

ACPDQC5V0ESPC-HF

High-Reliability and High-Performance

RoHS Device

Halogen Free

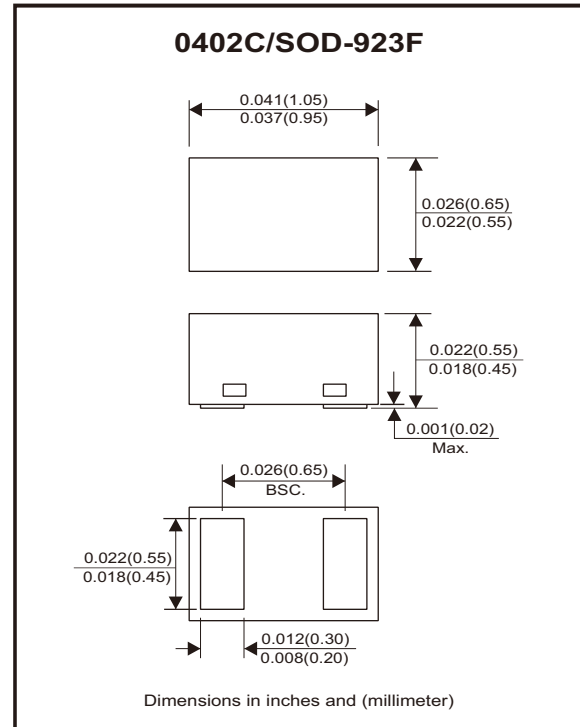


Features

- 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.)
- 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}	100	W
Peak pulse current	$T_P = 8/20\mu\text{s}$	I_{PP}	4	A
ESD capability	IEC 61000-4-2(air) IEC 61000-4-2(contact)	ESD	± 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		
Junction capacitance	$V_R = 0\text{V}, f = 1\text{MHz}$	C_J		0.28	0.35	pF

Typical Rating and Characteristic Curves (ACPDQC5V0ESPC-HF)

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

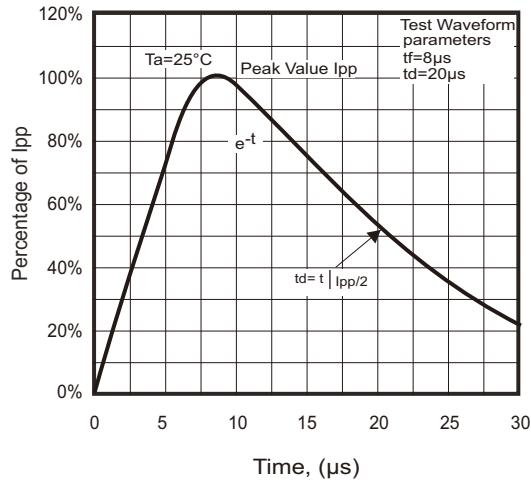


Fig.2 - Power Rating Derating Curve

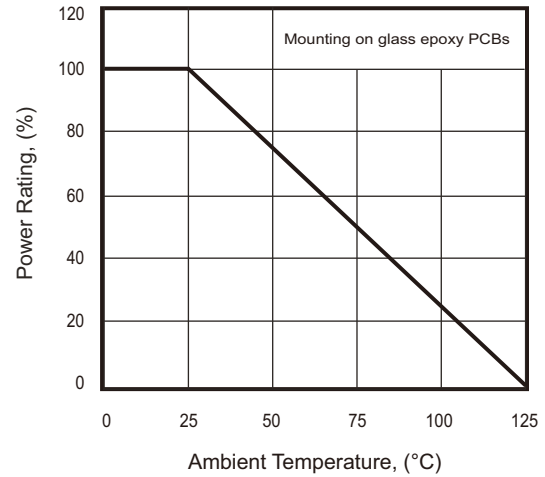


Fig.3 - Capacitance Between
Terminals Characteristics

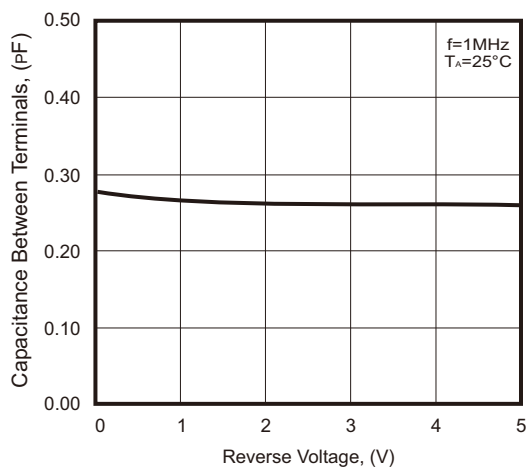


Fig.4 - Clamping Voltage Vs.
Peak Pulse Current

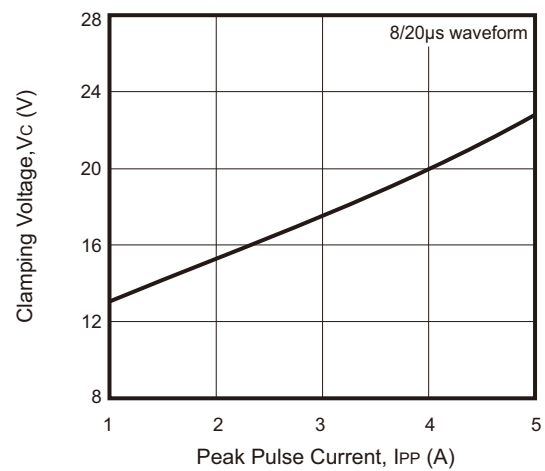


Fig.5 - Insertion Loss, Typical Values

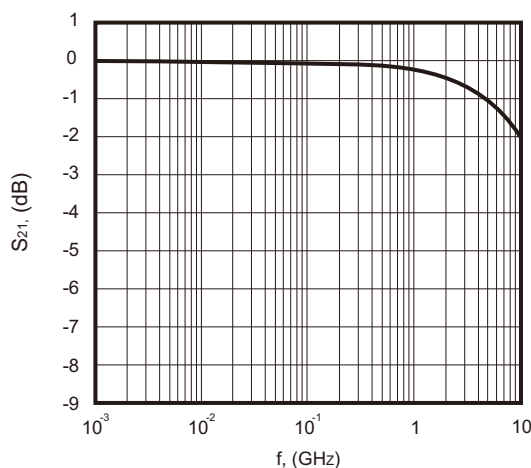


Fig.6 - Positive TLP IV Curve

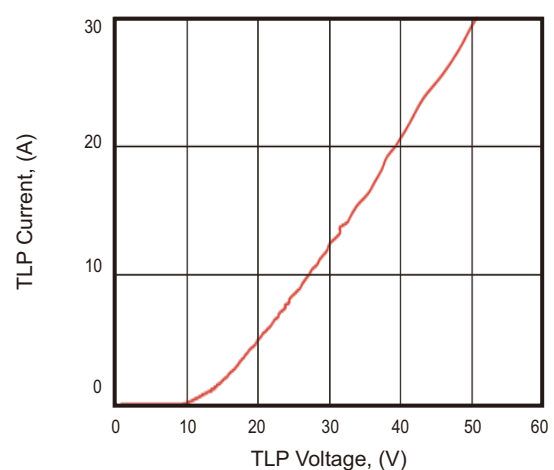
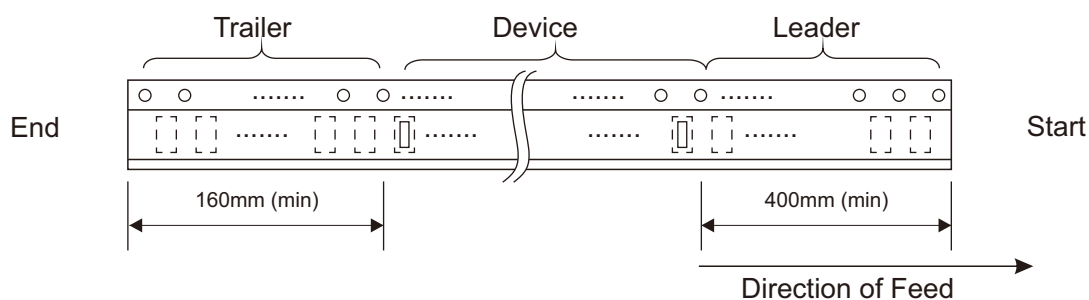


Figure 1 consists of three sub-diagrams labeled (a), (b), and (c), illustrating the dimensions of a test specimen.

- (a) Top View:** Shows a rectangular specimen with overall width W and height B . It features three rectangular segments separated by gaps of width P . The distance from the left edge to the first segment is P_0 , and the distance between segments is P_1 . A central "Index hole" is located at a distance d from the top edge. The distance from the bottom edge to the center of the segments is F . The distance from the right edge to the center of the segments is A . The total distance from the left edge to the center of the segments is P . The distance from the top edge to the center of the segments is E .
- (b) Side View:** Shows the specimen's profile with a thickness T and a width C at the base.
- (c) End View:** Shows a circular cross-section with three segments arranged at 120° intervals. The central hole has a diameter D_2 . The outer diameter of the segments is D_1 . The width of the segments is W_1 .



0402C (SOD-923F)	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	0.78 ± 0.05	1.25 ± 0.05	0.65 ± 0.05	1.50 + 0.10 - 0.00	178.00 ± 1.00	60.00 ± 0.50	13.50 ± 0.20
	(inch)	0.031 ± 0.002	0.049 ± 0.002	0.026 ± 0.002	0.059 + 0.004 - 0.000	7.008 ± 0.039	2.362 ± 0.020	0.531 ± 0.008

0402C (SOD-923F)	SYMBOL	E	F	P	P ₀	P ₁	T	W	W ₁
	(mm)	1.75 ± 0.10	3.50 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.10	0.20 + 0.03 - 0.05	8.00 ± 0.20	12.00 + 0.50 - 0.00
	(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 - 0.002	0.315 ± 0.008	0.472 + 0.020 - 0.000

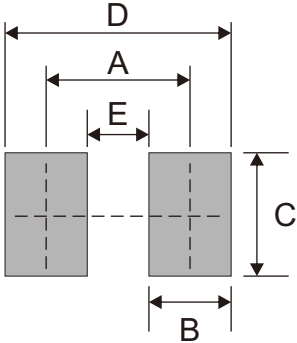
Marking Code

Part Number	Marking Code
ACPDQC5V0ESPC-HF	5SP



Suggested P.C.B. 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 (pcs)	Reel Size (inch)
0402C/SOD-923F	5,000	7