High Power Surface Mount Fuse

QM2822H Series (Automotive Grade, 2822 Size)

Features:

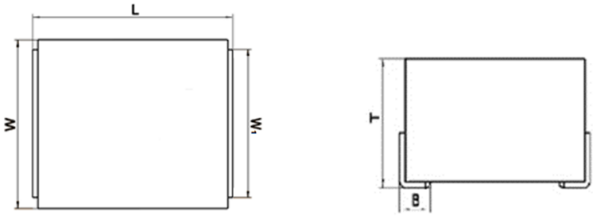
- Automotive grade with AEC-Q200 Rev. E qualification
- Ceramic body with silicone base filler
- Tin plated copper fuse link and terminal
- Surface mount type and small size
- High reliability for long time operation

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	0.228 ± 0.008	5.8 ± 0.2
W_1	0.201 ± 0.008	5.1 ± 0.2
T	0.165 ± 0.008	4.2 ± 0.2
B	0.051 ± 0.012	1.3 ± 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[4]
QM2822H40A0T	40	125	300A @125V DC 1,000A @ 75V DC[3] 1,500A @ 48V DC[3]	1.05	400	QMH 40
QM2822H50A0T	50			0.85	600	QMH 50
QM2822H60A0T	60	75	1,000A @ 75V DC[3] 1,500A @ 48V DC[3]	0.74	900	QMH 60
QM2822H70A0T	70			0.61	1,400	QMH 70
QM2822H80A0T	80			0.53	2,000	QMH 80
QM2822H90A0T	90			0.48	2,400	QMH 90
QM2822H100AT	100			0.44	3,600	QMH 100
QM2822H125AT	125			0.38	6,000	QMH 125

1. Measured at ≤10% rated current and 25 °C ambient.
2. Melting I^2t at 1000% of current rating.
3. Time constant of interrupting test less than 0.1ms.
4. Laser marking character code.

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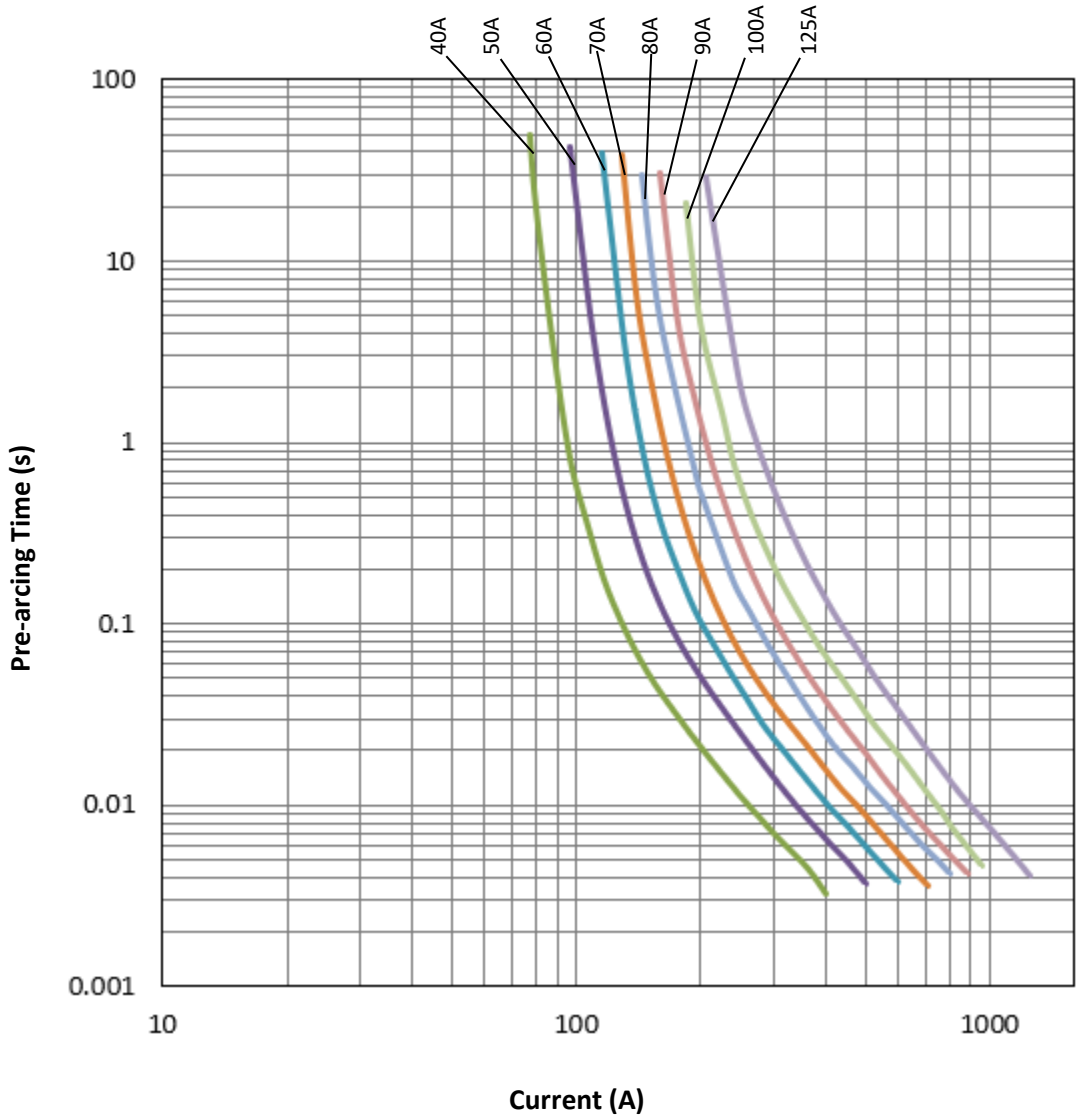
Average Pre-arcing Time Curves:



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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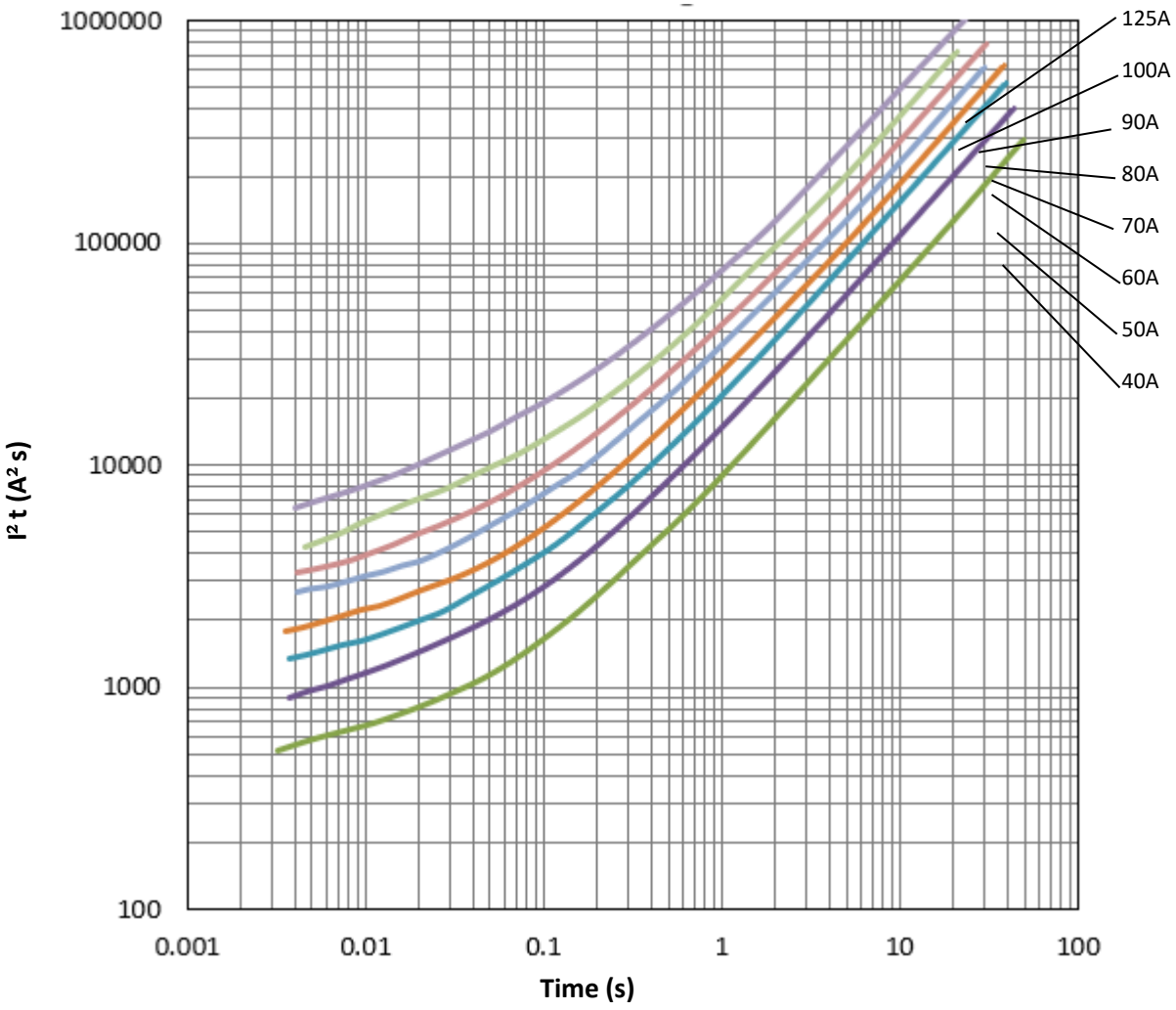
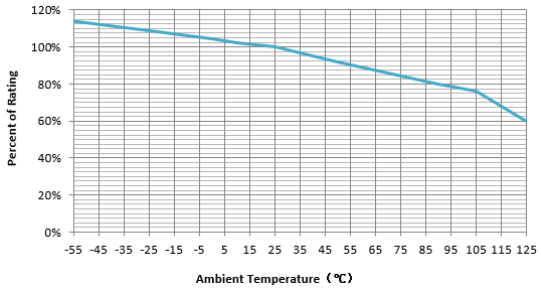
Average I^2t vs. t Curves:



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 2822 H 60A0 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: 60A0 - 60A

(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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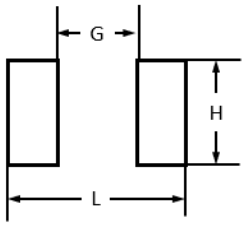
Recommended Land Pattern:

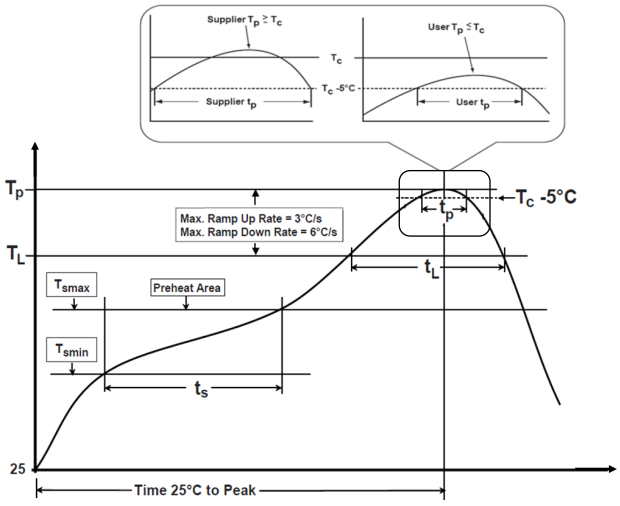
Chip Size	2822	Unit
L	0.386 (9.8)	Inch (mm)
G	0.173 (4.4)	Inch (mm)
H	0.228 (5.8)	Inch (mm)



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
2822	1,000

Disclaimer

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