

## INDIVIDUAL SPECIFICATION SHEET

**Product Name:** Self Control Fuse**Part Number:** WSFC3050**Revision:** A/1**Dongguan TLC Electronic Technology Co., LTD**

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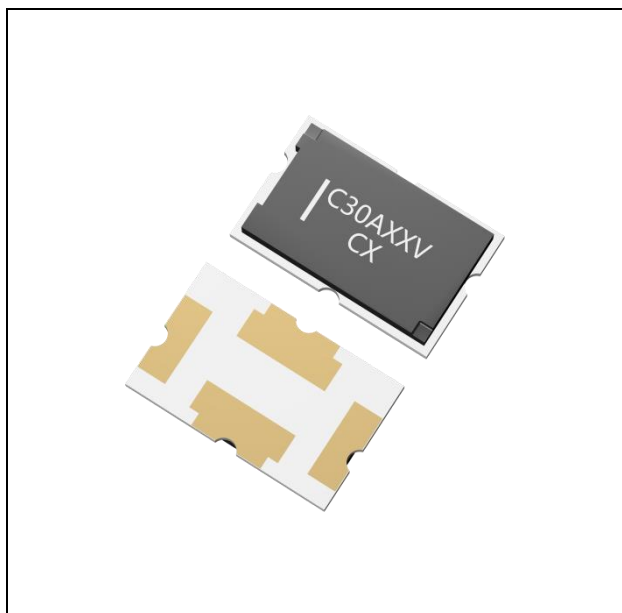
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Rev.	Effective Date	Changed Contents
A/0	2021-3-31	New Release
A/1	2022-6-11	Product picture change

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## Description

WSFC 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

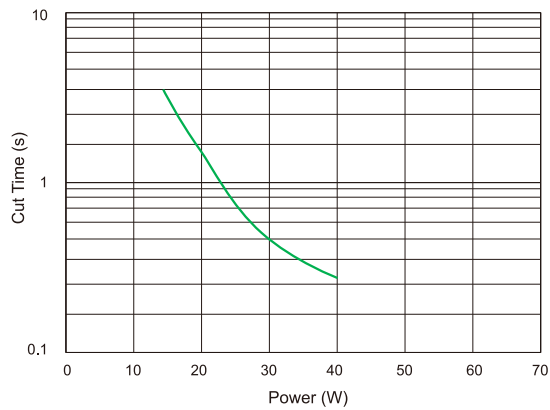
## Electrical Characteristics

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)	
WSFC3050	30	13	62	80	45.2-58.5	0.5-2.5	●
Current Capacity		100% x I <sub>rated</sub> , No Melting					
Cut Time		200% x I <sub>rated</sub> , < 1 min					
Interrupting Current		100 A, power on 5 ms, power off 995 ms, 10000 cycles, No Melting					
Over Voltage Operation		In operation voltage range, the fusing time is <1min					

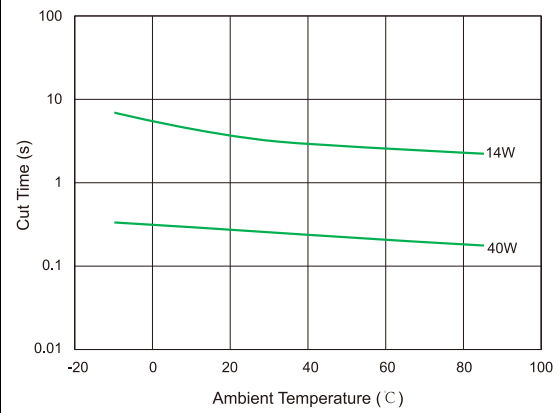
- 1) I<sub>rated</sub> = Current carrying capacity that is measured at 40°C thermal equilibrium condition
  - 2) I<sub>break</sub> = The current that the fuse element is able to interrupt
  - 3) V<sub>max</sub> = The maximum voltage that can be cut off by fuse
  - 4) V<sub>op</sub> = Range of operation 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 WSFC device to protect.
- Value specified is determined by using the PWB with 29.4mm\*2oz copper traces, AWG10 covered wire, and 0.6mm glass epoxy PCB.
  - Specifications are subject to change without notice.

### Cut Time by Heater Operation

Various heater wattage at 25°C ambient temperature

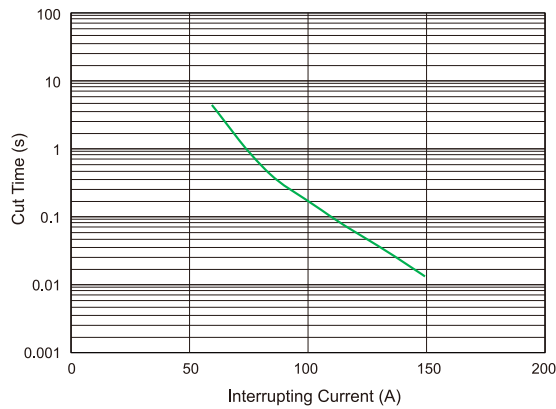


Constant heater wattage at various ambient temperature

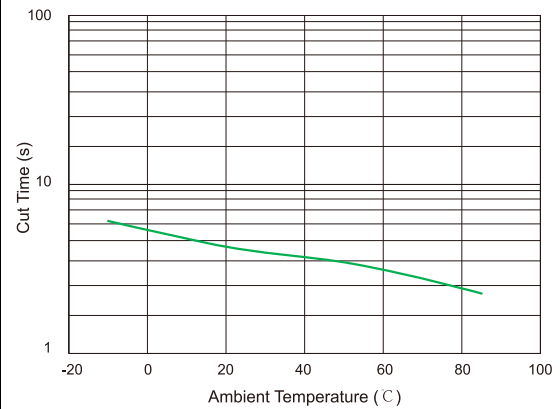


### Cut Time by Current Operation

Various interrupting current at 25°C ambient temperature

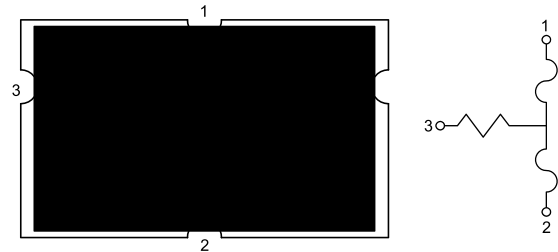
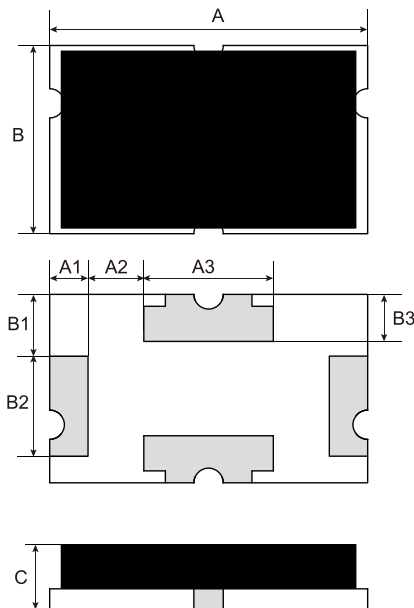


Constant 2x rated current at various ambient temperature

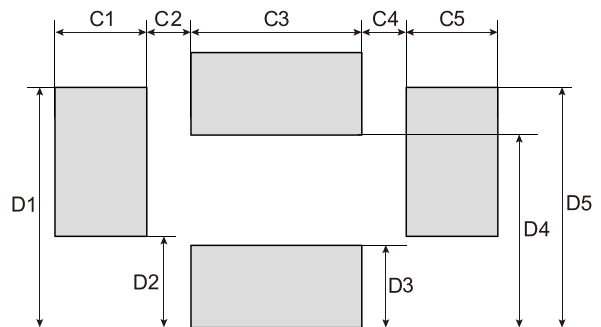


**Environmental Specifications**

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)**


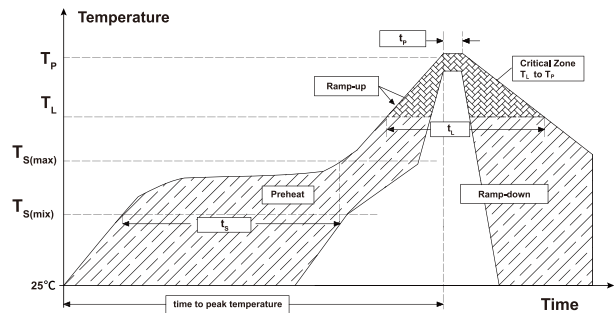
Symbol	Dimension
A	5.40±0.2
B	3.20±0.3
C	1.35±0.3
A1	0.65±0.1
A2	0.81±0.1
A3	2.20±0.1
B1	1.05±0.1
B2	1.70±0.1
B3	0.80±0.1

**Board and Solder Layout Recommend (mm)**


Symbol	Dimension
C1	1.25±0.1
C2	0.75±0.1
C3	2.40±0.1
C4	0.75±0.1
C5	1.25±0.1
D1/D5	3.35±0.1
D2	1.45±0.1
D3	1.40±0.1
D4	2.80±0.1

## Soldering Parameters

<b>Average Ramp-Up Rate</b> ( $T_{Smax}$ to $T_P$ )		3°C/second max.
<b>Preheat</b>	<b>Temperature Min (<math>T_{Smin}</math>)</b>	150°C
	<b>Temperature Max (<math>T_{Smax}</math>)</b>	200°C
	<b>Time (<math>T_{Smin}</math> to <math>T_{Smax}</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 (<math>T_P</math>)</b>		255°C
<b>Time within 5°C of actual Peak Temperature (<math>t_P</math>)</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

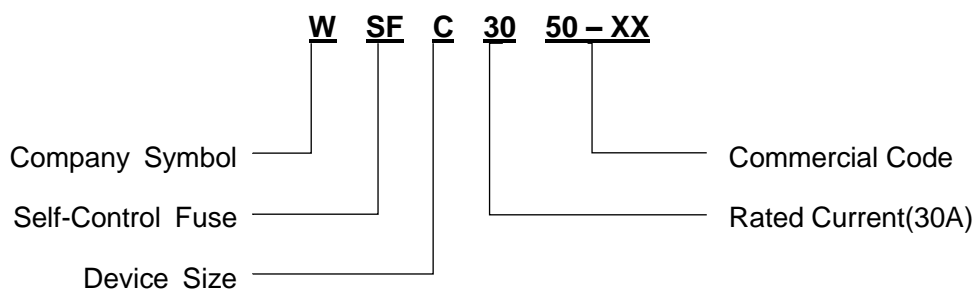
## Packaging

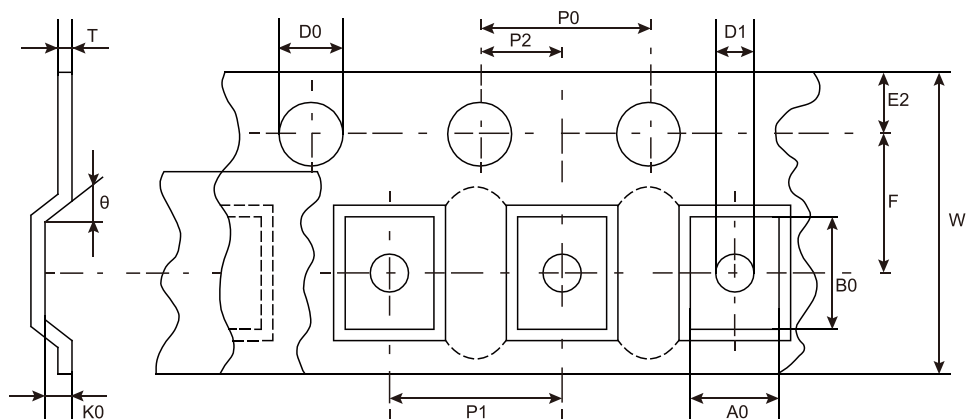
<b>Part Number</b>	<b>Tape and Reel Quantity</b>
WSFCXXXX	4,000

## Part Marking System

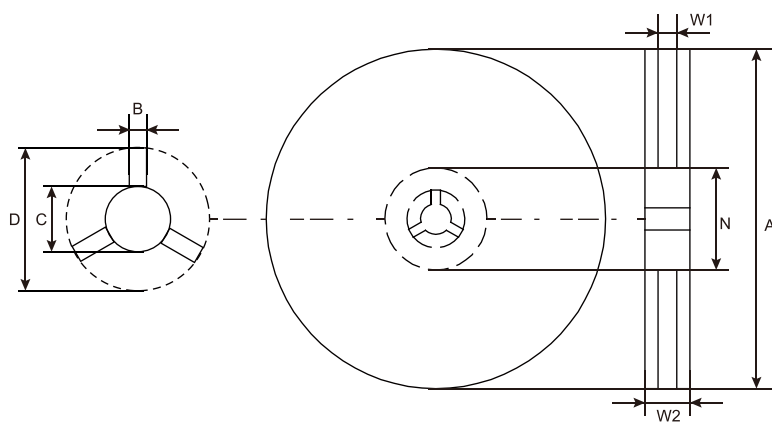
**C30A50V** ——— **Model Mark**  
**C13** ——— **Commercial Code**

## Part Numbering System



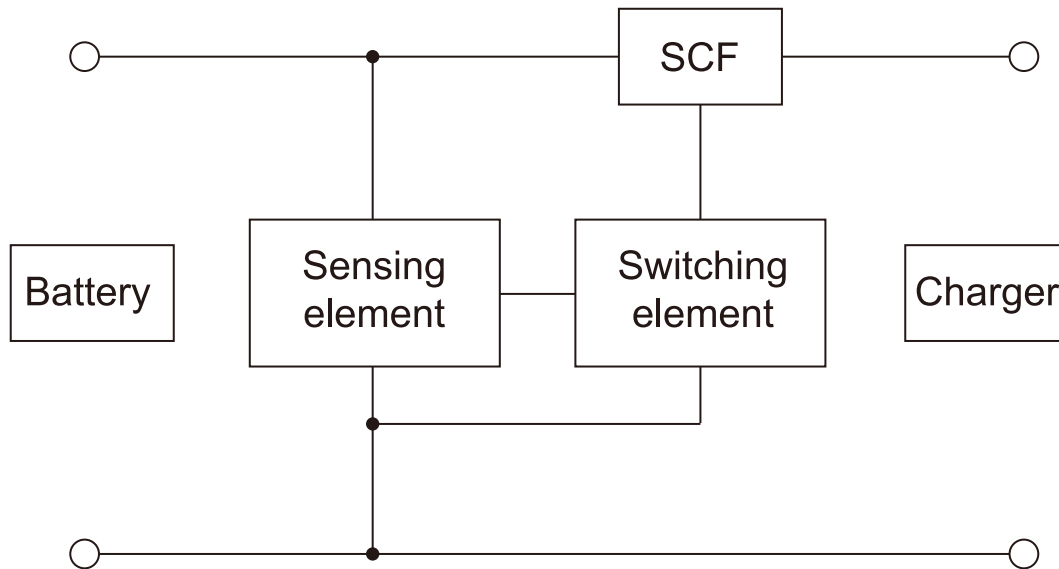
**Tape and Reel Specification**


Item	A0	B0	D0	D1	E2	F	K0
Spec.(mm)	$3.50 \pm 0.1$	$5.70 \pm 0.1$	$\Phi 1.50 \pm 0.05$ 5	$\Phi 1.50 \pm 0.05$	$1.75 \pm 0.10$	$5.50 \pm 0.05$	$1.60 \pm 0.10$
Item	P0	P1	P2	T	W	$\theta$	
Spec.(mm)	$4.00 \pm 0.10$	$8.00 \pm 0.10$	$2.00 \pm 0.10$	$0.30 \pm 0.05$	$12.00 \pm 0.30$	MAX6°	



Item	A	B	C	D	N	W1	W2
Spec.(mm)	$\Phi 330 \pm 0.1$	$2.50 \pm 0.05$	$13.60 \pm 0.05$	$22.60 \pm 0.05$	$\Phi 99 \pm 0.05$	$13.00 \pm 0.1$	$16.8 \pm 0.1$

## 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.