



TLC Electronic  
莞沃电子

Self Control Fuse

DOC.No. :  
ISS:WSFB1524

## INDIVIDUAL SPECIFICATION SHEET

**Product Name:** Self Control Fuse

**Part Number:** WSFB1524

**Revision:** A/1



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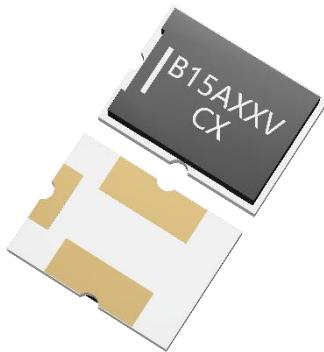
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Rev.	Effective Date	Changed Contents
A/0	2020-3-31	New Release
<b>A/1</b>	<b>2022-6-11</b>	<b>Product picture change</b>

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PREPARED BY	APPROVED BY



## 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 <sub>rated</sub> (A)	Cell In Series	V <sub>max</sub> (Vdc)	I <sub>break</sub> (A)	V <sub>op</sub> (V)	Resistance	Agency Approvals
						R <sub>fuse</sub> (mΩ)	
WSFB1524	15	6	48	200	17.3-28.0	1.0-3.0	●
Current Capacity	100% x I <sub>rated</sub> , No Melting						
Cut Time	200% x I <sub>rated</sub> , < 1 min						
Interrupting Current	5 x I <sub>rated</sub> , 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<sub>rated</sub> = Current carrying capacity that is measured at 40°C thermal equilibrium condition

2) I<sub>break</sub> = The current that the fuse element is able to interrupt

3) V<sub>max</sub> = The maximum voltage that can be cut off by fuse

4) V<sub>op</sub> = Range of operation voltage

5) R<sub>heater</sub> = The resistance of the heating element

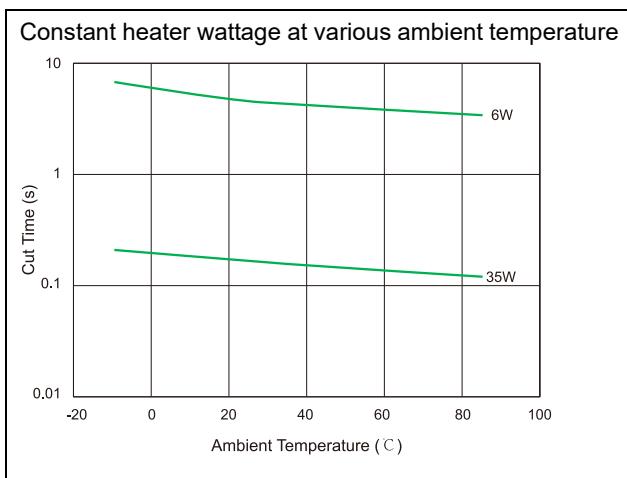
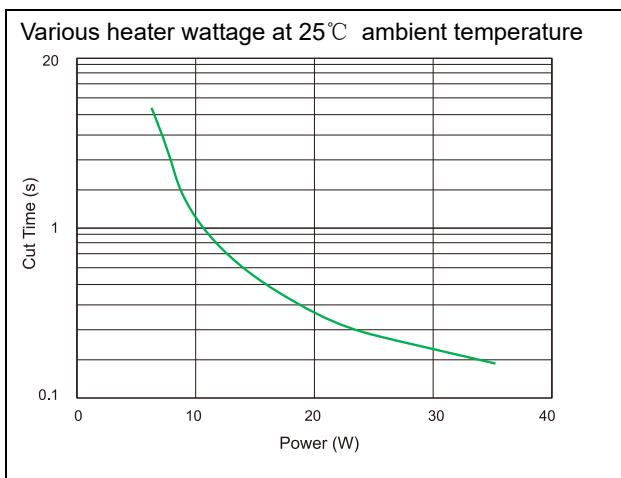
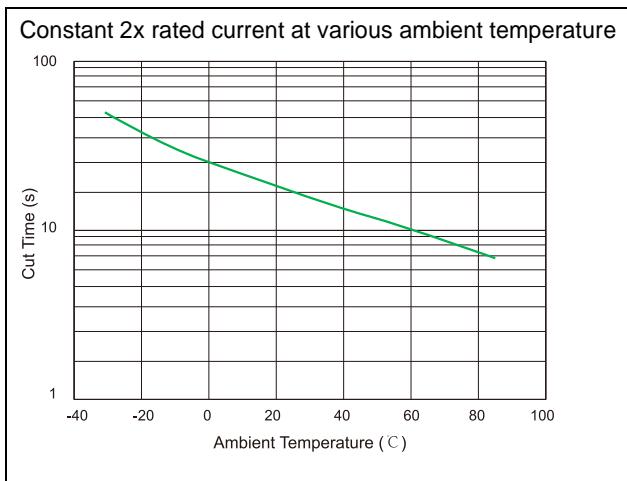
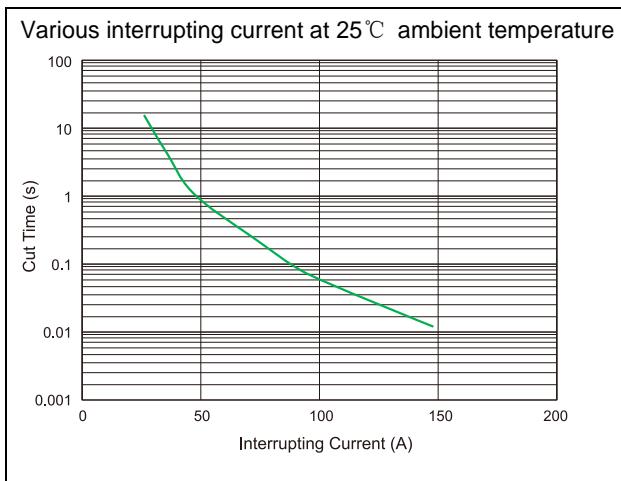
6) R<sub>fuse</sub> = The resistance of the fuse element

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.

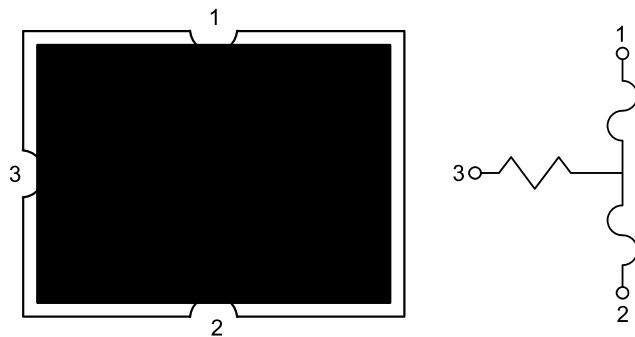
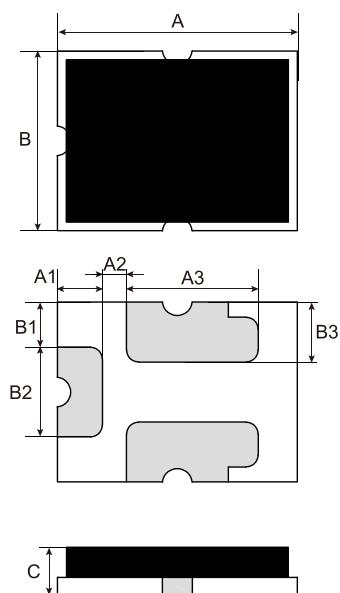
• Specifications are subject to change without notice.

• UL

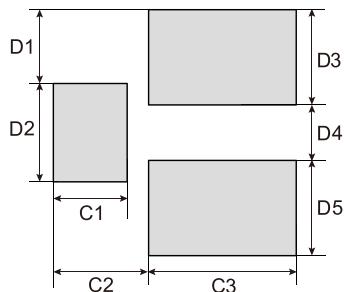
**Cut Time by Heater Operation (WSFB 15A series)**

**Cut Time by Current Operation (WSFB 15A series)**


**Environmental Specifications**

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

**Device Circuit**

**Physical Dimension (mm)**


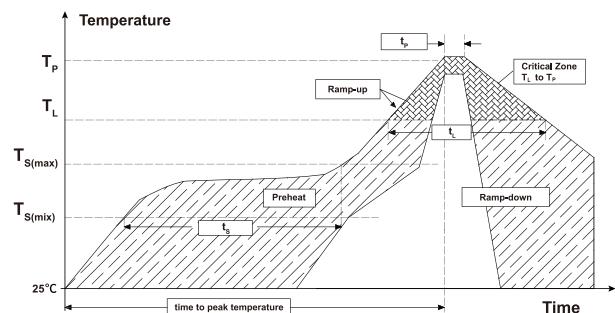
Symbol	Dimension
A	4.00±0.2
B	3.00±0.3
C	1.00max
A1	0.75±0.1
A2	0.46±0.1
A3	2.20±0.1
B1	0.75±0.1
B2	1.50±0.1
B3	1.00±0.1

**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

<b>Average Ramp-Up Rate (<math>T_{S\max}</math> to TP)</b>		3°C/second max.
<b>Preheat</b>	<b>Temperature Min (<math>T_{S\min}</math>)</b>	150°C
	<b>Temperature Max (<math>T_{S\max}</math>)</b>	200°C
	<b>Time (<math>T_{S\min}</math> to <math>T_{S\max}</math>)</b>	60-120 seconds
<b>Time maintained above:</b>	<b>Temperature (<math>T_L</math>)</b>	217°C
	<b>Time (<math>t_L</math>)</b>	60-105 seconds
<b>Peak Temperature (TP)</b>		255°C
<b>Time within 5°C of actual Peak Temperature (tP)</b>		5 seconds max.
<b>Ramp-Down Rate</b>		6°C/second max.
<b>Time 25°C to Peak Temperature</b>		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

<b>Material</b>	Glass Epoxy PCB
<b>Base Thickness</b>	0.6mm
<b>Copper Thickness</b>	0.07mm
<b>Covered Wire</b>	AWG18

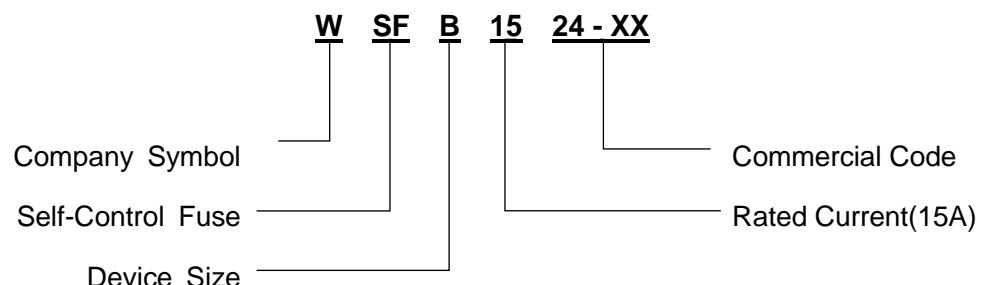
## Packaging

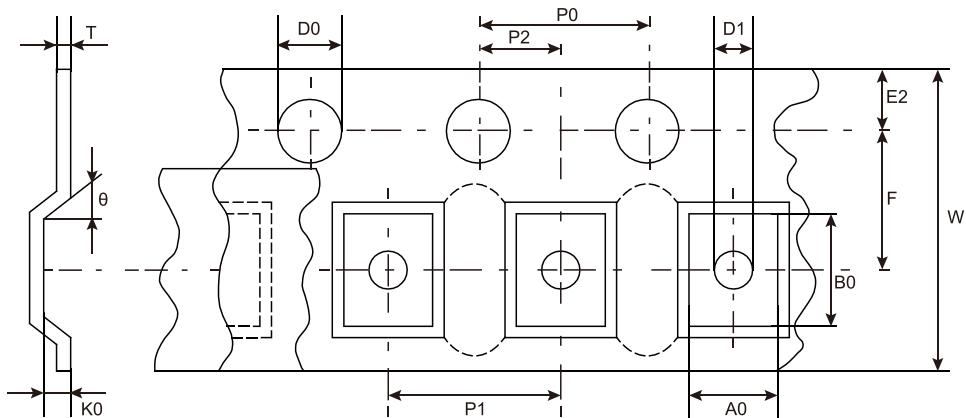
Part Number	Tape and Reel Quantity
WSFBXXXX	5,000

## Part Marking System

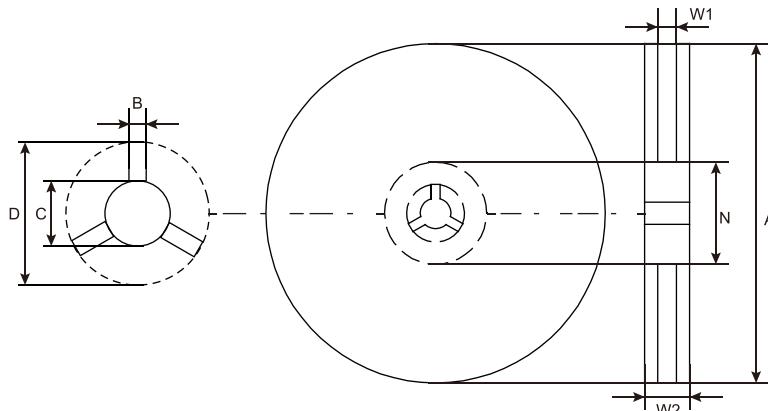
**B15A24V** —— Model Mark  
**C6** —— Commercial Code

## Part Numbering System

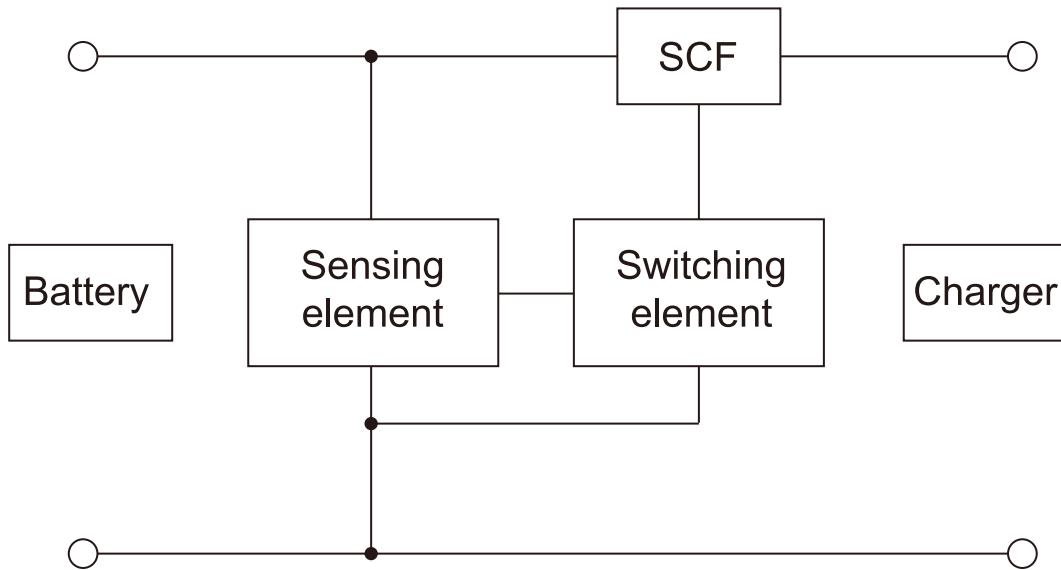


**Tape and Reel Specification**


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.