

### Features

- Transient protection for dual lines  
IEC 61000-4-2 (ESD)  $\pm 30\text{kV}$  (Air)  
 $\pm 30\text{kV}$  (Contact)  
IEC 61000-4-5 (Lightning) 20A (8/20 $\mu\text{s}$ )
- For 12V and below operating voltage
- Protects dual data, control or power lines
- Capacitance: 140pF (Typical)
- Low leakage current: 0.01 $\mu\text{A}$  @  $V_{\text{RWM}}$  (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for  $\pm 8\text{kV}$  contact discharge

### Description

SYS03H12AOC is a dual lines transient voltage suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for cell phones, notebook computers, PDA's. The SYS03H12AOC 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 (Lightning) 20A (8/20 $\mu\text{s}$ ), etc.

SYS03H12AOC is in SOT-23 package with working voltage of 12V. SYS03H12AOC can protect dual unidirectional lines or one bi-directional line. SYS03H12AOC can be used in lots of applications.

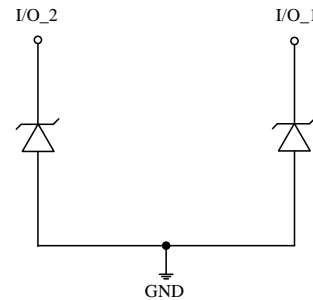
### Applications

- Desktops, Servers and Notebooks
- Cellular Phones
- Cell Phone Handsets and Accessories
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Portable Instrumentation
- Pagers Peripherals

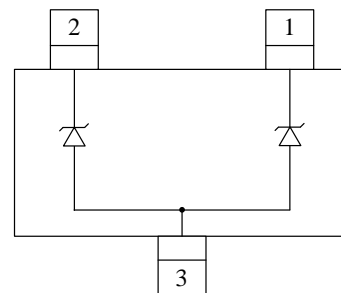
### Mechanical Characteristics

- SOT-23 package
- Marking: Device code, date code
- Packaging: Tape and Reel

### Circuit Diagram



### Pin Configuration



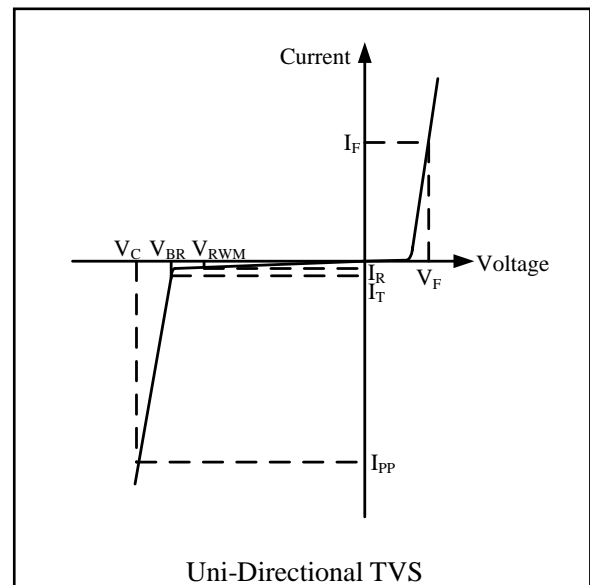
SOT-23  
(Top View)

## Absolute Maximum Rating

Symbol	Parameter	Value	Units
P <sub>PK</sub>	Peak Pulse Power (t <sub>p</sub> =8/20μs)	500	Watts
I <sub>PP</sub>	Peak Pulse Current (t <sub>p</sub> =8/20μs)	20	A
V <sub>ESD</sub>	ESD per IEC 61000-4-2 (Air)	±30	kV
	ESD per IEC 61000-4-2 (Contact)	±30	
T <sub>OPT</sub>	Operating Temperature	-40/+125	°C
T <sub>STG</sub>	Storage Temperature	-55/+150	°C

## Electrical Characteristics (T<sub>A</sub> = 25°C)

Symbol	Parameter
V <sub>RWM</sub>	Nominal Reverse Working Voltage
I <sub>R</sub>	Reverse Leakage Current @ V <sub>RWM</sub>
V <sub>BR</sub>	Reverse Breakdown Voltage @ I <sub>T</sub>
I <sub>T</sub>	Test Current for Reverse Breakdown
V <sub>C</sub>	Clamping Voltage @ I <sub>PP</sub>
I <sub>PP</sub>	Maximum Peak Pulse Current
C <sub>ESD</sub>	Parasitic Capacitance
V <sub>R</sub>	Reverse Voltage
f	Small Signal Frequency
I <sub>F</sub>	Forward Current
V <sub>F</sub>	Forward Voltage @ I <sub>F</sub>

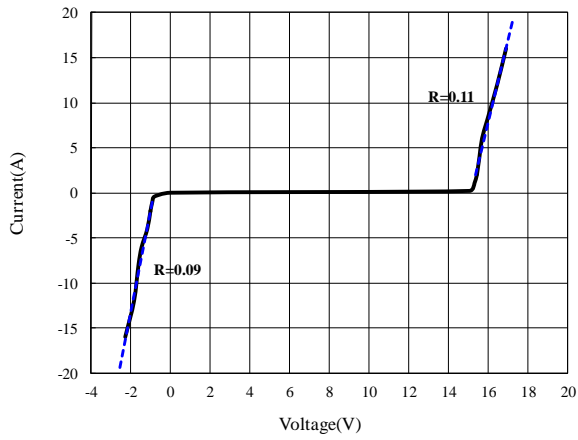


Symbol	Test Condition	Minimum	Typical	Maximum	Units
V <sub>RWM</sub>				12.5	V
I <sub>R</sub>	V <sub>RWM</sub> = 12V, T <sub>A</sub> = 25°C Between I/O and GND			0.1	μA
V <sub>BR</sub>	I <sub>T</sub> = 1mA Between I/O and GND	13.3		17	V
V <sub>F</sub>	I <sub>F</sub> = 1mA Between GND and IO	0.4	0.7	1.2	V
V <sub>C</sub> <sup>1</sup>	I <sub>PP</sub> = 1A, t <sub>p</sub> = 8/20μs Between I/O and GND		15.7		V
V <sub>C</sub> <sup>1</sup>	I <sub>PP</sub> = 20A, t <sub>p</sub> = 8/20μs Between I/O and GND		26		V
C <sub>ESD</sub> <sup>1</sup>	V <sub>R</sub> = 0V, f = 1MHz Between I/O and GND		140	150	pF

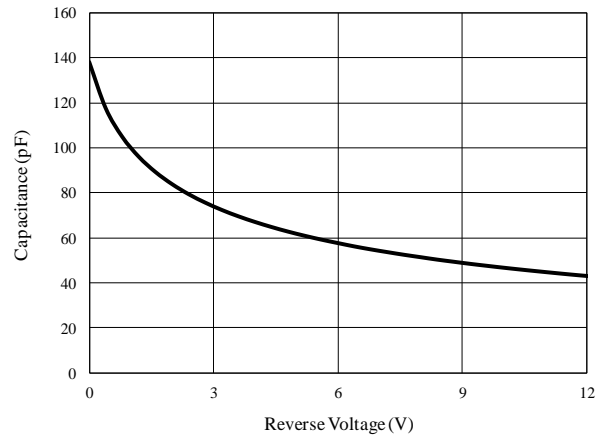
### NOTES

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

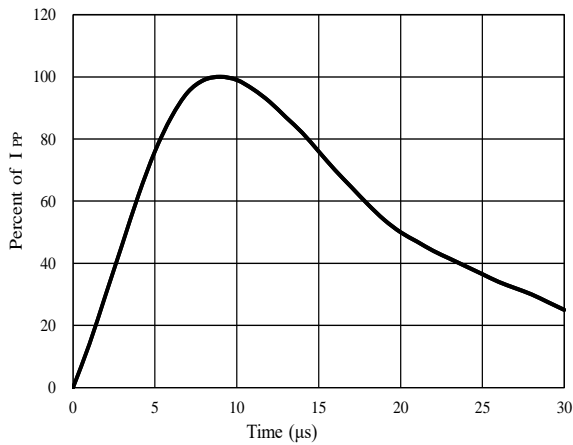
### TLP Testing of I/O to GND



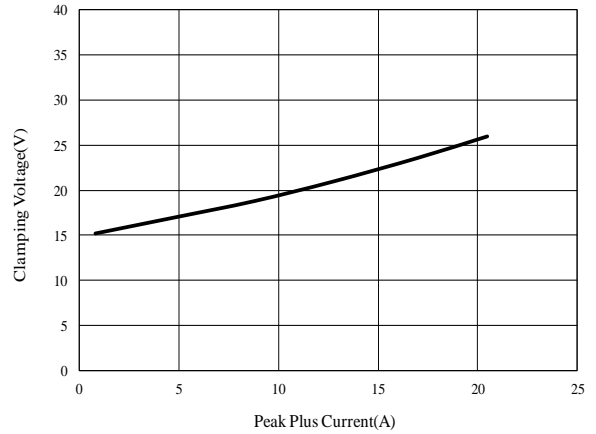
### Capacitance vs. Reverse Voltage (I/O to GND)



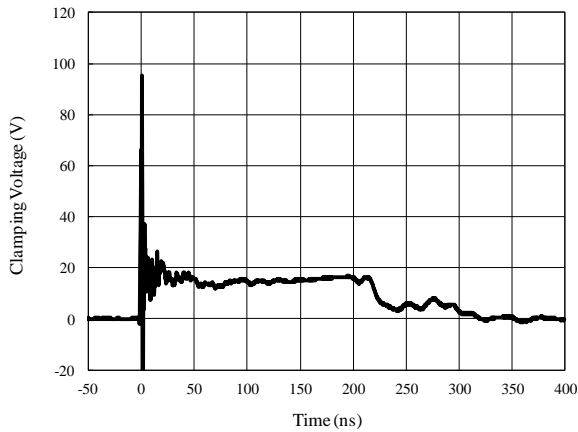
### 8/20µs Pulse Waveform



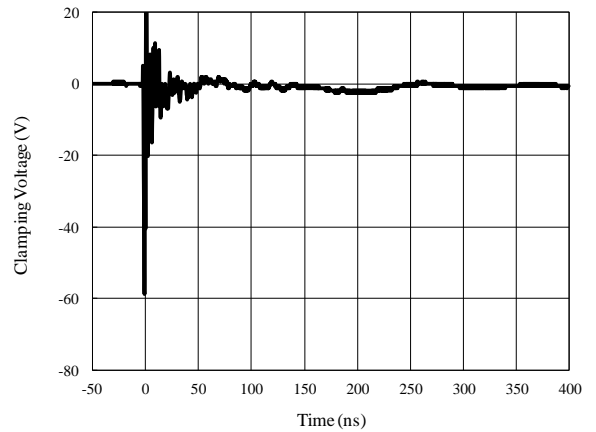
### Clamping Voltage vs. Peak Pulse Current (I/O to GND)



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

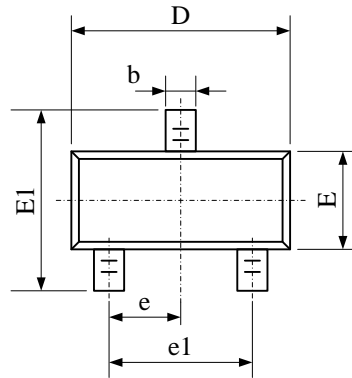


### ESD Clamping of I/O to GND (-8kV Contact per IEC 61000-4-2)

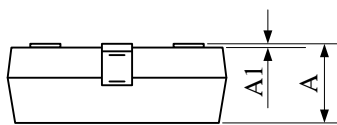


## Package Outline

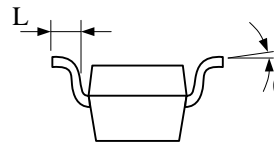
- SOT-23 package



**Top View**



**Side View A**



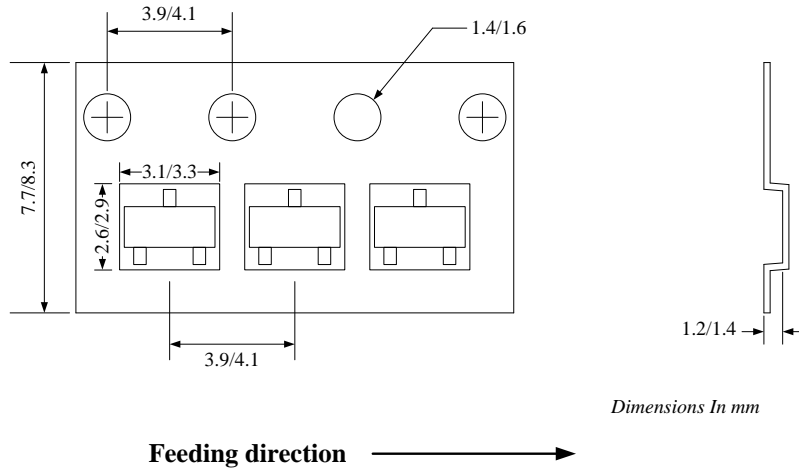
**Side View B**

**Package Dimensions**

Symbol	Dimensions In Millimeters	
	Minimum	Maximum
A	—	1.20
A1	0.00	0.15
b	0.28	0.52
D	2.70	3.10
e	0.95 BSC	
e1	1.90 BSC	
E	1.15	1.45
E1	2.20	2.60
L	0.25	0.55
θ	0°	8°

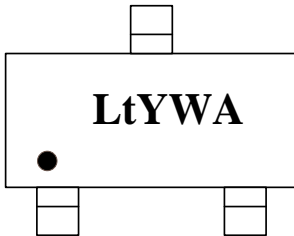
**Notes:** All dimension in mm and exclude mold flash & metal burr

## 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)
SOT-23	8	4	7"	400	200	3000

## Marking Codes



### Note:

- (1) "Lt" is the device code.
- (2) "YWA" is the date code & lot code.

## Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
SYS03H12AOC	12V	3,000	7 Inch



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