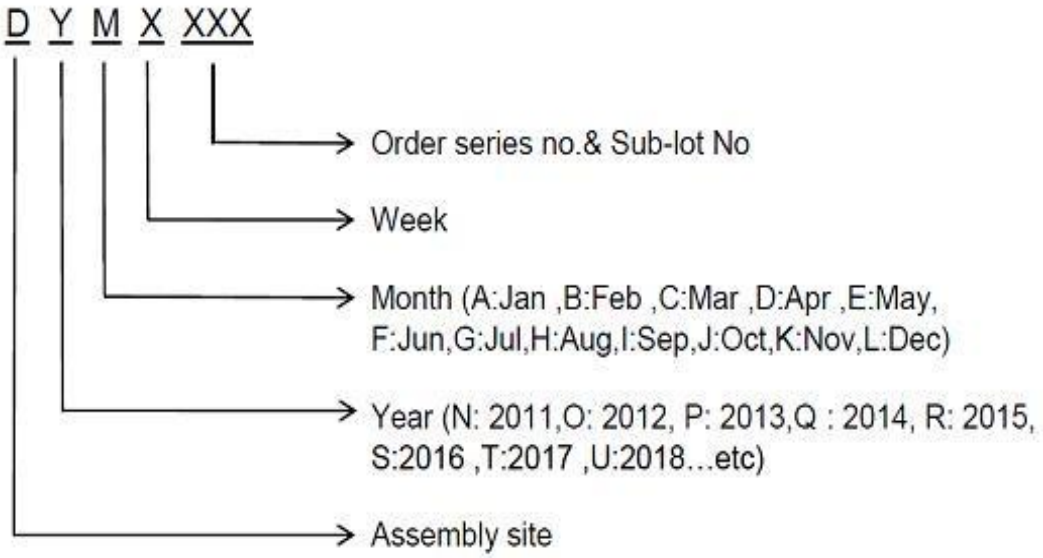
Note：All Dimension in millimeter

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	Device	Height: 3 mm (Max: 16 Digit)
6	Lot	Height: 3 mm (Max: 9 Digit) Sub lot
7	D/C	Height: 3 mm (Max: 7 Digit)
8	QTY	Height: 3 mm (Max: 6 Digit) Thousand mark is no needed
9	RoHS label	RoHS long axis: 12 mm minor axis:6 mm bottom color: White Font color: Black Font style: Arial
10	Halogen Free label	G Diameter: 10 mm bottom color: Green Font color: Black Font style: Arial
11	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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