

# ACPDUC5V0R-HF

## High-Reliability and High-Performance

### RoHS Device

### Halogen Free



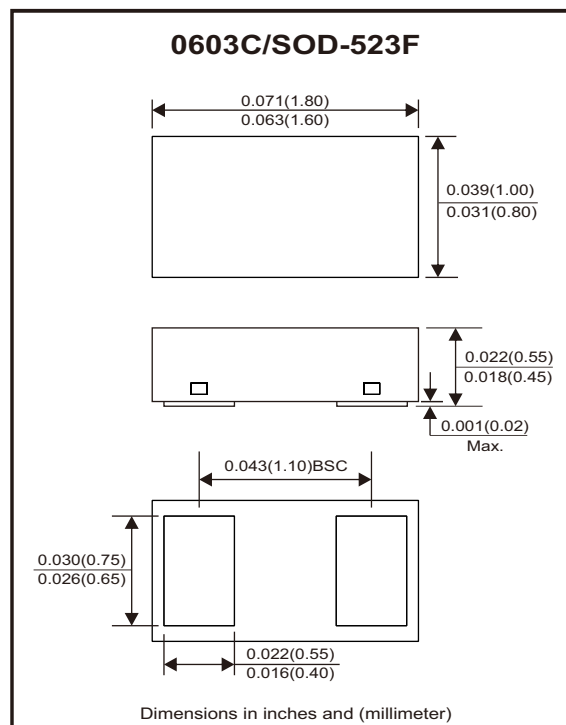
#### Features

- Bi-directional ESD protection.
- IEC 61000-4-2 (ESD) ;  $\pm 30\text{KV}$ (contact).
- Surface mount package.
- Ultra small SMD package: 0603C
- High component density.
- AEC-Q101 Qualified & PPAP.

#### Mechanical data

- Case: 0603C/SOD-523F standard package, molded plastic.
- Terminals: Gold plated, solderable per MIL-STD-750, method 2026.
- Mounting position: Any.

#### Circuit Diagram



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

| Parameter                   | Conditions              | Symbol    | Value       | Unit             |
|-----------------------------|-------------------------|-----------|-------------|------------------|
| Peak pulse power            | $T_P = 8/20\mu\text{s}$ | $P_{PP}$  | 154         | W                |
| Peak pulse current          | $T_P = 8/20\mu\text{s}$ | $I_{PP}$  | 11          | A                |
| ESD capability              | IEC 61000-4-2(air)      | ESD       | $\pm 30$    | kV               |
|                             | IEC 61000-4-2(contact)  | ESD       | $\pm 30$    |                  |
| Operating temperature range |                         | $T_J$     | -55 to +150 | $^\circ\text{C}$ |
| Storage temperature range   |                         | $T_{STG}$ | -55 to +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    |
| Diode breakdown voltage      | $I_T = 1\text{mA}$                            | $V_{BR}$  | 5.6 |     | 9.4 | V    |
| Reverse leakage current      | $V_{RWM} = 5\text{V}$                         | $I_R$     |     | 5   | 90  | nA   |
| Clamping voltage             | $I_{PP} = 1\text{A}$ , $t_p=8/20\mu\text{s}$  | $V_C$     |     | 7.5 | 10  | V    |
|                              | $I_{PP} = 11\text{A}$ , $t_p=8/20\mu\text{s}$ | $V_C$     |     | 12  | 14  | V    |
| Junction capacitance         | $V_R = 0\text{V}$ , $f = 1\text{MHz}$         | $C_J$     |     | 24  | 30  | pF   |

Typical Rating and Characteristic Curves (ACPDUC5V0R-HF)

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

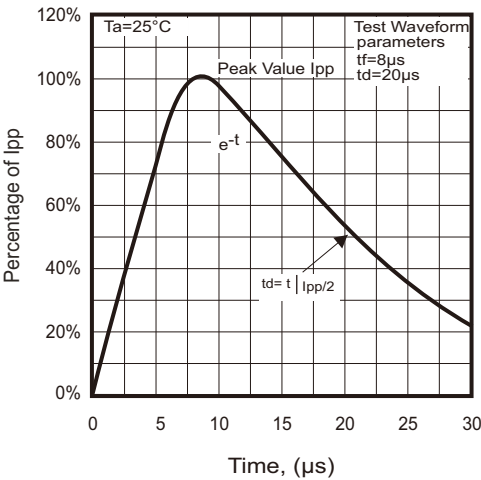


Fig. 2 - Capacitance Between  
Terminals Characteristics

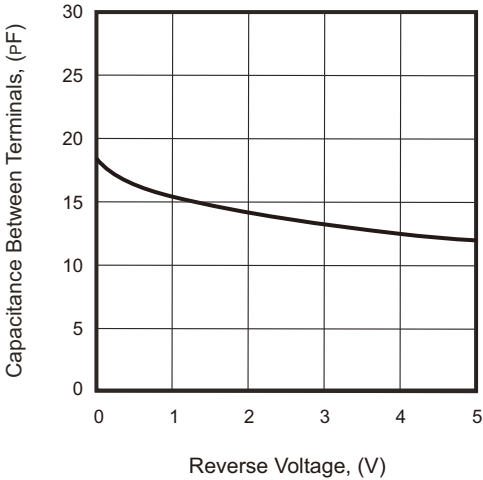


Fig.3 - Clamping Voltage Vs.  
Peak Pulse Current

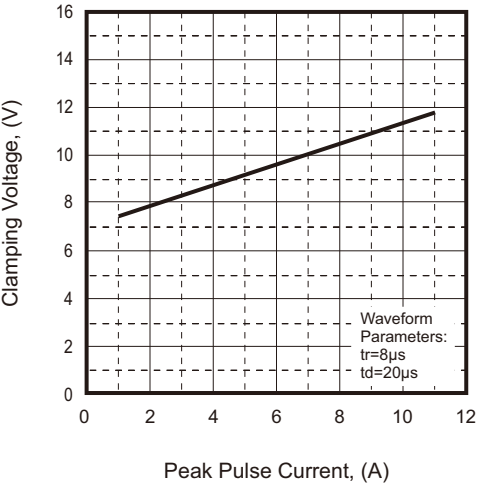
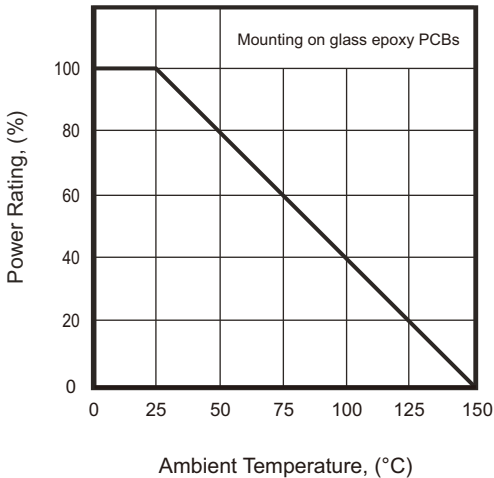
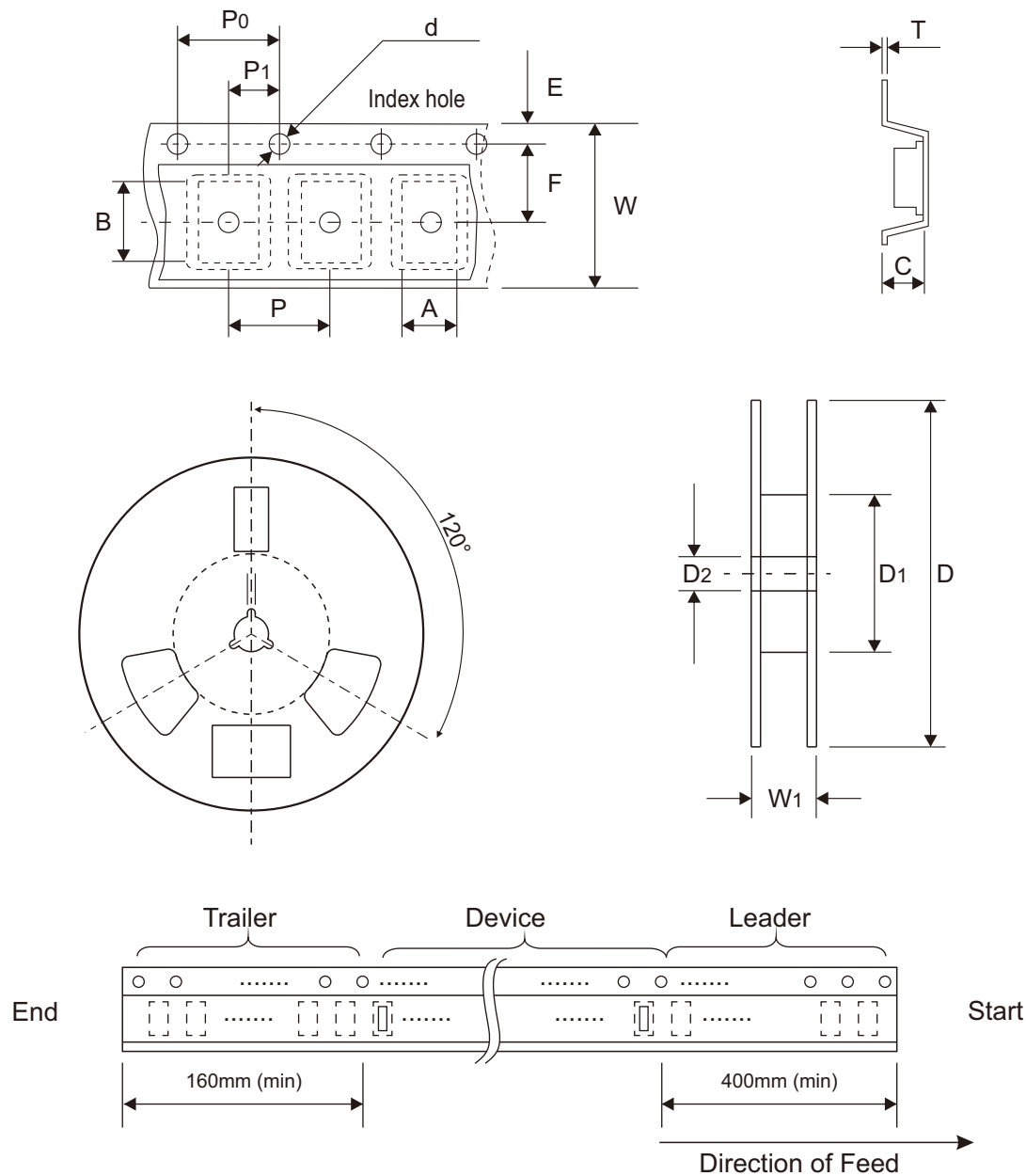


Fig. 4 - Power Rating Derating Curve



Reel Taping Specification



|                     |        |               |               |               |                          |               |               |               |
|---------------------|--------|---------------|---------------|---------------|--------------------------|---------------|---------------|---------------|
| 0603C<br>(SOD-523F) | SYMBOL | A             | B             | C             | d                        | D             | D1            | D2            |
|                     | (mm)   | 1.05 ± 0.05   | 1.96 ± 0.05   | 0.57 ± 0.05   | 1.50 + 0.10<br>- 0.00    | 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>- 0.000 | 7.008 ± 0.039 | 2.362 ± 0.020 | 0.531 ± 0.008 |

|                     |        |               |               |               |               |               |               |               |                          |
|---------------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|
| 0603C<br>(SOD-523F) | SYMBOL | E             | F             | P             | P0            | P1            | T             | W             | W1                       |
|                     | (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>- 0.00   |
|                     | (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>- 0.000 |

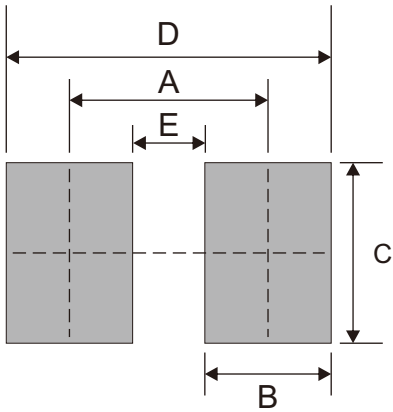
Marking Code

| Part Number   | Marking Code |
|---------------|--------------|
| ACPDUC5V0R-HF | E5R          |



Suggested P.C.B. 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<br>( pcs ) | Reel Size<br>(inch) |
| 0603C/SOD-523F | 4,000           | 7                   |