

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) 10A (8/20 μs)
- For 5.0V and Below the Operating Voltage
- Package Optimized for High-speed lines
- Ultra-small Package: DFN0.6 \times 0.3-2
DFN1.0 \times 0.6-2
- Protects One Data, Control or Power Line
- Low Capacitance: 2.0pF (Typical)
- Low Leakage Current: 0.1 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 SYT11L05 is a low-capacitance transient voltage suppressor (TVS) designed to provide the electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 2.0pF, the SYT11L05 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) (10A, 8/20 μs), etc.

Each SYT11L05 device can protect one data line. It offers the system designers flexibility to protect the single data line where the space is a premium concern.

Applications

- USB2.0
- Portable Electronics
- Desktops, Servers and Notebooks
- Cellular Phones
- MP3 Ports
- Digital Camera Ports

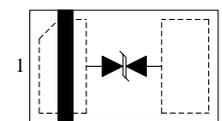
Mechanical Characteristics

- Package: DFN0.6 \times 0.3-2
DFN1.0 \times 0.6-2
- Marking: Device code, date
- Packaging: Tape and Reel

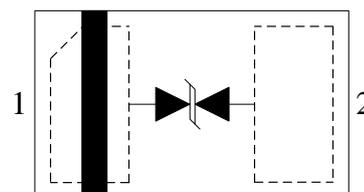
Circuit Diagram



Pin Configuration



DFN0.6x0.3-2
(Top View)



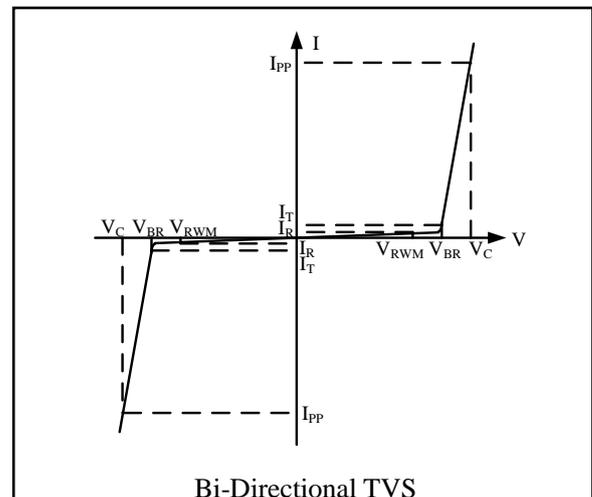
DFN1.0x0.6-2
(Top View)

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	
I_{PP}	Peak Pulse Current (8/20 μ s)	10	A
P_{PK}	Peak Pulse Power (8/20 μ s)	100	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



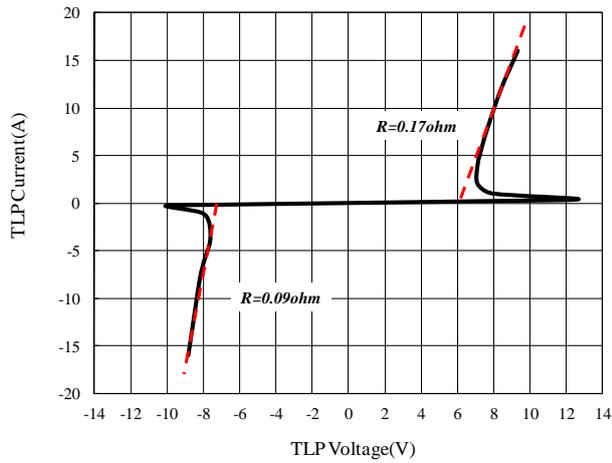
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				5.0	V
I_R	$V_{RWM} = 5.0V, T = 25^{\circ}C$		0.01	0.1	μ A
V_{BR}	$I_T = 1mA$	6.0			V
V_C^1	$I_{PP} = 10A, t_p = 8/20\mu s$		9.5		V
V_C^1	$I_{PP} = 16A, t_p = 10/100ns$		9		V
$R_{DYN}^{1,2}$	$t_p = 10/100ns$		0.17		Ω
C_{ESD}^1	$V_R = 0V, f = 1MHz$		2.0	3.0	pF

NOTES

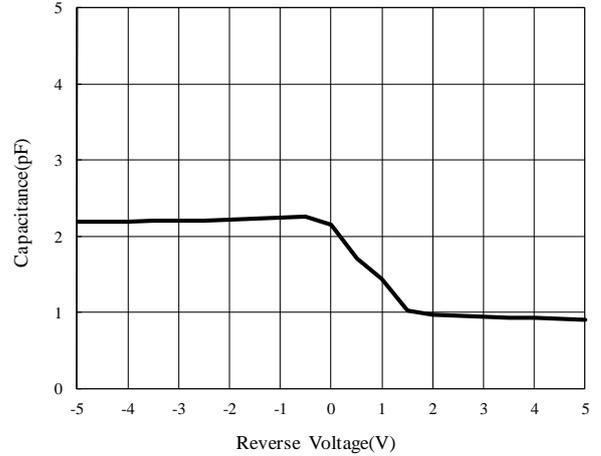
¹Guaranteed by design and not subject to production test.

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

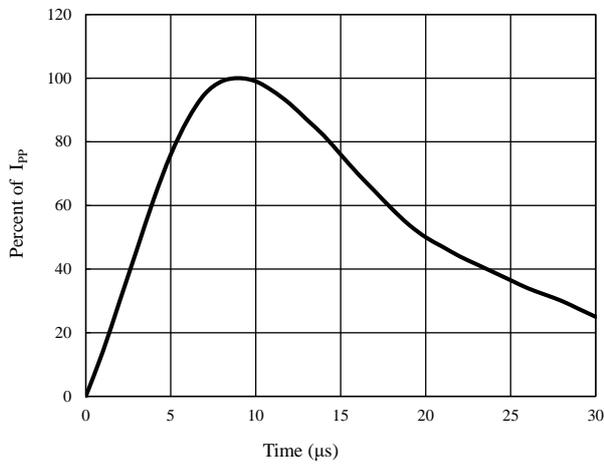
TLP Testing of I/O_1 to I/O_2



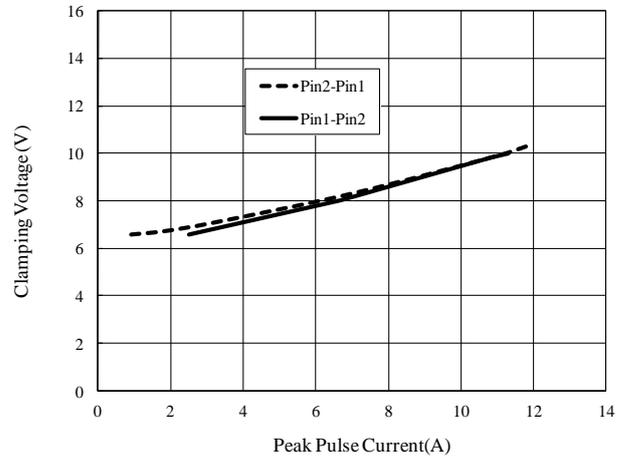
Capacitance vs. Voltage of I/O_1 to I/O_2



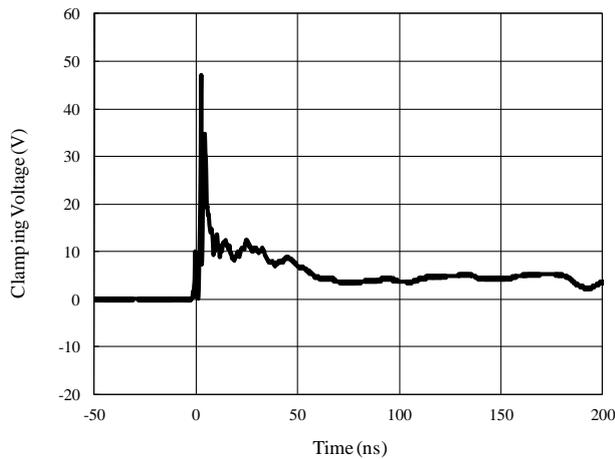
Pulse Waveform



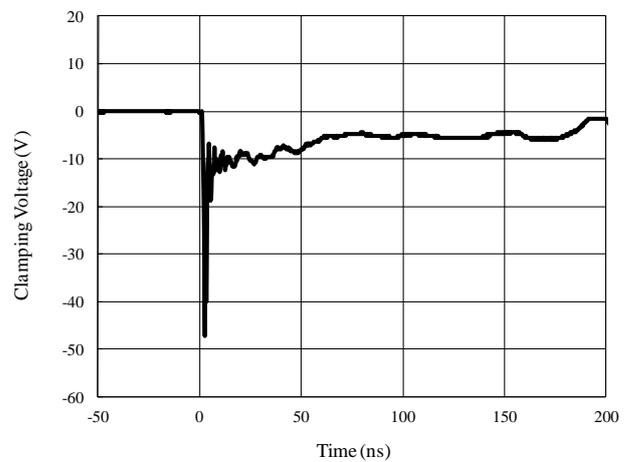
Clamping Voltage vs. Peak Pulse Current



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

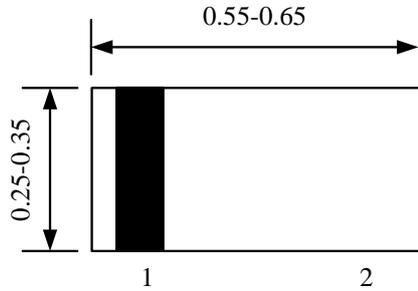


ESD Clamping of I/O_1 to I/O_2 (-8kV Contact per IEC 61000-4-2)

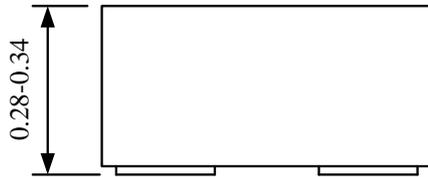


Package Outline

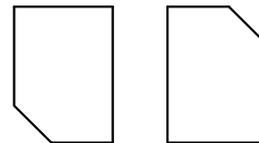
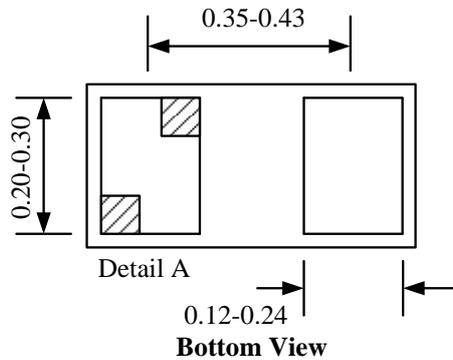
- DFN0.6*0.3-2 Package



Top View



Side View



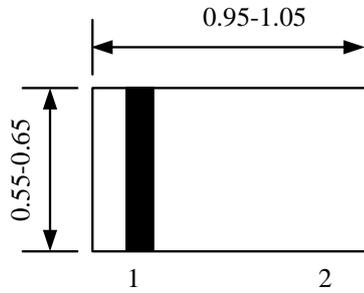
Pin1 Identifier: Two options

Detail A

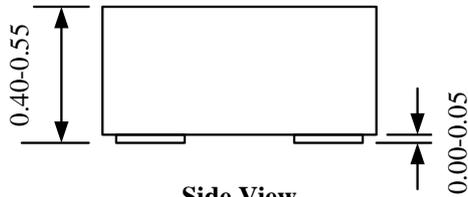
Notes: All dimension in mm and exclude mold flash & metal burr.

Package Outline

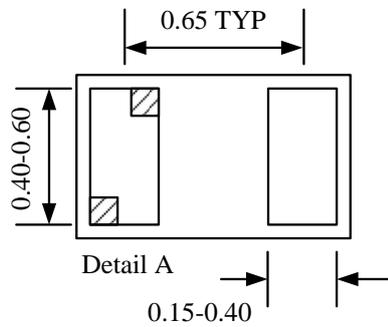
- DFN1.0*0.6-2 Package



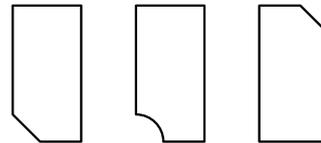
Top View



Side View



Bottom View



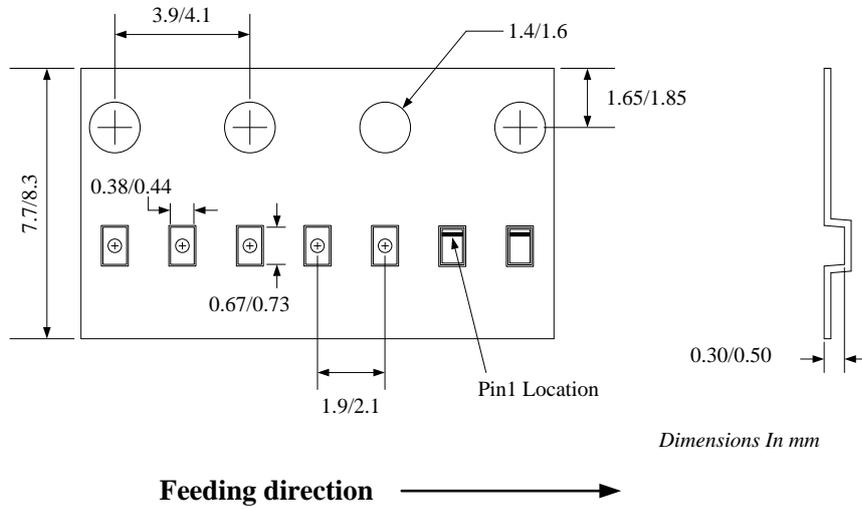
Pin1 Identifier: 3 options

Detail A

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

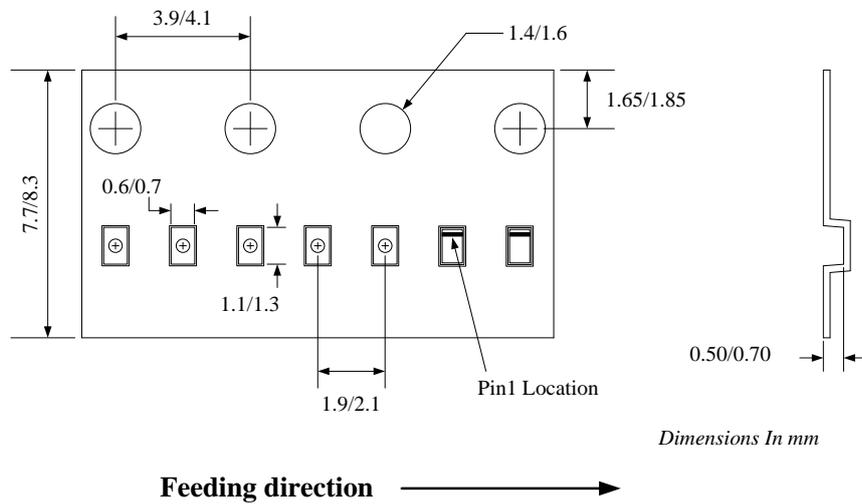
Tape and Reel Specification

- DFN0.6*0.3-2



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

- DFN1.0*0.6-2

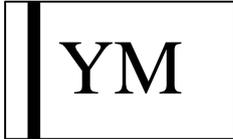


Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Qty per reel (pcs)
DFN1.0*0.6-2	8	2	7"	10000

Marking Codes



DFN0.6*0.3-2



DFN1.0*0.6-2

Ordering Information

Part Number	Package	QTY/Reel
SYT11L05DXC	DFN0.6*0.3-2	10,000
SYT11L05DWC	DFN1.0*0.6-2	10,000

Note:

- (1) “W”, “Y” is device code, fixed.
- (2) “M” is date code.



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