High Power Surface Mount Fuse

QM2840H Series (Automotive Grade, 2840 Size)

Features:

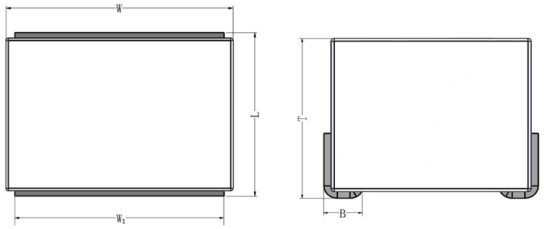
- Automotive grade with AEC-Q200 Rev. E qualification
- Robust interconnection reliability with one unit of fuse link and terminations
- The most compact design of at 2840 case size in surface mount type of high current fuse up to 200A
- Low DC resistance (DCR) – Minimizes excessive power loss
- High interrupting ratings – for excellent inrush current capability

Clearing Time Characteristics:

% of current rating	Clearing time at 25°C	
	Min.	Max.
100%	4 hours	-
250%	-	60 seconds

Shape and Dimensions:

Unit	Inch	mm
L	0.287 ± 0.012	7.3 ± 0.3
W	0.406 ± 0.008	10.3 ± 0.2
W_1	0.374 ± 0.008	9.5 ± 0.2
T	0.228 ± 0.008	5.8 ± 0.2
B	0.047 ± 0.012	1.2 ± 0.3



Applications:

- Server Systems
- UPS & Routers & Switches
- Energy Storage
- Drones
- Power tools
- Battery power systems
- PDU
- AGV & AMR

Ordering Information:

Part Number	Current Rating (A)	Voltage Rating (V DC)	Interrupting Rating	Nominal DCR (mΩ)[1]	Nominal I^2t $(A^2s)^2$	Marking[3]
QM2840H150AT	150	75	1,500A @ 75VDC	0.29	16000	QMH 150
QM2840H200AT	200			0.20	28000	QMH 200

1. Measured at ≤10% rated current and 25 °C ambient.
2. Melting I^2t at 1000% of current rating.
3. Laser marking character code.

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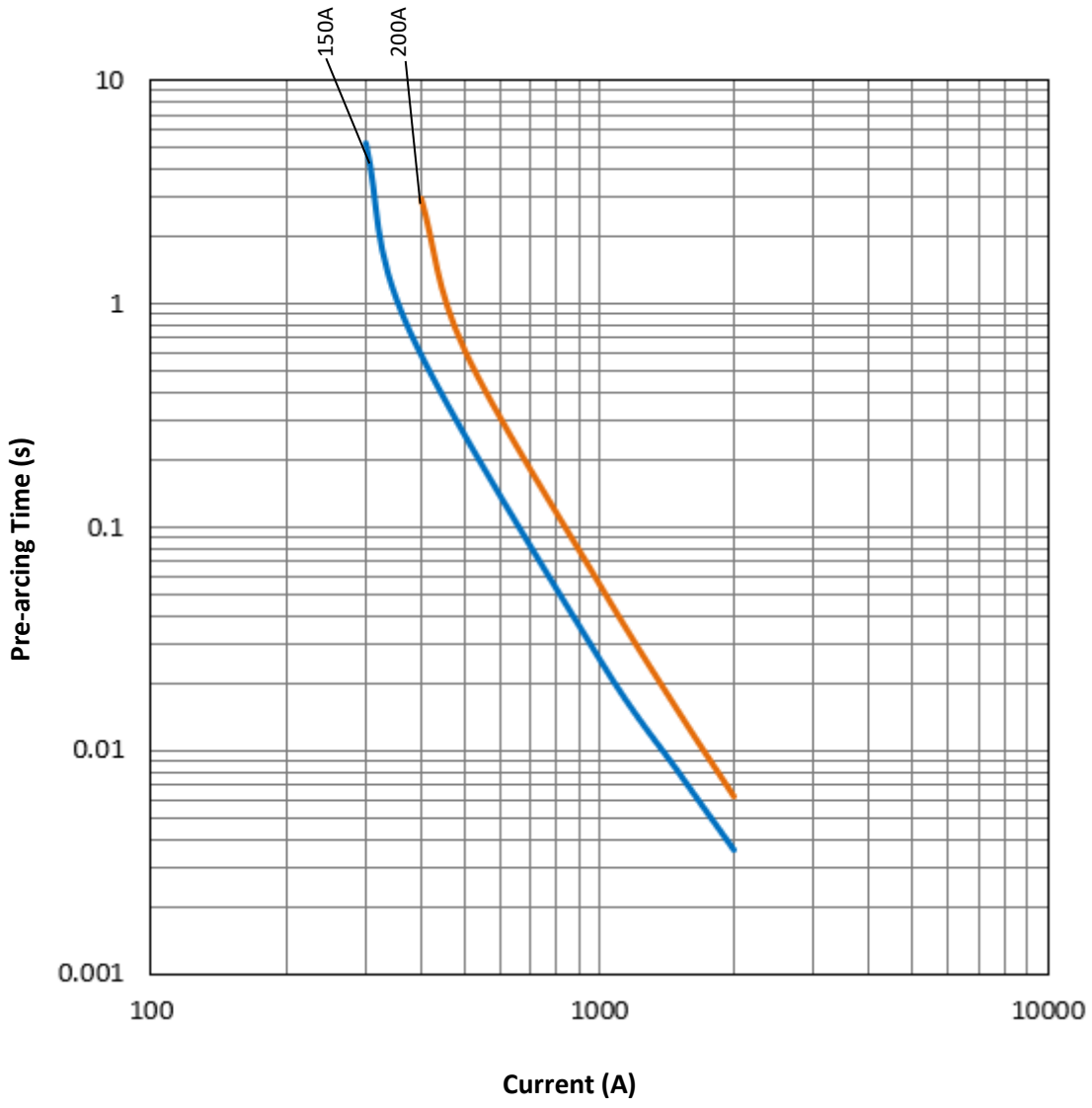
Average Pre-arcing Time Curves:



Operating Temperature Range:

- -55°C ~+125°C (with de-rating)

Agency Approval:

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

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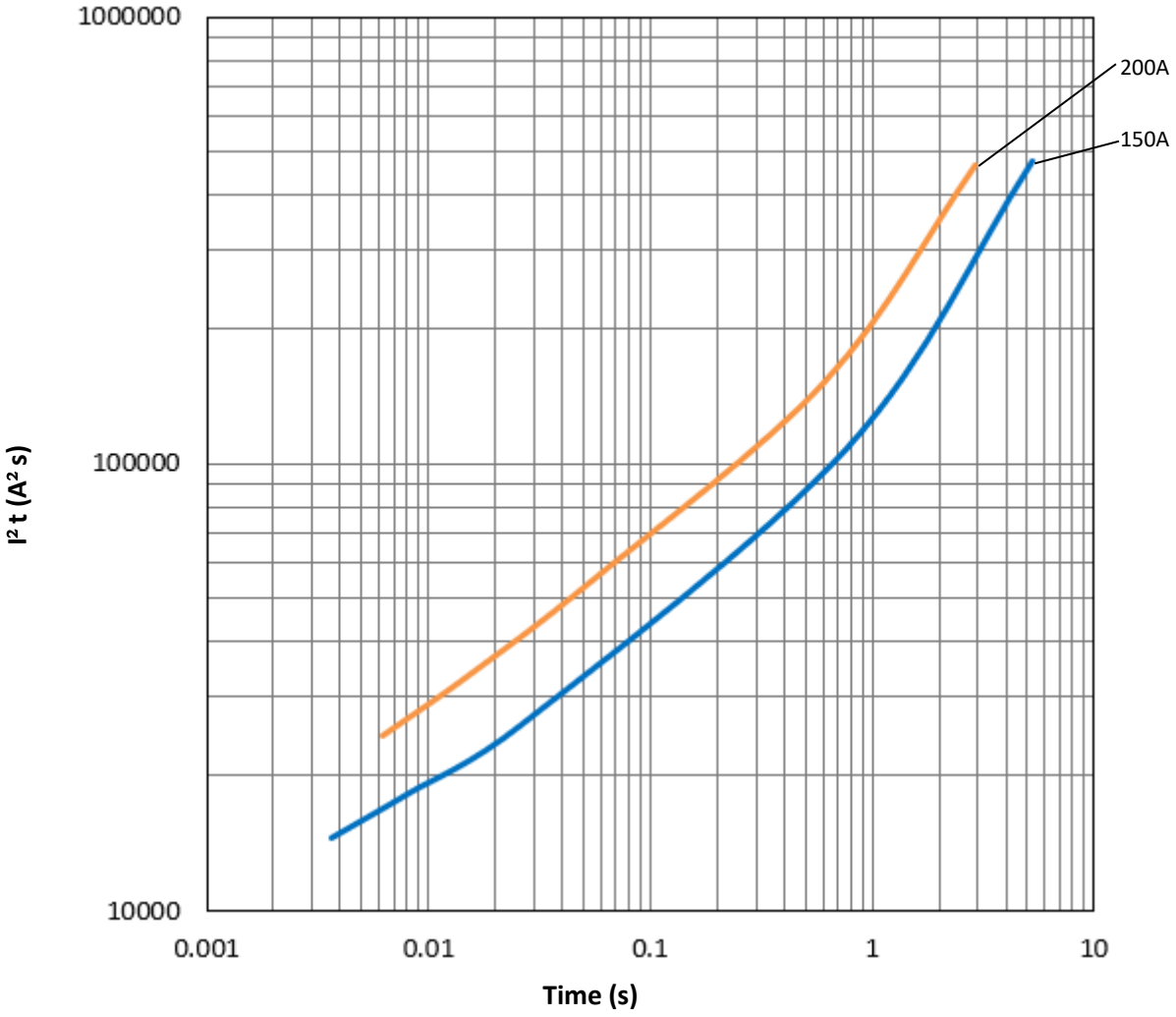
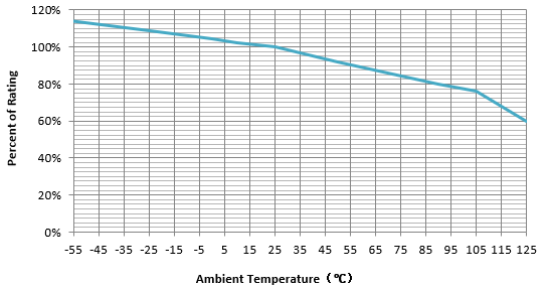
Average I^2t vs. t Curves:



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.



Product Identification:

QM 2840 H 150A T

(1) (2) (3) (4) (5)

(1) Series Code: QMH Series

(2) Size Code: L x W (inch), the first two digits - L (length), the last two digits - W (width)

(3) Characteristic Code: H - High Inrush

(4) Current Rating Code: 150A0 - 150A

(5) Package Code: T - Tape & Reel, B - Bulk

Marking:

Top Line: △ AEM Logo; **QMH:** Series Code

Bottom Line: Current Rating Code

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Reliability Tests:

No.	Item	Condition	Criteria
1	High temperature storage	Subject fuses to +125°C for 1000 hours	DCR change within ±20%, no observed damage
2	Low temperature storage	Subject fuses to -65°C for 1000 hours	DCR change within ±20%, no observed damage, post electrical test not required
3	Temperature Cycling	Subject fuses to 1000 temperature cycles, 30min at -65°C lowest temp and 30min at +125°C highest temp	DCR change within ±20%, no observed damage
4	Biased Humidity	Subject fuses to +85°C/85%RH with 10% rated current for 1000 hours	DCR change within ±20%, no excessive corrosion
5	High Temperature Operating Life	+125°C for 1000 hours. Load setting: 75% (current de-rating)* 60% (temp. de-rating) * Rated current	DCR change within ±20%, no observed damage
6	Mechanical Vibration	0.4" D.A. or 30G between 5 and 3000 Hz, along 3 mutually perpendicular axes for a total of 12 hours	DCR change within ±20%, no mechanical damage
7	Mechanical Shock	1500G, 0.5 ms, half sine shocks in 6 major directions along 3 mutually perpendicular axes	DCR change within ±20%, no mechanical damage
8	Resistance to Soldering Heat	One dip at 260°C,10 seconds.	DCR change within ±20%, new solder coverage 75% minimum, no damage
9	Salt spray	5% salt solution, 48 hours exposure	DCR change within ±20%, no excessive corrosion, post electrical test not required
10	Solderability	245°C, 5 seconds	New solder coverage 95% minimum, post electrical test not required
11	Terminal Strength	Apply 17.7N (1.8kg) force gradually to the side of the fuse, this force shall be applied for 60 seconds	DCR change within ±20%, no mechanical damage
12	Board Flex	Apply a force that will bend the board distance of x = 2 mm, and the duration of the applied forces shall be 60 seconds	DCR change within ±20%, no mechanical damage
13	Electrical Characterization	Conducted electrical characterization test at minimum , ambient and maximum operating temperatures; Current carrying capacity test with temperature de-rating; Overload test at 250% of current rating	Current carrying capacity: 4 hours min.; 250% Overload: 60 seconds max.; Interrupting test: meet interrupting ratings capability
14	Post -stress Electrical Test	Current carrying capacity: half of samples, test at room ambient; Overload test: half of samples, test at room ambient and 250% of current rating	Current carrying capacity: 4 hours min.; 250% Overload: 60 seconds max.;

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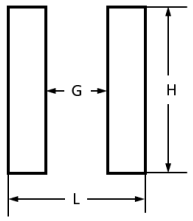
Recommended Land Pattern:

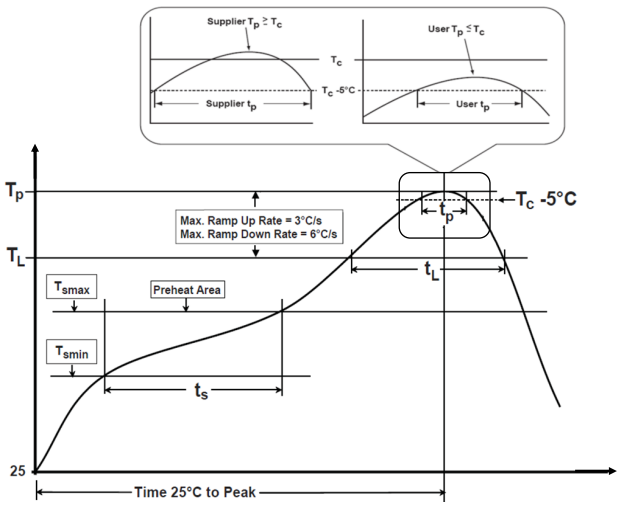
Chip Size	2840	Unit
L	0.386 (9.8)	Inch (mm)
G	0.173 (4.4)	Inch (mm)
H	0.472 (12.0)	Inch (mm)



Recommended Temperature Profile:

Profile Feature	Pb-Free Assembly
Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60~120 seconds
Ramp-uprate (T_L to T_p)	3°C/second max.
Liquidous temperature (T_L) Time (t_L) maintained above T_L	217°C 60~150 seconds
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.

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=1

Packaging:

Chip Size	Parts on 13 inch (330 mm) Reel
2840	600

Disclaimer

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