

General Description

SY205242AMC is an ultra-low capacitance electrostatic discharge (ESD) and surge protector designed to provide ESD protection for high-speed data interfaces. SY205242AMC is designed to protect against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), ($\pm 30\text{kV}$ air, $\pm 30\text{kV}$ contact discharge), and IEC 61000-4-5 (surge) (550W, 8/20 μs).

The combined features of ultra-low capacitance and high ESD robustness make SY205242AMC ideal for applications where arrays are not practical. The low clamping voltage of the SY205242AMC guarantees minimum stress on the protected IC.

SY205242AMC is available in an SOD-323 package.

Features

- Working Voltages: 12V
- Ultra Low Capacitance: 0.6pF (Typical)
- Low Clamping Voltage
- Low Leakage Current: 0.01 μA @ V_{RWM} (Typical)
- Transient Protection for High-Speed Data Lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
 - IEC 61000-4-5 (Surge) 550W (8/20 μs)

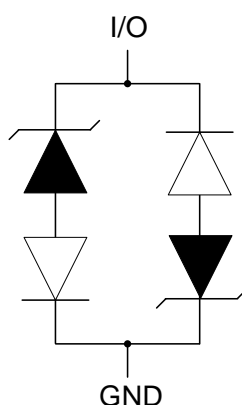
Applications

- Ethernet - 10/100/1000 Base T
- Desktops, Servers, and Notebooks
- Cellular Phones
- Portable Instruments
- Analog Inputs
- USB Interface

Mechanical Characteristics

- SOD-323 Package
- Flammability Rating: UL 94V-0
- Marking: Part Number, Date
- Packaging: Tape and Reel

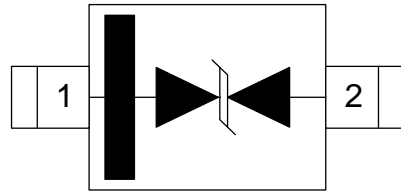
Circuit Diagram



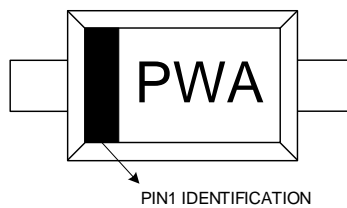
Ordering Information

Part Number	Package Type	Top Mark
SY205242AMC	SOD-323 RoHS Compliant and Halogen Free	PWA

Pinout (Top View)



Marking Codes



Note 1: "P" is device code, fixed.

Note 2: "W" is date code.

Note 3: "A" is production lot number.

Absolute Maximum Rating				
Parameter	Symbol	Min	Max	Unit
Maximum Peak Pulse Power (8/20 μ s)	P _{PK}		550	W
ESD per IEC 61000-4-2 (Air)	V _{ESD}	-30	30	kV
ESD per IEC 61000-4-2 (Contact)				
Operating Temperature	T _{OPT}	-45	+125	°C
Storage Temperature	T _{STG}	-55	+150	°C

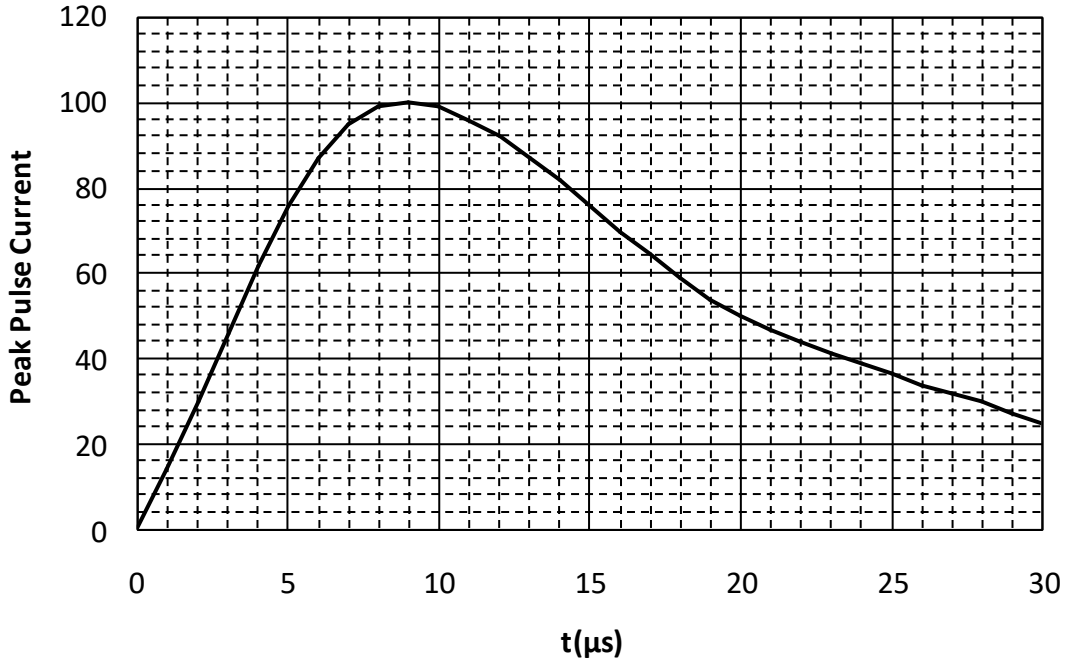
Electrical Characteristics (T_A = 25°C)

Part Number	Device Code	Stand-off Voltage V _{RWM} (V)	Breakdown Voltage @ 10mA V _{BR} (V) Min.	Peak Pulse Current ¹ (8/20 μ s) I _{PP} (A) Max.	Clamping Voltage ¹ @ 1A V _C (V) Max.	Leakage Current @ V _{RWM} I _R (μ A) Max.	Capacitance ¹ @ 0V, 1MHz C (pF) Typ.
SY205242	P	12.0	13.5	12	20.0	0.1	0.6

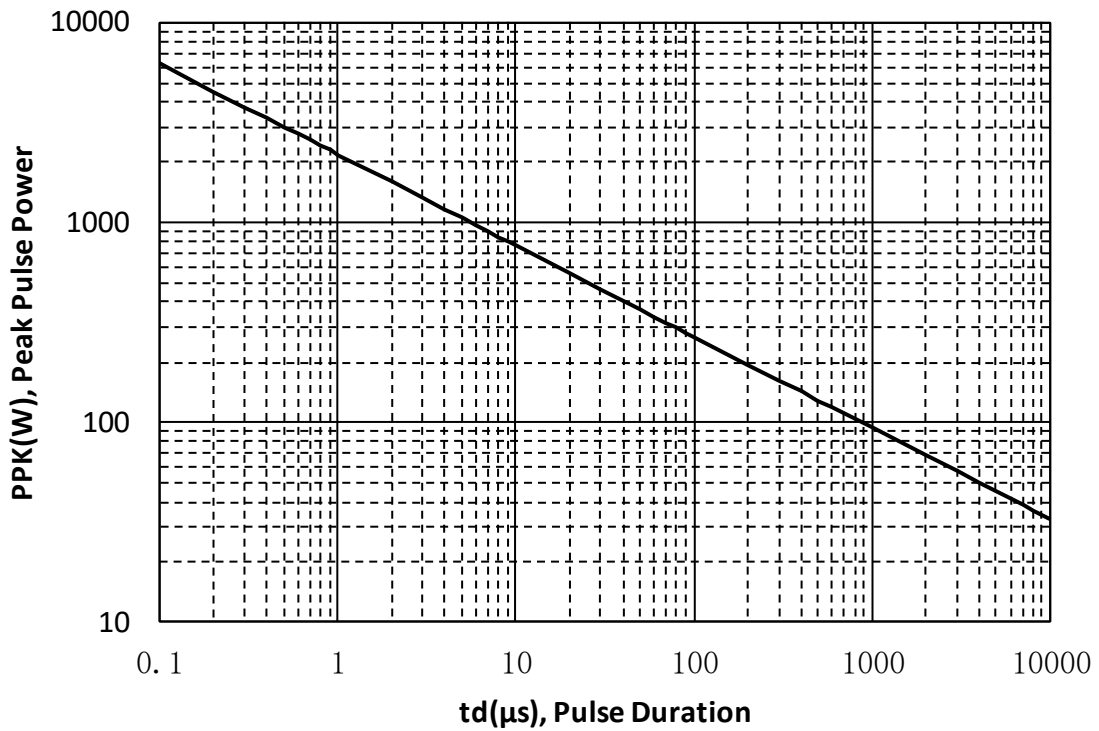
Note: Guaranteed by design and not subject to production test.

Typical Operating Characteristics

8/20 μ s Pulse Waveform



Peak Pulse Power vs. Pulse Duration



Application Information

SY205242AMC is designed to protect one data line pair. The SY205242AMC pin connections for RJ45 Ethernet line-to-line ESD and surge protection are shown in Figure 1.

One RJ45 data line is connected to Pin1 of SY205242AMC. The other RJ45 line is connected to Pin2 of SY205242AMC. The SY205242AMC peak pulse current (IPP) rating of 12A can provide good line-to-line surge protection for the LAN PHY chip.

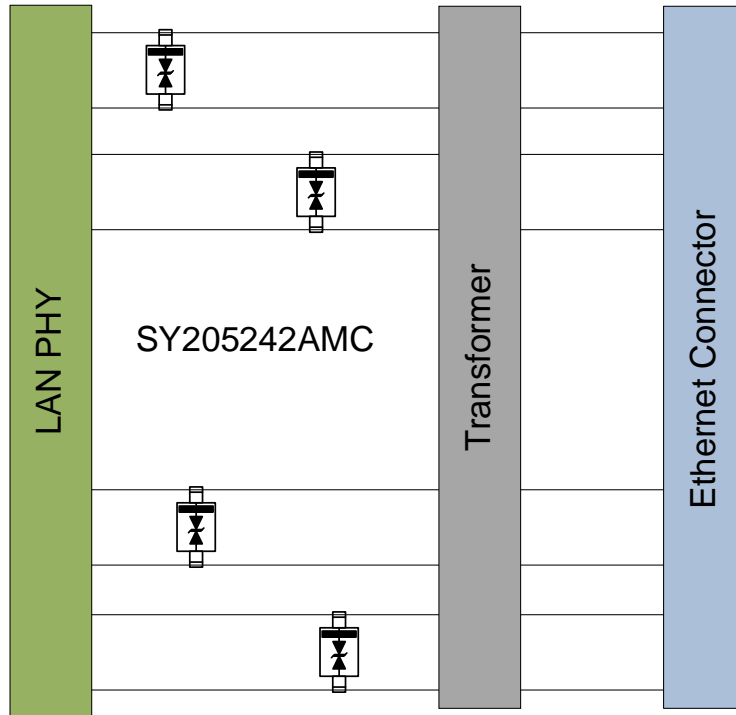
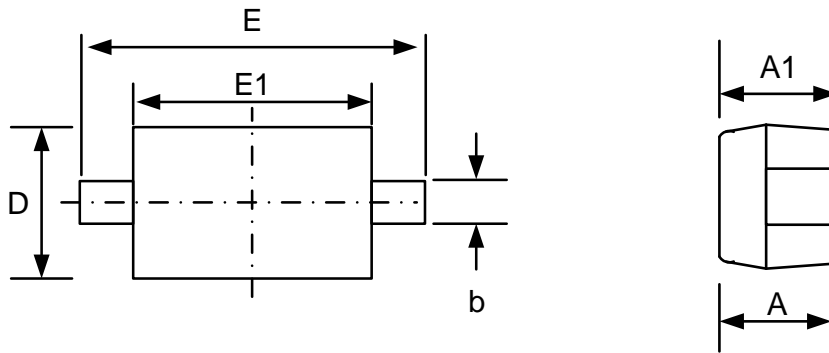


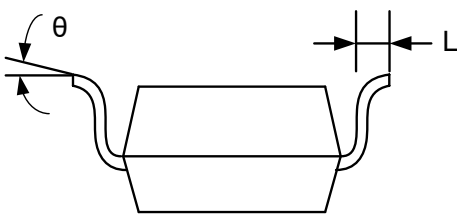
Figure 1. SY205242AMC Pin Connections in PCB

SOD-323 Package Outline

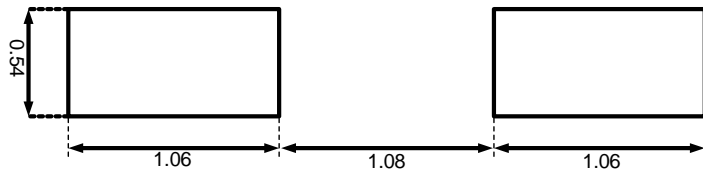


Top View

Side View



Side View



**Recommended PCB Layout
(Reference only)**

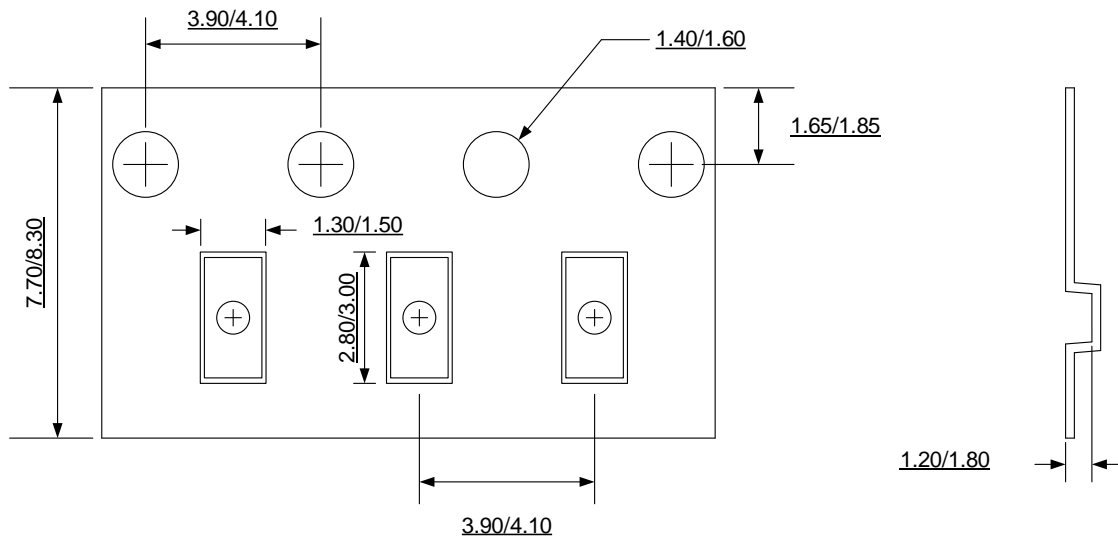
Package Dimensions

Symbol	Dimensions (mm)	
	Minimum	Maximum
A	0.80	0.90
A1	0.90	1.00
b	0.25	0.35
D	1.20	1.40
E	2.50	2.70
E1	1.60	1.80
L	0.25	0.40
θ	0°	8°

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

Tape and Reel Specification

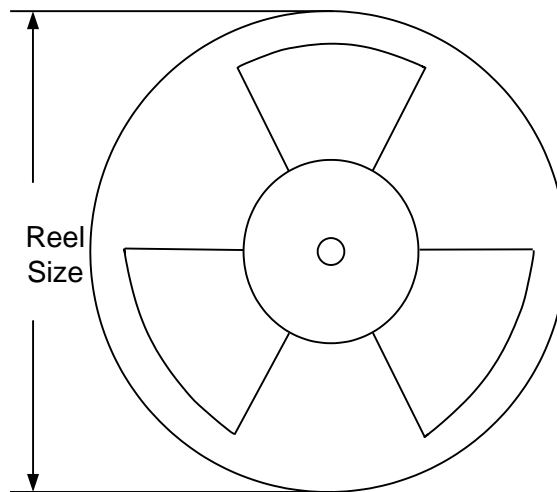
SOD-323 Taping Orientation



Dimensions In mm

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	

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