

INDIVIDUAL SPECIFICATION SHEET

Product Name: Self Control Fuse**Part Number:** WSFB1514**Revision:** A/2**Dongguan TLC Electronic Technology Co., LTD**

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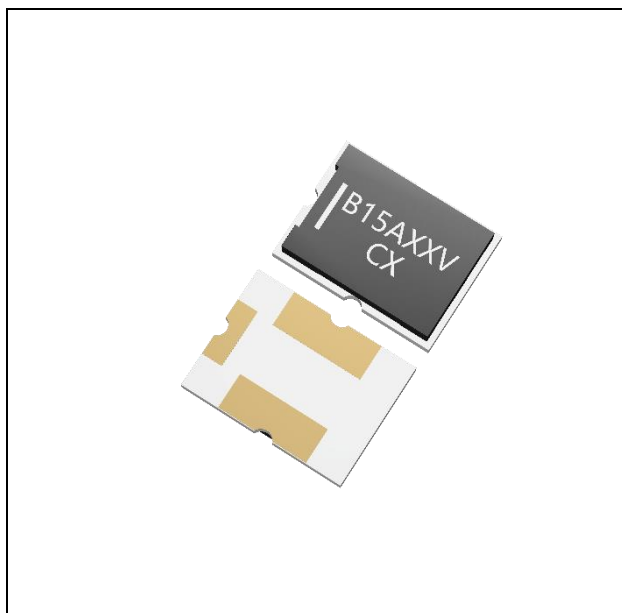
| Rev. | Effective Date | Changed Contents |
|------|------------------|---------------------------------|
| A/0 | 2020-3-31 | New Release |
| A/1 | 2022-6-11 | Product picture change |
| A/2 | 2023-2-14 | Voltage range correction |

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PREPARED BY**APPROVED BY**

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Description

WSFB Series is a three terminals surface mountable battery protector that can protect against both overcurrent and overcharging. It comprises a fuse element to ensure stable operation under normal electrical current and to cut off the current when overcurrent occurs. It also comprises a resistive heating element that could be used in combination with a voltage detecting means, such as IC and FET. When overvoltage is detected, it will generate heat to blow the fuse to achieve overvoltage protection.


Features

- Halogen Free
- Protection for both overcurrent and overcharging
- Surface Mount
- Fast response

Agency Approvals

- UL file: E467707

Electrical Characteristics

| Part Number | I _{rated} (A) | Cell In Series | V _{max} (Vdc) | I _{break} (A) | V _{op} (V) | Resistance | Agency Approvals |
|------------------------|---------------------------|--|---------------------------|---------------------------|------------------------|------------------------|---|
| | | | | | | R _{fuse} (mΩ) |  |
| WSFB1514 | 15 | 4 | 36 | 50 | 10.5-19.6 | 1.0-3.0 | ● |
| Current Capacity | | 100% x I _{rated} , No Melting | | | | | |
| Cut Time | | 200% x I _{rated} , < 1 min | | | | | |
| Interrupting Current | | 5 x I _{rated} , power on 5 ms, power off 995 ms, 10000 cycles, No Melting | | | | | |
| Over Voltage Operation | | In operation voltage range, the fusing time is <1min | | | | | |

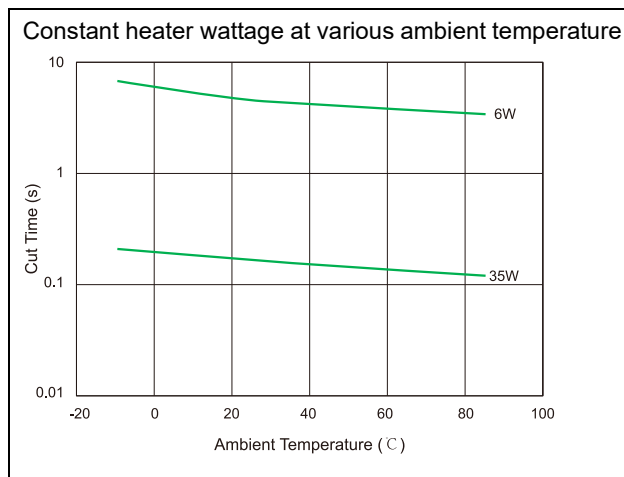
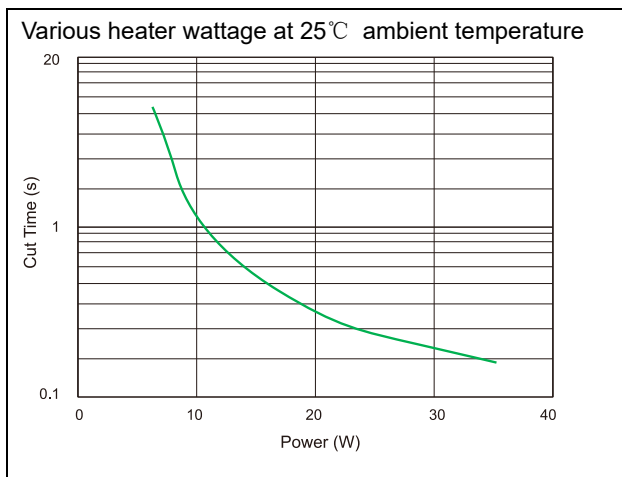
- 1) I_{rated} = Current carrying capacity that is measured at 40℃ thermal equilibrium condition
- 2) I_{break} = The current that the fuse element is able to interrupt
- 3) V_{max} = The maximum voltage that can be cut off by fuse
- 4) V_{op} = Range of operation voltage
- 5) R_{heater} = The resistance of the heating element
- 6) R_{fuse} = The resistance of the fuse element
- 7) Cells in series = Number of battery cells connected in series in the circuit for WSFB device to protect.

• Value specified is determined by using the PWB with 2mm*2oz copper traces, AWG18 covered wire, and 0.6mm glass epoxy PCB.

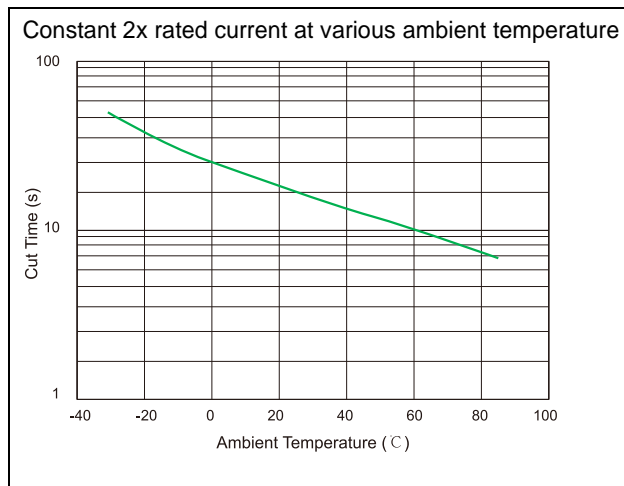
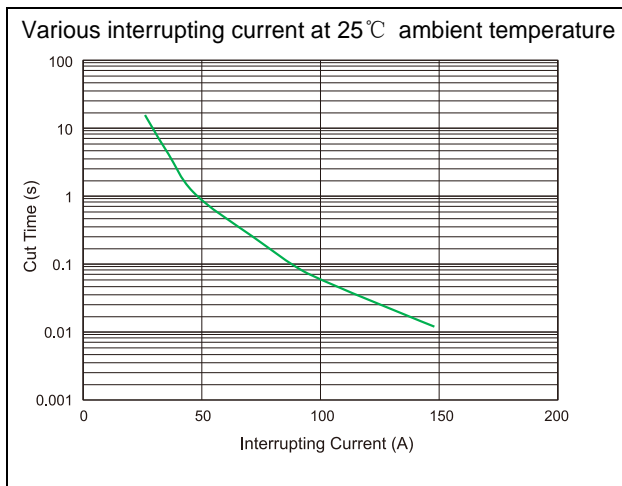
• Specifications are subject to change without notice.

• UL

Cut Time by Heater Operation (WSFB 15A series)

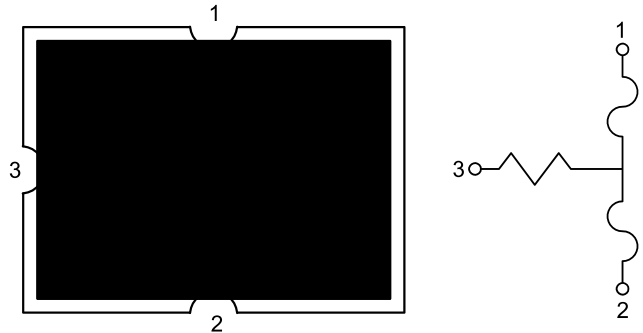
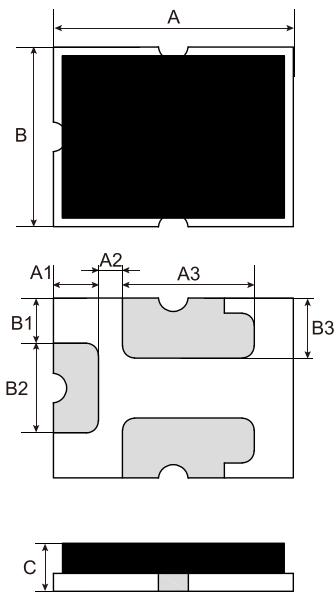


Cut Time by Current Operation (WSFB 15A series)

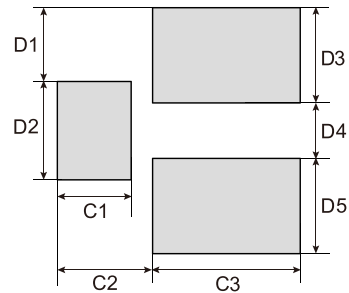


Environmental Specifications

| | |
|-----------------------|---|
| Storage Temperature | 0~35℃, ≤70%RH 1 year after shipment |
| Operating Temperature | -10℃ to +65℃ |
| Hot Passive Aging | 100±5℃, 250 hours No structural damage and functional failure |
| Humidity Aging | 60℃±2℃, 90~95% R.H. 250 hours No structural damage and functional failure |
| Cold Passive Aging | -20±3℃, 500 hours No structural damage and functional failure |
| Thermal Shock | MIL-STD-202 Method 107G +125℃/-55℃, 100 times No structural damage and functional failure |

Device Circuit

Physical Dimension (mm)


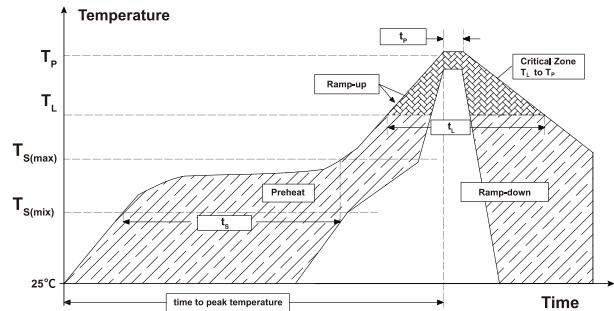
| Symbol | Dimension |
|--------|-----------|
| A | 4.00±0.2 |
| B | 3.00±0.3 |
| C | 1.00max |
| A1 | 0.75±0.1 |
| A2 | 0.46±0.1 |
| A3 | 2.20±0.1 |
| B1 | 0.75±0.1 |
| B2 | 1.50±0.1 |
| B3 | 1.00±0.1 |

Board and Solder Layout Recommend (mm)


| Symbol | Dimension |
|--------|-----------|
| C1 | 1.20±0.1 |
| C2 | 1.55±0.1 |
| C3 | 2.40±0.1 |
| D1 | 1.20±0.1 |
| D2 | 1.60±0.1 |
| D3 | 1.55±0.1 |
| D4 | 0.90±0.1 |
| D5 | 1.55±0.1 |

Soldering Parameters

| | | |
|--|--|-----------------|
| Average Ramp-Up Rate (T_{Smax} to T_P) | | 3°C/second max. |
| Preheat | Temperature Min (T_{Smin}) | 150°C |
| | Temperature Max (T_{Smax}) | 200°C |
| | Time (T_{Smin} to T_{Smax}) | 60-120 seconds |
| Time maintained above: | Temperature (T_L) | 217°C |
| | Time (t_L) | 60-105 seconds |
| Peak Temperature (T_P) | | 255°C |
| Time within 5°C of actual Peak Temperature (t_P) | | 5 seconds max. |
| Ramp-Down Rate | | 6°C/second max. |
| Time 25°C to Peak Temperature | | 8 minutes 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

Physical Specifications

| | |
|-------------------------|-----------------|
| Material | Glass Epoxy PCB |
| Base Thickness | 0.6mm |
| Copper Thickness | 0.07mm |
| Covered Wire | AWG18 |

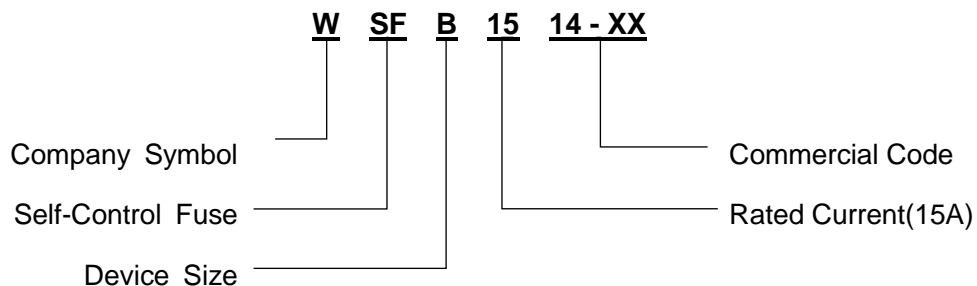
Packaging

| | |
|--------------------|-------------------------------|
| Part Number | Tape and Reel Quantity |
| WSFBXXXX | 5,000 |

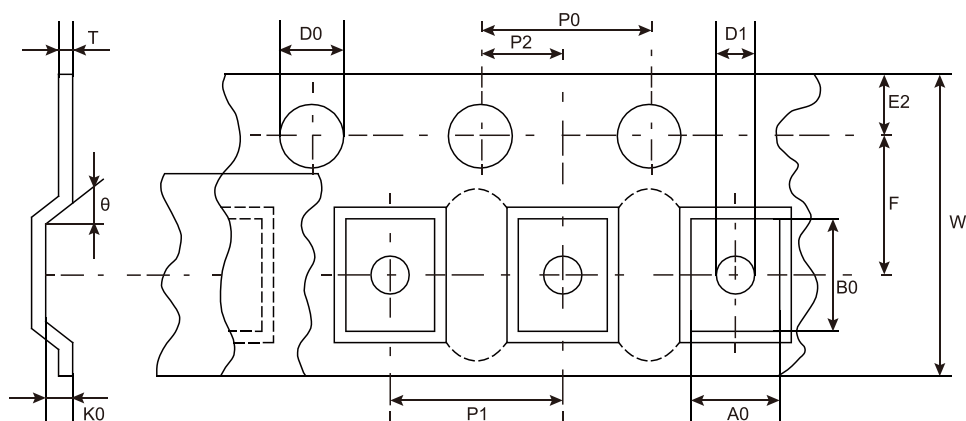
Part Marking System

B15A14V ——— Model Mark
C4 ——— Commercial Code

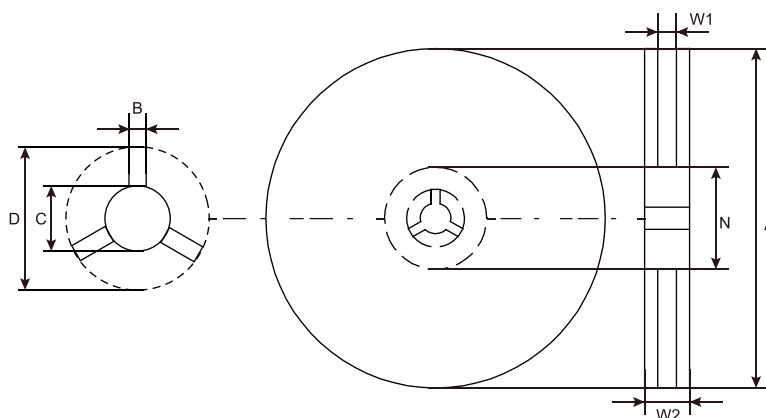
Part Numbering System



Tape and Reel Specification

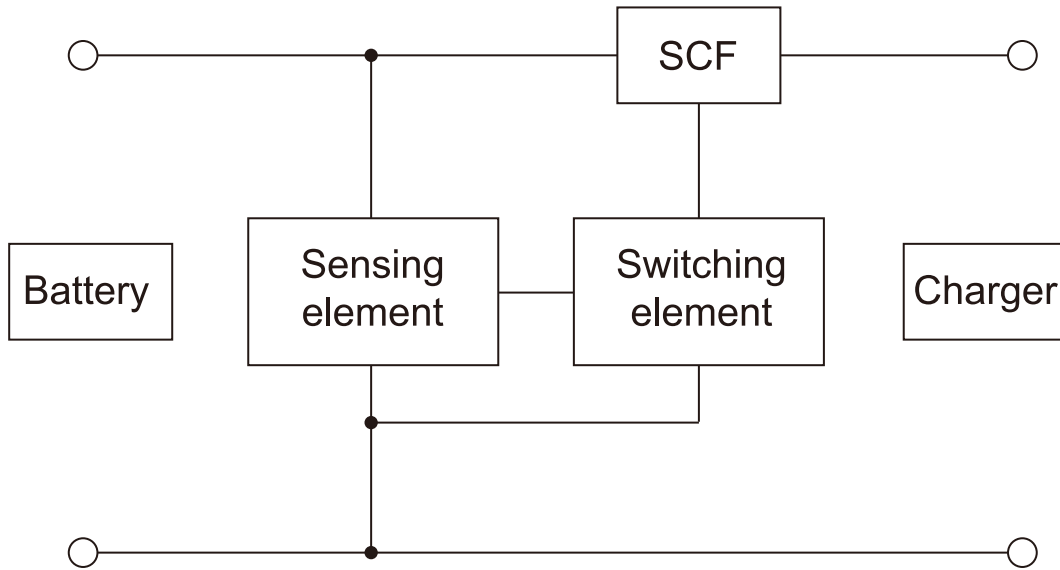


| Item | A0 | B0 | D0 | D1 | E2 | F | K0 |
|-----------|-----------|-----------|------------|------------|------------|-----------|-----------|
| Spec.(mm) | 3.35±0.1 | 4.35±0.1 | Φ1.50±0.05 | Φ1.50±0.05 | 1.75±0.10 | 5.50±0.05 | 1.20±0.10 |
| Item | P0 | P1 | P2 | T | W | θ | |
| Spec.(mm) | 4.00±0.10 | 8.00±0.10 | 2.00±0.10 | 0.30±0.05 | 12.00±0.30 | MAX6° | |



| Item | A | B | C | D | N | W1 | W2 |
|-----------|-------------|-------------|--------------|--------------|-------------|-------------|------------|
| Spec.(mm) | Φ 330 ± 0.1 | 2.50 ± 0.05 | 13.60 ± 0.05 | 22.60 ± 0.05 | Φ 99 ± 0.05 | 13.00 ± 0.1 | 16.8 ± 0.1 |

Typical Application Circuit Diagram



Installation and Handling Guidelines

- Before and after mounted, the ultrasonic-cleaning or immersion-cleaning must not be done to WSF device. The flux on element would flow, and it would not be satisfied its specification when cleaning is done. In addition, a similar influence happens when the product comes in contact with cleaning-solution. These products after cleaning will not be guaranteed.
- Silicone-based oils, oils, solvents, gels, electrolytes, fuels, acids, and the like will adversely affect the properties of WSF devices, and shall not be used or applied.
- Please Do Not reuse the WSF device removed by the soldering process.
- WSF devices are secondary protection devices and are used solely for sporadic, accidental over-current or over-temperature error condition, and shall NOT be used if or when constant or repeated fault conditions (such fault conditions may be caused by, among others, incorrect pin-connection of a connector) or over-extensive trip events may occur.
- Operation over the maximum rating or other forms of improper use may cause failure, arcing, flame and/or other damage to the WSF devices.
- The performance of WSF devices will be adversely affected if they are improperly used under electronic, thermal and/or mechanical procedures and/or conditions non-conformant to those recommended by manufacturer.
- Customers shall be responsible for determining whether it is necessary to have back-up, failsafe and/or fool-proof protection to avoid or minimize damage that may result from extra-ordinary, irregular function or failure of WSF devices.
- There should be minimum of 0.1mm spacing between WSF and surrounding compounds, to maintain the product characteristics and avoid damage other surrounding compounds.
- This product is designed and manufactured only for general-use of electronics devices. We do not recommend that it is used for the applications Military, Medical and so on which may cause direct damages on life, bodies or properties.