



**SILERGY**

# SYS12V05SLC

## Single Line TVS Diode for ESD Protection

### Features

- Transient protection for single line  
IEC 61000-4-2 (ESD)  $\pm 30\text{kV}$  (Air)  
 $\pm 30\text{kV}$  (Contact)  
IEC 61000-4-5 (Surge) 100A (8/20 $\mu\text{s}$ )
- For 5V and below operating voltage
- Protects one data, control or power line
- Capacitance: 1100pF (Typical)
- Low leakage current: 0.1 $\mu\text{A}$  @  $V_{\text{RWM}}$  (Max)
- Low clamping voltage
- Each pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge

### Description

SYS12V05SLC is a single line Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for cell phones, notebook computers, PDA's. The SYS12V05SLC is designed to protect sensitive semiconductor components from damage or upset due to electrostatic discharge (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), IEC 61000-4-5 (Surge) 100A (8/20 $\mu\text{s}$ ), etc.

SYS12V05SLC is in DFN1.6\*1.0-2 package with working voltage of 5 volts. SYS12V05SLC can protect one unidirectional line. It offers system designers flexibility to protect single data line. SYS12V05SLC can be used in lots of applications.

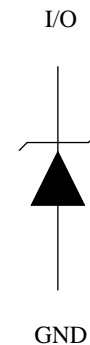
### Applications

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

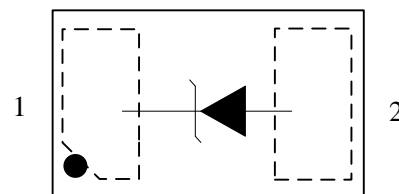
### Mechanical Characteristics

- DFN1.6x1.0-2 package
- Flammability Rating: UL 94V-0
- Marking: Device code, date code
- Packaging: Tape and Reel

### Circuit Diagram



### Pin Configuration



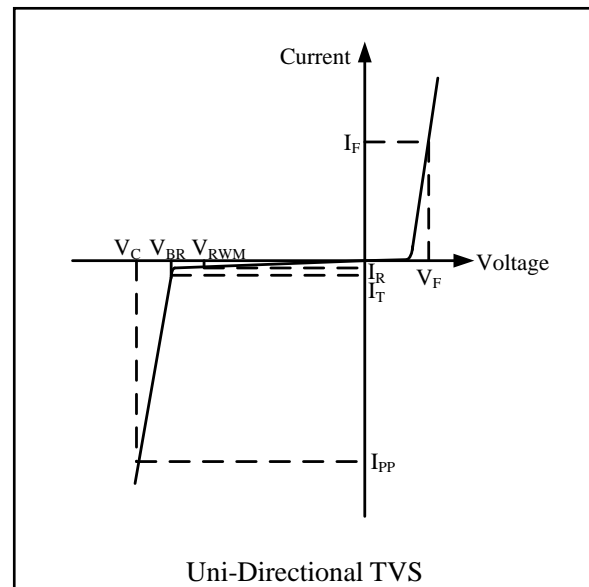
DFN1.6x1.0-2

## Absolute Maximum Rating

Symbol	Parameter	Value	Units
$P_{PK}$	Peak Pulse Power ( $t_p=8/20\mu s$ )	1300	Watts
$I_{PP}$	Peak Pulse Current ( $t_p=8/20\mu s$ )	100	A
$V_{ESD}$	ESD per IEC 61000-4-2 (Air)	$\pm 30$	kV
	ESD per IEC 61000-4-2 (Contact)	$\pm 30$	
$T_{OPT}$	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
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$

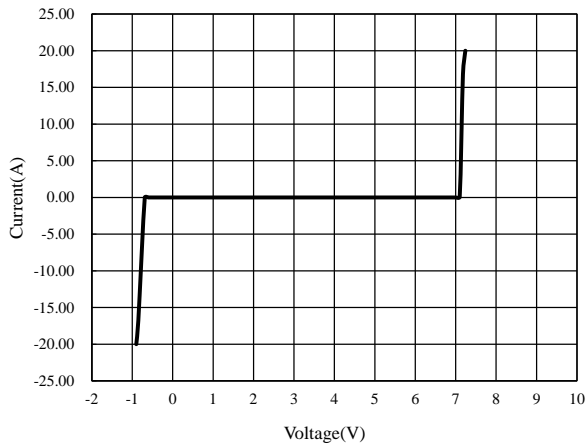


Symbol	Test Condition	Minimum	Typical	Maximum	Units
$V_{RWM}$				5.5	V
$I_R$	$V_{RWM} = 5V, T = 25^{\circ}C$ Pin1 to Pin2		0.01	0.1	$\mu A$
$V_{BR}$	$I_T = 1mA$ Pin1 to Pin2	5.6	7	9	V
$V_F$	$I_F = 1mA$ Pin2 to Pin1	0.4		1.2	V
$V_C^1$	$I_{PP} = 5A, t_p = 8/20\mu s$ Pin1 to Pin2		7.5	9	V
$V_C^1$	$I_{PP} = 100A, t_p = 8/20\mu s$ Pin1 to Pin2		13.5	16	V
$C_{ESD}^1$	$V_R = 0V, f = 1MHz$ Pin1 to Pin2		1100	1300	pF

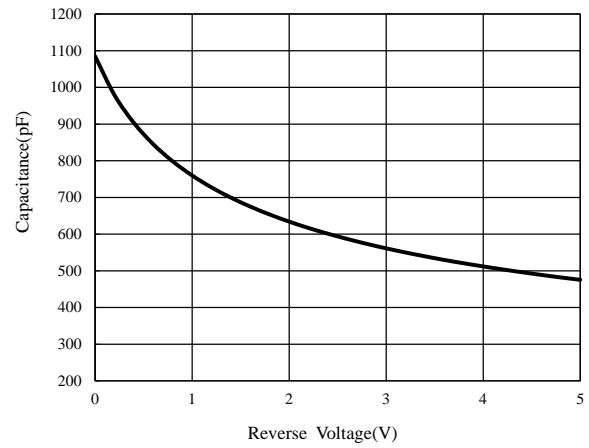
### NOTES

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

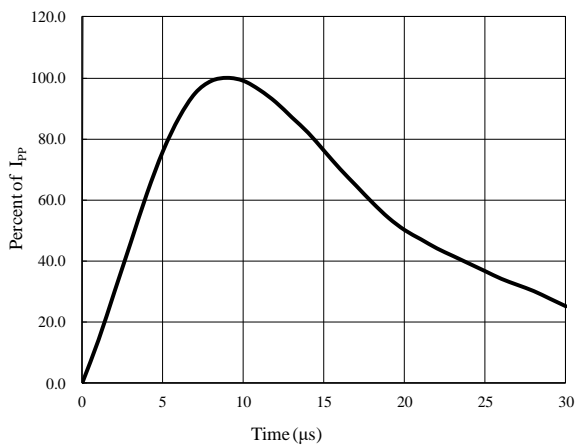
### TLP Curve



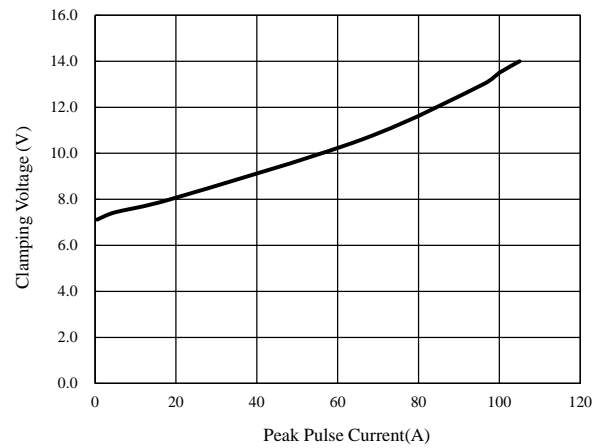
### Capacitance vs. Voltage (f = 1MHz)



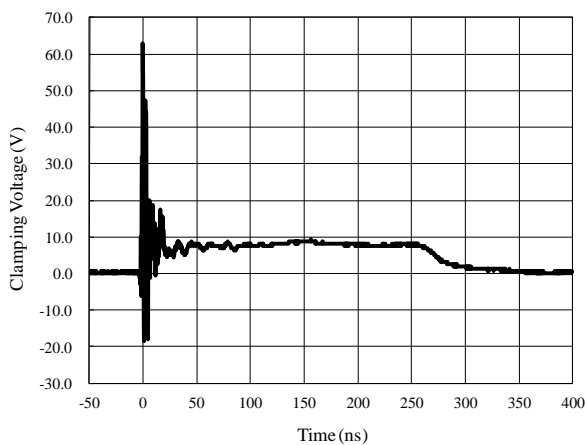
### 8/20µs Pulse Waveform



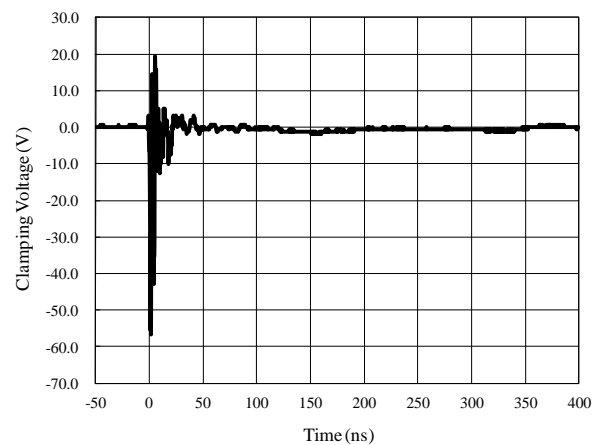
### Clamping Voltage vs. Peak Pulse Current



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

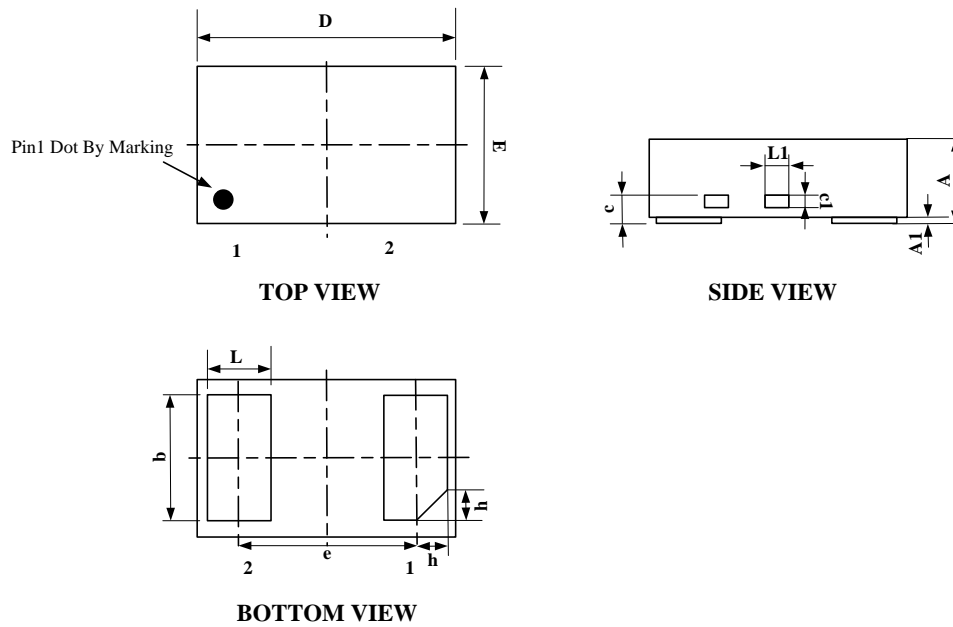


### ESD Clamping (-8kV Contact per IEC 61000-4-2)



## Package Outline

- DFN1.6\*1.0-2 package

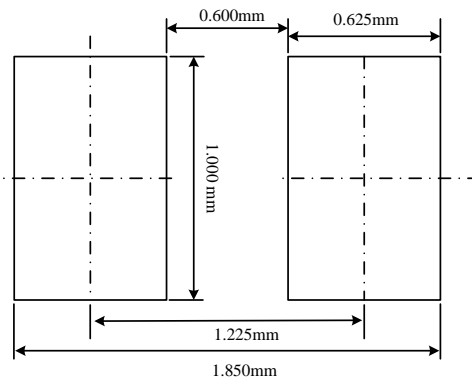


Package Dimensions

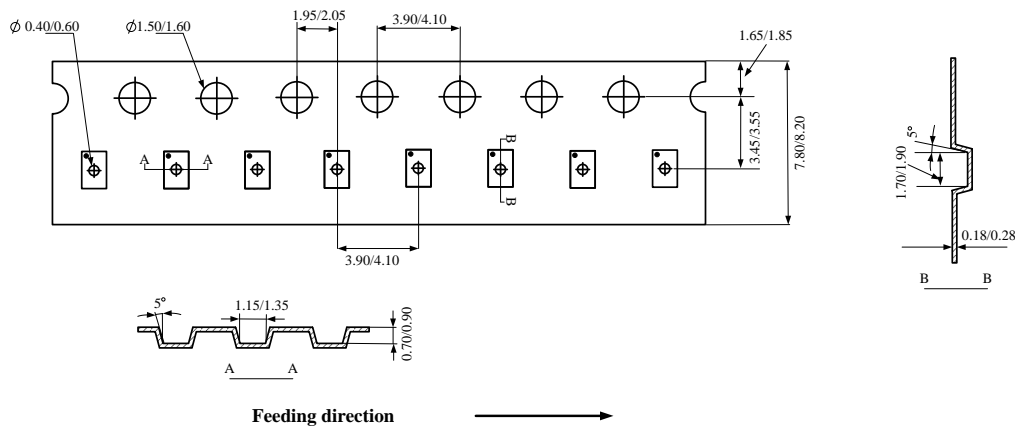
Symbol	Dimensions (mm)		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	-----	0.02	0.05
b	0.75	0.80	0.85
c	0.1	0.15	0.20
c1	0.075REF		
D	1.55	1.60	1.65
e	1.10BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.10	0.15	0.20
h	0.15	0.20	0.25

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

## PCB Layout Pattern



## Tape and Reel Specification



Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
DFN1.6*1.0-2	8	4	7"	400	400	3000

## Marking Codes



## Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
SYS12V05SLC	5V	3,000	7 Inch

### Note:

- (1) "S" is the device marking for SYS12V05SLC.
- (2) "YWA" is date code.



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