

# ACPDQC12VEU-HF

RoHS Device  
Halogen Free



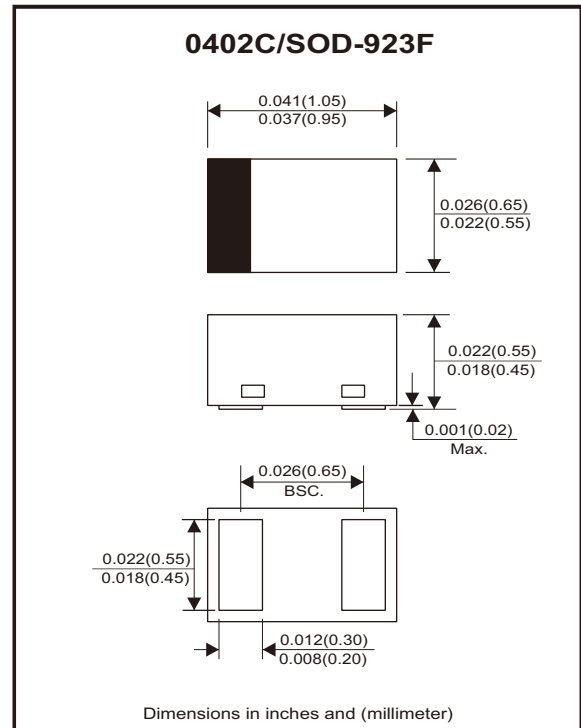
## Features

- Uni-directional ESD protection.
- IEC 61000-4-2 (ESD) ;  $\pm 30\text{KV}$ (contact)
- Surface mount package.
- Ultra small SMD package:0402.
- High component density.
- AEC-Q101 Qualified

## 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            | $T_P = 8/20\mu\text{s}$                      | $P_{PP}$  | 110           | W                |
| Peak pulse current          | $T_P = 8/20\mu\text{s}$                      | $I_{PP}$  | 5             | A                |
| ESD capability              | IEC 61000-4-2(air)<br>IEC 61000-4-2(contact) | ESD       | $\pm 30$      | kV               |
| Operating temperature range |                                              | $T_j$     | $-55\sim+125$ | $^\circ\text{C}$ |
| 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 |                                                                                            | $V_{RWM}$ |      |          | 12       | V    |
| Forward voltage              | $I_F = 10\text{mA}$                                                                        | $V_F$     |      | 0.8      | 1.2      | V    |
| Breakdown voltage            | $I_T = 1\text{mA}$                                                                         | $V_{BR}$  | 13.5 | 14.5     | 15.6     | V    |
| Reverse leakage current      | $V_{RWM} = 12\text{V}$                                                                     | $I_R$     |      | $<5$     | 100      | nA   |
| Clamping voltage             | $I_{PP} = 1\text{A}, T_P = 8/20\mu\text{s}$<br>$I_{PP} = 5\text{A}, T_P = 8/20\mu\text{s}$ | $V_C$     |      | 15<br>18 | 18<br>22 | V    |
| Junction capacitance         | $V_R = 0\text{V}, f = 1\text{MHz}$                                                         | $C_J$     |      |          | 60       | pF   |

Rating and Characteristic Curves (ACPDQC12VEU-HF)

Fig.1 - 8/20μs Peak Pulse Current  
Waveform Acc. IEC 61000-4-5

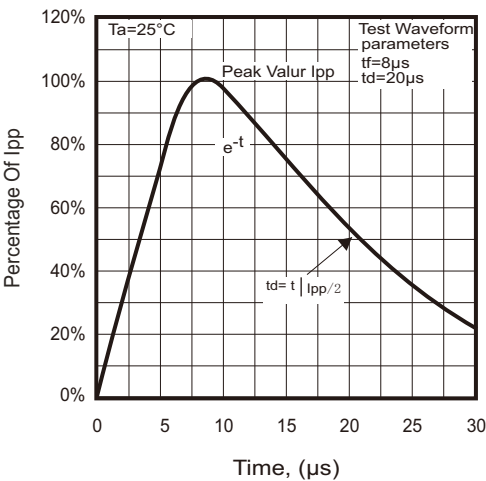


Fig.2 - Power Rating Derating Curve

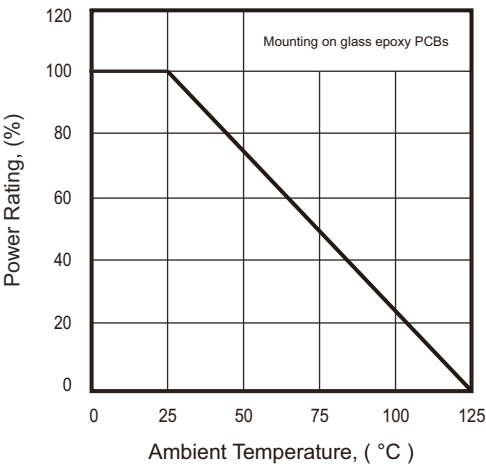


Fig.3 - Clamping Voltage Vs.  
Peak Pulse Current

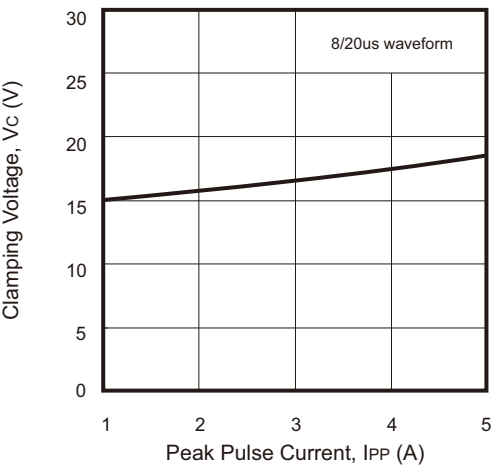
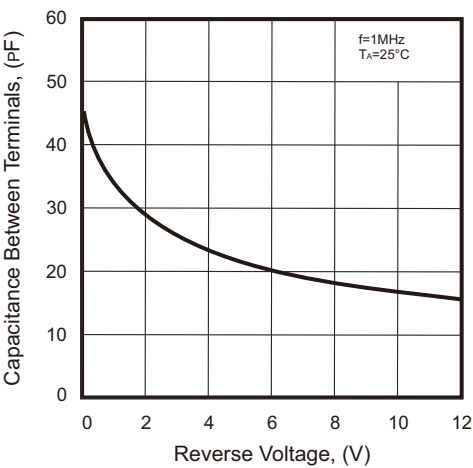
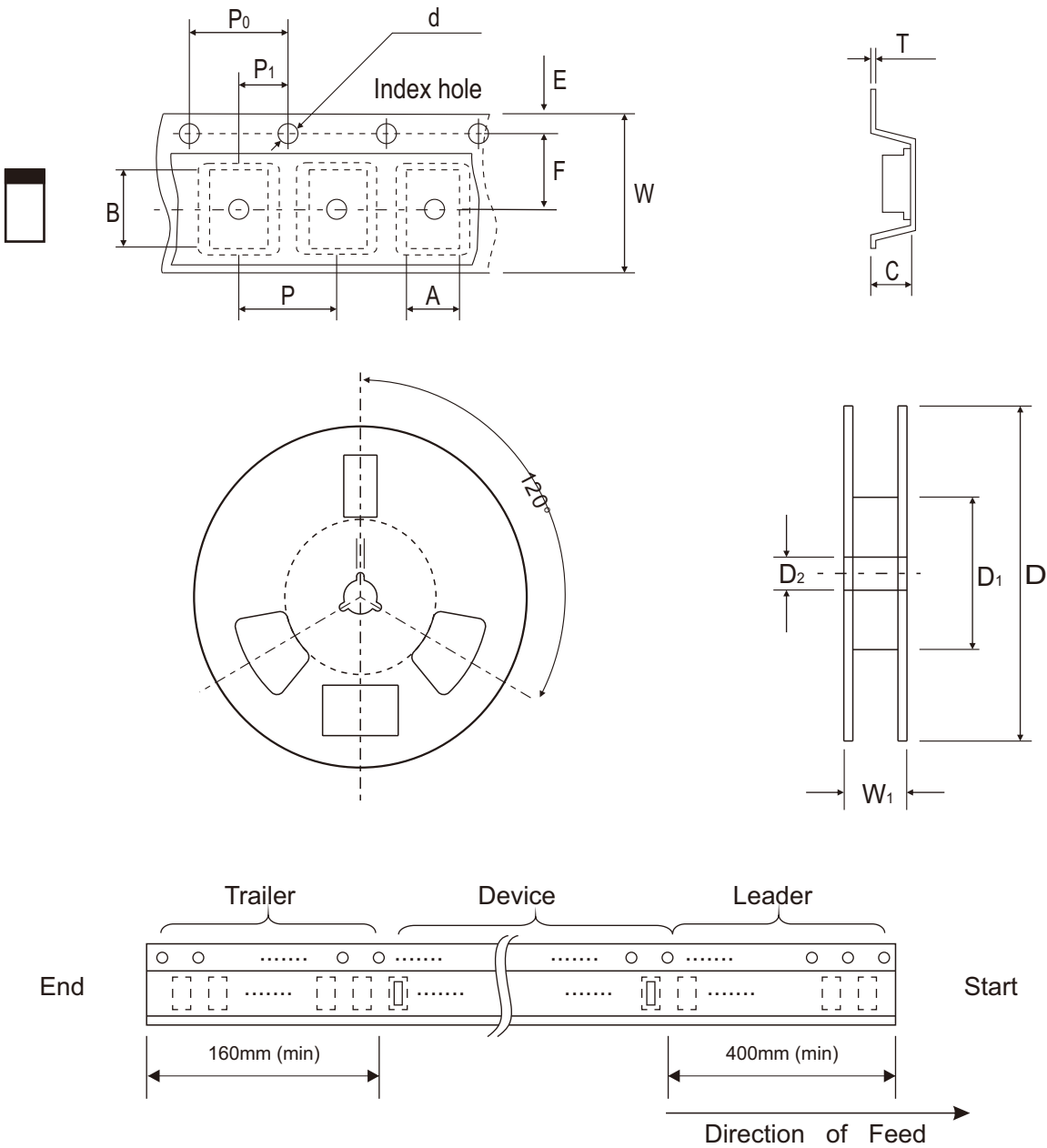


Fig.4 - Capacitance Between  
Terminals Characteristics



Reel Taping Specification



| 0402C<br>(SOD-923F) | SYMBOL | A                 | B                 | C                 | d                       | D                 | D1                | D2                |
|---------------------|--------|-------------------|-------------------|-------------------|-------------------------|-------------------|-------------------|-------------------|
|                     | (mm)   | $0.75 \pm 0.05$   | $1.17 \pm 0.05$   | $0.65 \pm 0.05$   | $1.50 + 0.10 - 0.00$    | $178.00 \pm 1.00$ | $60.00 \pm 0.50$  | $13.50 \pm 0.20$  |
|                     | (inch) | $0.030 \pm 0.002$ | $0.046 \pm 0.002$ | $0.026 \pm 0.002$ | $0.059 + 0.004 - 0.000$ | $7.008 \pm 0.039$ | $2.362 \pm 0.020$ | $0.531 \pm 0.008$ |

| 0402C<br>(SOD-923F) | SYMBOL | E                 | F                 | P                 | P0                | P1                | T                       | W                 | W1                      |
|---------------------|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------|-------------------|-------------------------|
|                     | (mm)   | $1.75 \pm 0.10$   | $3.50 \pm 0.10$   | $4.00 \pm 0.10$   | $4.00 \pm 0.10$   | $2.00 \pm 0.10$   | $0.20 + 0.02 - 0.05$    | $8.00 \pm 0.20$   | $12.00 + 0.50 - 0.00$   |
|                     | (inch) | $0.069 \pm 0.004$ | $0.138 \pm 0.004$ | $0.157 \pm 0.004$ | $0.157 \pm 0.004$ | $0.079 \pm 0.004$ | $0.008 + 0.001 - 0.002$ | $0.315 \pm 0.008$ | $0.472 + 0.020 - 0.000$ |

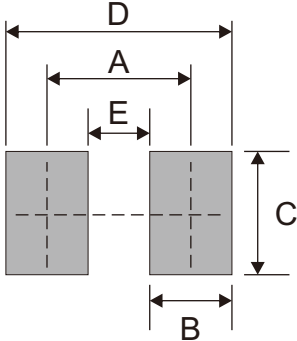
Marking Code

| Part Number    | Marking Code |
|----------------|--------------|
| ACPDQC12VEU-HF | E2           |



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                   |