

General Description

SY205245SLC is a single-line transient voltage suppressor (TVS) designed to provide electrostatic discharge (ESD) protection in consumer applications. The SY205245SLC is designed to protect sensitive semiconductor components from damage or upset due to ESD and other 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) 52A (8/20 μs).

SY205245SLC can protect one unidirectional line. SY205245SLC is available in a DFN1.6x1.0-2 package with a working voltage of 12V.

Features

- Capacitance: 400pF (Typical)
- For Operating Voltage of 12V and Below
- Protects One Data, Control, or Power Line
- Transient Protection for a Single Line
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air) $\pm 30\text{kV}$ (Contact)
 - IEC 61000-4-5 (Surge) 52A (8/20 μs)
- Low Leakage Current: 0.1 μA @ V_{RWM} (Max)
- Low Clamping Voltage

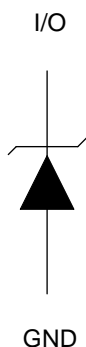
Applications

- USB VBUS Protection
- Power Supply Protection
- Desktops, Servers, and Notebooks
- Cellular Phones
- Portable Instrumentation
- Pagers Peripherals
- Digital Cameras

Mechanical Characteristics

- DFN1.6x1.0-2 Package
- Marking: Part Number, Date Code
- Packaging: Tape and Reel

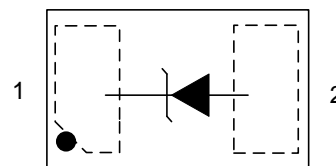
Circuit Diagram



Ordering Information

Part Number	Package Type	Top Mark
SY205245SLC	DFN1.6x1.0-2 RoHS Compliant and Halogen Free	NYWA

Pinout (Top View)



Marking Codes



Note 1: “N” is device code, fixed.

Note 2: “YWA” is date code.

Absolute Maximum Rating				
Parameter	Symbol	Min	Max	Unit
Maximum Peak Pulse Current (8/20μs)	I_{PP}		52	A
Maximum Peak Pulse Power (8/20μs)	P_{PK}		1100	W
ESD per IEC 61000-4-2 (Air)	V_{ESD}	-30	30	kV
ESD per IEC 61000-4-2 (Contact)				
Operating Temperature	T_{OPT}	-40	+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}				12.5	V
Reverse Leakage Current @ V_{RWM}	I_R	$V_{RWM} = 12\text{V}, T_A = 25^\circ\text{C}$ Pin1 to Pin2		0.01	0.1	μA
Reverse Breakdown Voltage @ I_T	V_{BR}	$I_T = 1\text{mA}$ Pin1 to Pin2	13.3	14.5	16.5	V
Forward Voltage @ I_F	V_F	$I_F = 1\text{mA}$ Pin2 to Pin1	0.4		1.2	V
Clamping Voltage @ I_{PP}	$V_C(1)$	$I_{PP} = 16\text{A}, t_p = 10/100\text{ns}$ Pin1 to Pin2		15		V
Clamping Voltage @ I_{PP}	$V_C(1)$	$I_{PP} = 5\text{A}, t_p = 8/20\mu\text{s}$ Pin1 to Pin2		16		V
Clamping Voltage @ I_{PP}	$V_C(1)$	$I_{PP} = 52\text{A}, t_p = 8/20\mu\text{s}$ Pin1 to Pin2		22		V
Parasitic Capacitance	$C_{ESD}(1)$	$V_R = 0\text{V}, f = 1\text{MHz}$ Pin1 to Pin2		400		pF

Note: Guaranteed by design and not subject to production test

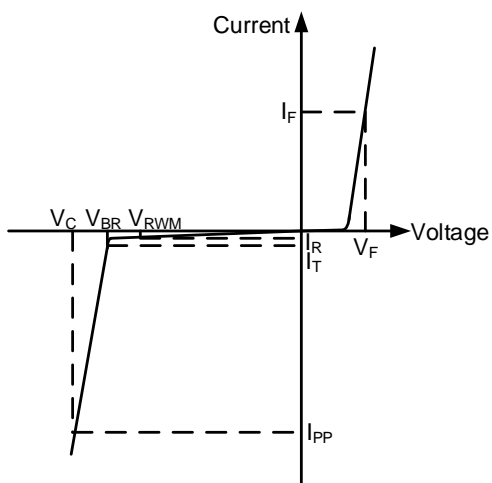
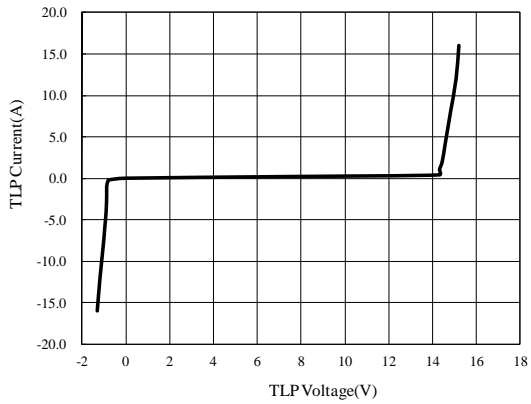


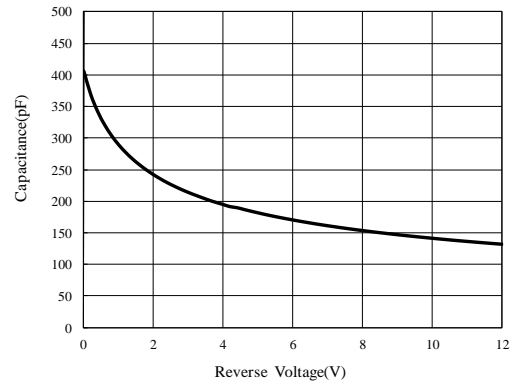
Figure 1. Uni-directional TVS

Typical Performance Characteristics

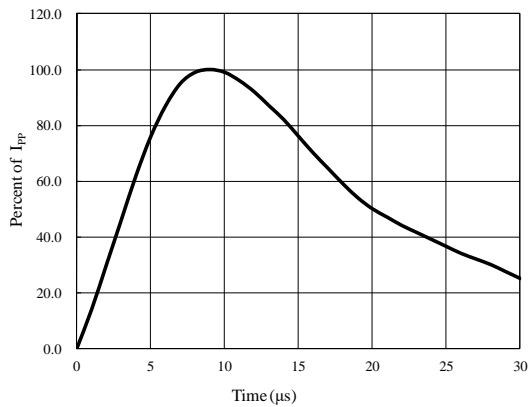
TLP Curve



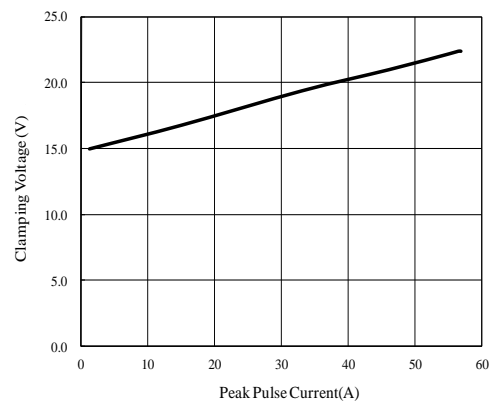
Capacitance vs. Voltage (f = 1MHz)



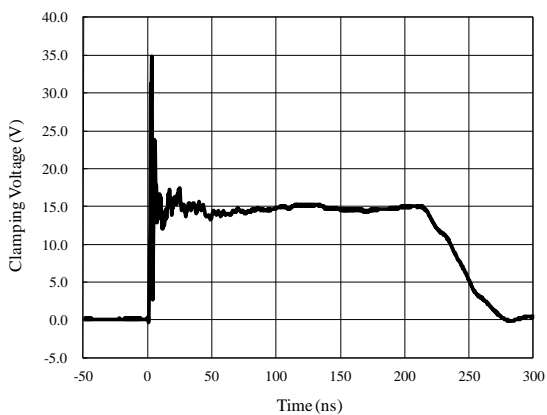
8/20µs Pulse Waveform



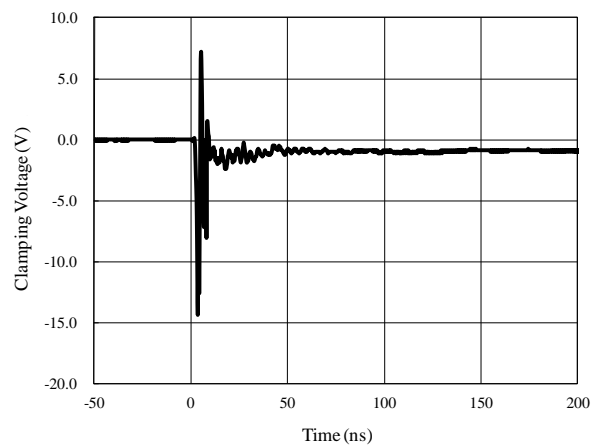
Clamping Voltage vs. Peak Pulse Current



ESD Clamping (+8kV Contact per IEC 61000-4-2)



ESD Clamping (-8kV Contact per IEC 61000-4-2)



Application Information

SY205245SLC is designed to protect one uni-directional line and can be used for control or power lines.

The SY205245SLC pin connections are shown in Figure 2. The control or power line is connected to Pin1. Pin2 is connected to the GND, which should connect to a ground plane on the board. The connection traces should be as short as possible to minimize the parasitic inductance.

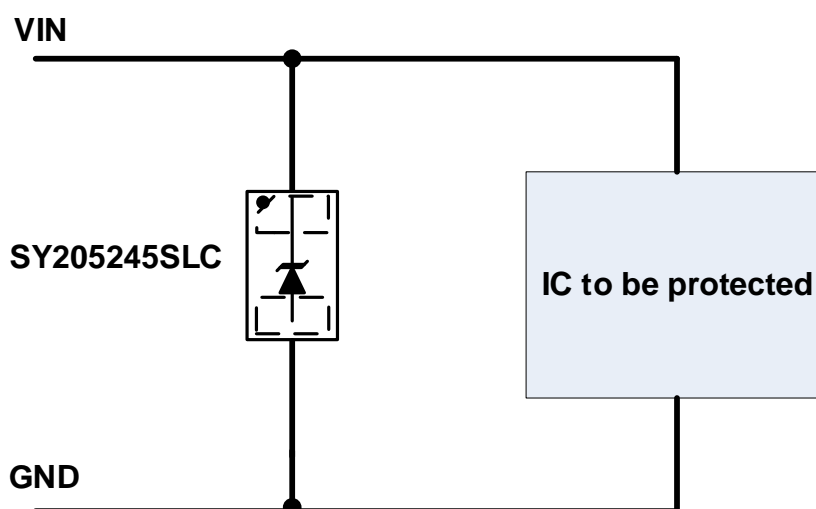
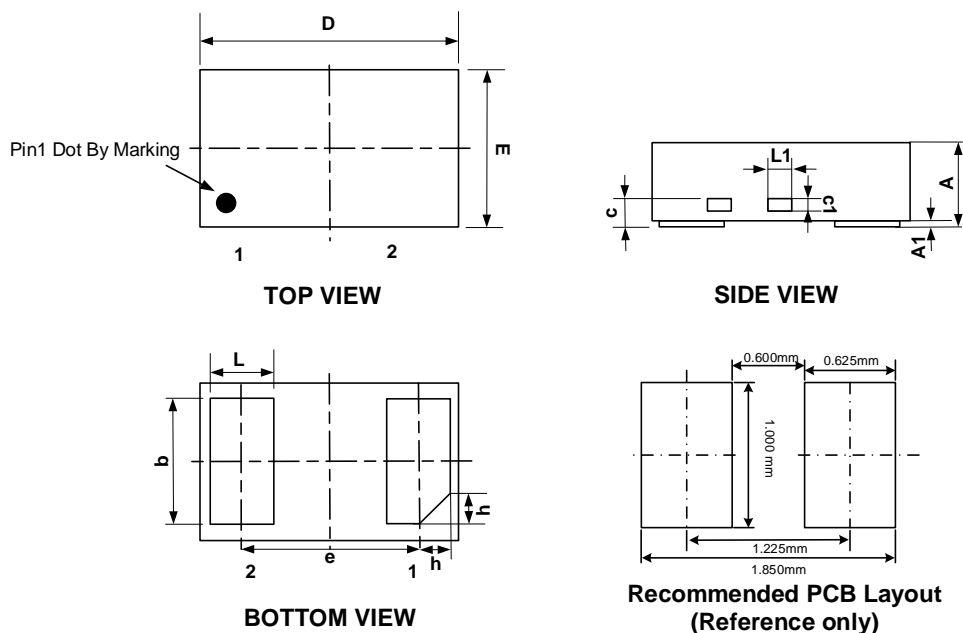


Figure 2. SY205245SLC Pin Connections in PCB

DFN1.6x1.0-2 Package Outline



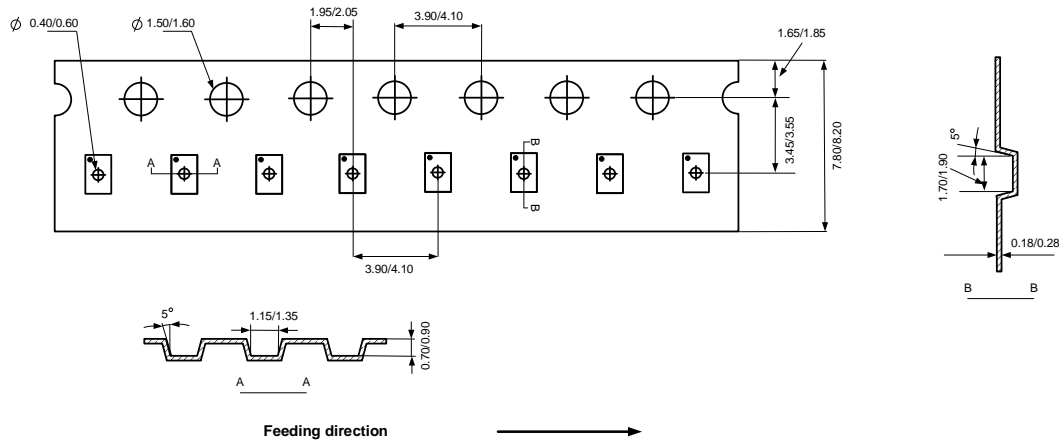
Package Dimensions

Symbol	Dimensions (mm)		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	-----	0.02	0.05
b	0.75	0.80	0.85
c	0.10	0.15	0.20
c1	0.075REF		
D	1.55	1.60	1.65
e	1.10BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.10	0.15	0.20
h	0.15	0.20	0.25

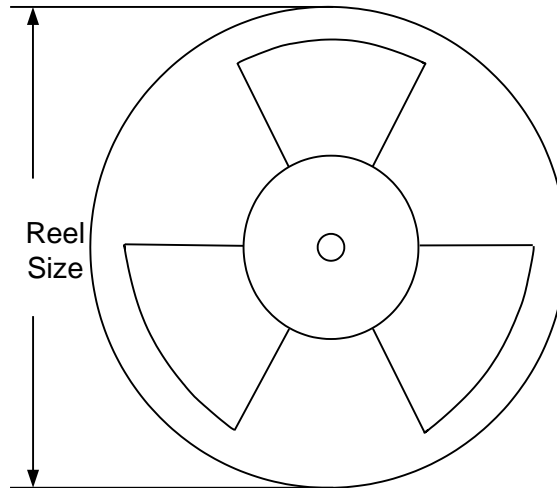
Note: All dimensions are in millimeters and exclude mold flash and metal burr.

Tape and Reel Specification

DFN1.6x1.0-2 Taping Orientation



Carrier Tape & Reel Specification for Packages



Package Types	Tape Width (mm)	Pocket Pitch(mm)	Reel Size (Inch)	Qty per Reel(pcs)
DFN1.6x1.0-2	8	4	7"	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	06/25/2021	Initial Release	
1.0	06/25/2022	Production Release	

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