PRODUCT SPECIFICATION

DOCUMENT NO.ENS000070430				
DESCRIPTION	**DRAWN BY**	**DESIGNED BY**	**CHECKED BY**	**APPROVED BY**
EGA AMDG Series	Sandy	James	James	Shawn

EGA AMDG Series Engineering Specification

1. Scope

This specification is applied to electrostatic discharge (ESD) protection. It is designed to protect the high-speed data lines against ESD transients. It has very low capacitance and fast turn on times makes it ideal for data and transmission lines with high data rates.
According to the special property of device, we recommend not to use on such application as: DC/AC power line, keypad, and button circuit.
For RoHS Compliance.

Feature

- Qualified based on AEC-Q200
- For RoHS Compliance.
- Meet IEC61000-4-2 Level 4 standard
- Extremely quick response time (<1ns)
- Extremely low capacitance (0.2pF typical)
- Extremely low leakage current
- Bi-directional device
- More than 1000 pulses ESD withstand capability
- Compact size for EIA 0402 and EIA0603

Applications

- USB 3.0
- HDMI
- Displayport
- MIPI
- LVDS
- MDDI
- DVI
- RGB

Product Model

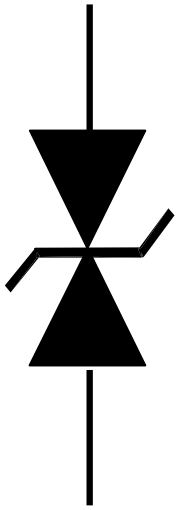
- Digital Video Equipment
- Mobile Phone
- GPS Antenna
- Bluetooth Communication Equipment

2. Explanation of Part Number

E	G	A	1	0	6	0	3	V	2	4	A	M	–	DG
1			2	3				4			5			6

- 1：ESDGUARD Series
- 2：Single element
- 3：Chip size, EIA0402, EIA 0603
- 4：Max rated voltage,VDC
- 5：”AM”： Model Code (Meet AECQ-200)
- 6：Inpaq Control Code

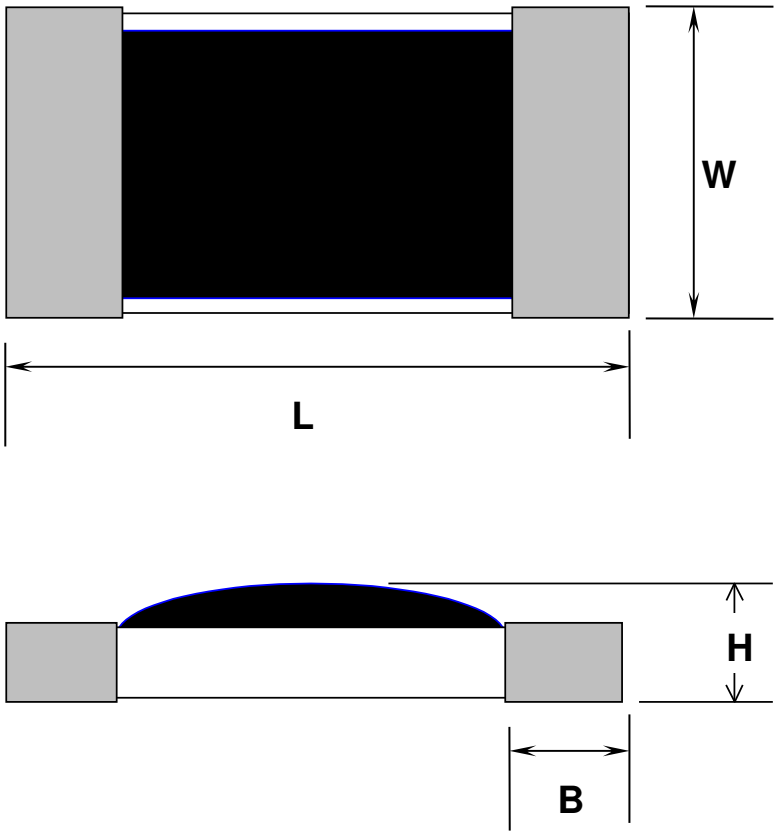
3. Circuit symbol



4. Construction & Dimensions

4.1. End termination: Ag/Ni/Sn

4.2. Construction & Dimension :



Unit: mm

Size Code EIA (EIAJ)	0402 (1005)	0603 (1608)
L	1.00 ± 0.10	1.60 ± 0.10
W	0.50 ± 0.10	0.85 ± 0.15
H	0.34 ± 0.10	0.51 ± 0.05
B	0.20 ± 0.15	0.30 ± 0.20

5. Performance Characteristics

Characteristic	Symbol	Unit	EGA10402				EGA10603			
			V05	V12	V24	V30	V05	V12	V24	V30
Rated voltage (max)	VDC	V	5	12	24	30	5	12	24	30
Leakage current	IL	μA		0.01						
Peak voltage	Vp	V		300V typ.						
Trigger voltage)	Vt	V		300V typ.						
Clamping voltage	Vc	V		30V typ.						
Capacitance, @1MHz	Cp	pF		0.2 typ.						
Response time		ns		<1						
ESD voltage capability, IEC 61000-4-2 Contact discharge mode		Kv		8						
ESD voltage capability, IEC 61000-4-2 Air discharge mode		Kv		15KV						
ESD withstand pulses		pulses		1000 typ.						

Vp –The peak voltage value shall be measured under the following conditions. ESD test conditions : IEC61000-4-2, 8 kV contact discharge
Vt – measurement by using Transmission Line Pulse (TLP)
Vc –measurement by using Transmission Line Pulse (TLP)
Cp – Device capacitance measured with 1Vrms

6. General specifications

6.1. Temperature Specifications

Operating Temperature range : -55℃ to + 125℃
Storage Temperature range : -55℃ to + 125℃

7. Taping Package and Label Marking

7.1. Packaging method

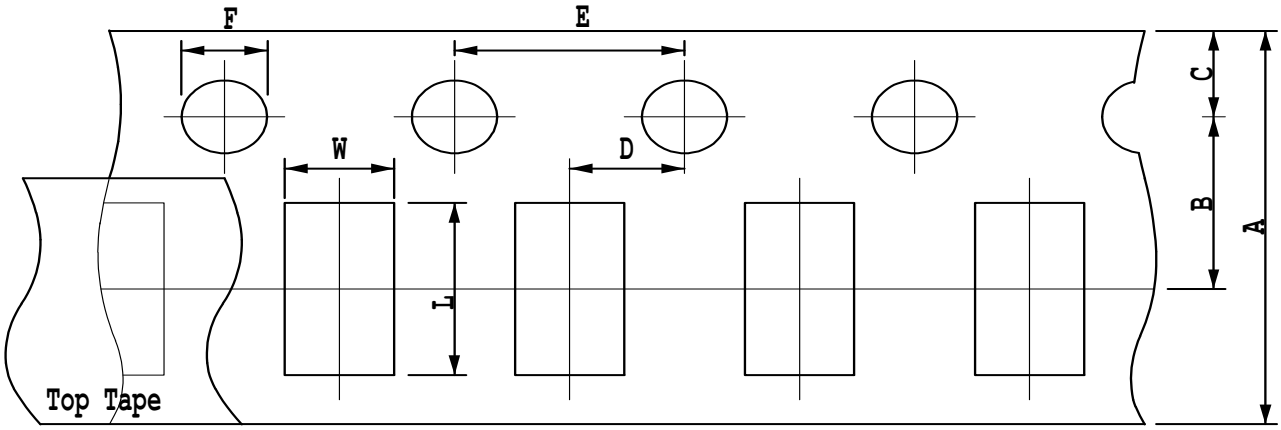
7.1.1. Products shall be heat-sealed in the chip pocket, spacing pitch 4-mm of carrier tape with cover tape, and the carrier tape shall be reeled to the reel.

7.1.2. Tape material to be paper.

Size Code EIA (EIAJ)	Tape thickness
0402 (1005)	0.48± 0.03 mm
0603 (1608)	0.60± 0.03 mm

7.1.3. Cover tape adhesion to be 35 ± 25 grams.

7.2. Carrier tape dimensions

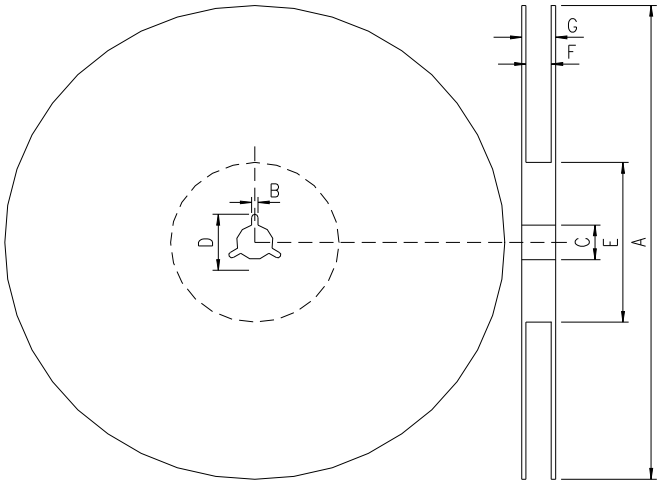


Unit: mm

Size Code EIA (EIAJ)	0402 (1005)	0603 (1608)
A	8.00±0.30	8.00±0.30
B	3.50±0.05	3.50±0.05
C	1.75±0.10	1.75±0.10
D	2.00±0.05	2.00±0.05
E	4.00±0.10	4.00±0.10
F	1.50±0.10	1.50±0.10
L	1.13±0.03	1.90±0.20
W	0.63±0.03	1.05±0.20
T	0.43±0.03	0.60±0.03

7.3. Taping reel dimensions

Unit: mm



A	178.0±2.0
B	2.0±0.5
C	13.0±0.5
D	21.0±0.8
E	62.0±1.5
F	9.0±0.5
G	13.0±1.0

7.4. Taping specifications

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the head of taping.

7.5. Label Marking

The label specified as follows shall be put on the side of reel.

(1) Part No.
(2) Quantity
(3) Lot No.

* Part No. And Quantity shall be marked on outer packaging.

7.6. Quantity of products in the taping package

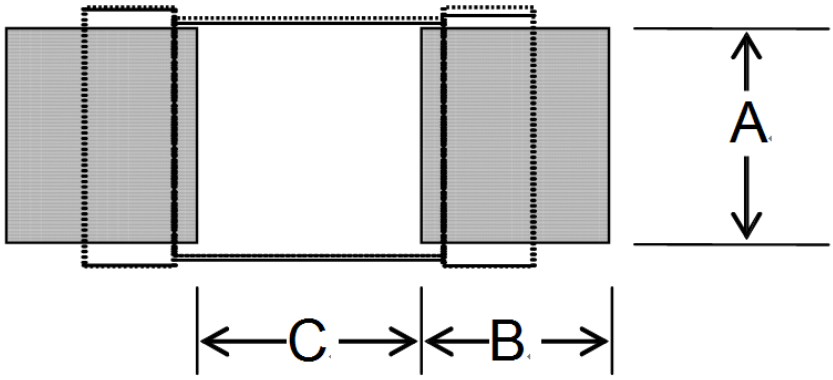
(1) Standard quantity：10000pcs/Reel for EGA0402 ; 5000pcs/Reel for EGA0603
(2) Shipping quantity is a multiple of standard quantity.

8. Precautions for Handling

8.1. Solder cream in reflow soldering

Refer to the recommendable land pattern as printing mask pattern for solder cream.
solder cream.

(1) Print solder in a thickness of 0.10 to 0.15 mm for EGA0402..
Print solder in a thickness of 0.15 to 0.20 mm for EGA0603.



Unit : mm

Size Code EIA (EIAJ)	0402 (1005)	0603 (1608)
A	0.50±0.1	0.75±0.1
B	0.50±0.1	0.75±0.1
C	0.50±0.1	0.75±0.1

8.2. Precaution for handling of substrate

Do not exceed to bend the board after soldering this product extremely. (reference examples)

- Mounting place must be as far as possible from the position, which is close to the break line

of board, or on the line of large holes of board.

- Do not bend extremely the board, in mounting another components.

If necessary, use back-up pin (support pin) to prevent from bending extremely.

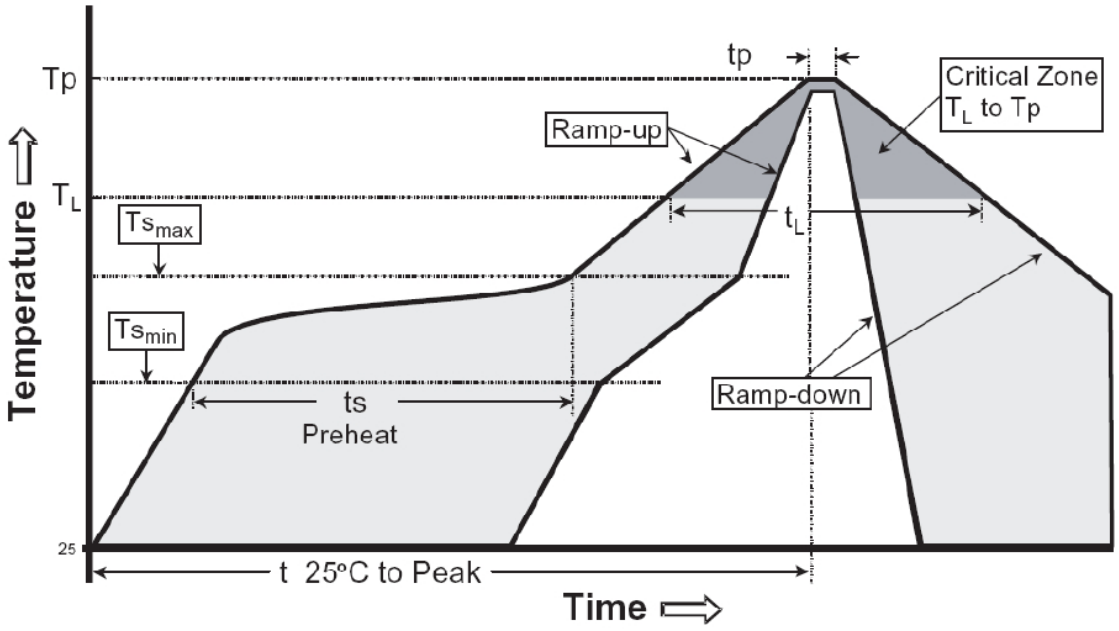
- Do not break the board by hand. We recommend to use the machine or the jig to break it.

8.3. Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.

Do not give heat shock over 100°C in the process of soldering. We recommend to take preheating and gradual cooling.

8.4. Recommendable reflow soldering



Reference IPC-J-STD-020D.1

Profile Feature	Pb free Assembly
Average Ramp Rate (Ts max to Tp)	3 ℃/second max
Preheat - Temperature Min (Ts_{min}) - Temperature Min (Ts_{max}) - Time(ts_{min} to ts_{min})	 150℃ 200℃ 60-120 seconds
Time maintained above: - Temperature (TL) - Time (tL)	 217℃ 60-150 seconds
Peak Temperature (T_p)	260℃ +0/-5 ℃
Time within 5 ℃ of actual Peak Temperature (T_p)	30 seconds
Ramp-Down Rate	6 ℃/second max.
Time 25℃ to Peak Temperature	8 minutes max

8.5. Soldering gun procedure

Note the follows, in case of using solder gun for replacement.

(1) The tip temperature must be less than 280°C for the period within 3 seconds by using soldering gun under 30 W.

(2) The soldering gun tip shall not touch this product directly.

8.6. Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

8.7. Taping Package Storage Condition

Storage Temperature : 5 to 40 ℃

Relative Humidity : < 65%RH

Storage Time : 12 months max