

OZCBDJAN2011

# Surface Mount PTC

## 0ZCB Series

1210 Chip  
RoHS6 Compliant & Halogen-Free



### Application

All high-density boards

### Product Features

1210 Chip Size, Fast Trip Time, Low DCR Resistance

### Operating (Hold Current) Range

50mA ~ 2A

### Maximum Voltage

6V ~ 60V (per table)

### Temperature Range

-40°C to 85°C

### Agency Approval

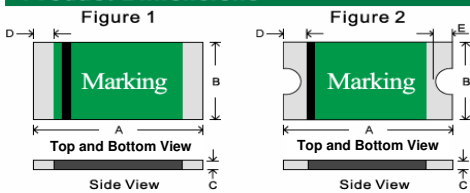
TUV (Std. EN60738-1-1, Cert. R50102117)

UL Component (Std. UL1434, File E305051)

UL Conditions of Acceptability:

1. These devices have been investigated for use in safety circuits and are suitable as a limiting device.
2. These devices have been calibrated to limit the current to 8 amps within 5 seconds, per ANSI/NFPA 70, "National Electrical Code"

### Product Dimensions



All dimensions in mm.

Part Number	Fig.	A		B		C		D		E	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
0ZCB0005FF2E	1	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	---	---
0ZCB0010FF2E	1	3.00	3.43	2.35	2.80	0.60	1.15	0.25	0.75	---	---
0ZCB0020FF2E	1	3.00	3.43	2.35	2.80	0.40	0.85	0.25	0.75	---	---
0ZCB0035FF2G	1	3.00	3.43	2.35	2.80	0.40	0.80	0.25	0.75	---	---
0ZCB0050FF2G	1	3.00	3.43	2.35	2.80	0.30	0.75	0.25	0.75	---	---
0ZCB0075FF2G	1	3.00	3.43	2.35	2.80	0.30	0.70	0.25	0.75	---	---
0ZCB0110FF2E	2	3.00	3.43	2.35	2.80	0.60	1.00	0.25	0.75	0.10	0.45
0ZCB0150FF2E	2	3.00	3.43	2.35	2.80	0.50	0.90	0.25	0.75	0.10	0.45
0ZCB0175FF2E	2	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45
0ZCB0200FF2E	2	3.00	3.43	2.35	2.80	0.80	1.40	0.25	0.75	0.10	0.45

### Standard Package

Part Number	Reel/Tape	4000 , 3000 or 2000 fuses in 7 inches dia. Reel, 8mm wide tape, 4mm pitch, per EIA-481 (equivalent IEC-286 part 3).
0ZCB0005FF2E	3K	
0ZCB0010FF2E	3K	
0ZCB0020FF2E	4K	
0ZCB0035FF2G	4K	
0ZCB0050FF2G	3K	
0ZCB0075FF2G	3K	
0ZCB0110FF2E	3K	
0ZCB0150FF2E	3K	
0ZCB0175FF2E	3K	
0ZCB0200FF2E	3K	

### PTC Marking

" b", IH code.

Part Number	IH Code
0ZCB0005FF2E	C
0ZCB0010FF2E	D
0ZCB0020FF2E	F
0ZCB0035FF2G	J
0ZCB0050FF2G	M
0ZCB0075FF2G	P
0ZCB0110FF2E	R
0ZCB0150FF2E	S
0ZCB0175FF2E	T
0ZCB0200FF2E	2

### Electrical Characteristics (23°C)

Part Number	Hold Current		Trip Current		Max. Time to Trip		Maximum Current	Rated Voltage	Typical Power	Resistance Tolerance			Agency Approvals	
	I <sub>H</sub> , A	I <sub>T</sub> , A	I <sub>T</sub> , A	I <sub>T</sub> , A	Current, A	Seconds				I <sub>max</sub> , A	V <sub>max</sub> , Vdc	P <sub>d</sub> , W	R <sub>min</sub> Ohms	R <sub>max</sub> Ohms
A 0ZCB0005FF2E	0.05	0.15	0.25	1.50	10	60	0.6	3.6	15.0	50.0	Y	Y		
B 0ZCB0010FF2E	0.10	0.25	0.50	1.50	10	60	0.6	1.6	6.0	15.0	Y	Y		
C 0ZCB0020FF2E	0.20	0.40	8.00	0.02	10	30	0.6	0.80	2.50	5.00	Y	Y		
D 0ZCB0035FF2G	0.35	0.70	8.00	0.20	40	16	0.6	0.32	0.65	1.30	Y	Y		
E 0ZCB0050FF2G	0.50	1.00	8.00	0.10	40	16	0.6	0.25	0.45	0.90	Y	Y		
F 0ZCB0075FF2G	0.75	1.50	8.00	0.10	40	8	0.6	0.13	0.20	0.40	Y	Y		
G 0ZCB0110FF2E	1.10	2.20	8.00	0.30	100	6	0.8	0.06	0.14	0.21	Y	Y		
H 0ZCB0150FF2E	1.50	3.00	8.00	0.50	100	6	0.8	0.04	0.07	0.11	Y	Y		
I 0ZCB0175FF2E	1.75	4.00	8.00	0.60	100	6	0.8	0.02	0.05	0.08	Y	Y		
J 0ZCB0200FF2E	2.00	4.00	8.00	1.00	100	6	0.8	0.015	0.045	0.070	Y	Y		

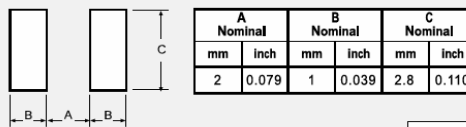
- I<sub>H</sub>** Hold current-maximum current at which the device will not trip in still air at 23°C.
- I<sub>T</sub>** Trip current-minimum current at which the device will always trip in still air at 23°C.
- I<sub>max</sub>** Maximum fault current device can withstand without damage at rated voltage (V<sub>max</sub>).
- V<sub>max</sub>** Maximum voltage device can withstand without damage at its rated current.
- P<sub>d</sub>** Typical power dissipated by device when in tripped state in 23°C still air environment.
- R<sub>min</sub>** Minimum device resistance at 23°C.
- R<sub>max</sub>** Maximum device resistance at 23°C.
- R<sub>1max</sub>** Maximum device resistance at 23°C, 1 hour after initial device trip.

### Termination pad characteristics

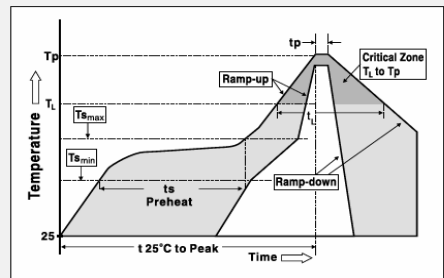
Termination pad materials  
Matte Tin-plated Copper

### Pad Layout, Solder Reflow and Rework Recommendations

The dimensions in the table below provide the recommended pad layout for each 0ZCB device



Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/second max.
<b>Preheat:</b>	
Temperature Min (T <sub>smin</sub> )	150 °C
Temperature Max (T <sub>smax</sub> )	200 °C
Time (t <sub>smin</sub> to t <sub>smax</sub> )	60-180 seconds
<b>Time maintained above:</b>	
Temperature (T <sub>i</sub> )	217 °C
Time (t <sub>i</sub> )	60-150 seconds
<b>Peak/Classification Temperature (T<sub>p</sub>):</b>	260 °C
<b>Time within 5°C of actual Peak:</b>	
Temperature (t <sub>p</sub> )	20-40 seconds
<b>Ramp-Down Rate:</b>	6 °C/second max.
<b>Time 25 °C to Peak Temperature:</b>	8 minutes max.



### Solder Reflow

\* Due to "lead free/RoHS6" construction of these PTC devices, the required Temperature and Dwell Time in the "Soldering" zone of the reflow profile are greater than those used for non-RoHS devices.

1. Recommended reflow methods; IR , vapor phase oven, hot air oven.
2. The 0ZCB Series is suitable for wave solder application methods.
3. Recommended maximum paste thickness is 0.25mm.
4. Devices are compatible with standard industry cleaning solvents and methods.

### Caution

If reflow temperature/dwell times exceed the recommended profile, the electrical performance of the PTC may be affected.

### Rework

MIL-STD-202G Method 210F. Test Condition A.

HALOGEN FREE = HF

LEAD FREE = Pb-free

Specifications subject to change without notice

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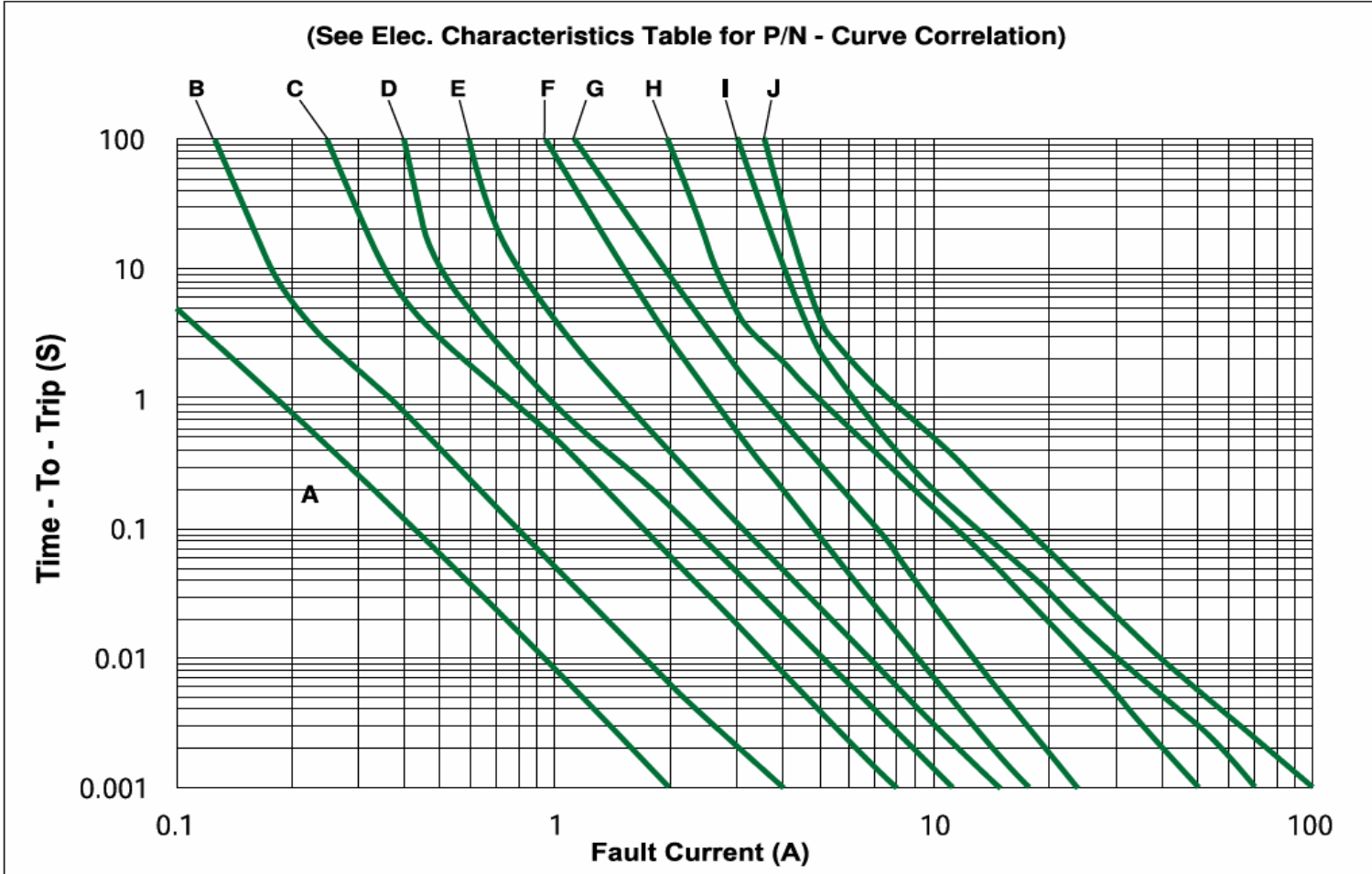
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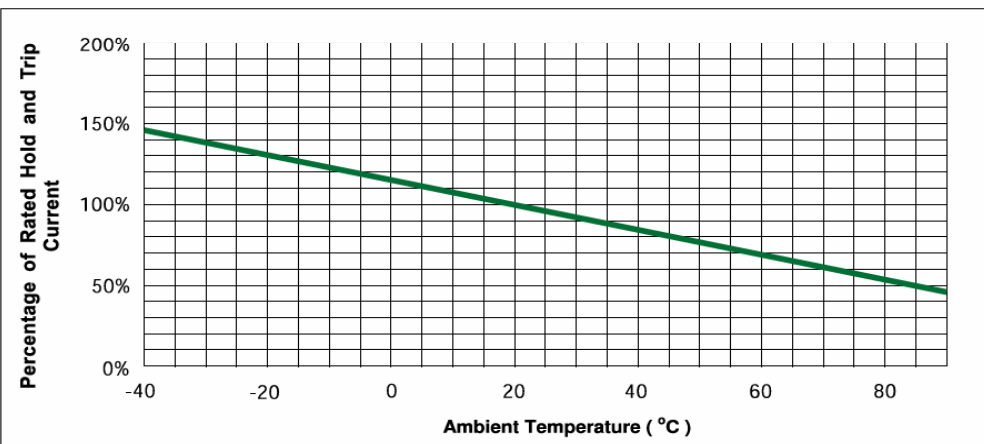


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### Typical Time - To - Trip at 23°C



### Thermal Derating Curve



### Cautionary Notes

1. Operation beyond the specified maximum ratings or improper use may result in damage and possible electrical arcing and/or flame.
2. These Polymer PTC (PPTC) devices are intended for protection against occasional overcurrent/ overtemperature fault conditions and may not be suitable for use in applications where repeated and/ or prolonged fault conditions are anticipated.
3. Avoid contact of PTC device with chemical solvent. Prolonged contact may adversely impact the PTC performance.
4. These PTC devices may not be suitable for use in circuits with a large inductance, as the PTC trip can generate circuit voltage spikes above the PTC rated voltage.

Specifications subject to change without notice

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