

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) 4A (8/20 μs)
- Package Optimized for High-speed Lines
- Ultra-small Package (1.0mm \times 0.6mm \times 0.55mm)
- Protects One Data, Control or Power Line
- Low Capacitance: 12pF (Typical)
- Low Leakage Current: 0.01 μA @ V_{RWM} (Typical)
- Low Clamping Voltage
- Each I/O Pin can Withstand Over 1000 ESD Strikes for $\pm 8\text{kV}$ Contact Discharge

Description

The SYT01N24DWC is a low-capacitance transient voltage suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 12pF, the SYT01N24DWC is designed to protect parasitic-sensitive systems 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), IEC 61000-4-5 (Surge) (4A, 8/20 μs), etc.

The SYT01N24DWC uses ultra-small DFN1.0*0.6-2 package. Each SYT01N24DWC device can protect one data line. It offers system designers flexibility to protect single data line where space is a premium concern.

Applications

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

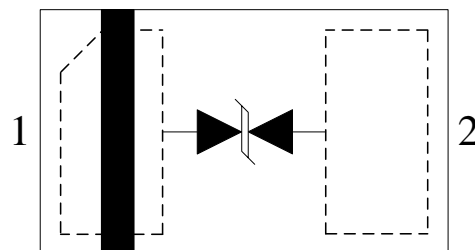
Mechanical Characteristics

- DFN1.0*0.6-2 package
- Marking: Part number
- Packaging: Tape and Reel

Circuit Diagram



Pin Configuration



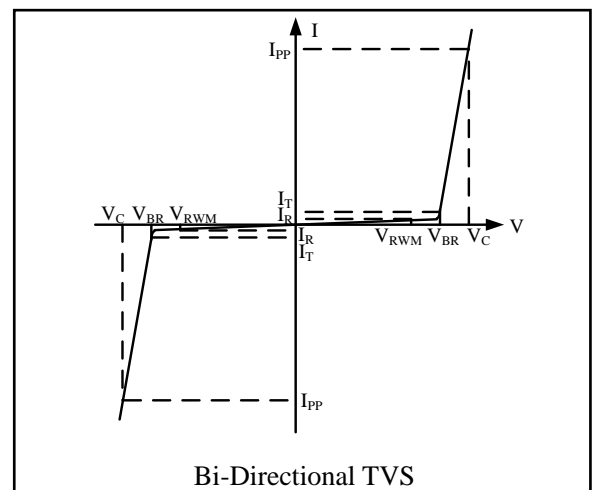
DFN1.0*0.6-2
(Top View)

Absolute Maximum Rating

Symbol	Parameter	Value	Units
V_{ESD}	ESD per IEC 61000-4-2 (Air)	± 30	kV
	ESD per IEC 61000-4-2 (Contact)	± 30	
P_{PK}	Peak Pulse Power (8/20 μ s)	180	Watts
I_{PP}	Peak Pulse Current (8/20 μ s)	4	A
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}	Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency



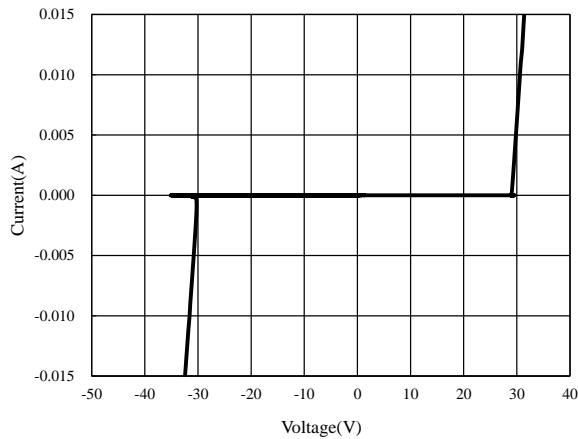
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				24	V
I_R	$V_{RWM} = 24V, T = 25^{\circ}C$ Between I/O_1 and I/O_2		0.01	0.1	μ A
V_{BR}	$I_T = 1mA$ Between I/O_1 and I/O_2	26.5		33	V
V_C^1	$I_{PP} = 1A, t_p = 8/20\mu s$ Between I/O_1 and I/O_2			36	V
V_C^1	$I_{PP} = 4A, t_p = 8/20\mu s$ Between I/O_1 and I/O_2			42	V
V_C^1	$I_{PP} = 16A, t_p = 10/100ns$ Between I/O_1 and I/O_2		35		V
$R_{DYN}^{1,2}$	$t_p = 10/100ns$ Between I/O_1 and I/O_2		0.3		Ω
C_{ESD}^1	$V_R = 0V, f = 1MHz$ Between I/O_1 and I/O_2		12	15	pF

NOTES

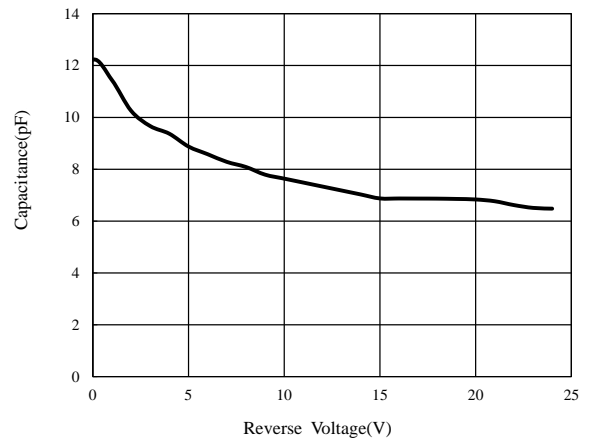
¹Guaranteed by design and no subject to production test.

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

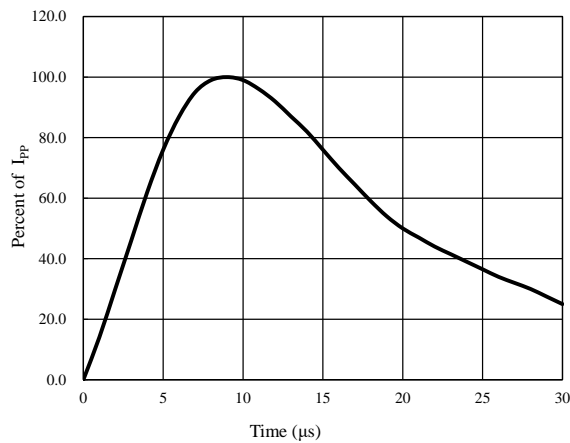
Voltage Sweeping of I/O_1 to I/O_2



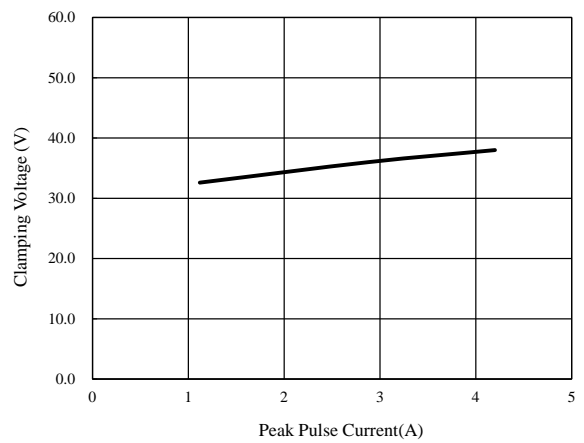
Capacitance vs. Voltage



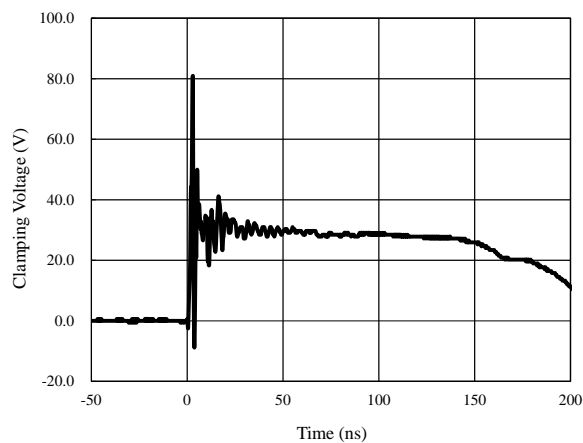
Pulse Waveform



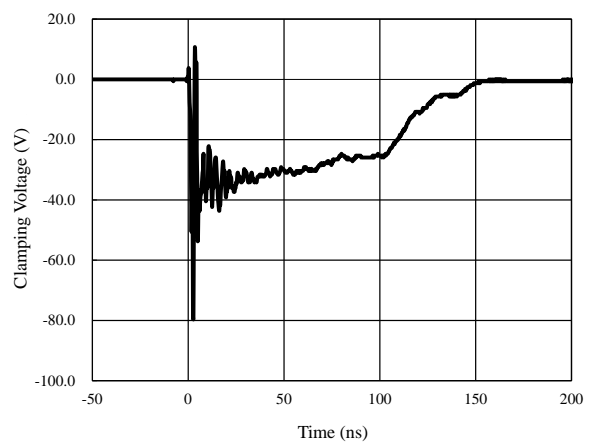
Clamping Voltage vs. Peak Pulse Current



ESD Clamping of I/O_1 to I/O_2 (+8kV Contact per IEC 61000-4-2)

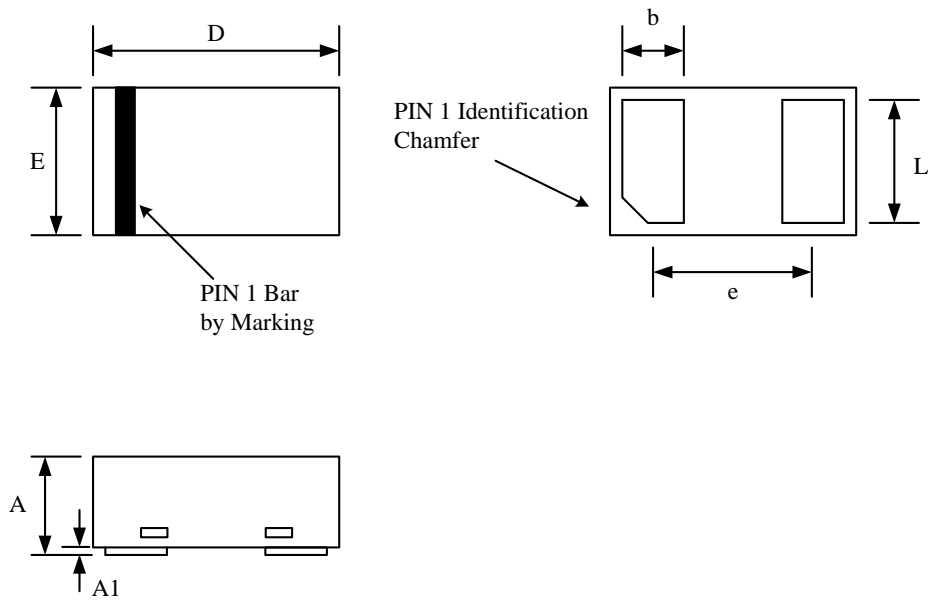


ESD Clamping of I/O_1 to I/O_2 (-8kV Contact per IEC 61000-4-2)



Package Outline

- DFN1.0*0.6-2 Package

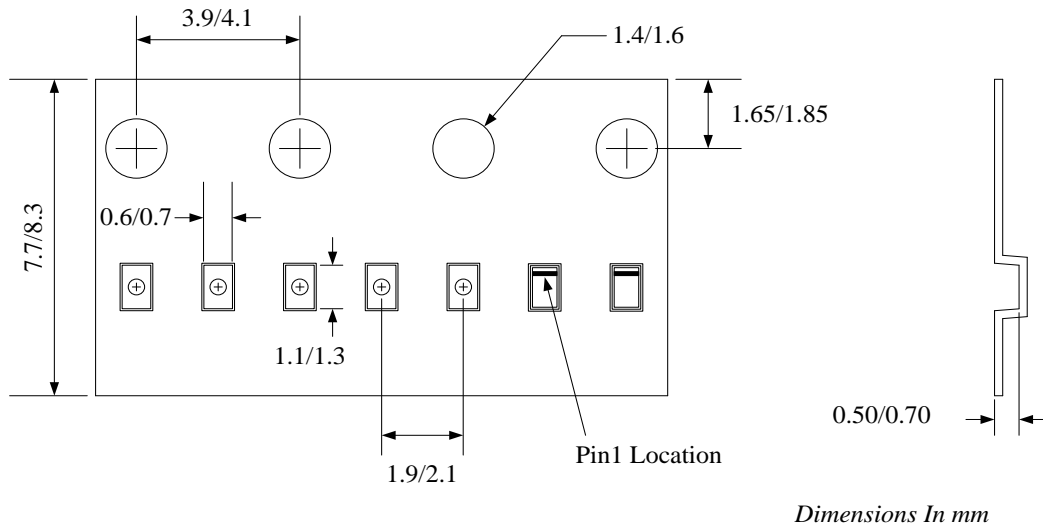


Package Dimensions

Symbol	Dimensions In Millimeters	
	Minimum	Maximum
A	0.40	0.55
A1	0.00	0.05
D	0.90	1.10
E	0.50	0.70
b	0.15	0.35
e	0.65 TYP	
L	0.40	0.60

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

Tape and Reel Specification



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

Marking Codes



Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
SYT01N24DWC	24V	10,000	7 Inch

Note:

- (1) "G" is part number.
- (2) "W" is date code, from 1 to 0, A to Z.



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