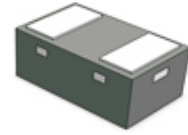


# CPDQC5V0ESPC-HF

## High-Reliability and High-Performance

### RoHS Device

### Halogen Free



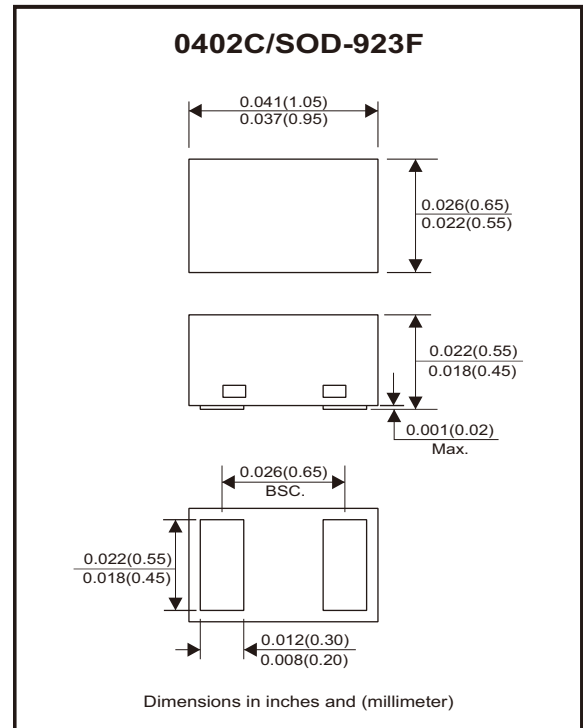
#### Features

- Bi-directional ESD protection.
- IEC 61000-4-2 ESD protection up to  $\pm 25\text{kV}$ (Contact).
- Surface mount package.
- Ultra small SMD package:0402C
- High component density.
- Low clamping voltage.
- Low leakage.
- Ultra-Low capacitance: 0.28 pF(typ.)

#### Mechanical data

- Case: 0402C/SOD-923F standard package, molded plastic.
- Terminals: Gold plated, solderable per MIL-STD-750, method 2026.
- Mounting position: Any.
- Weight: 0.001 grams(approx.).

#### Circuit Diagram



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

| Parameter                   | Conditions                                   | Symbol    | Value         | Unit             |
|-----------------------------|----------------------------------------------|-----------|---------------|------------------|
| Peak pulse power            | $T_P = 8/20\mu\text{s}$                      | $P_{PP}$  | 100           | W                |
| Peak pulse current          | $T_P = 8/20\mu\text{s}$                      | $I_{PP}$  | 4             | A                |
| ESD capability              | IEC 61000-4-2(air)<br>IEC 61000-4-2(contact) | ESD       | $\pm 25$      | kV               |
| Operating temperature range |                                              | $T_j$     | $-40\sim+125$ | $^\circ\text{C}$ |
| 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        |
| Breakdown voltage            | $I_T = 1\text{mA}$                          | $V_{BR}$  | 7   | 9    |      | V        |
| Reverse leakage current      | $V_{RWM} = 5\text{V}$                       | $I_R$     |     | <1   | 50   | nA       |
| Clamping voltage             | $I_{PP} = 1\text{A}, T_P = 8/20\mu\text{s}$ | $V_C$     |     | 13   | 15   | V        |
|                              | $I_{PP} = 4\text{A}, T_P = 8/20\mu\text{s}$ |           |     | 20   | 25   |          |
| Clamping voltage             | $I_{PP} = 8\text{A}, T_P = 100\text{ns}$    | $V_{CL}$  |     | 25   |      | V        |
|                              | $I_{PP} = 16\text{A}, T_P = 100\text{ns}$   |           |     | 35   |      |          |
| Dynamic resistance           |                                             | $R_{DYN}$ |     | 1.3  |      | $\Omega$ |
| Junction capacitance         | $V_R = 0\text{V}, f = 1\text{MHz}$          | $C_J$     |     | 0.28 | 0.35 | pF       |

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

REV:B

## Rating and Characteristic Curves (CPDQC5V0ESPC-HF)

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

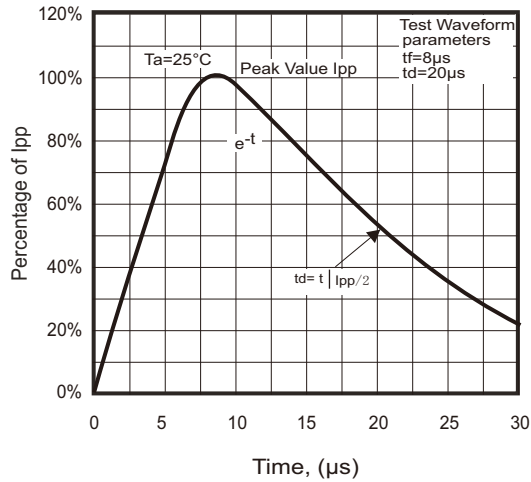


Fig.2 - Power Rating Derating Curve

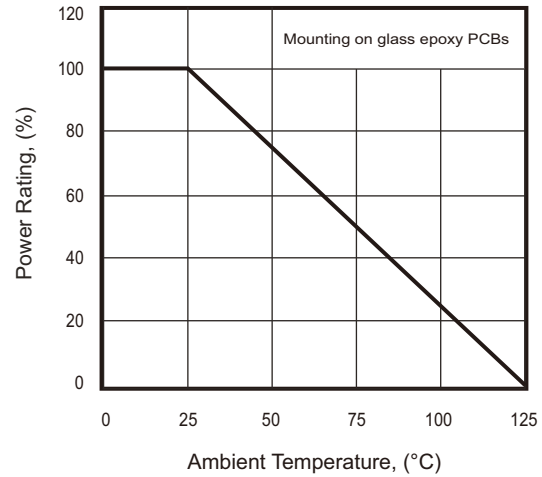


Fig.3 - Capacitance Between  
Terminals Characteristics

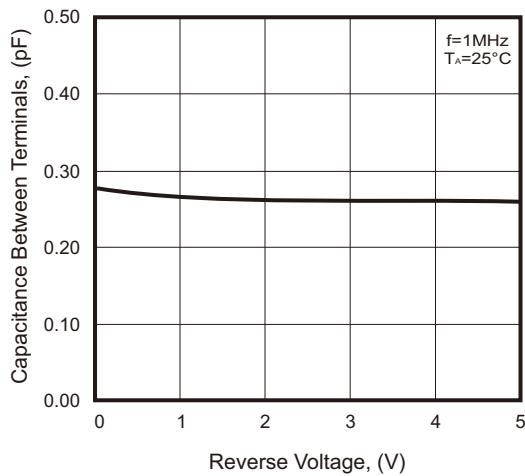


Fig.4 - Clamping Voltage Vs.  
Peak Pulse Current

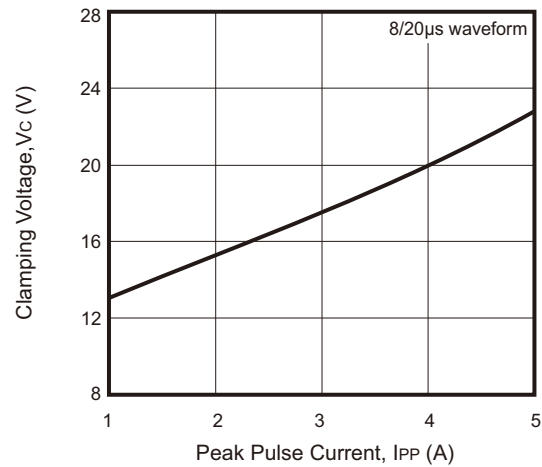


Fig.5 - Insertion Loss, Typical Values

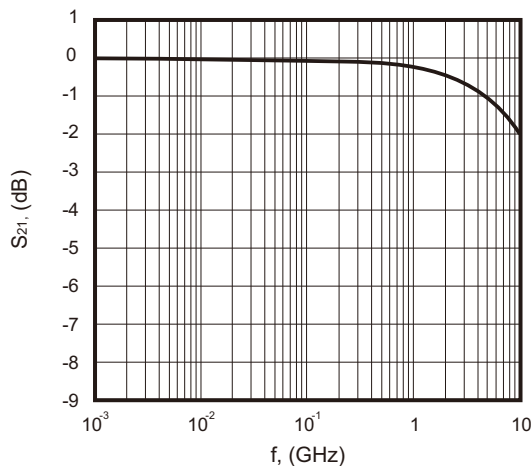
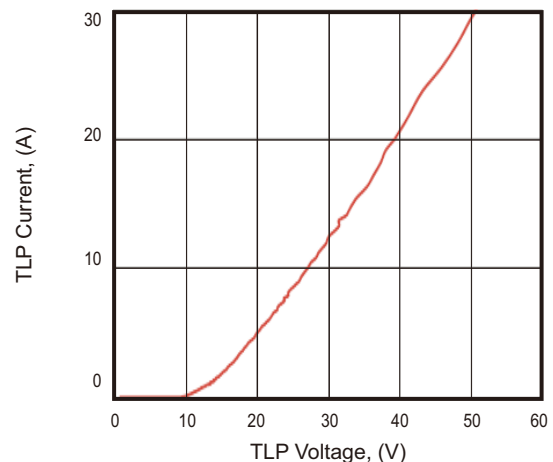
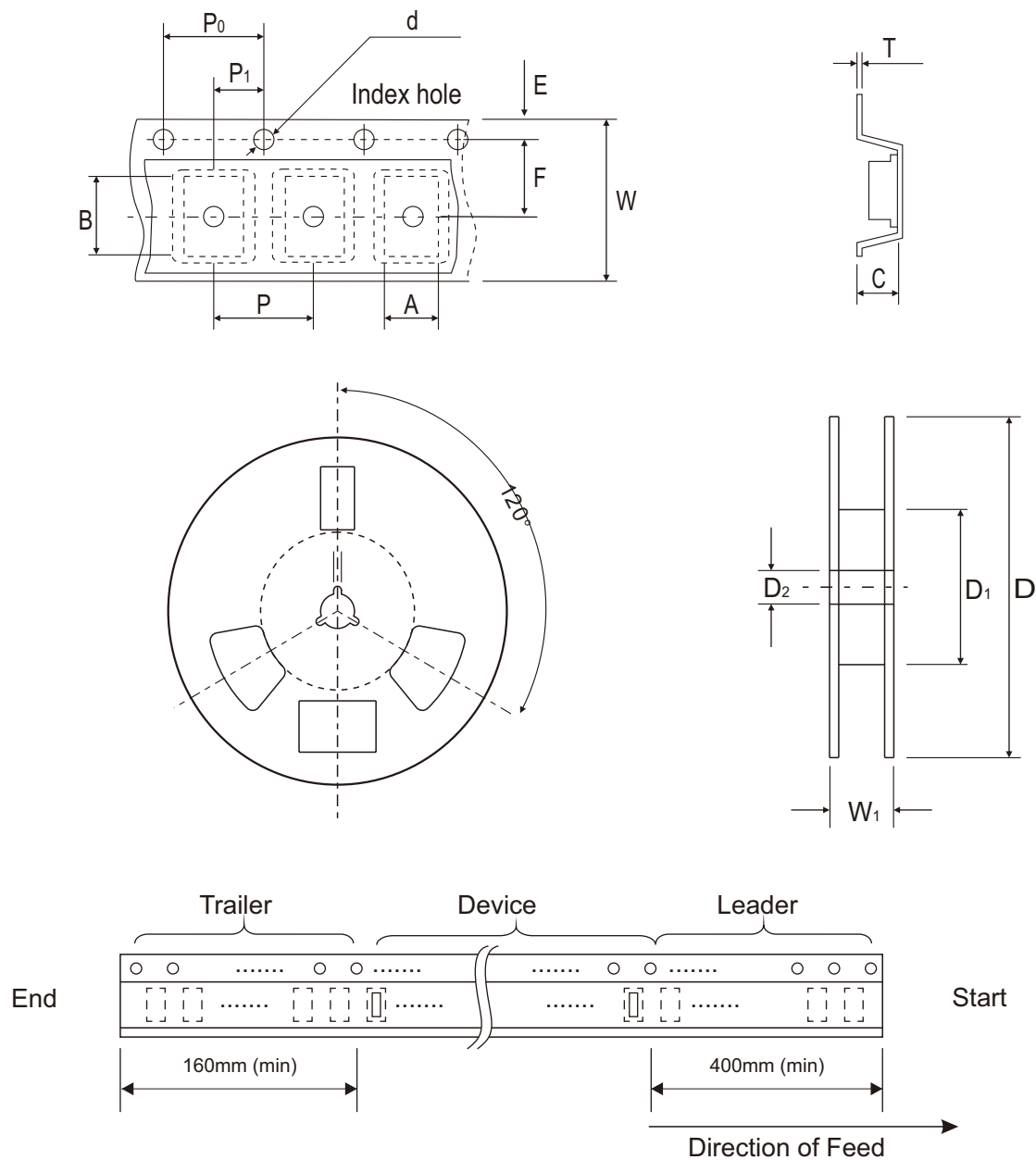


Fig.6 - Positive TLP IV Curve



Reel Taping Specification



| 0402C<br>(SOD-923F) | SYMBOL | A             | B             | C             | d                    | D             | D <sub>1</sub> | D <sub>2</sub> |
|---------------------|--------|---------------|---------------|---------------|----------------------|---------------|----------------|----------------|
|                     | (mm)   | 0.75 ± 0.05   | 1.17 ± 0.05   | 0.65 ± 0.05   | 1.50 + 0.10<br>- 0   | 178.00 ± 1.00 | 60.00 ± 0.50   | 13.50 ± 0.20   |
|                     | (inch) | 0.030 ± 0.002 | 0.046 ± 0.002 | 0.026 ± 0.002 | 0.059 + 0.004<br>- 0 | 7.008 ± 0.039 | 2.362 ± 0.020  | 0.531 ± 0.008  |

| 0402C<br>(SOD-923F) | 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 ± 0.10   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.10    | 0.20 + 0.02<br>- 0.05    | 8.00 ± 0.20   | 12.00 + 0.50<br>- 0  |
|                     | (inch) | 0.069 ± 0.004 | 0.138 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.004  | 0.008 + 0.001<br>- 0.002 | 0.315 ± 0.008 | 0.472 + 0.020<br>- 0 |

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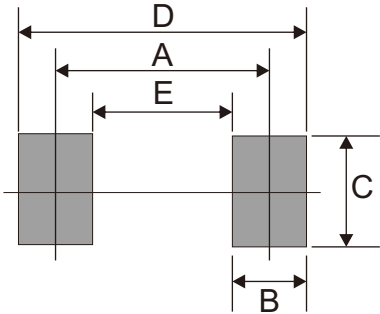
Marking Code

| Part Number     | Marking Code |
|-----------------|--------------|
| CPDQC5V0ESPC-HF | 5SP          |



Suggested PAD Layout

| SIZE | 0402C/SOD-923F |        |
|------|----------------|--------|
|      | (mm)           | (inch) |
| A    | 0.70           | 0.028  |
| B    | 0.40           | 0.016  |
| C    | 0.60           | 0.024  |
| D    | 1.10           | 0.043  |
| E    | 0.30           | 0.012  |



Standard Packaging

| Case Type      | REEL PACK       |                     |
|----------------|-----------------|---------------------|
|                | REEL<br>( pcs ) | Reel Size<br>(inch) |
| 0402C/SOD-923F | 5,000           | 7                   |