

# AHCA/AHC5A/AHCFA

## Automotive high voltage 6.3 mm x 32 mm fast-acting fuse



### Product features

- High voltage ceramic tube fuse
- Automotive grade qualified\*
- Compact 3AB footprint:  
6.3 mm x 32 mm (1/4" x 1 1/4")
- Fast-acting performance
- Up to 500 Vac rating
- Cartridge, axial lead, and PCB terminal mount versions available
- Very high interrupting ratings to help safely protect against dangerous high fault currents
- Fuse accessories (cartridge version):  
[HVP Panel mount fuse holder \(480V\)](#)  
[HVI In-line fuse holder \(600V\)](#)  
[S-8000 Panel mount fuse block \(600V\)](#)  
[1Axxxx \(up to 600V\) fuse clips](#)

\*Meets Eaton's internal AEC-Q200 test plan

### Agency information

- cURus recognition file number:  
E19180 Guide JDYX2 and JDYX8  
(cartridge and axial lead only)



### Applications

- On-board power conversion (Inverter, OBC, PDU) for xEVs
- Stationary EV charging stations
- Single phase and 3-phase UPS and VFD (Vac input for rectifier and Vdc input/battery)
- Industrial control panels and UL508A panel shops
- Energy storage and battery management systems
- High voltage power conversion (AC/DC, AC/AC, DC/DC, DC/AC)

### Environmental compliance



### Ordering part number

#### Cartridge/axial lead

##### BK-AHCA-V-18-R

Packaging prefix	_____
Family name	_____
Option code (V = leaded)	_____
Ampere rating	_____
RoHS compliance	_____

#### PCB terminal mount

##### AHCA-18-1P

Family name	_____
Ampere rating	_____
Terminal code	_____

### Packaging prefix

- **Blank**  
For terminal version only: 90 pieces in plastic tray, 10 trays (900 pcs) in a carton
- **BK-**  
For cartridge and axial versions only: 100 pieces in a box

### Option code

- **-V-**  
Axial leads with 38.1 length – copper tinned wire with nickel plated brass over caps

### Terminal code

- **-1P-**  
Copper with bright Nickel plating
- **-PCB**  
Copper with bright Nickel plating
- **-PCBR**  
Copper with bright Nickel plating
- **-PCBHT**  
Copper with bright Nickel plating

## Electrical characteristics

Amp rating	1.0 In minimum	1.5 In maximum	2.0 In maximum	3.0 In maximum
AHCA- (15 A to 30 A)	4 hours	60 minutes	30 minutes	10 seconds
AHCFA- (18 A to 25 A)	4 hours	60 minutes	30 minutes	10 seconds
AHC5A-30	NA	60 minutes	30 minutes	10 seconds
AHCFA-30	NA	60 minutes	30 minutes	10 seconds

## Product specifications

Part number	Current rating (A)	Voltage rating <sup>3</sup> (Vac)	Voltage rating <sup>3</sup> (Vdc)	Interrupting rating @ rated voltage (A)	Typical resistance <sup>1</sup> (mΩ)	Typical voltage drop <sup>2</sup> (mV)	Vac Interrupting rating power factor
AHCA-15	15	500	500	20,000	6.6	170	0.35 to 0.4
AHCA-18	18	500	-	20,000	5	145	0.55 to 0.6
AHCFA-18	18	500	500	20,000	5	145	0.99 to 1
AHCA-20	20	500	-	20,000	4.7	145	0.55 to 0.6
AHCFA-20	20	500	500	20,000	4.7	145	0.99 to 1
AHCA-25	25	500	-	20,000	3.9	175	0.55 to 0.6
AHCFA-25	25	500	500	20,000	3.9	175	0.99 to 1
AHC5A-30	30	500	-	20,000	3.3	225	0.55 to 0.6
AHCA-30	30	450	450	10,000	2.9	165	0.35
AHCFA-30	30	500	500	20,000	3.3	225	0.99 to 1

1. Typical resistance measured at <10% of rated current at +23 °C

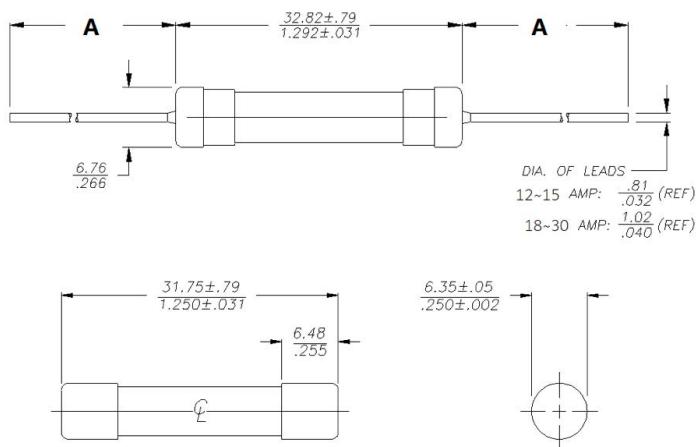
2. Typical voltage drop measured at +23 °C and rated current

3. DC interrupting rating measured at rated voltage, time constant 1.95 to 2 ms

## Dimensions- mm/inches

Drawing not to scale

## Cartridge and axial lead



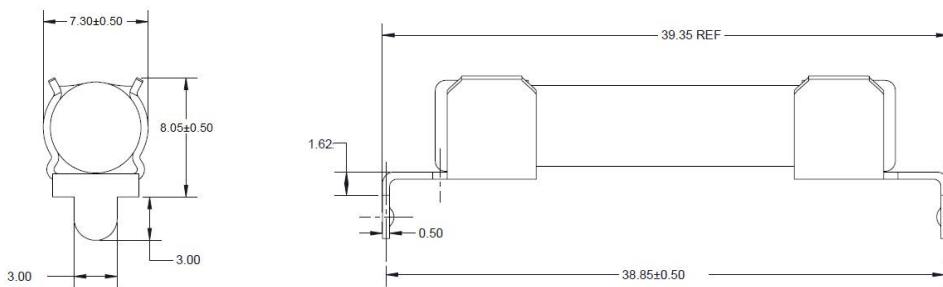
Part number	Dimension A
BK-AHC(5)(F)A-V-XX-R	38.1 mm (REF)

**Dimensions- mm/inches (continued)**

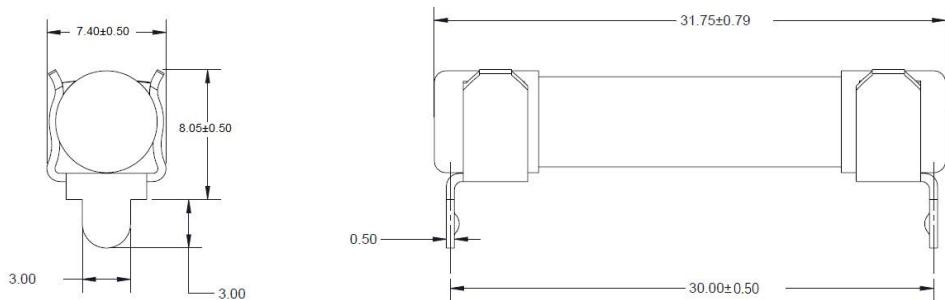
Drawing not to scale

**PCB terminal fuse**

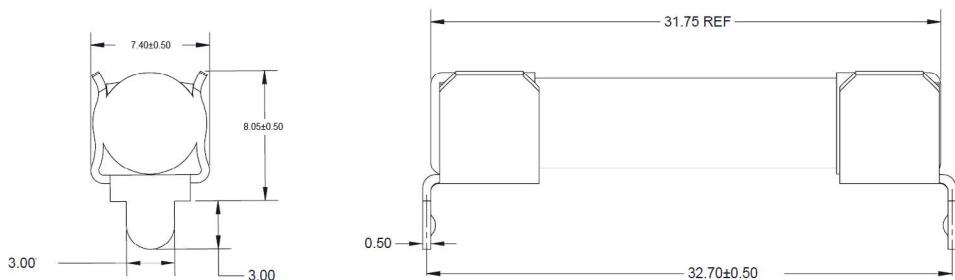
**AHC(5)(F)A-XX-1P**



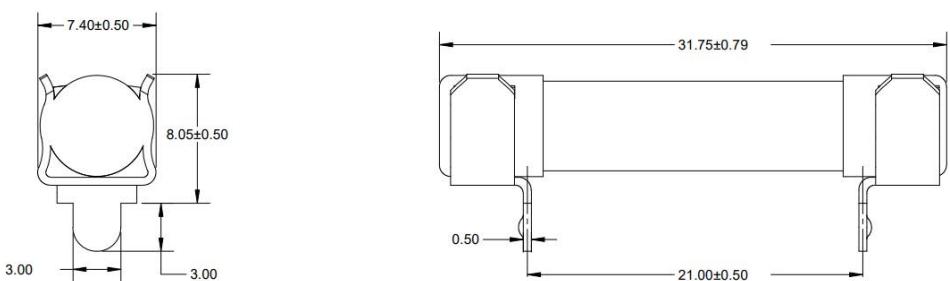
**AHC(5)(F)A-XX-PCB**



**AHC(5)(F)A-XX-PCBHT**



**AHC(5)(F)A-XX-PCBR**



Unless otherwise specified dimensions are in millimeters tolerances to be +/-0.13 mm

## General specifications

Operating temperature: -55 °C to +125 °C with proper correction factor applied

Humidity: MIL-STD-202, Method 103B, test condition A, Environmental chamber 85% +2% relative humidity at 85 °C +2 °C, 10% rated current for 240 hours

Terminal strength: MIL-STD-202, Method 211A, Test condition A, Pull force test. The force applied to the terminal shall be 5-pound force

Mechanical shock: MIL-STD 202 Method 213, Condition C, 100 g, 6 ms, Half sine

Vibration: MIL-STD 202, Method 204, 5 g's for 20 minutes, 12 cycles each of 3 orientations. Test from 10 to 2000 Hz.

Life test: MIL-STD-202, Method 108A, except Circulating air environment at +125 °C ±2 °C, apply 60% rated current for 250 hours

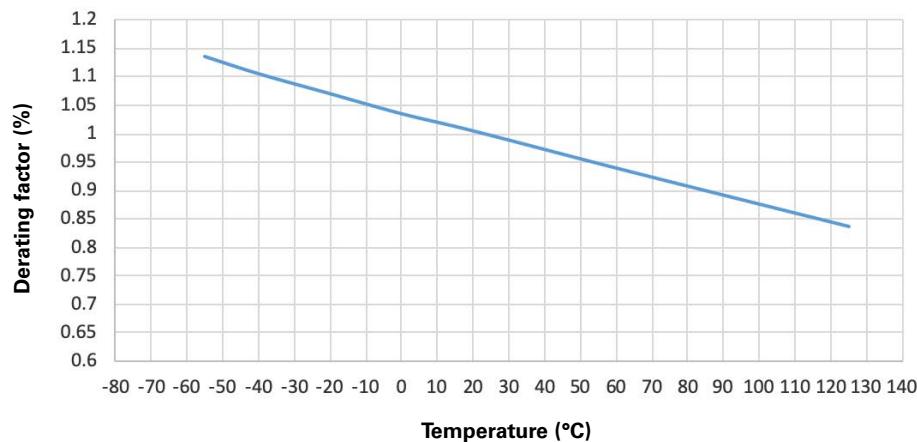
Temperature cycling: MIL-STD-202, Method 107G, Condition B-1, -55 °C to +125 °C, 25 cycles

Resistance to solder heat: MIL-STD 202 Method 210 Condition B

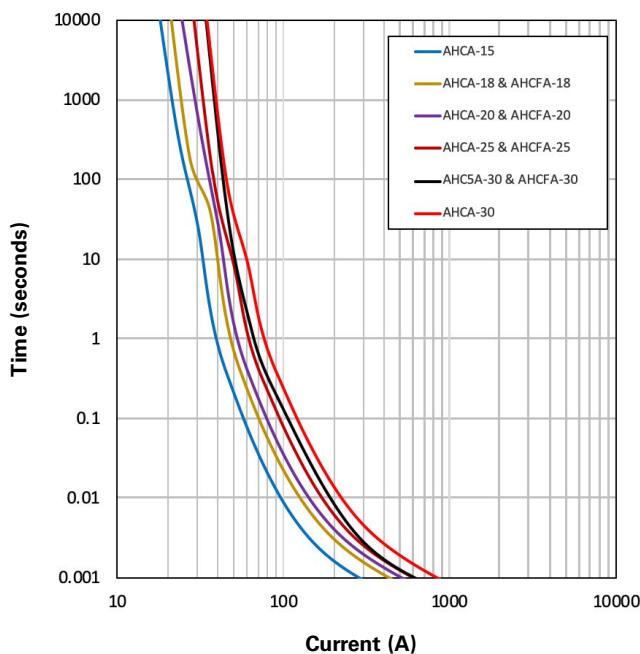
Salt spray: MIL-STD-202, Method 101E, Test condition B. (NaCl) content of from 5±1 percent for 48 hours.

ESD: According to AEC-Q200-002 or ISO/DIS 10605

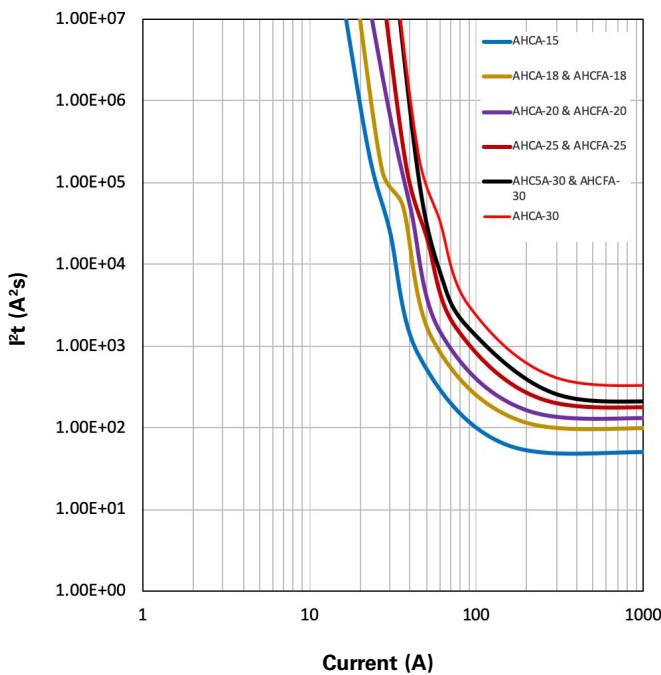
## Temperature derating curve



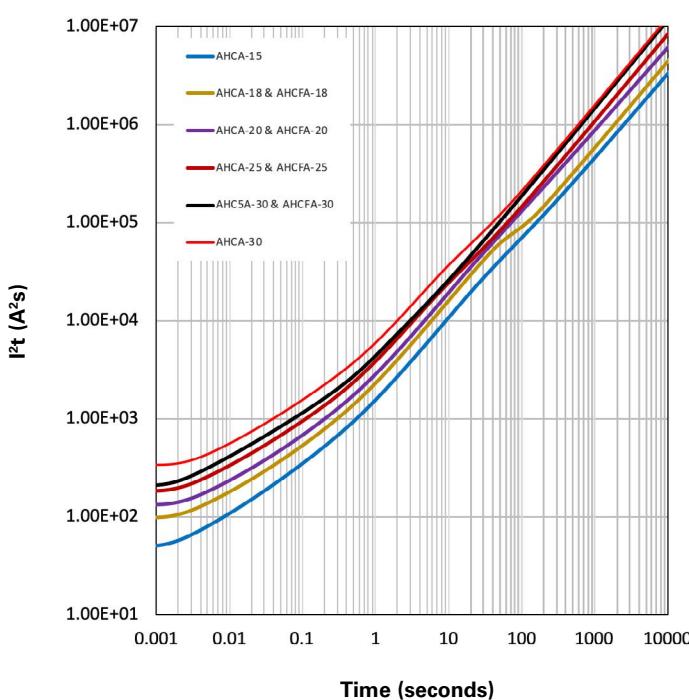
## Current vs. time curve



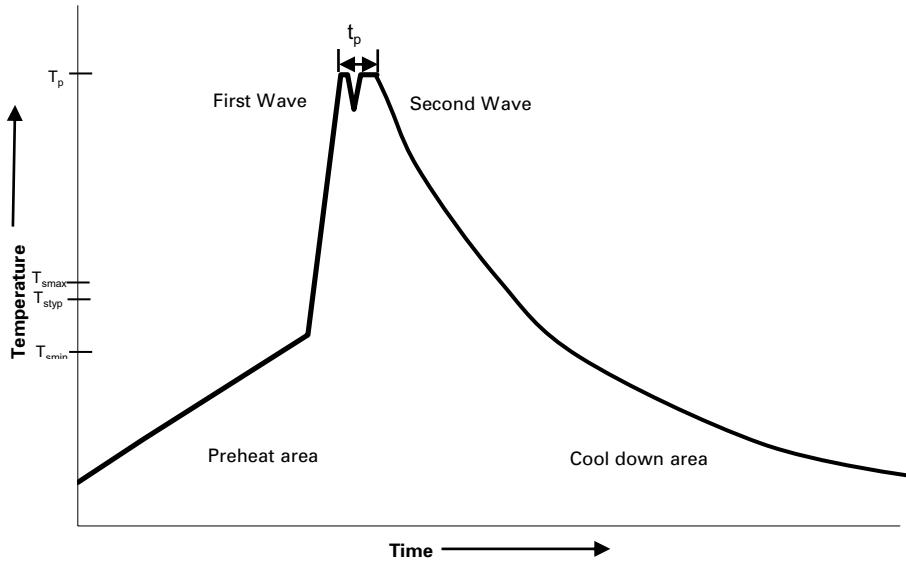
**I<sup>2</sup>t vs. current curve**



**I<sup>2</sup>t vs. time curve**



**Wave solder profile** (Axial lead and PCB terminal mount only)



**Reference EN 61760-1:2006**

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature typ. (<math>T_{styp}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	100 °C 120 °C 130 °C 70 seconds
Δ preheat to max Temperature	150 °C max.	150 °C max.
Peak temperature ( $T_p$ )*	235 °C – 260 °C	250 °C – 260 °C
Time at peak temperature ( $t_p$ )	10 seconds max 5 seconds max each wave	10 seconds max 5 seconds max each wave
Ramp-down rate	~ 2 K/s min ~3.5 K/s typ ~5 K/s max	~ 2 K/s min ~3.5 K/s typ ~5 K/s max
Time 25 °C to 25 °C	4 minutes	4 minutes

**Manual solder**

+350 °C (4-5 seconds by soldering iron), generally manual/hand soldering is not recommended.

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**Eaton**  
**Electronics Division**  
1000 Eaton Boulevard  
Cleveland, OH 44122  
United States  
Eaton.com/electronics

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