



## Features

- Bidirectional TVS 5 V
- ESD protection >30 kV
- Replacement for MLV (0402)
- Low Clamping Voltage
- Low Leakage Current

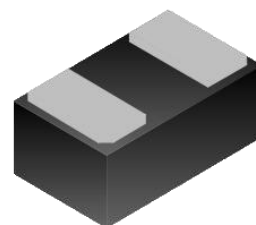
## Applications

- Mother Board and Notebook, Cellular Phone, PDA, DV, Scanner and Set-Top Box etc.
- Suitable for Power Line , Low-speed data line interface

## VTSB55AP3 ----- SURFACE MOUNT TVS Diodes

## General Information

The VTSB55AP3 is designed with Vicsemi Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras and many other portable applications where board space comes at a premium.



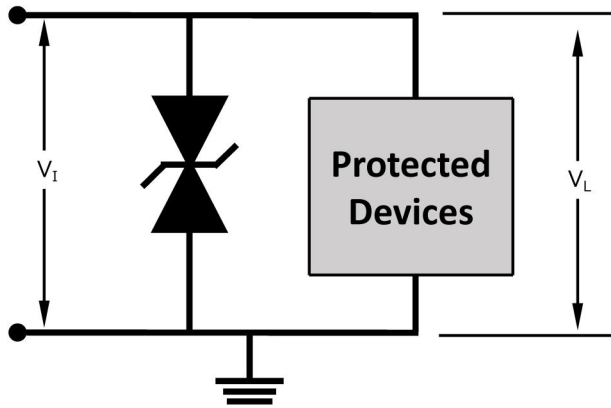
## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Maximum Contact discharge voltage Per IEC61000-4-2	---	30KV	V
Maximum Air discharge voltage Per IEC61000-4-2	---	30KV	V
Maximum Operating temperature	T <sub>OPER</sub>	-40 to +90	°C
Maximum Storage temperature	T <sub>STG</sub>	-55 to +125	°C
Maximum lead temperature for soldering during 10s	T <sub>L</sub>	260	°C

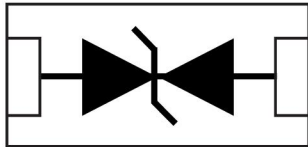
## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Reverse Working Voltage	V <sub>RWM</sub>	Any I/O pin to GND	---	---	5	V
Reverse Breakdown Voltage	V <sub>BR</sub>	Any I/O pin to GND I <sub>T</sub> =1mA	6	---	---	V
Positive Clamping Voltage	V <sub>C</sub>	I <sub>PP</sub> =20A, t <sub>p</sub> =8/20μ; Any I/O pin to GND	---	---	15	V
Peak Pulse Current	I <sub>PP</sub>	t <sub>p</sub> =8/20μs waveform	---	---	20	A
Reverse Leakage Current	I <sub>L</sub>	V <sub>RWM</sub> =5V ; Any I/O pin to GND	---	---	1.00	uA
Junction Capacitance	C <sub>P</sub>	V <sub>R</sub> =0V, f=1MHz ; Any I/O pin to GND	---	30	---	pF

## Typical Protection Circuit

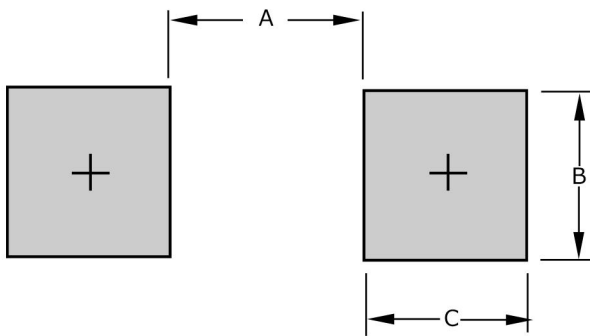


## Block Diagram



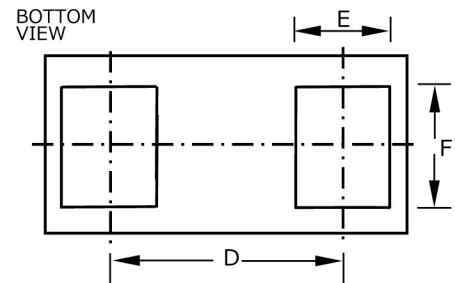
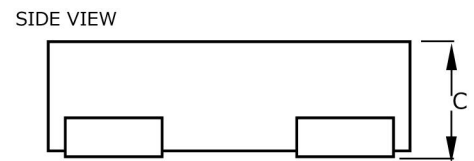
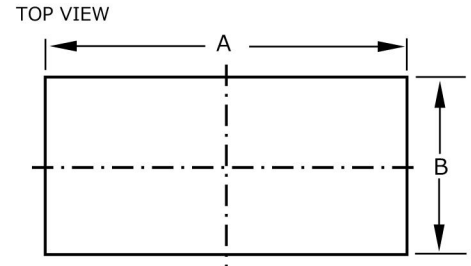
Bi-directional

## Recommended PCB Footprint



Dimension	DFN-2L
A	$\frac{0.30}{(0.012)}$
B	$\frac{0.80}{(0.031)}$
C	$\frac{0.55}{(0.022)}$

## Product Dimensions

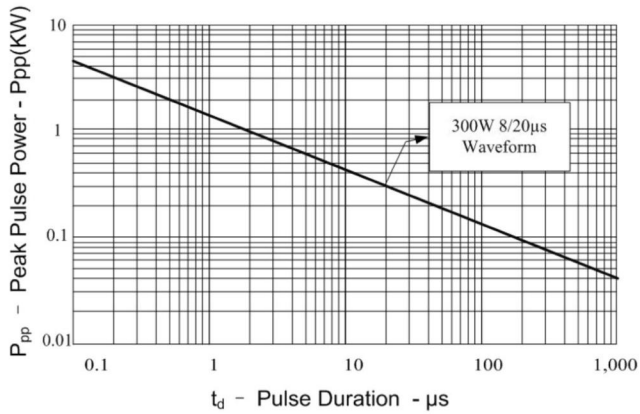


Dimension	DFN-2L
A	$\frac{0.95-1.05}{(0.037-0.041)}$
B	$\frac{0.55-0.65}{(0.022-0.026)}$
C	$\frac{0.40-0.50}{(0.016-0.020)}$
D	$\frac{0.65}{(0.026)}$
E	$\frac{0.10-0.35}{(0.004-0.014)}$
F	$\frac{0.40-0.50}{(0.016-0.020)}$

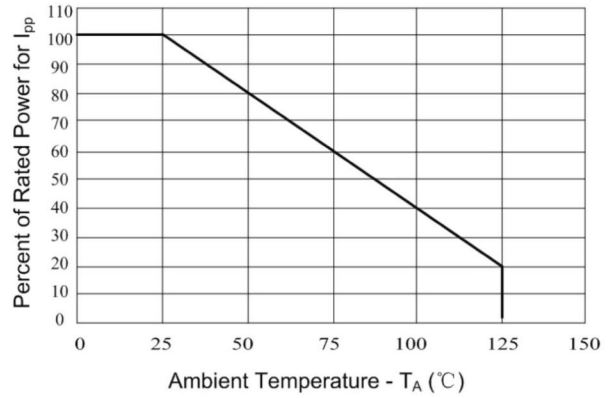
DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

## Performance Graphs

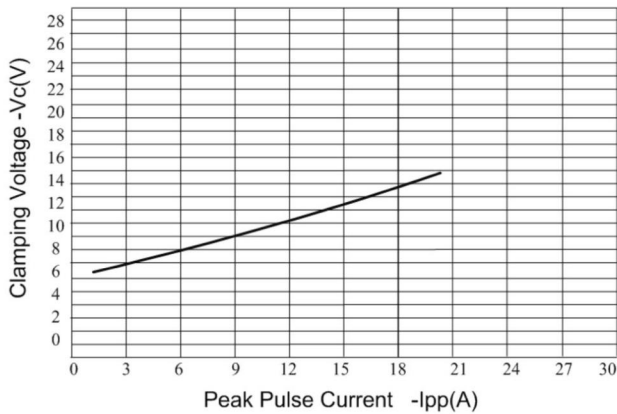
**Figure 1: Peak Pulse Power Vs Pulse Time**



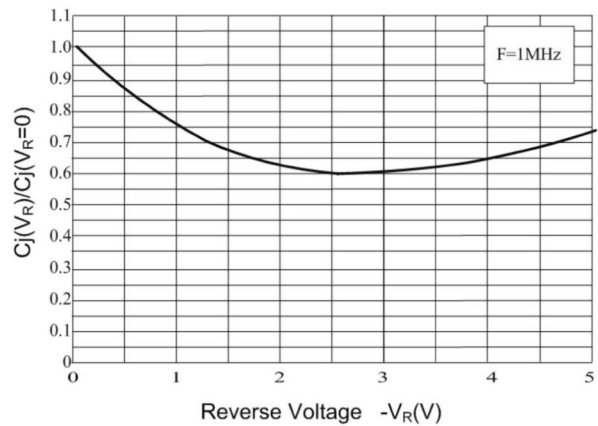
**Figure 2: Power Derating Curve**



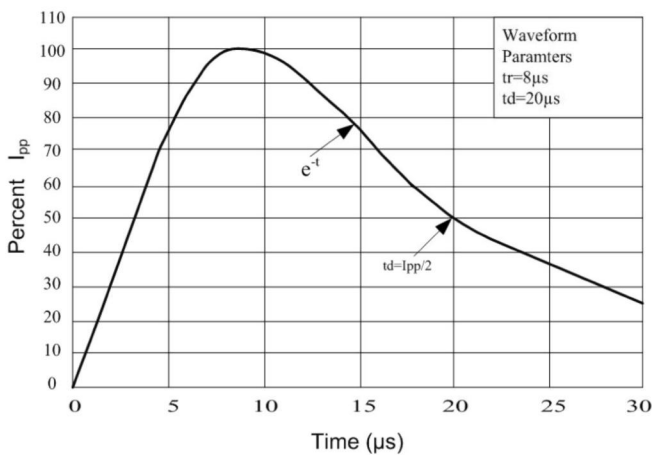
**Figure 3: Clamping Voltage vs. Peak Pulse Current**



**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**

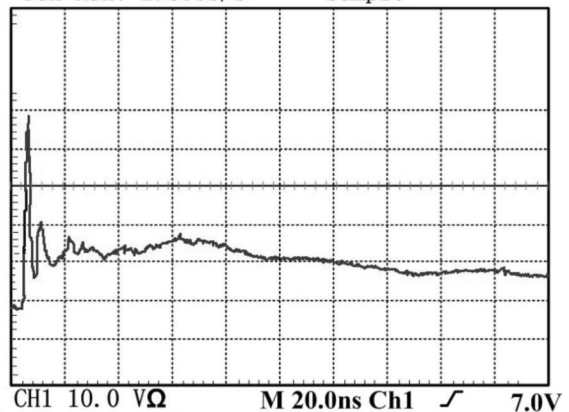


**Figure 5: Pulse Waveform**



**Figure 6: ESD Clamping( 8kV Contact per IEC 61000-4-2)**

Tek Run: 2.50GS/s Sample

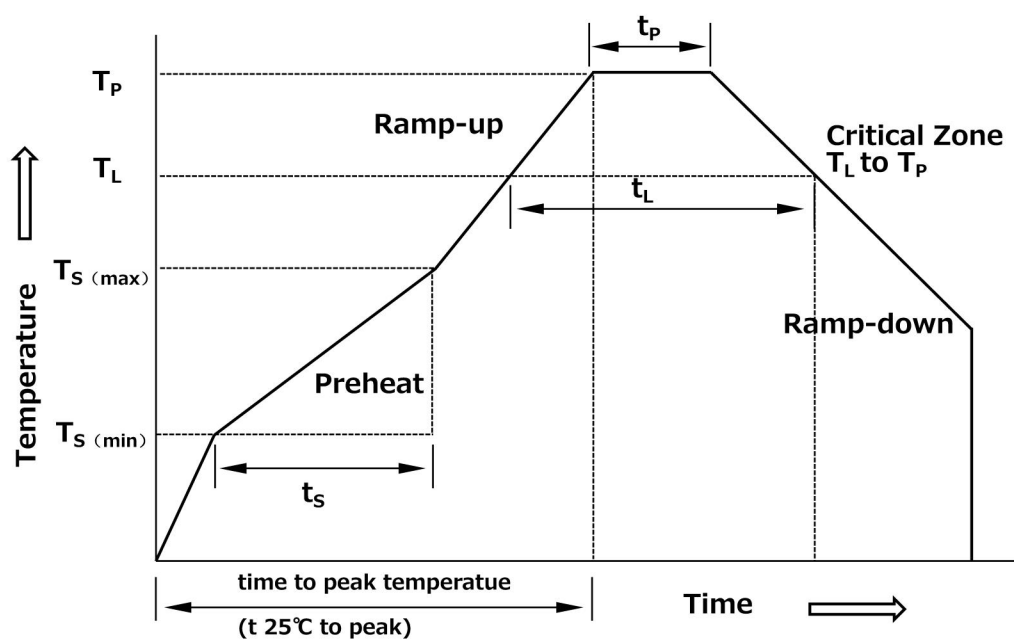




## VT5B55AP3 ----- SURFACE MOUNT TVS Diodes

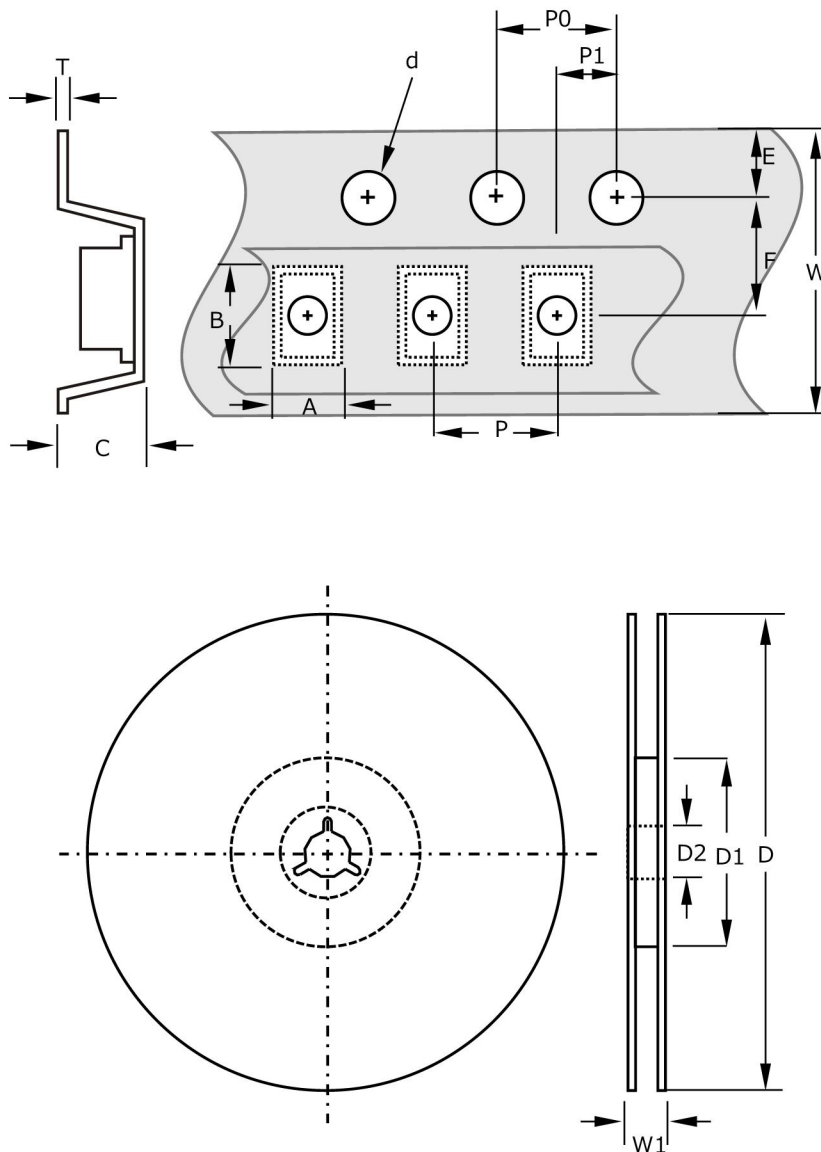
### Recommendable reflow soldering

Profile Feature	Pb-Free Assembly
Average Ramp-UP Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/secondmax.
Preheat -Temperature Min(T <sub>smin</sub> ) -Temperature Max(T <sub>smax</sub> ) -Time(T <sub>smin</sub> to T <sub>smax</sub> )	150 °C 200 °C 60-180seconds
Time maintained above: -Temperature(T <sub>L</sub> ) -Time(t <sub>L</sub> )	217 °C 60-150 seconds
Peak/Classification Temperature(T <sub>p</sub> )	260°C
Time within 5°C of actual Peak Temperature(t <sub>p</sub> )	20-40 seconds
Ramp-Down Rate	6°C/secondmax.
Time 25°C to Peak Temperature	8 minutes max.



## Packaging Information

Symbol	DFN-2L
A	$0.7 \pm 0.05$ (0.028 ± 0.002)
B	$1.15 \pm 0.05$ (0.045 ± 0.002)
C	$0.47 \pm 0.05$ (0.019 ± 0.002)
d	$1.55 \pm 0.05$ (0.061 ± 0.002)
D	$180.00 \pm 2.00$ (7.087 ± 0.079)
D1	$60.0 \pm 1.00$ (2.362 ± 0.039)
D2	$13.0 \pm 0.20$ (0.516 ± 0.008)
E	$1.75 \pm 0.10$ (0.069 ± 0.004)
F	$3.50 \pm 0.05$ (0.138 ± 0.002)
P	$2.00 \pm 0.10$ (0.079 ± 0.004)
P0	$4.00 \pm 0.10$ (0.157 ± 0.004)
P1	$2.00 \pm 0.05$ (0.079 ± 0.002)
T	$0.20 \pm 0.05$ (0.008 ± 0.002)
W	$8.00 \pm 0.10$ (0.315 ± 0.004)
W1	$11.6 \pm 1.00$ (0.457 ± 0.039)



DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

### Quantity of products in the taping package

- (1) Standard quantity : 5000 pcs/reel or 10000 pcs/Reel for the Series.
- (2) Shipping quantity is a multiple of standard quantity.
- (3) For additional information, please contact your local Sales Representative.