

### Features

- 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) 15A (8/20  $\mu\text{s}$ )
- For 3.3V and below operating voltage
- Package optimized for high-speed lines
- Ultra-small package: DFN1.0\*0.6-2  
SOD523  
DFN0.6\*0.3-2
- Protects one data, control or power line
- Low capacitance: 27pF (Typical)
- Low leakage current: 0.1 $\mu\text{A}$  @  $V_{\text{RWM}}$  (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge

### Description

SYT01N03 is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 27pF, SYT01N03 is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC61000-4-2 (ESD) ( $\pm 30\text{kV}$  air,  $\pm 30\text{kV}$  contact discharge), IEC61000-4-5 (Surge) (15A, 8/20 $\mu\text{s}$ ), etc.

Each SYT01N03 device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

### Applications

- Portable Electronics
- Desktops, Servers and Notebooks
- Cellular Phones
- MP3 Ports
- Digital Camera Ports

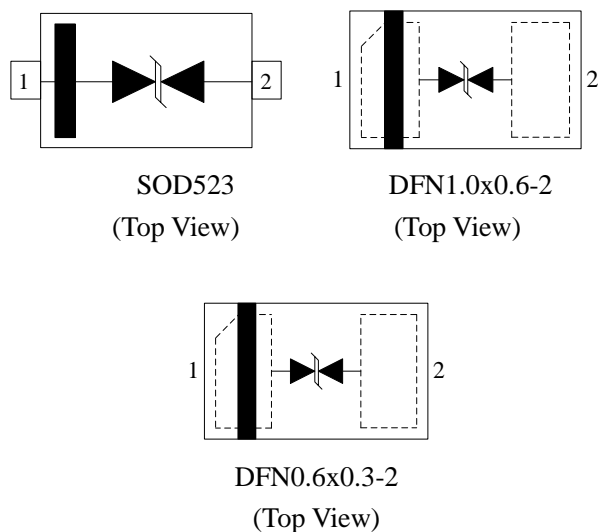
### Mechanical Characteristics

- Package: DFN1.0\*0.6-2  
SOD523  
DFN0.6\*0.3-2
- Marking: Part number
- Packaging: Tape and Reel

### Circuit Diagram



### Pin Configuration

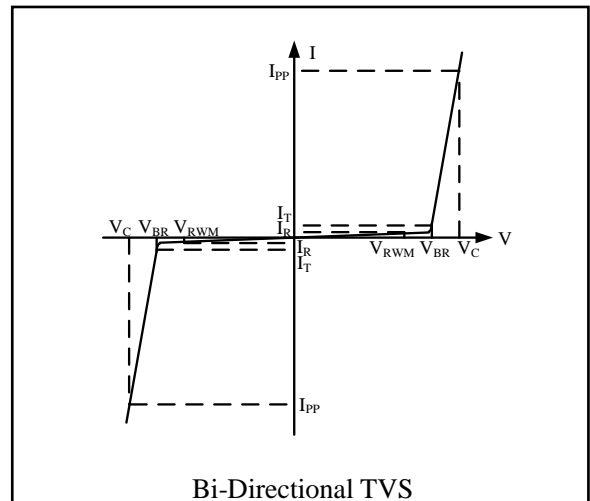


## Absolute Maximum Rating

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2 (Air)	$\pm 30$	kV
	ESD per IEC 61000-4-2 (Contact)	$\pm 30$	
$I_{PP}$	Peak Pulse Current (8/20 $\mu$ s)	15	A
$P_{PK}$	Peak Pulse Power (8/20 $\mu$ s)	140	W
$T_{OPT}$	Operating Temperature	-40/+125	$^{\circ}$ C
$T_{STG}$	Storage Temperature	-55/+150	$^{\circ}$ C

## Electrical Characteristics (T = 25 $^{\circ}$ C)

Symbol	Parameter
$V_{RWM}$	Nominal Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Reverse Breakdown Voltage @ $I_T$
$I_T$	Test Current for Reverse Breakdown
$V_C$	Clamping Voltage @ $I_{PP}$
$I_{PP}$	Maximum Peak Pulse Current
$C_{ESD}$	Parasitic Capacitance
$V_R$	Reverse Voltage
f	Small Signal Frequency



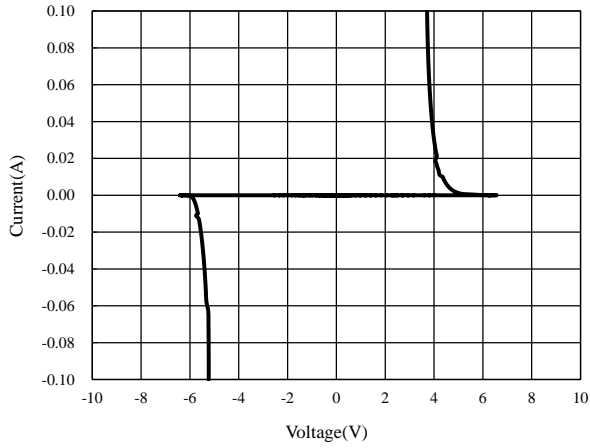
Symbol	Test Condition	Minimum	Typical	Maximum	Units
$V_{RWM}$				3.3	V
$I_R$	$V_{RWM} = 3.3V, T = 25^{\circ}C$		0.1	1.0	$\mu$ A
$V_{BR}$	$I_T = 10mA$	3.7			V
$V_C^1$	$I_{PP} = 1A, t_p = 8/20\mu s$			6.5	V
$V_C^1$	$I_{PP} = 15A, t_p = 8/20\mu s$		7.8	10	V
$V_C^1$	$I_{PP} = 16A, t_p = 10/100ns$		8		V
$R_{DYN}^{1,2}$	$t_p = 10/100ns$		0.25		$\Omega$
$C_{ESD}^1$	$V_R = 0V, f = 1MHz$		27	35	pF

### NOTES

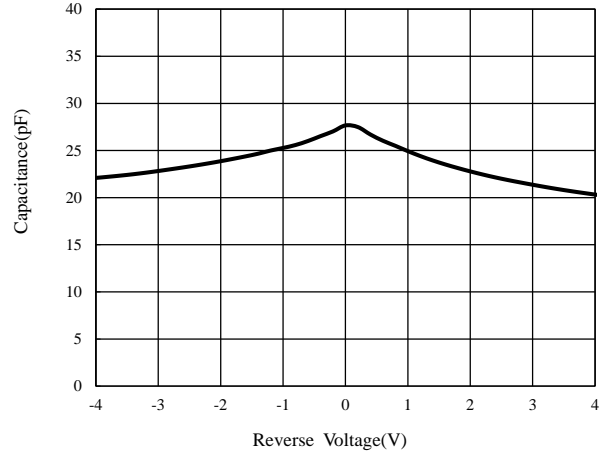
<sup>1</sup>Guaranteed by design and not subject to production test.

<sup>2</sup> $R_{DYN}$  calculated based on  $I_{PP}=8A$  to  $I_{PP}=16A, t_p = 10/100ns$ .

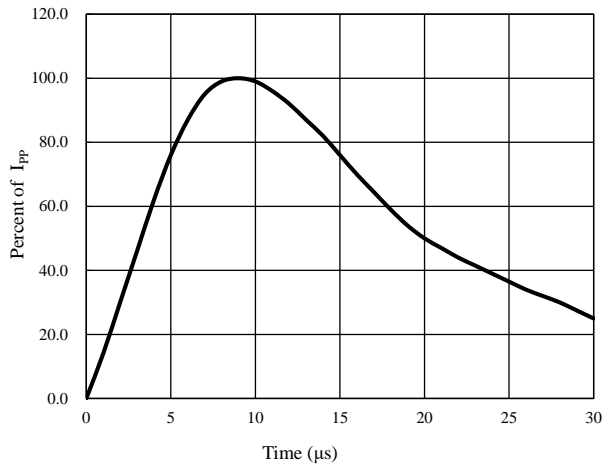
### Current Sweeping of I/O\_1 to I/O\_2



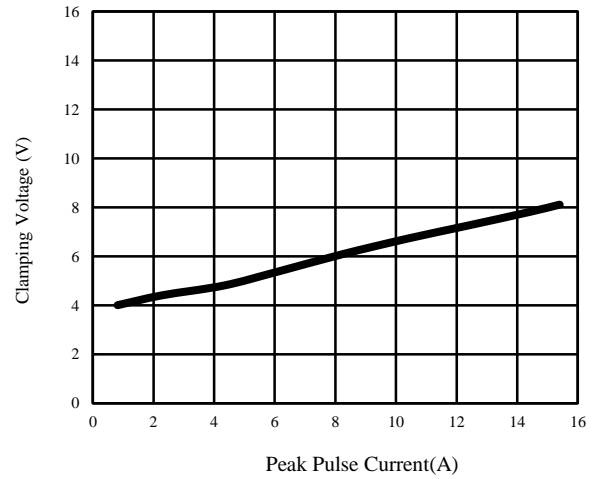
### Capacitance vs. Voltage of I/O\_1 to I/O\_2



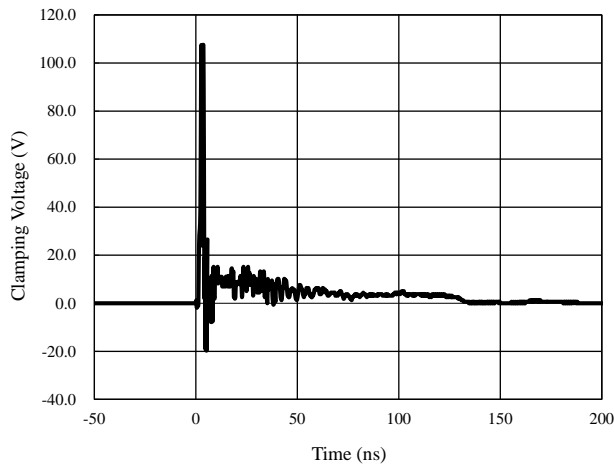
### Pulse Waveform



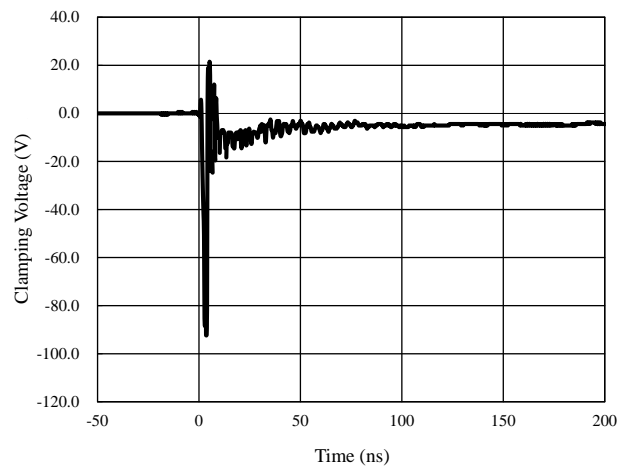
### Clamping Voltage vs. Peak Pulse Current



### ESD Clamping of I/O\_1 to I/O\_2 (+8kV Contact per IEC 61000-4-2)

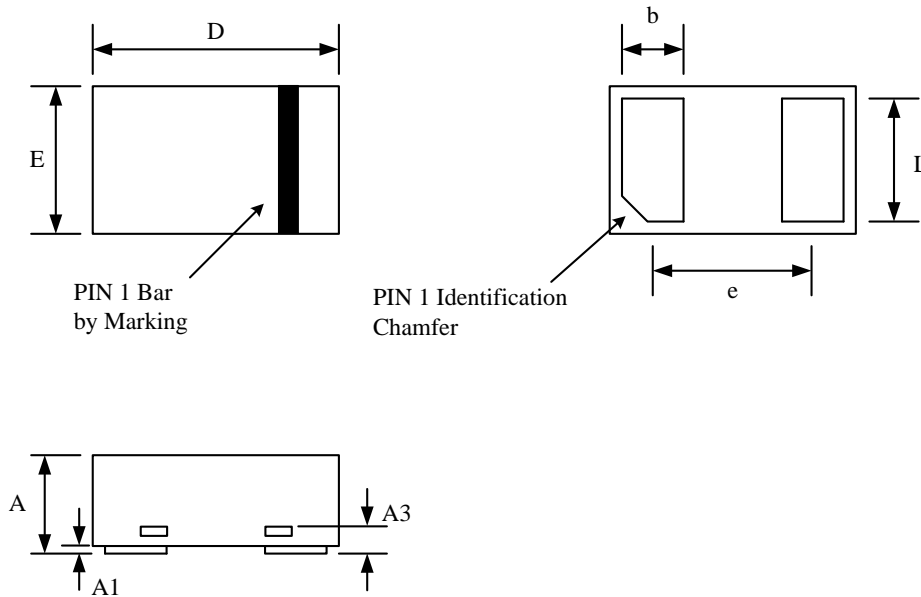


### ESD Clamping of I/O\_1 to I/O\_2 (-8kV Contact per IEC 61000-4-2)



**Package Outline**

- DFN1.0\*0.6-2 Package



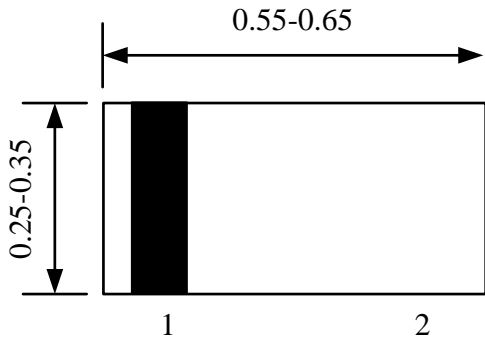
Package Dimensions

Symbol	Dimensions In Millimeters	
	Minimum	Maximum
A	0.400	0.550
A1	0.000	0.050
A3	0.125 REF	
D	0.950	1.050
E	0.550	0.650
b	0.200	0.300
e	0.650 BSC	
L	0.450	0.550

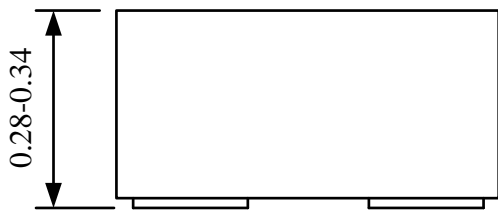
**Notes:** All dimension in mm and exclude mold flash & metal burr.

**Package Outline**

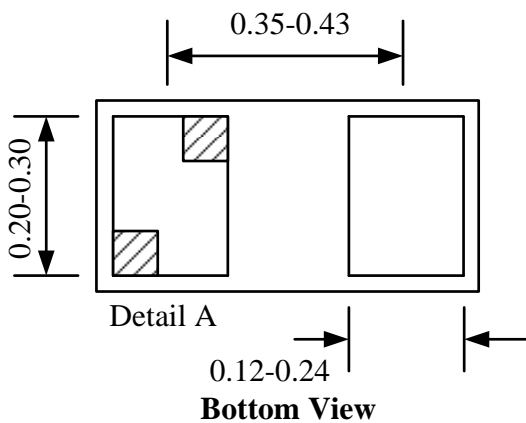
- DFN0.6\*0.3-2 Package



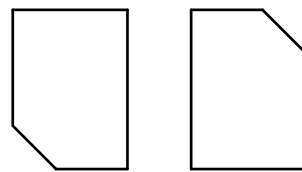
**Top View**



**Side View**



**Bottom View**



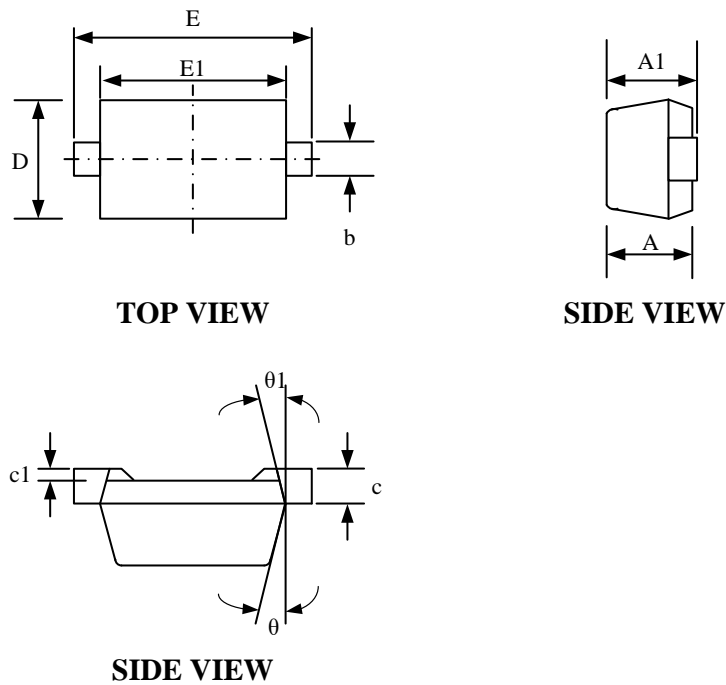
Pin1 Identifier: Two options

**Detail A**

**Notes:** All dimension in mm and exclude mold flash & metal burr.

## Package Outline

- SOD523 package



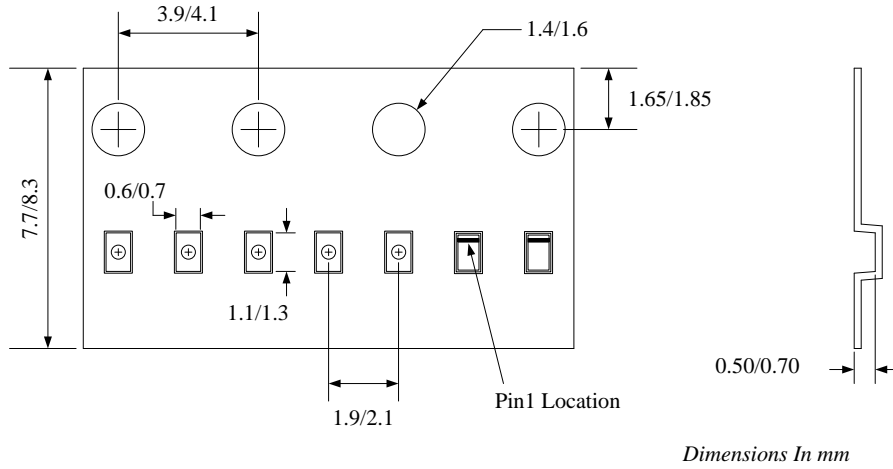
Package Dimensions

Symbol	Dimensions (mm)	
	Minimum	Maximum
A	0.50	0.70
A1	0.51	0.77
b	0.25	0.35
c	0.08	0.15
c1	0.01	0.07
D	0.70	0.80
E	1.50	1.70
E1	1.10	1.30
$\theta$	7° Ref	
$\theta_1$	7° Ref	

Notes: All dimension in mm and exclude mold flash & metal burr.

## Tape and Reel Specification

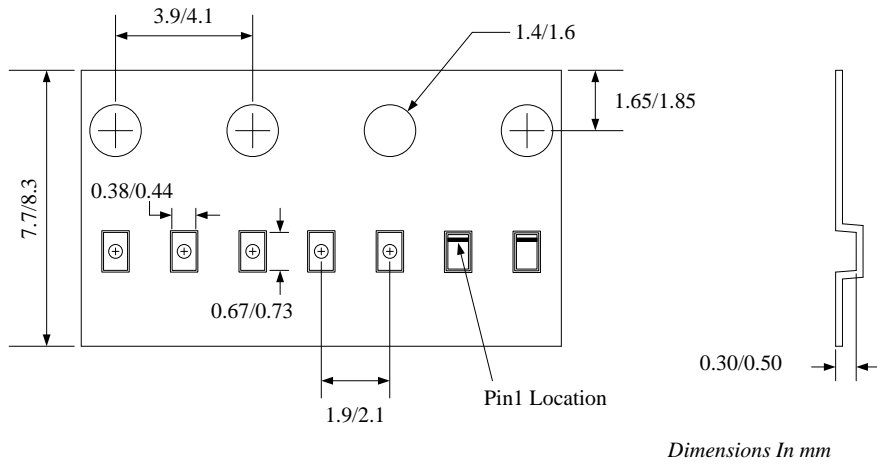
- DFN1.0\*0.6-2



Feeding direction →

Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
DFN1.0*0.6-2	8	2	7"	400	400	10000

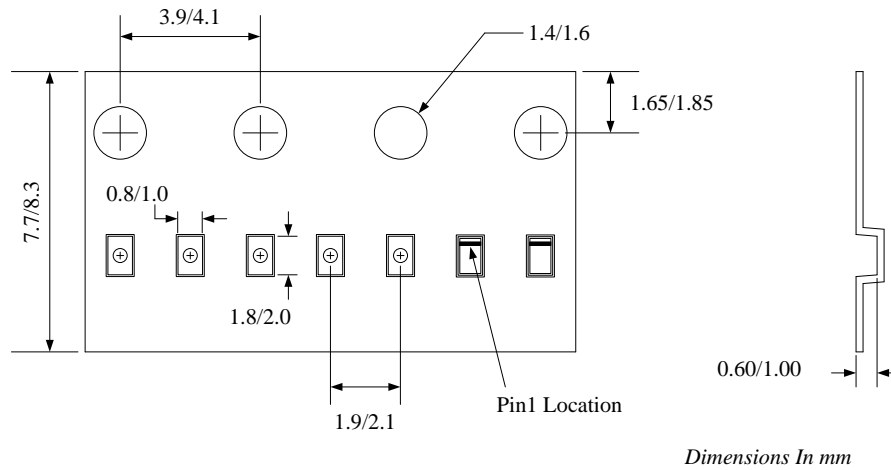
- DFN0.6\*0.3-2



Feeding direction →

Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
DFN0.6*0.3-2	8	2	7"	400	400	10000

- SOD523



Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
SOD523	8	2	7"	400	400	8000

## Marking Codes





## Ordering Information

Part Number	Pkg	QTY/Reel
SYT01N03DXC	DFN0.6*0.3-2	10,000
SYT01N03DWC	DFN1.0*0.6-2	10,000
SYT01N03ANC	SOD523	8,000

## Note:

- (1) "P", "L" is part number, fixed.
- (2) "M" is date code, from 1 to 0, A to Z.



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