AEM Innovation to Power Your Vision

RoHS COMPLIANT HALOGEN FREE c UL us

AEM COMPONENTS

Surface Mount High Power Fuse

CM5040G Series

Features:

- Ceramic body with silicone base filler
- Tin plated copper fuse link and terminal
- Surface mount type and big size
- Halogen free, RoHS compliant and 100% lead-free
- Operating temperature range: -55℃ to +125℃ (with de-rating)

Clear-Time Characteristics:

% of current rating	Clear-time at 25 ℃
100%	4 hours (min)
250%	60 seconds (max)

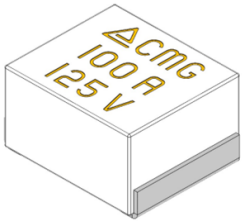
Recommended PCB for Standard Test Boards:

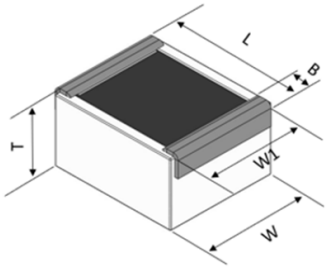
Test board thickness: 1.6mm for 50-125A, 2.4mm for 150-200A;

Copper Thickness: 8OZ for 50A-125A, 15OZ for 150A-200A;

Copper Layer Width: 22mm for 50A-125A, 40mm for 150A-200A;

Shape and Dimensions:





Size	L Inch (mm)	W Inch (mm)	W1 Inch (mm)	T Inch (mm)	B Inch (mm)
5040 (50-125A)	0.476 12.1	0.394 10	0.362 9.2	0.272 6.9	0.071 1.8
5040 (150-200A)	0.496 12.6	0.394 10	0.362 9.2	0.28 7.1	0.087 2.2

Applications:

- High-power Battery Systems
- Blade Servers
- Router & Switch
- PFC Application（Power Factor Correction）
- Data center
- PDU (Power Distribution Unit)
- Battery Management System

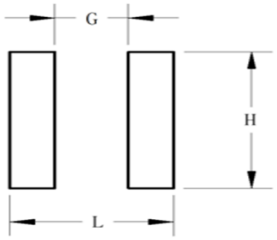
Operating Temperature Range:

- -55°C ~+125°C (with de-rating)

Agency Approval:

- Recognized Under the Components Program of Underwriters Laboratories.
- Certification #: UL-E507943

Recommended Land Pattern:



Chip Size	5040
L INCH (mm)	0.551(14.0)
G INCH (mm)	0.315(8.0)
H INCH (mm)	0.394(10.0)

Packaging:

Chip Size	Parts on 13 inch (330 mm) Reel
5040	500

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Electrical Specification:

AEM Part Number	Current Rating (A)	Voltage Rating (VDC)	Interrupting Rating	Nominal Cold DCR (mΩ)[1]	DCR min. (mΩ)	DCR max. (mΩ)	Nominal I^2t $(A^2s)^2$	Marking[3]
CM5040G50A0T	50	125	1000A@125VDC 1500A@75VDC	1.04	0.83	1.25	1250	⏃CMG 50 A 125 V
CM5040G60A0T	60	125	1000A@125VDC 1500A@75VDC	0.82	0.66	0.98	2350	⏃CMG 60 A 125 V
CM5040G70A0T	70	125	1000A@125VDC 1500A@75VDC	0.73	0.58	0.88	3200	⏃CMG 70 A 125 V
CM5040G80A0T	80	125	1000A@125VDC 1500A@75VDC	0.58	0.46	0.70	4600	⏃CMG 80 A 125 V
CM5040G90A0T	90	125	1000A@125VDC 1500A@75VDC	0.54	0.43	0.65	5750	⏃CMG 90 A 125 V
CM5040G100AT	100	125	1000A@125VDC 1500A@75VDC	0.48	0.38	0.58	7400	⏃CMG 100 A 125 V
CM5040G125AT	125	125	1000A@125VDC 1500A@75VDC	0.43	0.34	0.52	9400	⏃CMG 125 A 125 V
CM5040G150AT	150	100	1000A@100VDC 1500A@75VDC	0.33	0.26	0.40	18000	⏃CMG 150 A 100 V
CM5040G200AT	200	100	1000A@100VDC 1500A@75VDC	0.24	0.19	0.29	40000	⏃CMG 200 A 100 V

1. Measured at ≤ 10% rated current and 25°C ambient;
2. Melting I2t at 1000% of current rating;
3. Laser Marking Character Code.

Storage:

1. The maximum ambient temperature shall not exceed 35°C . Storage temperatures higher than 35°C could result in the deformation of packaging materials.
2. The maximum relative humidity recommended for storage is 75%. High humidity with high temperature can accelerate the oxidation of the solder plating on the termination and reduce the solderability of the components.
3. The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.
4. MSL Level 1

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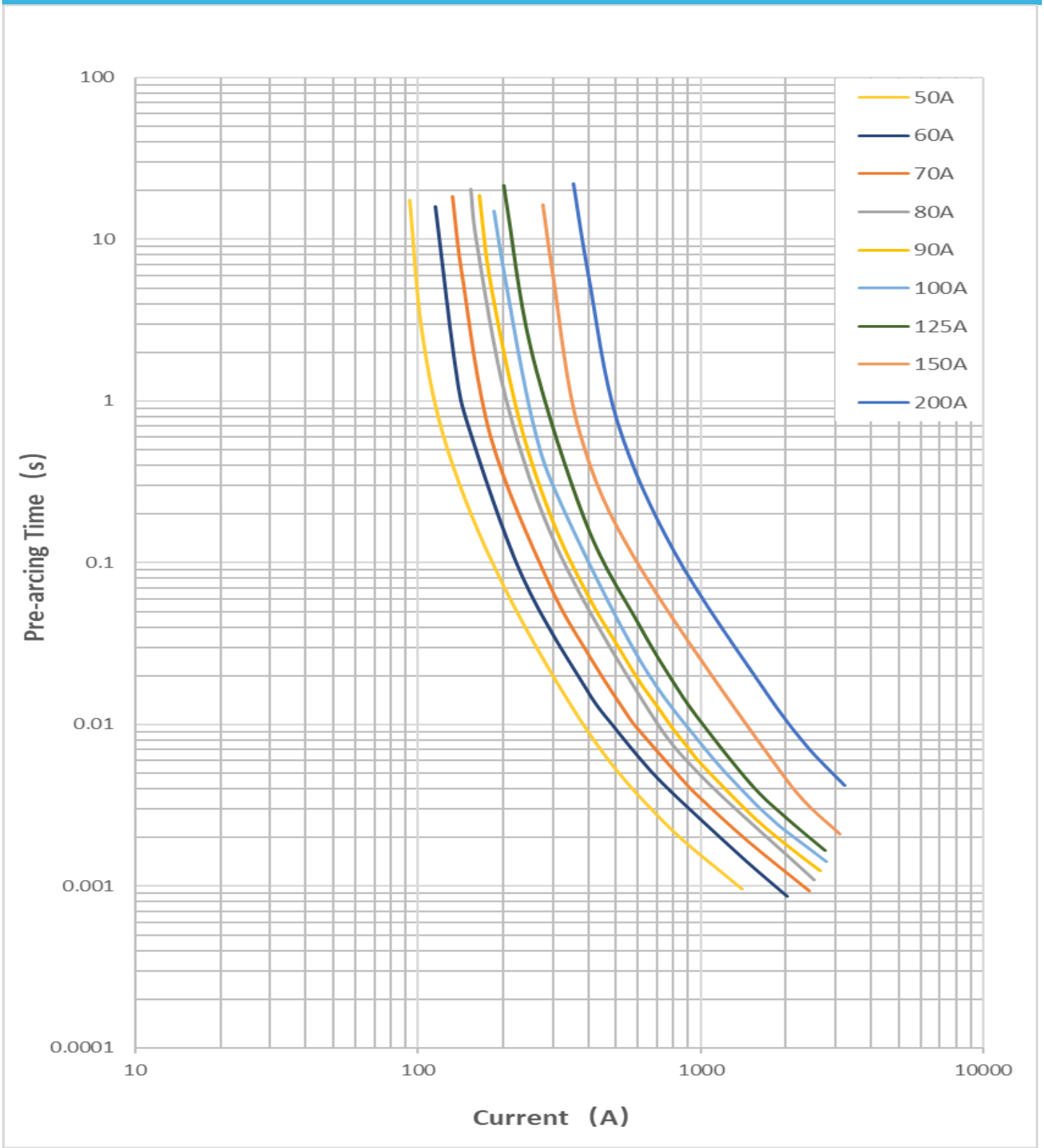
Clear Time Curve:



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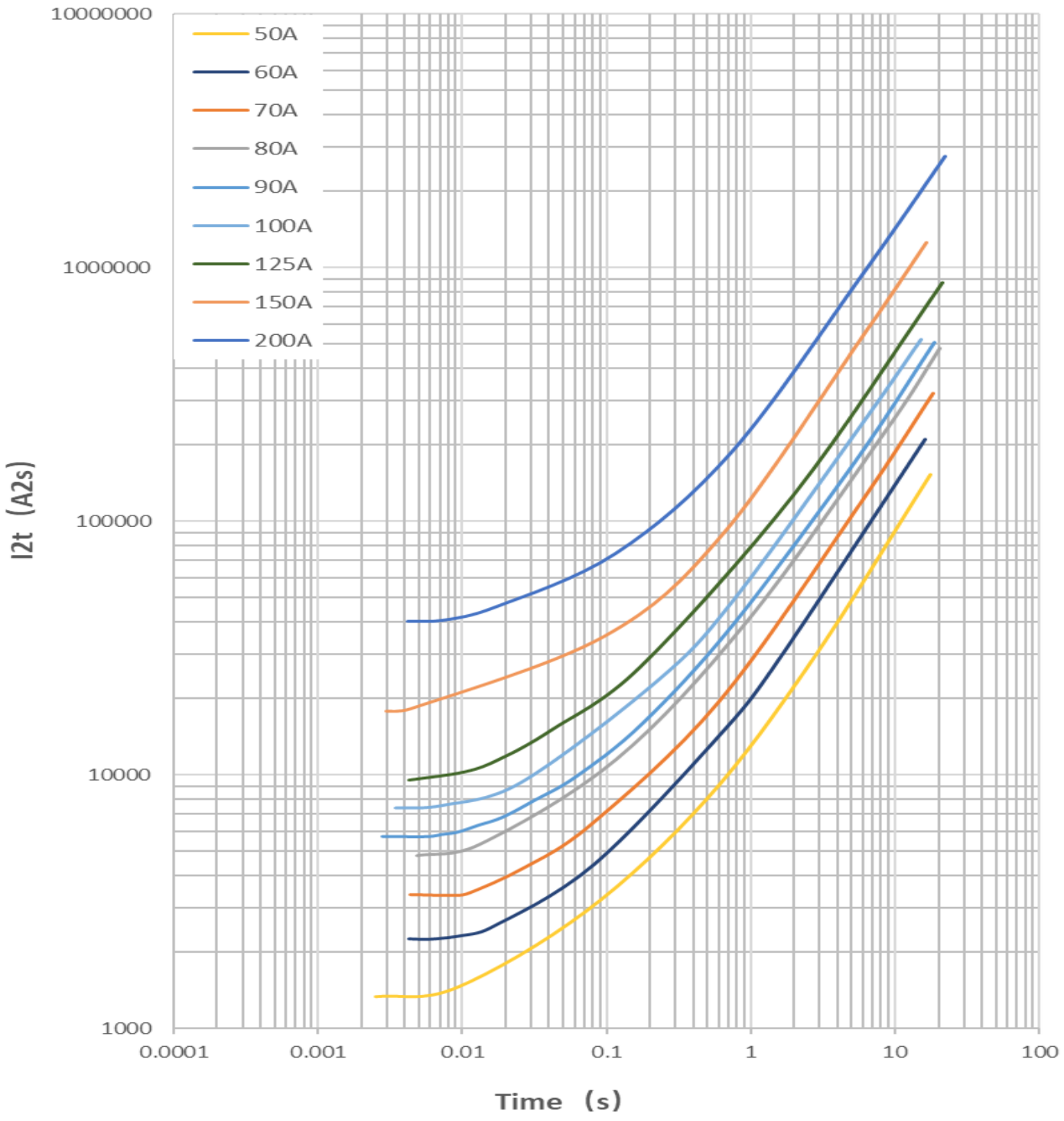
I^2t vs.t Curves:



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Reliability Tests:

Item	Test Condition	Criteria
Bend	2mm bend	DCR change within ±20%, no mechanical damage
Solderability	245°C, 5 seconds	New solder coverage 95% minimum
Soldering Heat Resistance	260°C, 10 seconds	DCR change within ±20%, new solder coverage 75% minimum, no mechanical damage
Terminal Strength	Gradually apply 1.8 kg force to the bottom of the part for 60 seconds	DCR change within ±20%, no mechanical damage
Life	80% rated current, 2000 hours, ambient temperature+20ºC to 30ºC	Voltage drop change within ±20%
Thermal Shock	-65ºC to +125ºC, 100 cycles	DCR change within ±20%, no mechanical damage
Mechanical Vibration	5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak	DCR change within ±20%, no mechanical damage
Mechanical Shock	1500G, 0.5 milliseconds, half-sine shocks	DCR change within ±20%, no mechanical damage
Salt Spray	5% salt solution, 48 hours exposure	DCR change within ±20%, no excessive corrosion
Moisture Resistance	10 cycles	DCR change within ±20%, no excessive corrosion

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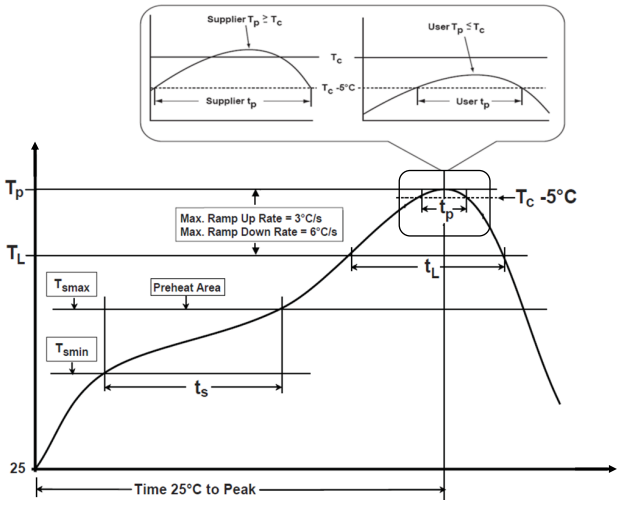
Recommended Temperature Profile:

Profile Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (T_{smin})	150°C
Temperature Max (T_{smax})	200°C
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature (T_L)	217°C
Peak package body temperature (T_p)	260°C
Time (t_p)*within 5°C of the specified classification temperature (T_c)	30 seconds *
Ramp-down rate (T_p to T_L)	6°C/second max.
Time 25°C to peak temperature	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum	

* Recommended Temperature Profile for Reflow Soldering



Recommended conditions for hand soldering:

1. Appropriate temperature (max.) of soldering iron tip/soldering time (max.): 280°C /10 s or 350°C / 3 s
2. Using hot air rework station with tip that can melt the solder on both terminations at the same time is strongly recommended. Do not directly contact the chip termination with the tip of soldering iron.

Recommended Temperature Profile:

Item	Test Condition	Criteria
Bend	2mm bend	DCR change within ±20%, no mechanical damage
Solderability	245°C, 5 seconds	New solder coverage 95% minimum
Soldering Heat Resistance	260°C, 10 seconds	DCR change within ±20%, new solder coverage 75% minimum, no mechanical damage
Terminal Strength	Gradually apply 1.8 kg force to the bottom of the part for 60 seconds	DCR change within ±20%, no mechanical damage
Life	80% rated current, 2000 hours, ambient temperature+20°C to 30°C	Voltage drop change within ±20%
Thermal Shock	-65°C to +125°C, 100 cycles	DCR change within ±20%, no mechanical damage
Mechanical Vibration	5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak	DCR change within ±20%, no mechanical damage
Mechanical Shock	1500G, 0.5 milliseconds, half-sine shocks	DCR change within ±20%, no mechanical damage
Salt Spray	5% salt solution, 48 hours exposure	DCR change within ±20%, no excessive corrosion
Moisture Resistance	10 cycles	DCR change within ±20%, no excessive corrosion

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CM5040G Series

Product Identification:

CM	5040	G	90A0	T
(1)	(2)	(3)	(4)	(5)

(1) Product code: CM - Commercial Molding Fuse

(2) Size code: L x W (inch)

The first two digits - L (length)

The last two digits - W (width)

(3) Series code: G

(4) Current rating code: 90A0: 90.0A

(5) Package code:

T - Tape & Reel; B - Bulk

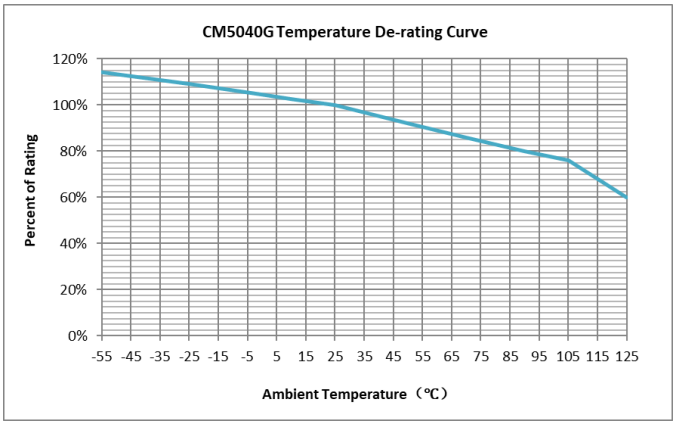
Marking: Top Line: AEM Logo; CMG: CM5040G series

Middle Line: Current rating code

Bottom Line: Voltage rating code

Temperature De-rating:

The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C , the fuse shall be "de-rated" according to the de-rating curve.



Disclaimer

Specifications are subject to change without notice. AEM products are designed for specific applications and should not be used for any purpose (including, without limitation, automotive, aerospace, medical, life-saving applications, or any other application which requires especially high reliability for the prevention of such defect as may directly cause damage to the third party's life, body or property) not expressly set forth in applicable AEM product documentation. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Warranties granted by AEM shall be deemed void for products used for any purpose not expressly set forth in applicable AEM product documentation. AEM shall not be liable for any claims or damages arising out of products used in applications not expressly intended by AEM as set forth in applicable AEM product documentation. The sale and use of AEM products is subject to AEM terms and conditions of sale. Please refer to AEM's website for updated catalog and terms and conditions of sale.