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 (¼" x 1 ¼")
- 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

Pb HALOGEN HF FREE RoHS

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

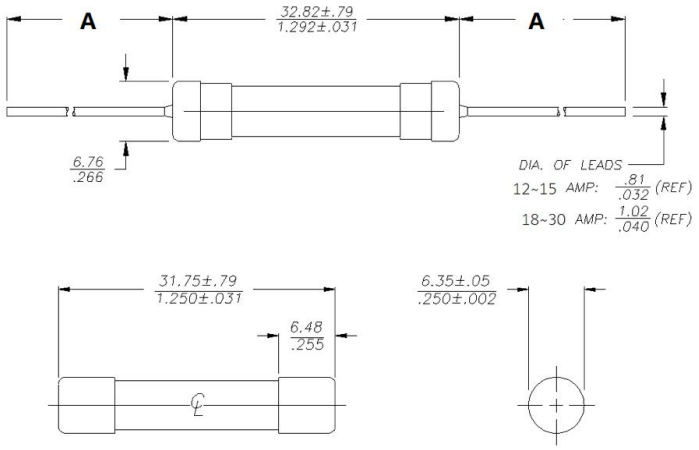
Product specifications

Part number	Current rating (A)	Voltage rating[3] (Vac)	(Vdc)	Interrupting rating @ rated voltage (A)	Typical resistance[1] (mΩ)	Typical voltage drop[2] (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

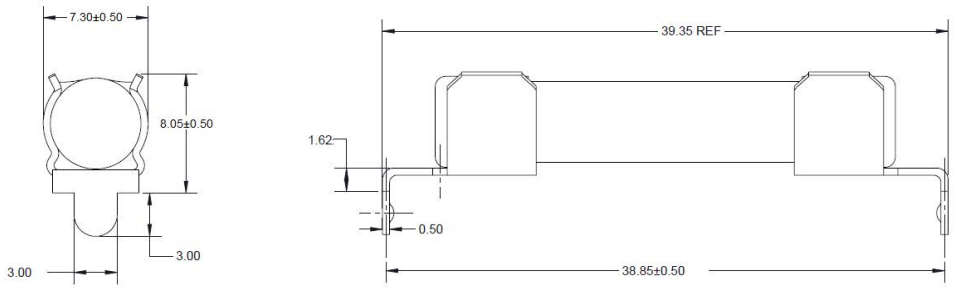


Part number	Dimension A
BK-AHC(5)(F)A-V-XX-R	38.1 mm (REF)

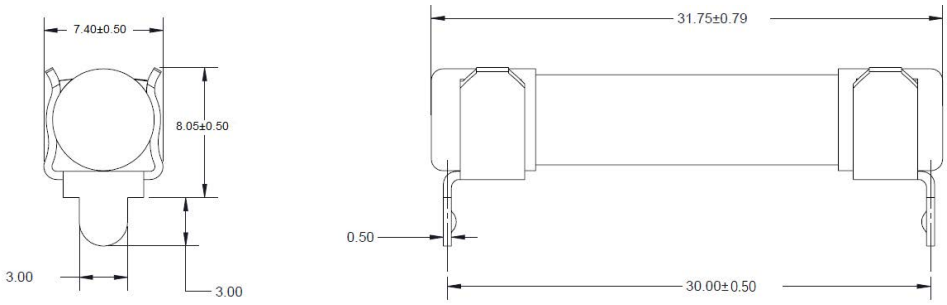
Dimensions- mm/inches (continued)
Drawing not to scale

PCB terminal fuse

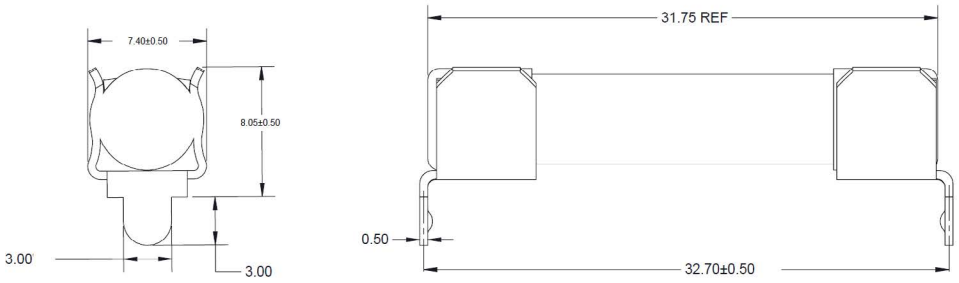
AHC(5)(F)A-XX-1P



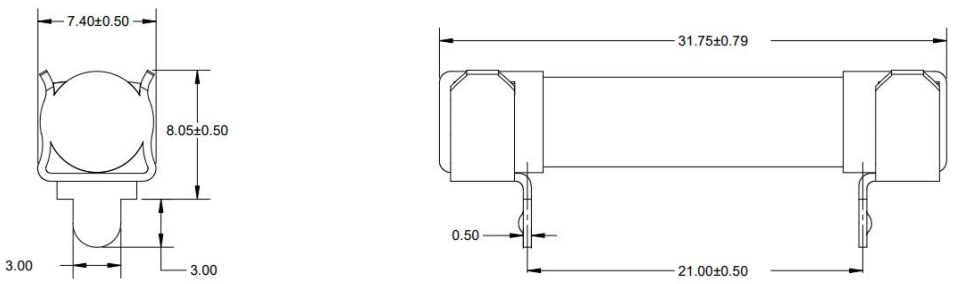
AHC(5)(F)A-XX-PCB



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



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

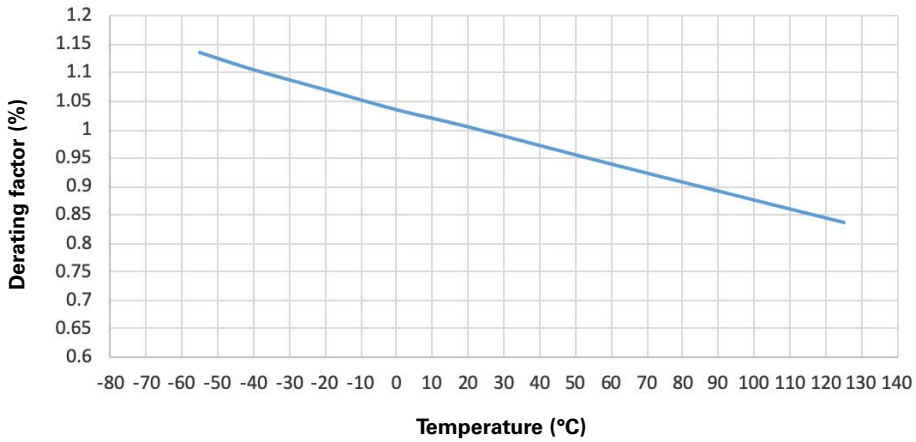


Unless otherwise specified dimensions are in millimeters tolerances to be +/-0.13 mm

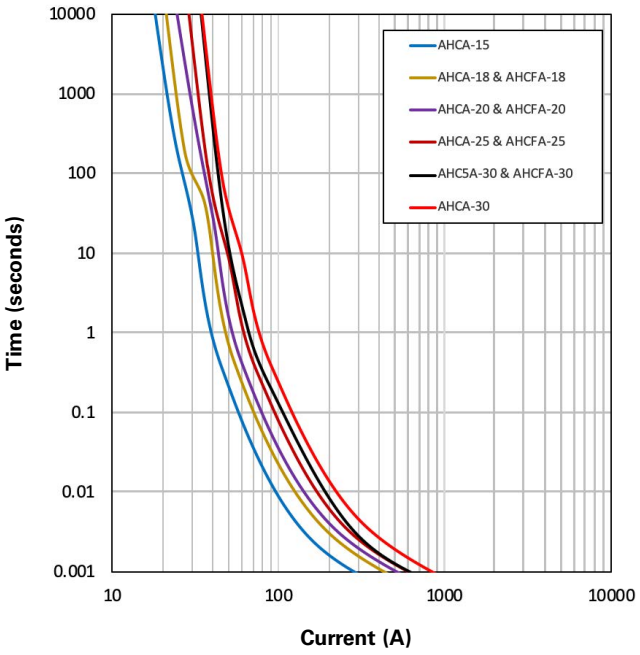
General specifications

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: MILSTD 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

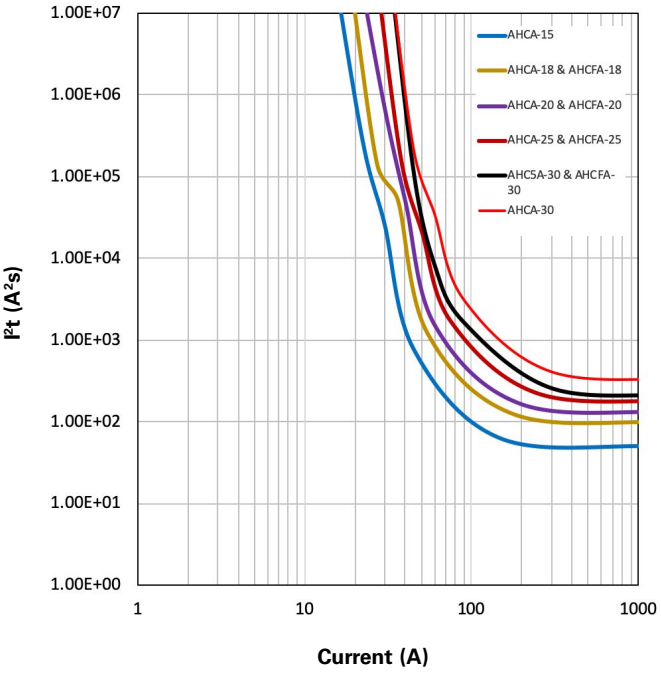
Temperature derating curve



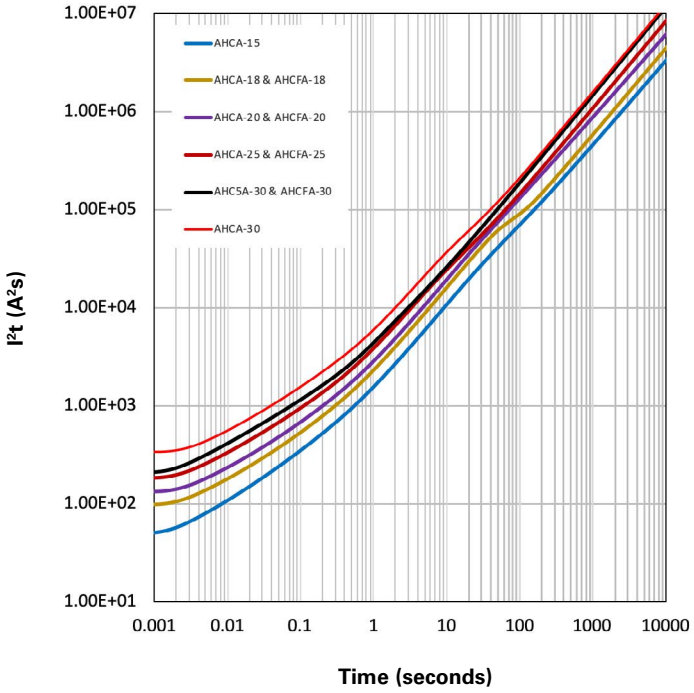
Current vs. time curve



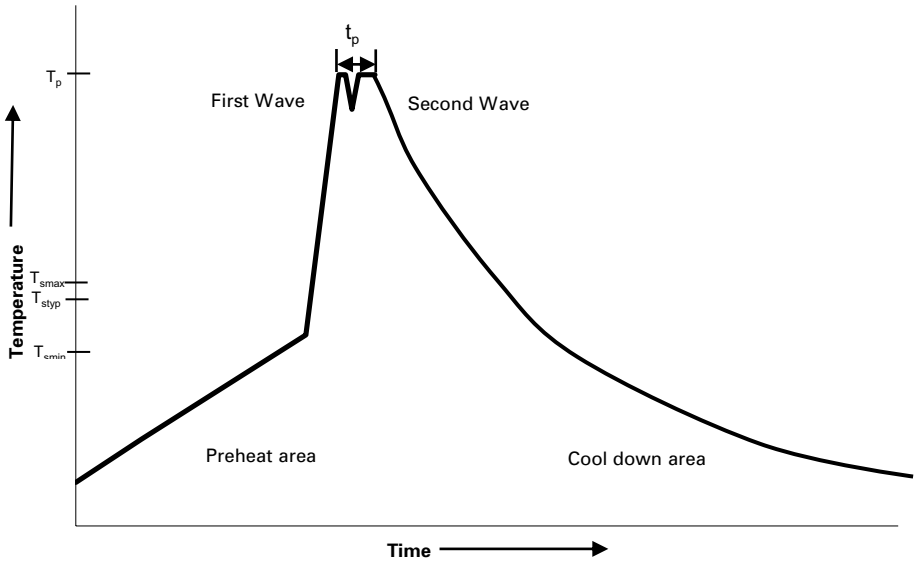
I2t vs. current curve



I²t 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	• Temperature min. (T_{smin})	100 °C	100 °C
	• Temperature typ. (T_{styp})	120 °C	120 °C
	• Temperature max. (T_{smax})	130 °C	130 °C
	• Time (T_{smin} to T_{smax}) (t_s)	70 seconds	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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