zeptoSMDC Series
Surface Mount

HF RoHS

Description

Littelfuse zeptoSMDC Series PPTC is developed for overcurrent and overtemperature protection in mobile applications. It works to protect battery management ICs and fuel auges.

Features

- Maximum electrical rating: 13 VDC
- Short circuit current: 82~200mA
- Small footprint 0201 size
- RoHS compliant
- ISO/TS 16949 certified
- Resets to normal operation after fault is cleared
- Help protect battery monitor IC from electrical over-stress
- Save space due to small footprint

Web Resources

Download ECAD models, order samples, and find technical recources at www.littelfuse.com

Applications

- Smartphones and Tablets
- Notebook PC
- e-Readers
- Portable medical equipment
- Mobile point of sale
- Wearables
- Smartwatches
- Wireless speakers
- Portable game players

Agency Approvals

Agency	Agency File Number
	E74889
	50517757

Electrical Characteristics

Part Number	Initial Resistance Ohms @ 25°C		V_{MAX}[2] (Vdc)	I_{MAX}[3] (mA)	Trip Temperature °C TYP	Hold Current[4] (mA) @ 25°C	Time to Trip[5]		Post Process Resistance[6]	
	Min[1]	Max					Current (mA)	Time (ms) Max	ohms @ -20°C Min	ohms @ 60°C Max
zeptoSMDC0011F	10	80	13	82	125	11	80	20	68	290
zeptoSMDC0015F	10	60	13	200	125	15	80	20	28	150

Notes:
1. Rmin = Minimum resistance of device in initial (un-soldered) state
2. Vmax = Maximum voltage device can withstand without damage at rated current (Imax)
3. Imax = Maximum fault current device can withstand without damage at rated voltage (Vmax)
4. Ihold = Hold current: maximum current device will pass without tripping in 25°C still air. Values specified using PCB's with 0.004" x 1.0 ounce copper traces
5. Time to trip values specified using PCB's with 0.004" x 1.0 ounce copper traces
6. With LOCTITE ECCOBOND UF 3915, curing condition: 140°C/20mins, resistance is measured 12 hours post coating curing process

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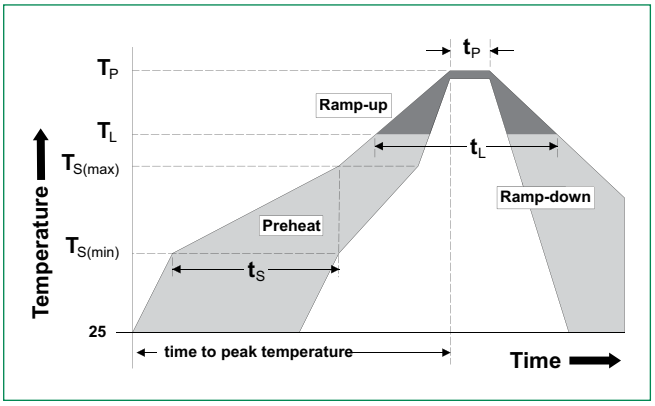
Soldering Parameters

Profile Feature		Pb-Free Assembly
Average Ramp-Up Rate (Liquidus Temp (TL) to peak		1~3 °C/second max.
Preheat:	**Temperature Min. (Ts_{min})**	130 °C
	Temperature Max. (Ts_{max})	180 °C
	Time Min. to Max (ts)	90 – 110 seconds
Ts_{max} to T_L Ramp-up Rate		≤2 °C/seconds max.
Reflow	**Temperature (T_L) (Liquidus)**	217 °C
	Time (t_L)	60~70 seconds
Peak Temperature (T_P)		240 °C
Time within 3°C of actual Peak Temperature (t_P)		35 seconds
Ramp-down Rate		2~4 °C/seconds
Time 25°C to peak Temperature (T_P)		300 seconds max.



- All temperature refer to topside of the package, measured on the package body surface.
- If reflow temperature exceeds the recommended profile, devices may not meet the performance requirements.
- Recommended reflow methods:IR, vapor phase oven, hot air oven.
- Customer should validate that the solder paste amount and reflow recommendations to meet its application
- Recommended maximum paste thickness is 0.25 mm (0.010 inch).
- Devices can be cleaned using standard industry methods and aqueous solvents.
- Devices can be reworked using the standard industry practices (avoid contact to
- the device).

Physical Specifications

Terminal Material	Solder-Plated Copper (Solder Material: NiAu)
Lead Solderability	Meets EIA Specification RS186-9E, ANSI/J- STD-002B, Test S

Environmental Specifications

Operating Temperature	-20°C to 60°C
Passive Aging	+85°C, 1000 hours -25% typical resistance change
Humidity Aging	+65°C, 90%,R.H.,100 hours -/+15% typical resistance change
Thermal Shock	MIL-STD-202, Method 107G -33% typical resistance change -40°C to 85°C (20 times)
Vibration	MIL–STD–202, Method 204 Condition A No change
Moisture Sensitivity Level	Level 2a, J–STD–020

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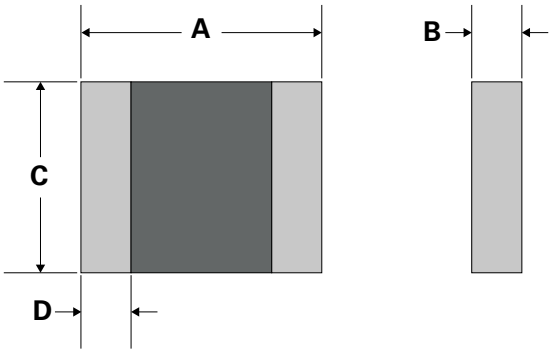
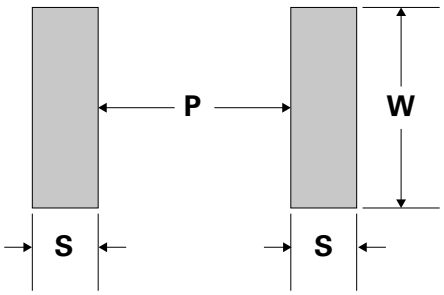
Physical Dimensions



Solder Pad Layout



Part Number	A		B		C		D	
	Min	Max	Min	Max	Min	Max	Min	Max
zeptoSMDC0011F	0.55 (0.022)	0.65 (0.026)	-	0.40 (0.016)	0.40 (0.016)	0.50 (0.020)	0.10 (0.004)	0.25 (0.010)
zeptoSMDC0015F	0.55 (0.022)	0.65 (0.026)	-	0.40 (0.016)	0.40 (0.016)	0.50 (0.020)	0.10 (0.004)	0.25 (0.010)

Packaging

Part Number	Ordering	Tape & Reel Quantity	Minimum Orgder Quantity	Recommended Pad Layout Figures [mm(in)]		
				Dimension W (Nom)	Dimension S (Nom)	Dimension P (Nom)
zeptoSMDC0011F	RF5005-000	15,000	15,000	0.45 (0.0178)	0.325 (0.013)	0.250 (0.010)
zeptoSMDC0015F	RF5006-000	15,000	15,000	0.45 (0.0178)	0.325 (0.013)	0.250 (0.010)

Application Notifications:

- Electrical performance of the device can differ according to installation conditions. Users should independently evaluate the suitability of the device under the actual application conditions. It is the customer's sole responsibility to determine suitability for a particular system or use based on their own performance criteria, conditions, specific application, compatibility with other components, and environmental conditions. Customers must independently provide appropriate design and operating safeguards to minimize any risks associated with their specific applications and products.
- Operation beyond maximum ratings may result in device damage.
- Product is a protection device designed for safety assurance against occasional faulty events only.
- Exposure to silicon-based oils, grease, solvents, electrolytes, acids, or similar materials can adversely affect device performance. Consulting Littelfuse and self-evaluation are necessary when uncertain material is used, such as using conform coating which may contain harmful materials.
- The device undergoes thermal expansion during fault conditions. It should be provided with adequate space to allow expansion and should be protected against mechanical stress.
- Users and contract manufacturers need to consult with Littelfuse if the device will experience excessive thermal processing such as greater than 2 times reflow by profile of max 245C peak onto the PCB board, molding, and hand soldering. Thermal processing at higher levels may negatively impact product performance.
- Product specifications are provided by Littelfuse only for informational and guideline purposes and at the customer's sole risk as to satisfactory quality, performance, accuracy, and effort. Performance ratings are for illustrative purposes only and Littelfuse makes no representation that such ratings are applicable to the customer's specific use without further testing or modification.

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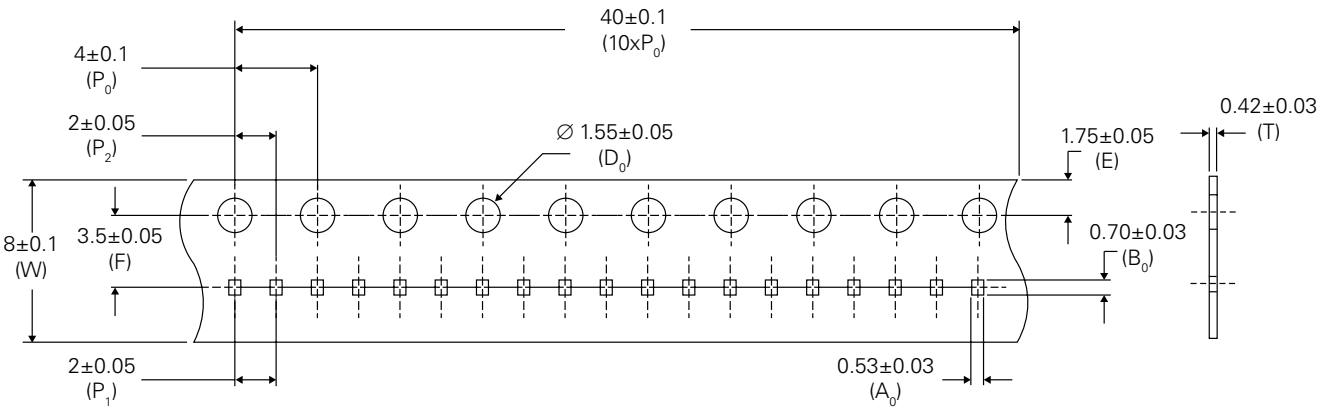
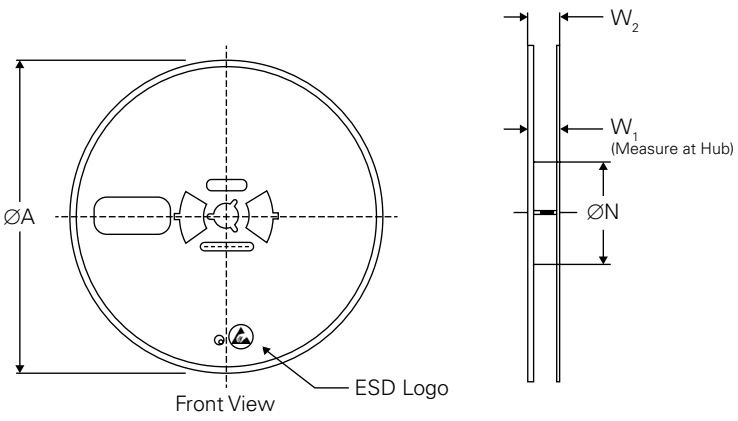
Part Ordering Number System

zepto SMDC 0011 F

- **0201 Size Series**
- **Surface Mount Device**
- **Hold Current 11mA**
- **Lead-Free**

Tape and Reel Specifications





All dimensions in mm	
W	8 ±0.1
P_0	4 ± 0.1
P_1	2 ± 0.05
P_2	2 ± 0.05
A_0	0.53 ± 0.03
B_0	0.70 ± 0.03
D_0	1.55 ± 0.05
F	3.5 ± 0.05
E	1.75 ± 0.05
T	0.42 ± 0.03
A	178.0 ± 1.0
N	54.0 ± 0.5
W_1	9.5 ± 0.5
$W_{2\ max}$	15.0

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