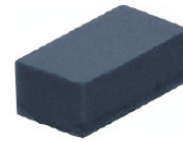


## CPDER Series-HF

### RoHS Device

### Halogen Free



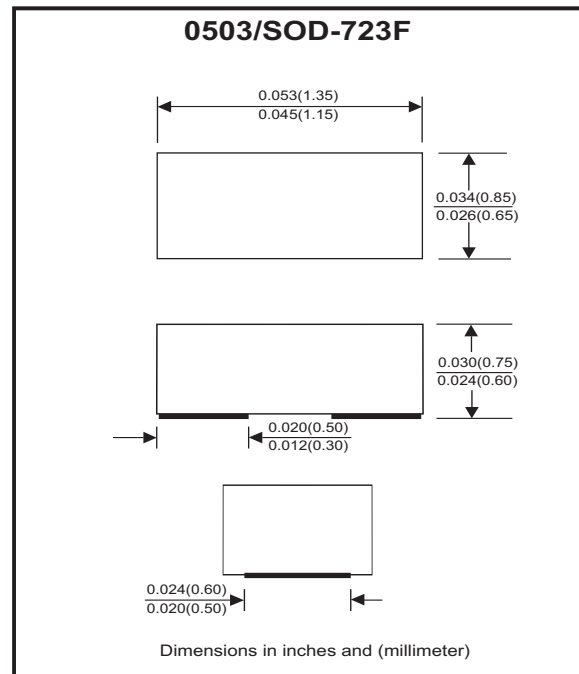
### Features

- Bi-directional ESD protection.
- Surface mount package.
- Ultra small SMD package:0503.
- High component density.

### Mechanical data

- Case: 0503/SOD-723F standard package, molded plastic.
- Terminals: Gold plated, solderable per MIL-STD-750,method 2026.
- Marking Code:  
CPDER5V0-HF: E05  
CPDER12V-HF: E12  
CPDER24V-HF: E24
- Mounting position: Any.
- Weight: 0.002 grams(approx.).

### Circuit Diagram



### Electrical Characteristics (at TA=25°C unless otherwise noted)

| Parameter                   |                                           | Conditions                                                                                   | Symbol           | Min | Typ | Max            | Unit |
|-----------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------|------------------|-----|-----|----------------|------|
| Diode breakdown voltage     | CPDER5V0-HF                               | I <sub>R</sub> = 1mA                                                                         | V <sub>BD</sub>  | 5.1 | 7.0 |                | V    |
|                             | CPDER12V-HF                               |                                                                                              |                  | 13  | 17  |                |      |
|                             | CPDER24V-HF                               |                                                                                              |                  | 25  | 28  |                |      |
| Leakage current             | CPDER5V0-HF                               | V <sub>R</sub> = 5V                                                                          | I <sub>L</sub>   |     | 0.1 | 2.0            | uA   |
|                             | CPDER12V-HF                               | V <sub>R</sub> = 12V                                                                         |                  |     |     |                |      |
|                             | CPDER24V-HF                               | V <sub>R</sub> = 24V                                                                         |                  |     |     |                |      |
| Junction capacitance        | CPDER5V0-HF                               | V <sub>R</sub> = 0V, f = 1MHz                                                                | C <sub>T</sub>   |     | 15  | 20             | pF   |
|                             | CPDER12V-HF                               |                                                                                              |                  |     | 12  | —              |      |
|                             | CPDER24V-HF                               |                                                                                              |                  |     | 10  | —              |      |
| ESD capability              | CPDER Series-HF                           | IEC 61000-4-2(air)<br>IEC 61000-4-2(contact)                                                 | ESD              |     |     | 16<br>8        | kV   |
| Clamping voltage            | CPDER5V0-HF                               | I <sub>PP</sub> = 1A, T <sub>P</sub> =8/20us                                                 | V <sub>C</sub>   |     |     | 10             | V    |
|                             | CPDER12V-HF                               | I <sub>PP</sub> = 5A, T <sub>P</sub> =8/20us                                                 |                  |     |     | 15             |      |
|                             | CPDER24V-HF                               | I <sub>PP</sub> = 1A, T <sub>P</sub> =8/20us<br>I <sub>PP</sub> = 1A, T <sub>P</sub> =8/20us |                  |     |     | 25<br>47       |      |
| Peak pulse power            | CPDER5V0-HF<br>CPDER12V-HF<br>CPDER24V-HF | T <sub>P</sub> =8/20us                                                                       | P <sub>PP</sub>  |     |     | 75<br>25<br>47 | W    |
| Operation temperature range | CPDER Series-HF                           |                                                                                              | T <sub>J</sub>   | -40 |     | 125            | °C   |
| Storage temperature range   | CPDER Series-HF                           |                                                                                              | T <sub>STG</sub> | -55 |     | 150            | °C   |

## RATING AND CHARACTERISTIC CURVES (CPDER Series-HF)

Fig.1 - 8/20us Peak Pulse Current Wave Form Acc. IEC 61000-4-5

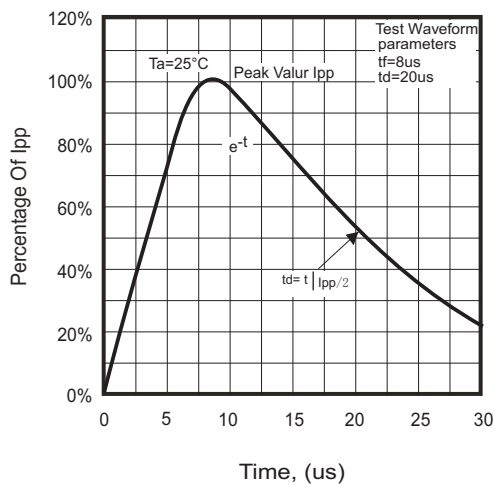


Fig.2-1 - Reverse Characteristics

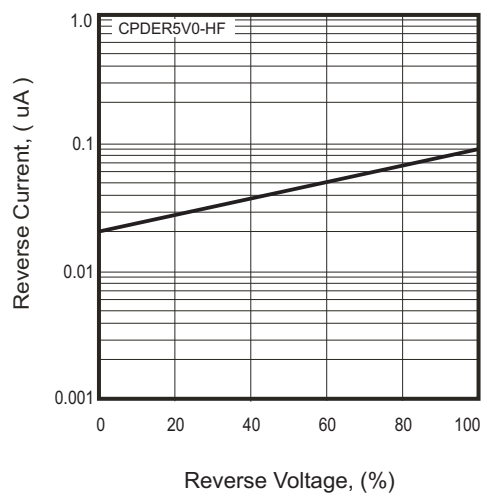


Fig.2-2 - Reverse Characteristics

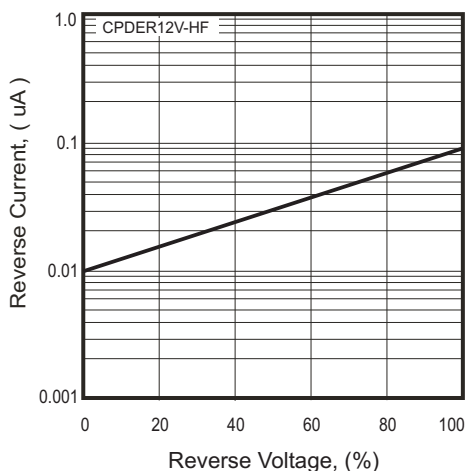


Fig.2-3 - Reverse Characteristics

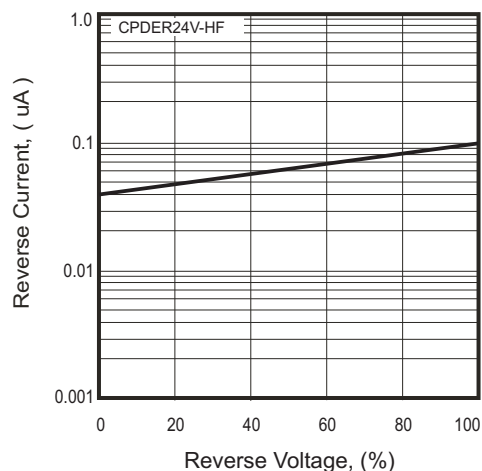


Fig.3 - Capacitance Between Terminals Characteristics

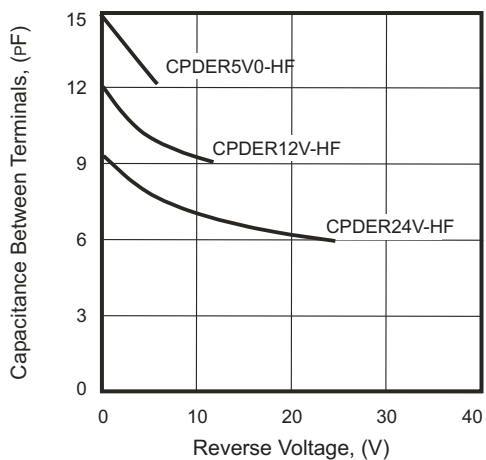
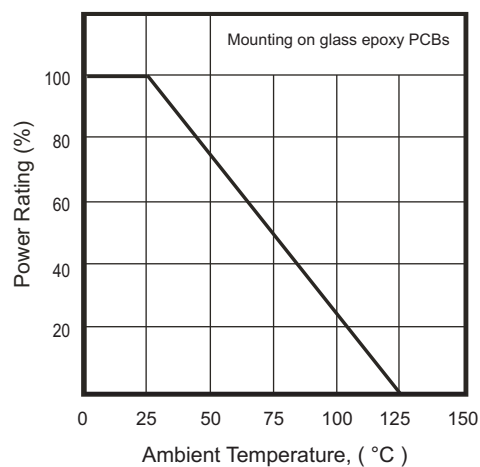
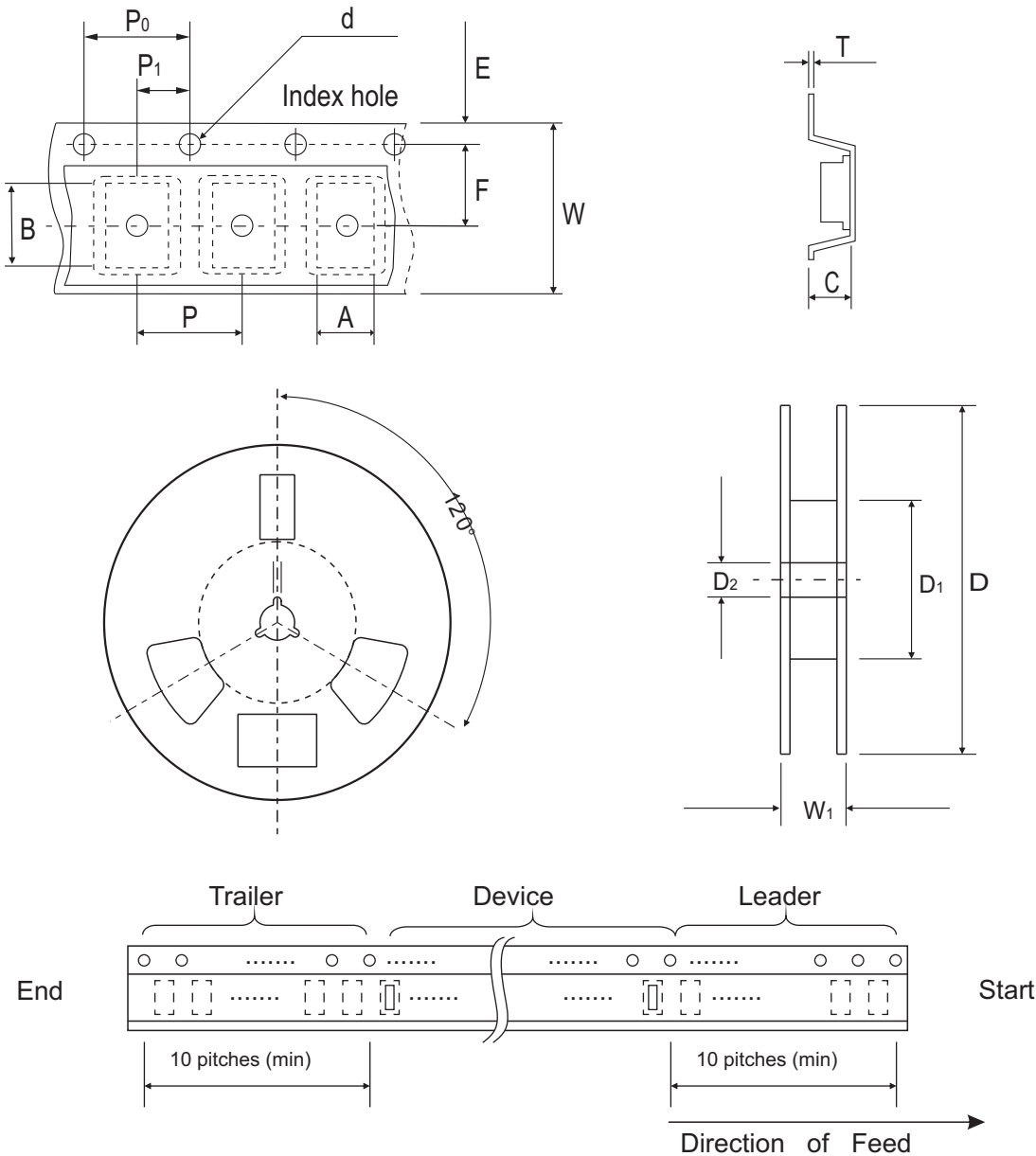


Fig.4 - Power Rating Derating Curve



Reel Taping Specification



|                    |        |               |               |               |               |              |                |                |
|--------------------|--------|---------------|---------------|---------------|---------------|--------------|----------------|----------------|
| 0503<br>(SOD-723F) | SYMBOL | A             | B             | C             | d             | D            | D <sub>1</sub> | D <sub>2</sub> |
|                    | (mm)   | 0.90 ± 0.10   | 1.46 ± 0.10   | 0.80 ± 0.10   | 1.55 ± 0.05   | 178 ± 1      | 60.0 MIN.      | 13.0 ± 0.20    |
|                    | (inch) | 0.035 ± 0.004 | 0.057 ± 0.004 | 0.031 ± 0.004 | 0.061 ± 0.002 | 7.008 ± 0.04 | 2.362 MIN.     | 0.512 ± 0.008  |

|                    |        |               |               |               |                |                |               |               |                |
|--------------------|--------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|----------------|
| 0503<br>(SOD-723F) | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | T             | W             | W <sub>1</sub> |
|                    | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.05    | 0.22 ± 0.05   | 8.00 ± 0.20   | 13.5 MAX.      |
|                    | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.002  | 0.009 ± 0.002 | 0.315 ± 0.008 | 0.531 MAX.     |

## Marking Code

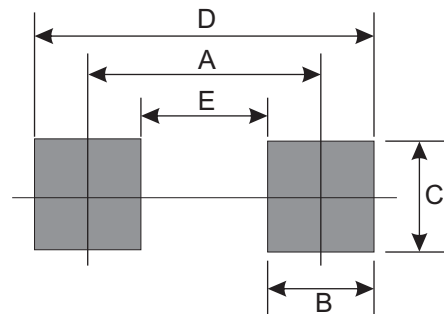
| Part Number | Marking Code |
|-------------|--------------|
| CPDER5V0-HF | E05          |
| CPDER12V-HF | E12          |
| CPDER24V-HF | E24          |



xxx = Product type marking code

## Suggested PAD Layout

| SIZE | 0503/SOD-723F |        |
|------|---------------|--------|
|      | (mm)          | (inch) |
| A    | 0.85          | 0.033  |
| B    | 0.55          | 0.022  |
| C    | 0.85          | 0.033  |
| D    | 1.40          | 0.055  |
| E    | 0.30          | 0.012  |



## Standard Packaging

| Case Type     | Qty Per Reel | Reel Size |
|---------------|--------------|-----------|
|               | (Pcs)        | (inch)    |
| 0503/SOD-723F | 4,000        | 7         |