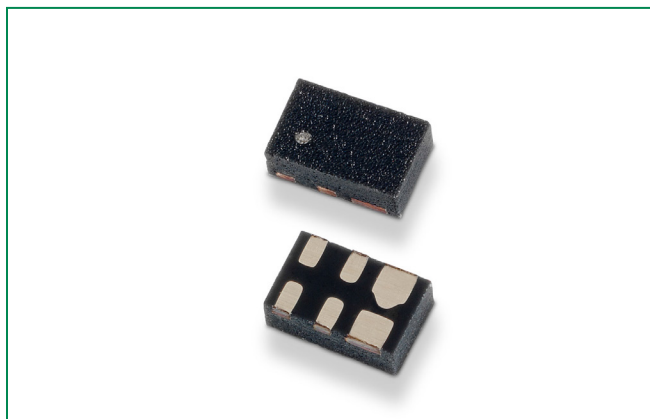


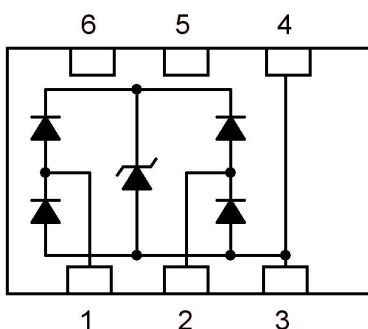
# SP3400, 1pF, ±30kV Diode Array



## Pinout

I/O1	1	6	NC
I/O2	2	5	NC
GND	3	4	GND

## Functional Block Diagram



## Description

The SP3400 integrates 2 channels of low capacitance steering diodes and an additional zener diode to provide protection for electronic equipment that may experience destructive electrostatic discharges (ESD). The SP3400 can safely absorb repetitive ESD strikes above the maximum contact level specified in IEC 61000-4-2 international standard (Level 4, ±8kV contact discharge) without performance degradation.

The low off-state capacitance makes it ideal for protecting high-speed signal lines such as USB2.0 or USB 3.0 and 1Gb Ethernet with an extremely low dynamic resistance to protect the most sensitive, state of the art chipsets against ESD transients.

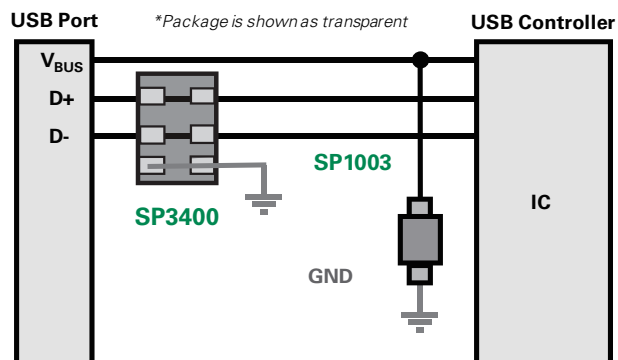
## Features

- ESD, IEC 61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC 61000-4-4, 80A (t<sub>p</sub>=5/50ns)
- Lightning, 8A (8/20 as defined in IEC 61000-4-5 2<sup>nd</sup> edition)
- Low capacitance of 1pF (TYP) per I/O
- Low leakage current of 0.01µA (TYP) at 5V
- Small form factor µDFN (JEDEC MO-229) package provides flow through routing to simplify PCB layout
- AEC-Q101 qualified
- Moisture Sensitivity Level(MSL -1)
- Halogen free, lead free and RoHS compliant

## Applications

- LCD/PDP TVs
- External Storages
- DVD/Blu-ray Players
- Set Top Boxes
- Smartphones
- Ultrabooks/Notebooks
- Digital Cameras
- Portable Medical
- Automotive Electronics
- Wearable Technology

## USB 2.0 Protection Application Example



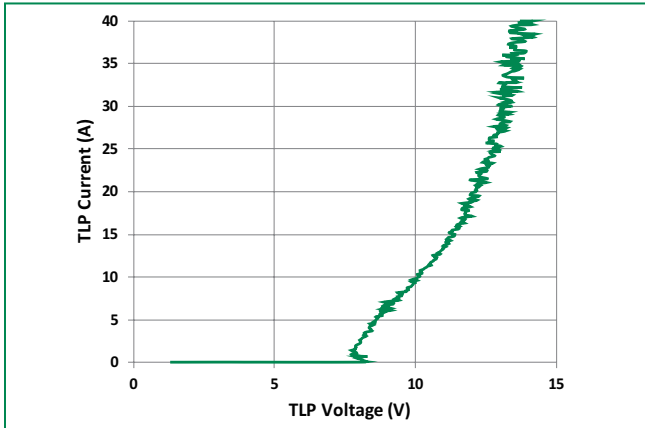
Life Support Note:

**Not Intended for Use in Life Support or Life Saving Applications**

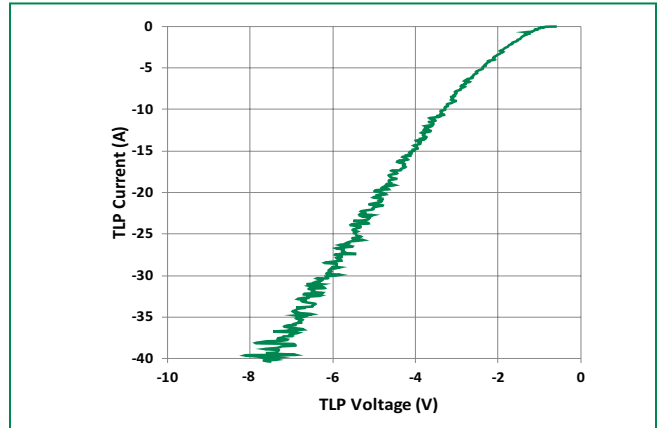
The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.



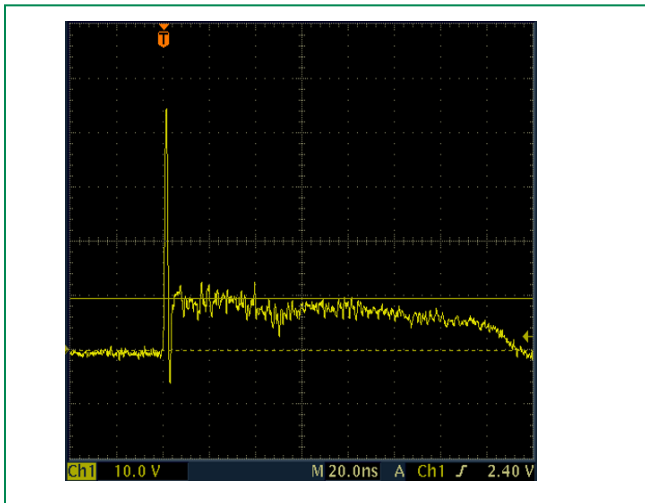
Positive Transmission Line Pulsing (TLP) Plot



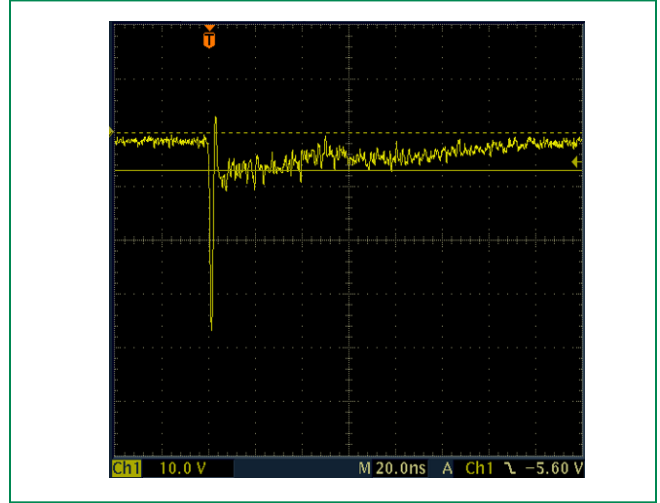
Negative Transmission Line Pulsing (TLP) Plot



IEC 61000-4-2 +8 kV Contact ESD Clamping Voltage

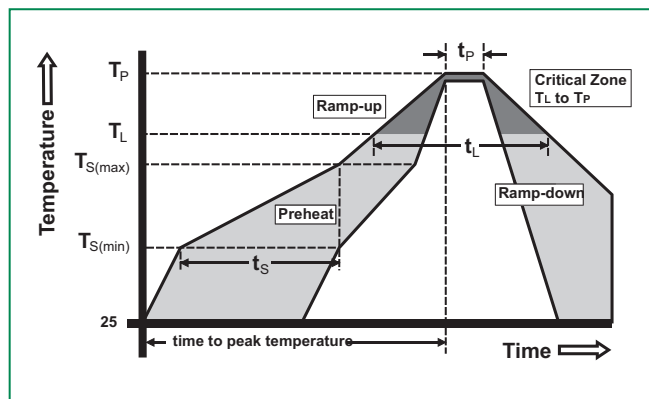


IEC 61000-4-2 -8 kV Contact ESD Clamping Voltage



### Soldering Parameters

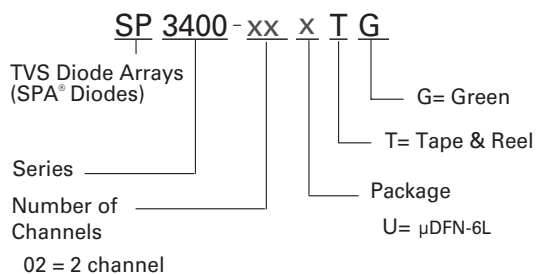
Reflow Condition		Pb – Free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus) Temp ( $T_L$ ) to peak		3°C/second max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/second max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Temperature ( $t_L$ )	60 – 150 seconds
Peak Temperature ( $T_p$ )		260 <sup>+0/-5</sup> °C
Time within 5°C of actual peak Temperature ( $t_p$ )		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature ( $T_p$ )		8 minutes Max.
Do not exceed		260°C



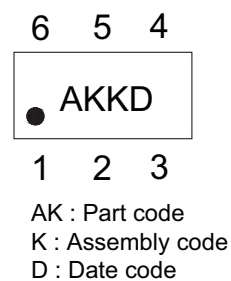
### Product Characteristics

<b>Lead Plating</b>	Pre-Plated Frame ( $\mu$ DFN)
<b>Lead Material</b>	Copper Alloy
<b>Substrate Material</b>	Silicon
<b>Body Material</b>	Molded Compound
<b>Flammability</b>	UL Recognized compound meeting flammability rating V-0

### Part Numbering System



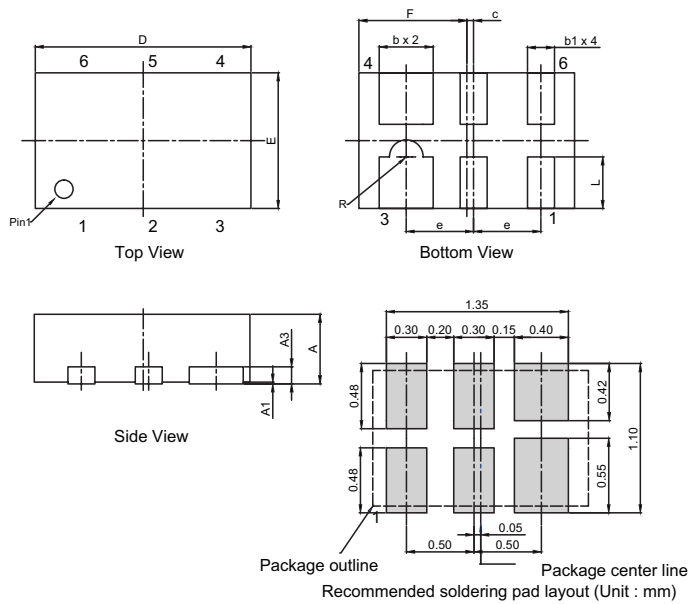
### Part Marking System



### Ordering Information

Part Number	Package	Min. Order Qty.
SP3400-02UTG	$\mu$ DFN-6L	3000

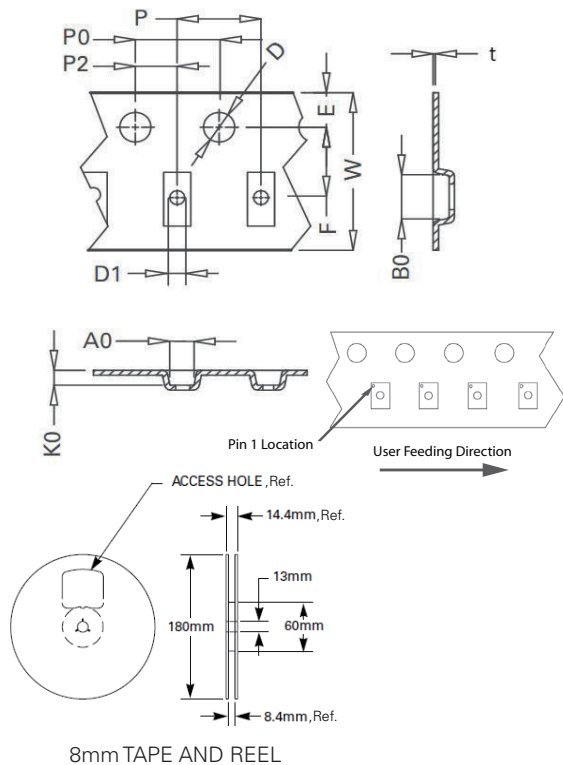
Package Dimensions —  $\mu$ DFN-6L



Drawing# : U03-A

Package	$\mu$ DFN-6L			
JEDEC	MO-229			
Pins	6			
	Millimeters		Inches	
	Min	Max	Min	Max
<b>A</b>	0.45	0.55	0.018	0.022
<b>A1</b>	0.00	0.05	0.000	0.002
<b>A3</b>	0.125 REF		0.005 REF	
<b>b</b>	0.35	0.45	0.014	0.018
<b>b1</b>	0.15	0.25	0.006	0.010
<b>c</b>	0.05 REF		0.002 REF	
<b>D</b>	1.55	1.65	0.062	0.065
<b>E</b>	0.95	1.05	0.038	0.042
<b>F</b>	0.80 REF		0.031 REF	
<b>e</b>	0.50 REF		0.020 REF	
<b>R</b>	0.125 REF		0.005 REF	
<b>L</b>	0.33	0.43	0.013	0.017

Embossed Carrier Tape & Reel Specification —  $\mu$ DFN-6L



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
<b>E</b>	1.65	1.85	0.064	0.073
<b>F</b>	3.45	3.55	0.135	0.139
<b>P2</b>	1.95	2.05	0.076	0.081
<b>D</b>	1.40	1.60	0.055	0.063
<b>D1</b>	0.45	0.55	0.017	0.021
<b>P</b>	3.90	4.10	0.154	0.161
<b>10P0</b>	40.0+/-0.20		1.574+/-0.008	
<b>W</b>	7.90	8.30	0.311	0.319
<b>P0</b>	3.90	4.10	0.154	0.161
<b>A0</b>	1.15	1.25	0.045	0.049
<b>B0</b>	1.75	1.85	0.069	0.073
<b>K0</b>	0.65	0.75	0.026	0.03
<b>t</b>	0.22 max		0.009 max	

8mm TAPE AND REEL

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