

### General Description

SY205244AMC is a single-line transient voltage suppressor (TVS) designed to provide electrostatic discharge (ESD) protection in consumer applications. The SY205244AMC is designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (ESD) and other over-current transient events. It complies with IEC 61000-4-2 (ESD) ( $\pm 30\text{kV}$  air,  $\pm 15\text{kV}$  contact discharge), and IEC 61000-4-5 (lightning) 24A (8/20 $\mu\text{s}$ ).

SY205244AMC can protect one bidirectional line. The SY205244AMC is available in an SOD-323 package with a working voltage of 5V.

### Features

- Low Clamping Voltage
- Capacitance: 200pF (Maximum)
- Transient Protection for a Single Line
  - IEC 61000-4-2 (ESD)  $\pm 30\text{kV}$  (Air)  $\pm 15\text{kV}$  (Contact)
  - IEC 61000-4-5 (Lightning) 24A (8/20 $\mu\text{s}$ )
- Protects One Data, Control, or Power Line
- Low Leakage Current: 0.1 $\mu\text{A}$  @  $V_{\text{RWM}}$  (Typical)
- Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge.

### Applications

- Desktops, Servers, and Notebooks
- Cell Phone Handsets and Accessories
- Microprocessor-Based Equipment
- Personal Digital Assistants (PDAs)
- Portable Instrumentation
- Pagers Peripherals

### Mechanical Characteristics

- SOD-323 Package
- Marking: Part Number, Date Code
- Packaging: Tape and Reel

### Circuit Diagram





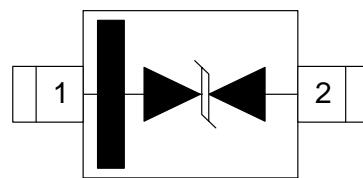
SILERGY

SY205244AMC

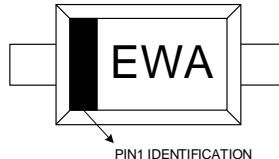
## Ordering Information

Part Number	Package Type	Top Mark
SY205244AMC	SOD-323 RoHS Compliant and Halogen Free	EWA

## Pinout (Top View)



## Marking Codes



**Note 1:** "E" is device code, fixed.

**Note 2:** "W" is date code.

**Note 3:** "A" is production lot number.

Absolute Maximum Rating					
Parameter	Symbol	Test Condition	Min	Max	Unit
Maximum Peak Pulse Power (8/20 $\mu$ s)	$P_{PK}$			350	W
ESD per IEC 61000-4-2 (Air)	$V_{ESD}$		-30	30	kV
ESD per IEC 61000-4-2 (Contact)			-15	15	
Operating Temperature	$T_{OPT}$		-55	+125	°C
Storage Temperature	$T_{STG}$		-55	+150	°C

Electrical Characteristics $T_A = 25^\circ\text{C}$						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Nominal Reverse Working Voltage	$V_{RWM}$				5.0	V
Reverse Leakage Current @ $V_{RWM}$	$I_R$	$V_{RWM} = 5\text{V}$ , $T = 25^\circ\text{C}$ Between I/O and GND			1	$\mu\text{A}$
Reverse Breakdown Voltage @ $I_T$	$V_{BR}$	$I_T = 1\text{mA}$ Between I/O and GND	5.5			V
Clamping Voltage @ $I_{PP}$	$V_C$	$I_{PP} = 5\text{A}$ , $t_p = 8/20\mu\text{s}$ Between I/O and GND			12	V
Maximum Peak Pulse Current	$I_{PP}$	Peak Pulse Current			24	A
Parasitic Capacitance	$C_{ESD}$	$V_R = 0\text{V}$ , $f = 1\text{MHz}$ Between I/O and GND			200	pF

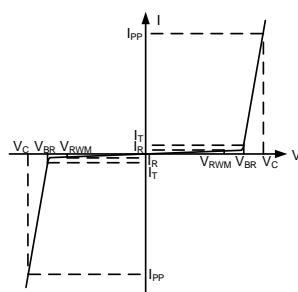
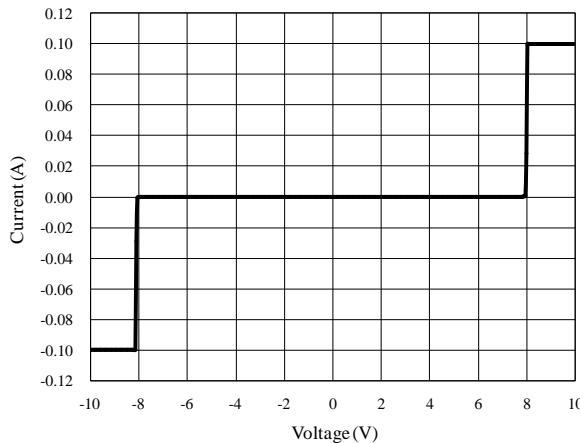


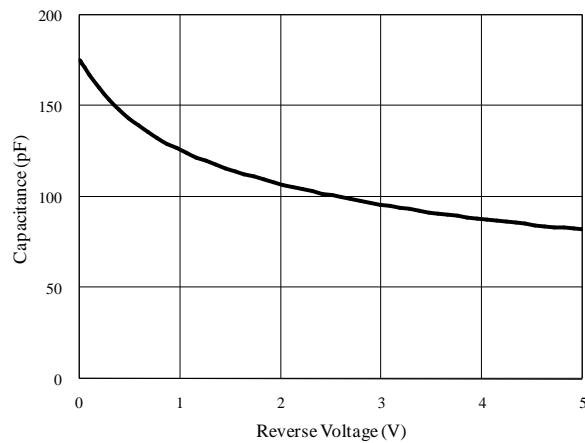
Figure 1. Bi-directional TVS

## Typical Performance Characteristics

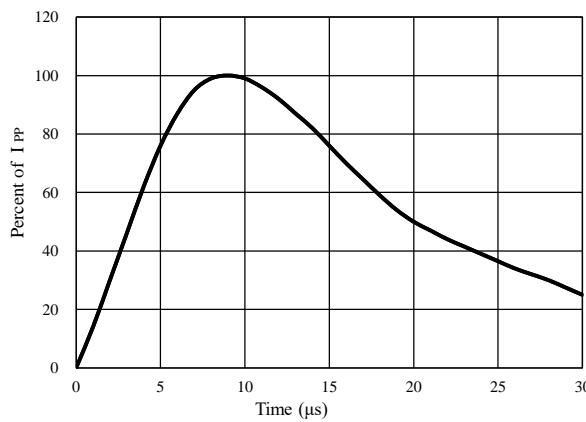
### Voltage Sweeping of I/O to GND



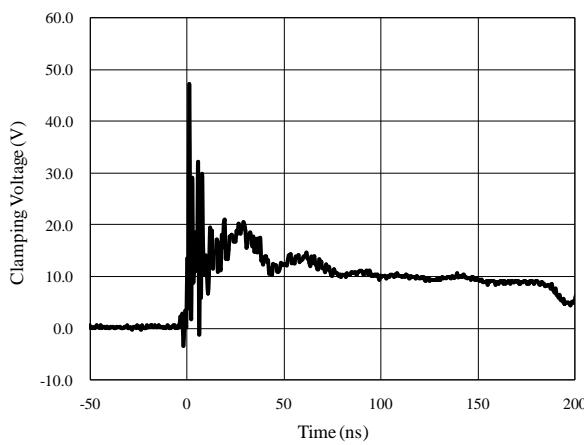
### Capacitance vs. Reverse Voltage



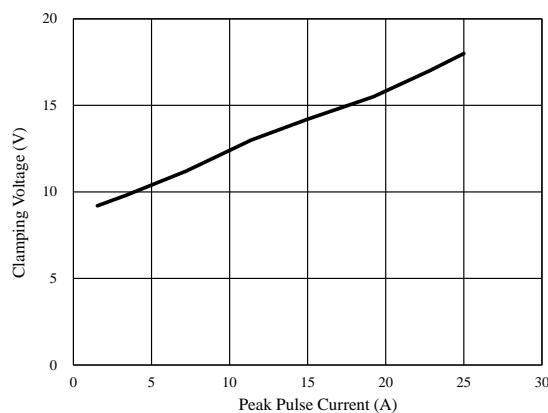
### 8/20 $\mu$ s Pulse Waveform



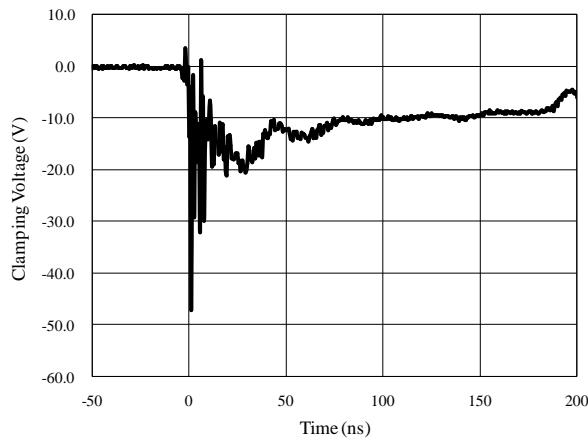
### ESD Clamping of I/O to GND (+8kV Contact per IEC 61000-4-2)



### Clamping Voltage vs. Peak Pulse Current



### ESD Clamping of I/O to GND (-8kV Contact per IEC 61000-4-2)



## Application Information

The SY205244AMC protects one data line, control line or power line against over-voltage and over-current transient events by clamping it to an acceptable reference.

The SY205244AMC pin connections are shown in Figure 2. The protected line is connected at Pin1 while Pin2 is connected to GND, which should connect to a ground plane on the board. All path lengths connected to pins of SY205244AMC should be as short as possible to minimize the parasitic inductance.

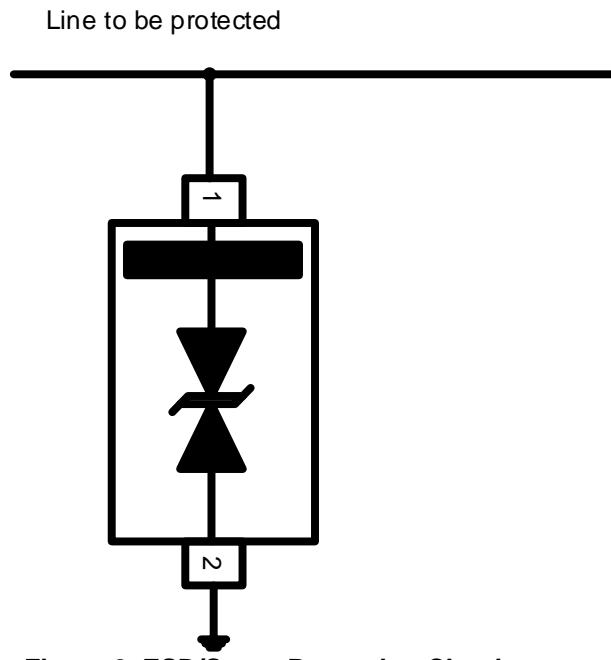


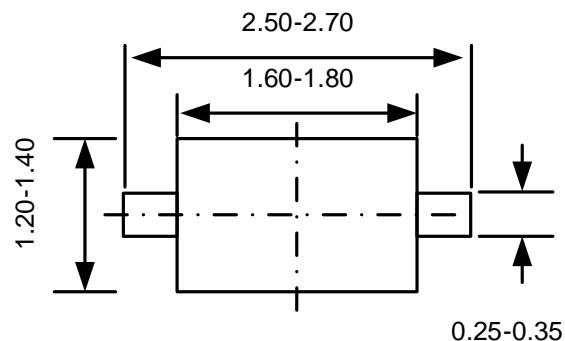
Figure 2. ESD/Surge Protection Circuit

## PCB Layout Guidelines

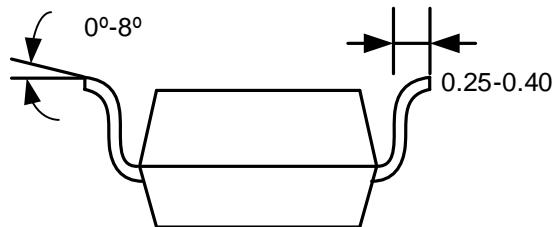
For optimum ESD protection and circuit performance, the following circuit board guidelines are recommended:

- Place SY205244AMC as close to the connector or terminal ports as possible.
- Use a large via to connect the SY205244AMC pin to the ground.
- Avoid running signals near board edges.
- The SY205244AMC should be placed near the protected line.
- The distance between the SY205244AMC ground pin and the GND reference path should be as short as possible.

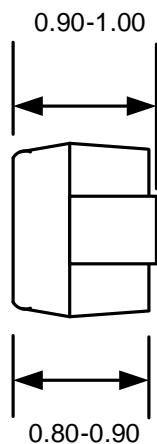
## SOD-323 Package Outline



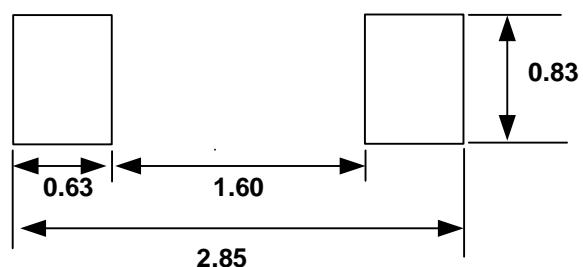
**Top View**



**Side View**



**Side View**

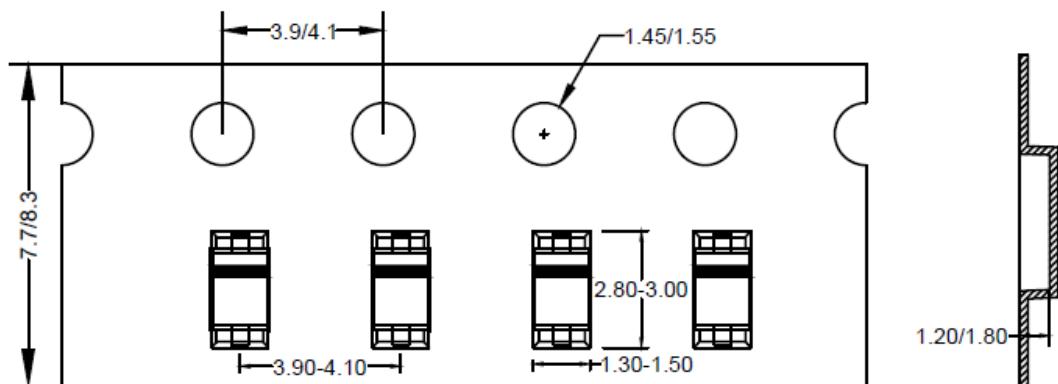


**Recommended PCB Layout  
(Reference only)**

**Note:** All dimensions are in millimeters and exclude mold flash and metal burr.

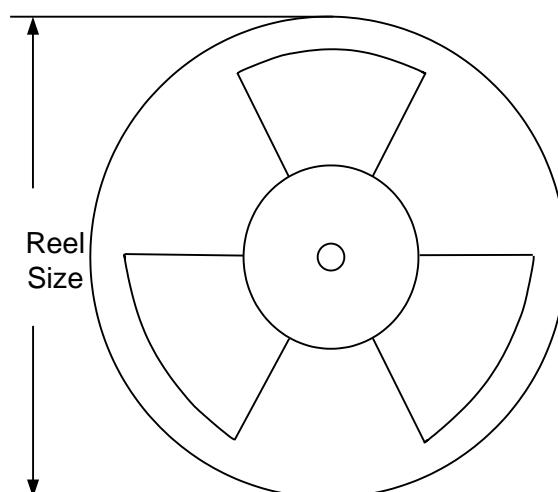
## Tape and Reel Specification

### SOD-323 Taping Orientation



Feeding direction →

### Carrier Tape & Reel Specification for Packages



Package Types	Tape Width (mm)	Pocket Pitch(mm)	Reel Size (Inch)	Trailer * Length(mm)	Leader * Length (mm)	Qty per Reel (pcs)
SOD-323	8	4	7"	400	200	3000



### Revision History

The revision history provided is for informational purpose only and is believed to be accurate, however, not warranted. Please make sure that you have the latest revision.

Revision Number	Revision Date	Description	Pages changed
0.9	05/10/2016	Initial Release	
1.0	05/10/2017	Production Release	
1.0A	12/07/2023	In general description, "protect one unidirectional line" is changed to "protect one bidirectional line"	1

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