

## CPDUC5V0USP-HF

### High-Reliability and High-Performance

### RoHS Device

### Halogen Free



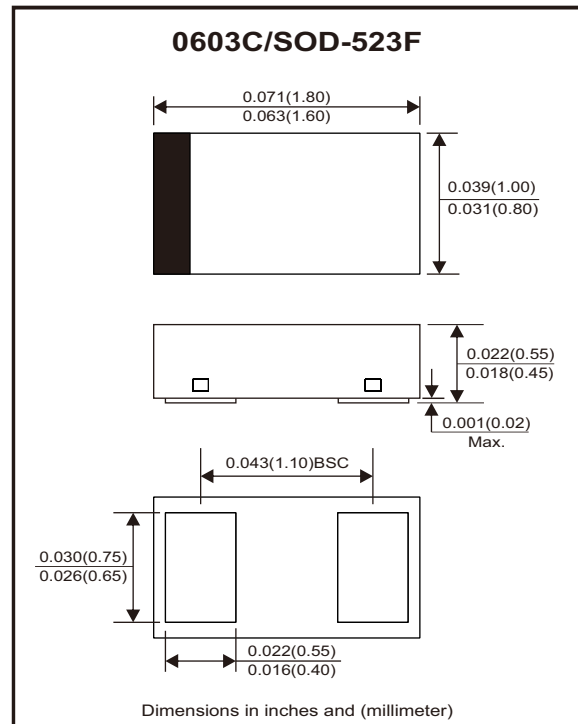
#### Features

- Uni-directional ESD protection.
- Surface mount package.
- Low capacitance.
- Low Leakage current.
- High component density.

#### Mechanical data

- Case: 0603C/SOD-523F standard package, molded plastic.
- Terminals: Matte tin plated, Solderable per MIL-STD-750, method 2026.
- Marking Code: Cathode band & E5P
- Mounting position: Any.
- Weight: 0.003 grams (approx.).

#### Circuit Diagram



#### Maximum Rating (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                   | Conditions                                   | Symbol    | Value               | Unit               |
|-----------------------------|--|-----------|---------------------|--------------------|
| Peak pulse power            | $T_P = 8/20\mu\text{s}$                      | $P_{PP}$  | 60                  | W                  |
| Peak pulse current          | $T_P = 8/20\mu\text{s}$                      | $I_{PP}$  | 3                   | A                  |
| ESD capability              | IEC 61000-4-2(air)<br>IEC 61000-4-2(contact) | ESD       | $\pm 15$<br>$\pm 8$ | kV                 |
| Operating temperature range |  | $T_j$     | $-55 \sim +150$     | $^{\circ}\text{C}$ |
| Storage temperature range   |  | $T_{STG}$ | $-55 \sim +150$     | $^{\circ}\text{C}$ |

#### Electrical Characteristics (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                    | Conditions   | Symbol    | Min | Typ | Max      | Unit          |
|------------------------------|--|-----------|-----|-----|----------|---------------|
| Working peak reverse voltage |  | $V_{RWM}$ |     |     | 5        | V             |
| Forward voltage              | $I_F = 10\text{mA}$  | $V_F$     |     |     | 1.5      | V             |
| Diode breakdown voltage      | $I_T = 1\text{mA}$   | $V_{BR}$  | 5.4 |     |          | V             |
| Reverse current              | $V_{RWM} = 5\text{V}$  | $I_R$     |     | 0.1 | 1.0      | $\mu\text{A}$ |
| Clamping voltage             | $I_{PP} = 1\text{A}, T_P = 8/20\mu\text{s}$<br>$I_{PP} = 3\text{A}, T_P = 8/20\mu\text{s}$ | $V_C$     |     |     | 13<br>20 | V             |
| Junction capacitance         | $V_R = 0\text{V}, f = 1\text{MHz}$   | $C_J$     |     | 0.6 | 0.9      | pF            |

## Rating and Characteristic Curves (CPDUC5V0USP-HF)

Fig.1 - 8/20 $\mu$ s Peak Pulse Current Waveform Acc. IEC 61000-4-5

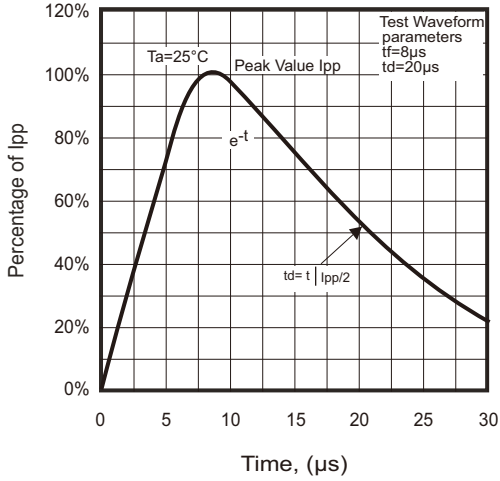


Fig.2 - Power Rating Derating Curve

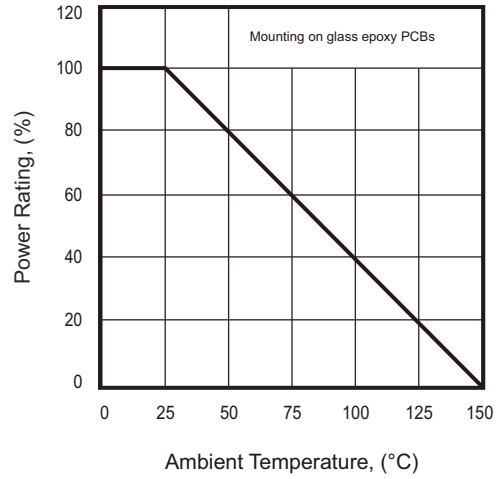


Fig.3 - Clamping Voltage Vs. Peak Pulse Current

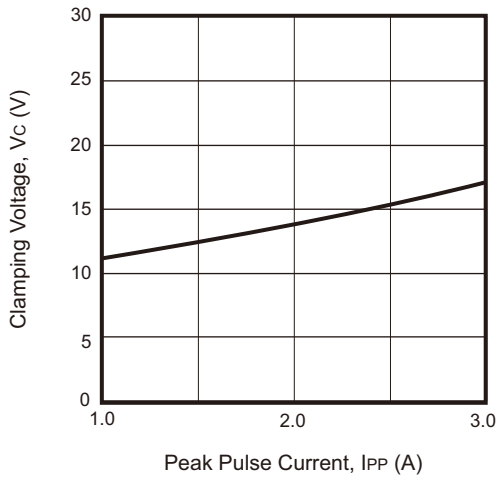


Fig.4 - Forward Voltage Vs. Forward Current

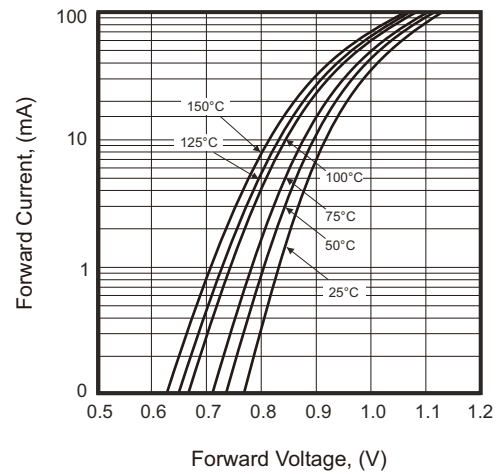
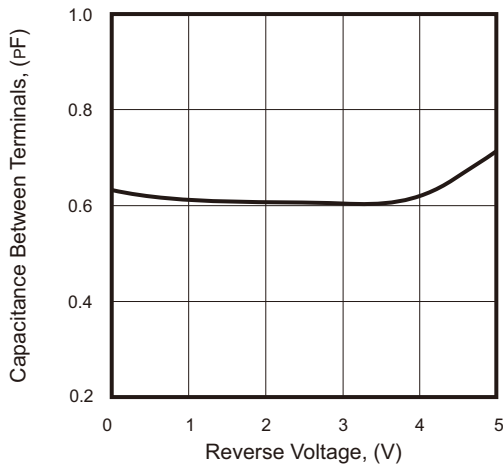
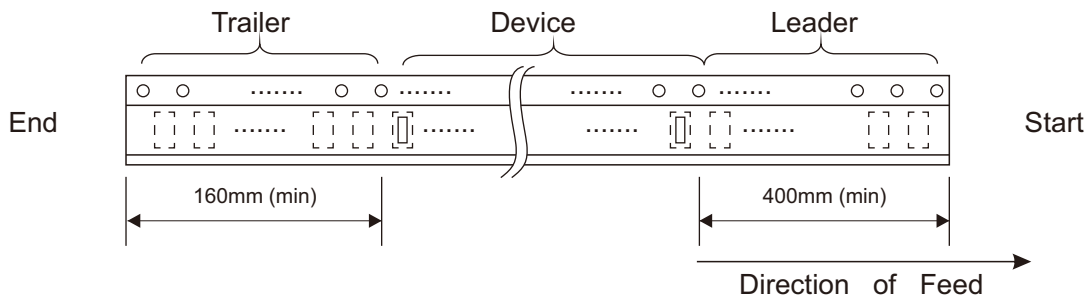
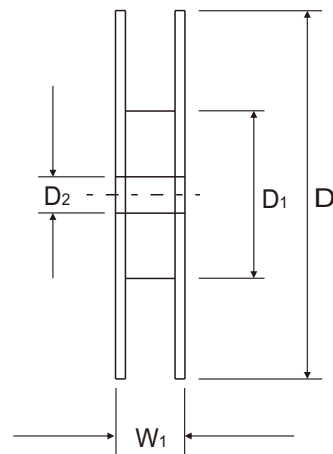
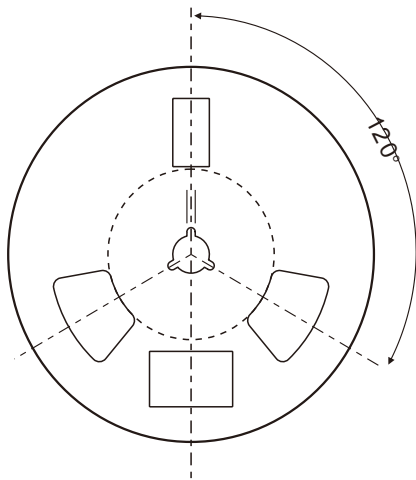
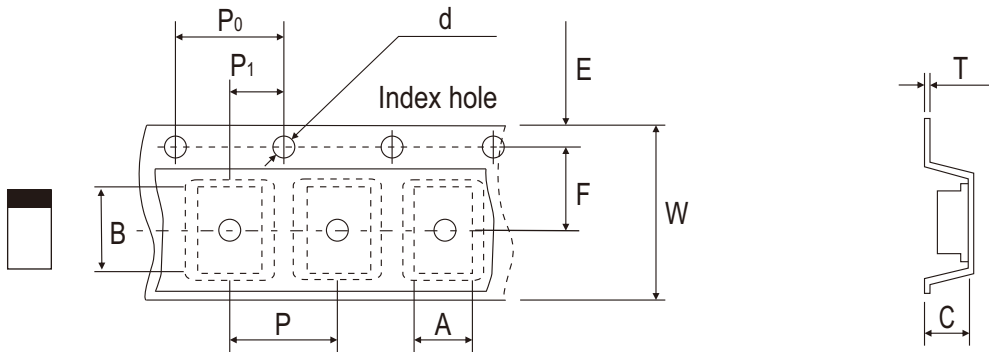


Fig.5 - Capacitance Between Terminals Characteristics



## Reel Taping Specification



| 0603C/<br>SOD-523F | SYMBOL | A             | B             | C             | d                    | D             | D <sub>1</sub> | D <sub>2</sub> |
|--------------------|--------|---------------|---------------|---------------|----------------------|---------------|----------------|----------------|
|                    | (mm)   | 1.05 ± 0.05   | 1.96 ± 0.05   | 0.57 ± 0.05   | 1.50 + 0.10<br>- 0   | 178.00 ± 1.00 | 60.00 ± 0.50   | 13.50 ± 0.20   |
|                    | (inch) | 0.041 ± 0.002 | 0.077 ± 0.002 | 0.022 ± 0.002 | 0.059 + 0.004<br>- 0 | 7.008 ± 0.039 | 2.362 ± 0.020  | 0.531 ± 0.008  |

| 0603C/<br>SOD-523F | 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 ± 0.05    | 2.00 ± 0.05    | 0.20 ± 0.03   | 8.00 ± 0.20   | 12.00 + 0.50<br>- 0  |
|                    | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.002  | 0.079 ± 0.002  | 0.008 ± 0.001 | 0.315 ± 0.008 | 0.472 + 0.020<br>- 0 |

Company reserves the right to improve product design, functions and reliability without notice.

REV:B

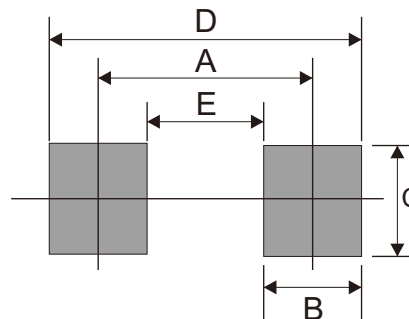
## Marking Code

| Part Number    | Marking Code |
|----------------|--------------|
| CPDUC5V0USP-HF | E5P          |



## Suggested PAD Layout

| SIZE | 0603C/SOD-523F |        |
|------|----------------|--------|
|      | (mm)           | (inch) |
| A    | 1.10           | 0.043  |
| B    | 0.70           | 0.028  |
| C    | 1.00           | 0.039  |
| D    | 1.80           | 0.071  |
| E    | 0.40           | 0.016  |



## Standard Packaging

| Case Type      | REEL PACK    |                  |
|----------------|--------------|------------------|
|                | REEL ( pcs ) | Reel Size (inch) |
| 0603C/SOD-523F | 4,000        | 7                |