

## **TYPICAL DEVICE RATINGS AND CHARACTERISTICS**

|        | Typical IEC Trigger Voltage <sup>1</sup> | Typical IEC Clamping Voltage <sup>1</sup> after 30ns | Typical TLP Trigger Voltage <sup>2</sup> | Typical TLP Clamping Voltage <sup>2</sup> after 30ns | Typical TLP Clamping Voltage <sup>2</sup> after 60ns | Typical Capacitance @ 1 MHz, 1V <sub>rms</sub> |
|--------|--|--|--|--|--|--|
| Symbol | V <sub>T(IEC)</sub>                      | V <sub>C(IEC)</sub>                                  | V <sub>T(TLP)</sub>                      | V <sub>C(TLP 30)</sub>                               | V <sub>C(TLP 60)</sub>                               | C <sub>p</sub>                                 |
| Unit   | V  | V  | V  | V  | V  | pF   |
| Value  | 150                                      | 25   | 225                                      | 40   | 35   | 0.25   |

Note 1: Measured during IEC 61000-4-2, level 4 pulse, 8kV contact test method

Note 2: TLP test method at 1000V (refer to graph on next page).

## **GENERAL CHARACTERISTICS**

Operating temperature: -55°C ... + 110°C

Storage temperature: -40°C ... + 85°C

ESD voltage capability (tested per IEC 61000-4-2)

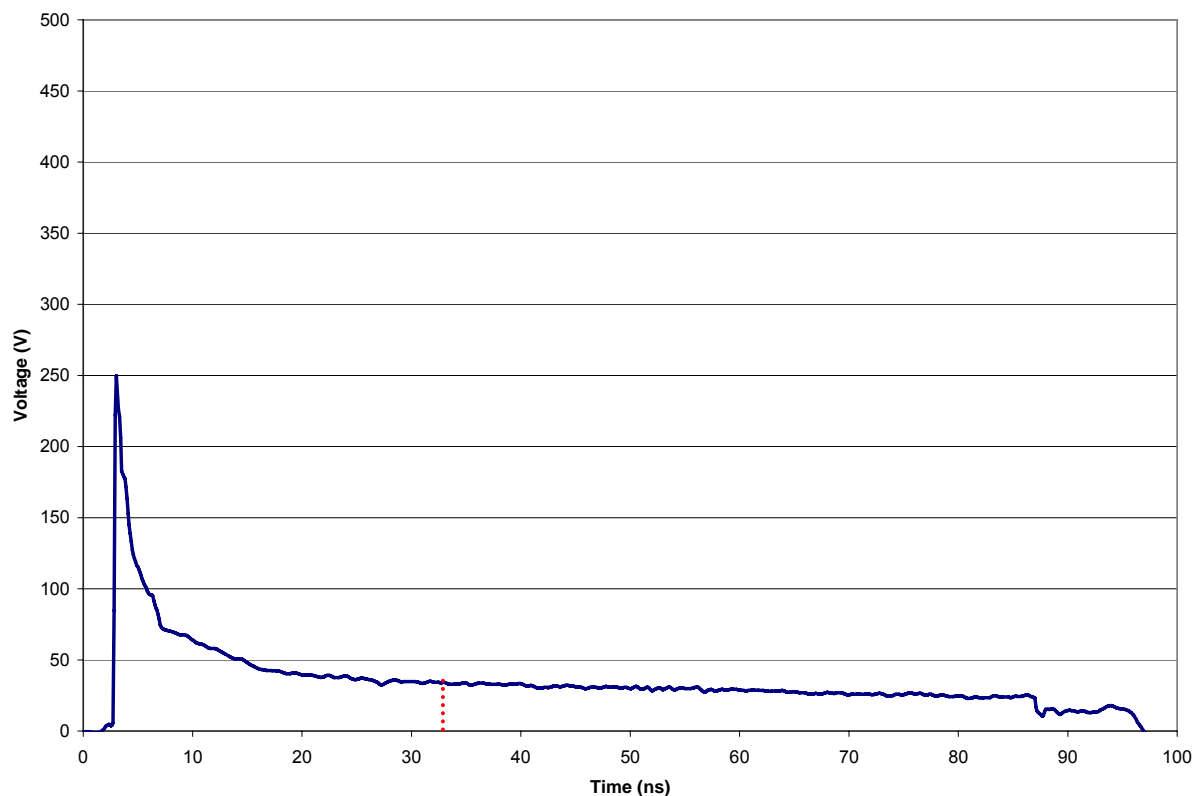
- Contact discharge mode: typical 8kV, max 15kV
- Air discharge mode: typical 15kV, max 25kV

ESD pulse withstand: Typically 500 pulses (tested per IEC 61000-4-2, level 4, contact method)

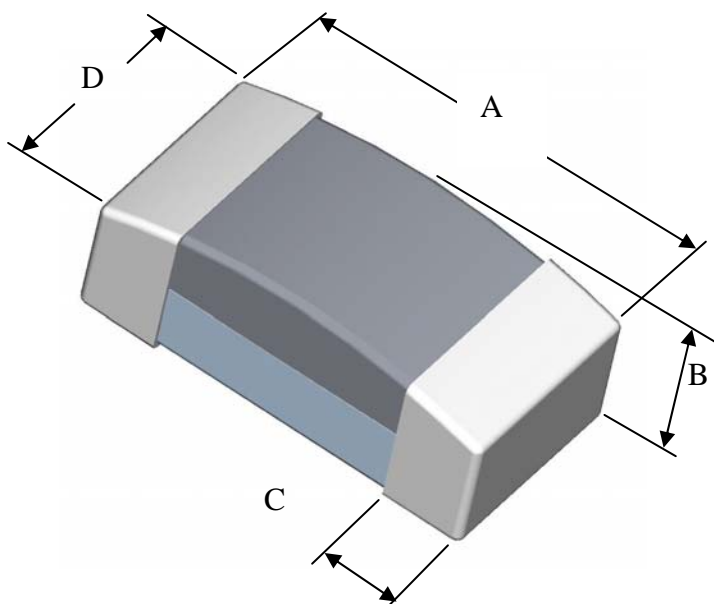
## **Environmental Specifications**

|                    | Thermal Shock                                | Heat Storage Test    | Solderability                        | Solder Heat          | Vibration  | Mechanical Shock                     | Solvent Resistance   |
|--------------------|--|----------------------|--------------------------------------|----------------------|--|--------------------------------------|----------------------|
| Test Conditions    | -55°C to 125°C<br>30min dwell<br>1000 cycles | 110°C,<br>1000hours  | 230 °C±5 °C<br>3±1s,<br>95% coverage | 260 °C,<br>10s       | 10 to 50Hz,60s cycle,<br>2hrs each in X-Y-Z axis | 1500G,<br>0.5ms, X-Y-Z axis, 3 times | IPA ultrasonic 300s  |
| Pass/Fail Criteria | I <sub>L</sub> ≤10μA                         | I <sub>L</sub> ≤10μA | I <sub>L</sub> ≤10μA                 | I <sub>L</sub> ≤10μA | I <sub>L</sub> ≤10μA                             | I <sub>L</sub> ≤10μA                 | I <sub>L</sub> ≤10μA |

**TYPICAL TRANSMISSION LINE PULSE RESPONSE GRAPH**



## DIMENSIONS



Drawing Not To Scale

|      | Length A |         | Height B |         | Terminal Width C |         | Width D |         |
|------|----------|---------|----------|---------|------------------|---------|---------|---------|
|      | MIN      | MAX     | MIN      | MAX     | MIN              | MAX     | MIN     | MAX     |
| mm:  | 0.95     | 1.05    | 0.28     | 0.43    | 0.1              | 0.3     | 0.45    | 0.55    |
| in*: | (0.037)  | (0.041) | (0.008)  | (0.017) | (0.004)          | (0.010) | (0.018) | (0.022) |

\*Rounded off approximation

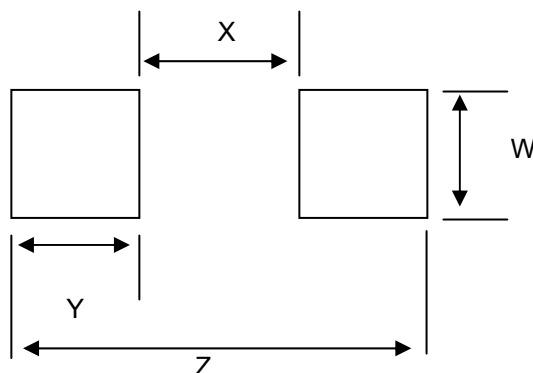
## ESD Protector Overvoltage Protection Device

**Raychem Circuit Protection Products**

**PRODUCT: PESD0402-060**

DOCUMENT: SCD 26105  
REV LETTER: I  
REV DATE: DECEMBER 7, 2007  
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### RECOMMENDED LAND PATTERN:



Solder thickness 0.15 to 0.2mm

| W     |         | X       |         | Y (Ref) |         | Z       |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| Min   | Max     | Min     | Max     | Min     | Max     | Min     | Max     |
| 0.6   | 0.7     | 0.3     | 0.4     | 0.8     | 0.9     | 2.1     | 2.2     |
| in: * | (0.024) | (0.028) | (0.012) | (0.016) | (0.031) | (0.035) | (0.083) |

\*Rounded off approximation.

### SOLDER REFLOW RECOMMENDATIONS:

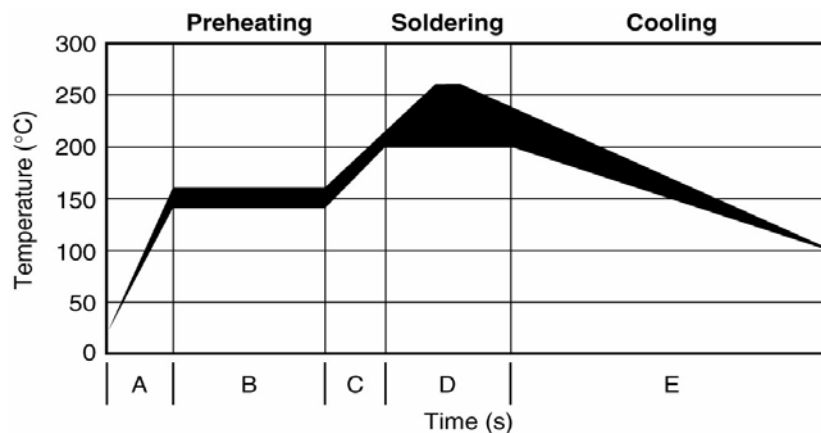
|   |                       |  |   |
|---|-----------------------|--|---|
| A | Temperature ramp up 1 | From ambient to Preheating temperature       | 30s to 60s                                      |
| B | Preheating            | 140°C - 160°C                                | 60s to 120s                                     |
| C | Temperature ramp up 2 | From Preheating to Main heating temperature  | 20s to 40s                                      |
| D | Main heating          | at 200°C<br>at 220°C<br>at 240°C<br>at 260°C | 60s ~ 70s<br>50s ~ 60s<br>30s ~ 40s<br>5s ~ 10s |
| E | Cooling               | From main heating temperature to 100°C       | max 4°C/s                                       |

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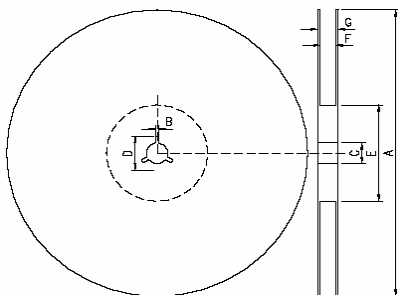
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### PACKAGING

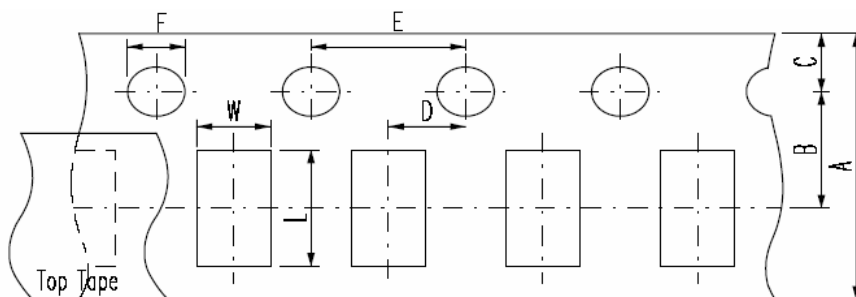
| Packaging    | Tape & Reel | Standard Box |
|--------------|-------------|--------------|
| PESD0402-060 | 10,000      | 50,000       |

## EIA referenced Reel Dimensions for PESD Devices



### Reel Dimensions (mm):

|                     | A          | B        | C        | D        | E        | F       | G        |
|---------------------|------------|----------|----------|----------|----------|---------|----------|
| <b>0402 Devices</b> | 178.0 ±2.0 | 2.0 ±0.5 | 13.0±0.5 | 21.0±0.8 | 62.0±1.5 | 9.0±0.5 | 13.0±1.0 |



### Carrier Dimensions (mm):

|                     | A       | B        | C        | D        | E       | F       | L        | W         | T <sup>1</sup> |
|---------------------|---------|----------|----------|----------|---------|---------|----------|-----------|----------------|
| <b>0402 Devices</b> | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 2.0±0.05 | 4.0±0.1 | 1.5±0.1 | 1.15±0.2 | 0.65±0.05 | 0.40±0.05      |

**Product Orientation** – always face up (meaning the substrate is at the bottom), but parts do not have polarity mark.

**Leader & Trailer:** The leader is 180mm in length & consists of empty cavities with sealed cover tape.

The trailer is 350mm in length & consists of empty cavities with sealed cover tape.

## **POST REFLOW, CLEANING CONDITIONS**

A 5% saponifier combined with water during wash.

For Ultrasonic process water temperature should be at 50°C and board should be submerged for a minimum of one minute in the solutions, then rinse and dry.

For in-line washing, the temperature of the water sprayed should be at 110°C, rinse and drying is done in-line.



## **WARNING**

**Warning: Application Limitations for PESD0402-060. This part is not intended to be used under bias, nor for power bus nor data line applications. It is only to be used in RF applications. Users should independently evaluate the suitability of and test each product selected for their own applications**

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