AEM
Innovation to power your vision

Revision of Nov. 2024

SolidMatrix® Surface Mount Fuses

SB Series (Slow Blow), 0603 Size

Features:

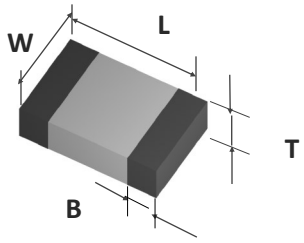
- High inrush current withstanding capability
- Ceramic Monolithic structure
- Silver fusing element and silver termination with nickel and tin plating
- Symmetrical design with marking on both sides (optional)
- Operating temperature range: -55°C to +150°C (with de-rating)

Clearing Time Characteristics:

% of Current Rating	Clearing time at 25°C	
100%	4 hours min.	
200%	1 second min.	120 seconds max.
300%	0.1 seconds min.	3 seconds max.
800% (1 A - 1.5 A)	0.0005 seconds min.	0.05 seconds max.
800% (2 A - 8 A)	0.001 seconds min.	0.05 seconds max.

Shape and Dimensions:

Unit	Inch	mm
L	0.063 ± 0.006	1.60 ± 0.15
W	0.031 ± 0.006	0.80 ± 0.15
T	0.031 ± 0.006	0.80 ± 0.15
B	0.014 ± 0.006	0.36 ± 0.15



Agency Approval:

Recognized Under the Components Program of UL.
File Number: E232989.

Applications:

- Power tools
- DC-DC convert
- Panel
- PC & NB
- Server
- Battery pack
- Set top box

Ordering Information:

Part Number	Current Rating (A)	Voltage Rating (Vdc)	Interrupting Ratings	Nominal Cold DCR (Ω)[1]	Nominal I^2t $(A^2s)^2$	Marking (Optional)[3]
F0603SB1000V032TM	1.0	32	50A at rated voltage	0.200	0.093	E
F0603SB1500V032TM	1.5	32		0.100	0.18	G
F0603SB2000V032TM	2.0	32		0.052	0.32	I
F0603SB2500V032TM	2.5	32		0.041	0.63	J
F0603SB3000V032TM	3.0	32		0.031	0.87	K
F0603SB3500V032TM	3.5	32		0.021	1.20	L
F0603SB4000V032TM	4.0	32		0.017	2.30	M
F0603SB4500V032TM	4.5	32		0.015	2.70	T
F0603SB5000V032TM	5.0	32		0.013	3.20	N
F0603SB6000V032TM	6.0	32	80A at rated voltage	0.010	4.00	O
F0603SB7000V032TM	7.0	32		0.008	5.00	P
F0603SB8000V032TM	8.0	32		0.006	7.00	R

1. Measured at ≤ 10% rated current and 25°C ambient. 2. Melting I^2t at 0.001 second pre-arcing time. 3. Red Marking Character Code.

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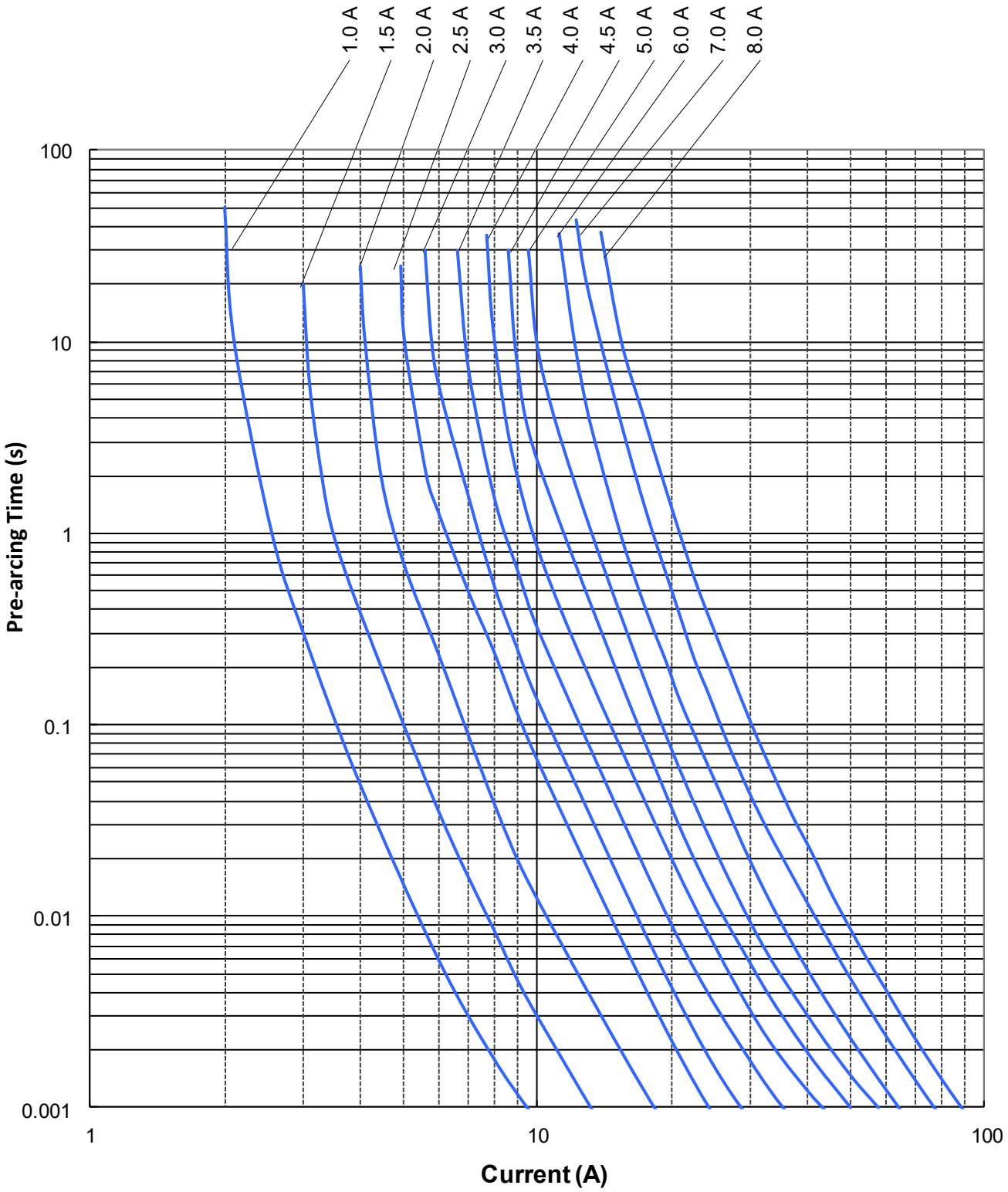
Average Pre-arcing Time Curves:



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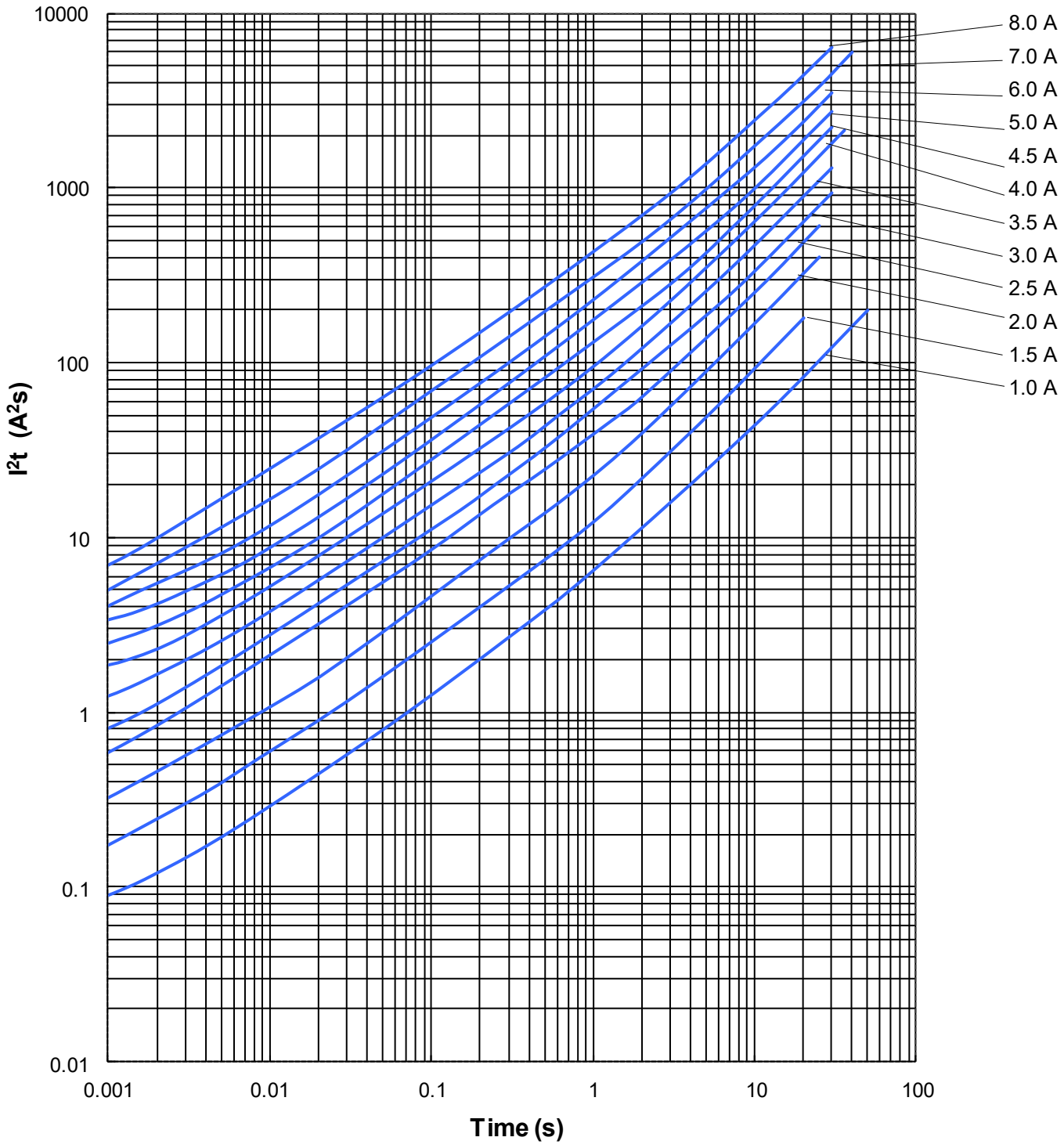
SB Series (Slow Blow), 0603 Size

Average I^2t vs. t Curves:



SolidMatrix® Surface Mount Fuses

Product Identification:

F 0603 FA 1000 V032 T M
(1) (2) (3) (4) (5) (6) (7)

(1) Product Code: F—Chip Fuse

(2) Size Code: Standard EIA Chip Sizes

(3) Series Code: FA - Fast Acting, SB - Slow Blow,
HI - High Inrush, FF - Very Fast Acting, HB - High Current

(4) Current Rating Code: 1000 - 1000 mA (For HB, 10 - 10A)

(5) Voltage Rating Code: V032 - 32 VDC

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

(7) Marking Code: M - With Marking

F 1206 HC 20A0 T M
(1) (2) (3) (4) (5) (6)

(1) Product Code: F—Chip Fuse

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

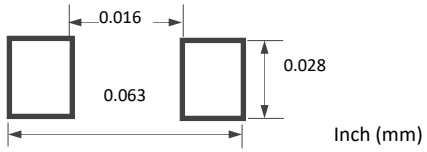
(3) Series Code: HC Series

(4) Current Rating Code: 20A0—20.0A

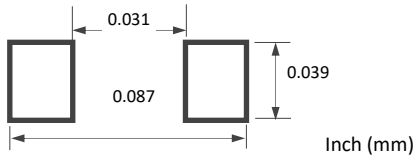
(5) Package Code: T - Tape & Reel, B - Bulk

(6) Marking Code: M - With Marking

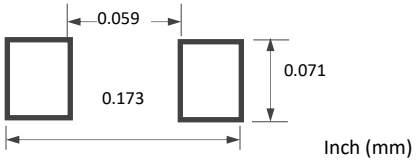
Recommended Land Pattern:



0402 Size



0603 Size



1206 Size

Environmental Tests:

No.	Test	Test Condition and Requirement	Test reference
1	Soldering heat resistance	DCR change ≤ ±10%. No mechanical damage One dip at 260°C for 60 seconds	MIL-STD-202 Method 210
2	Solderability	245°C , 5 seconds, new solder coverage ≥95%	MIL-STD-202 Method 208
3	Thermal shock	DCR change ≤ ±10%. No mechanical damage 100 cycles between -65°C and +125° C	MIL-STD-202 Method 107
4	Moisture resistance	10 cycles, DCR change ≤ ±10%, no excessive corrosion	MIL-STD-202 Method 106
5	Salt spray	DCR change ≤ ±10%. No excessive corrosion 48 hour exposure	MIL-STD-202 Method 101
6	Mechanical vibration	DCR change ≤ ±10%. No mechanical damage. 0.4 ” D.A. or 30 G between 5 – 3000 Hz	MIL-STD-202 Method 204
7	Mechanical shock	DCR change ≤ ±10%. No mechanical damage. 1500 G, 0.5 ms, half-sine shocks	MIL-STD-202 Method 213
8	Life	80% rated current (75% for <1A), 2000 hours, ambient temperature (from +20°C to 30°C), voltage drop change within ±10%	Refer to AEM QIQ106

Moisture Sensitivity Level 1

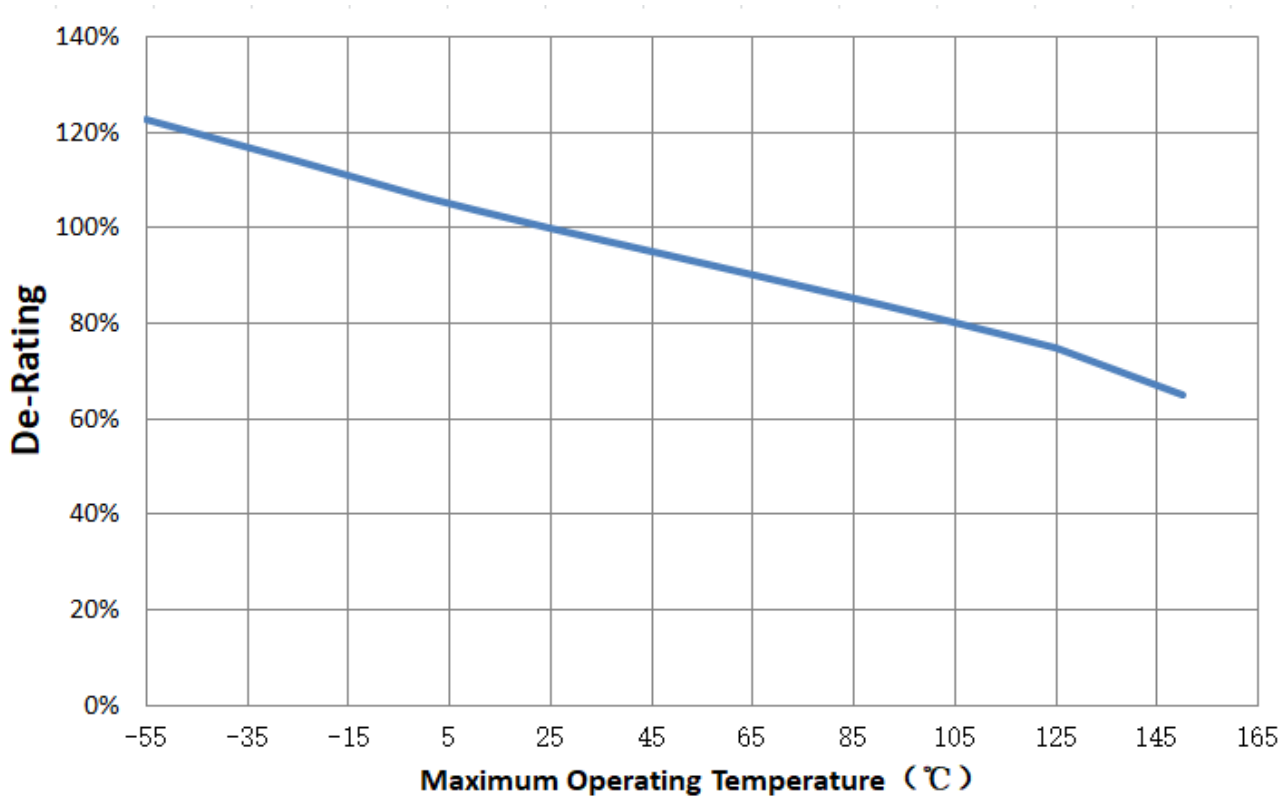
SolidMatrix® Surface Mount Fuses

Electrical Specification:

Clearing Time Characteristics:
Same as specified on the Short Form Data Sheet
Insulation Resistance after Opening:
20,000 ohms typical when cleared with rated voltage applied. Fuse clearing under low voltage conditions may result in lower after clearing insulation resistance values. (Note: Under normal fault conditions (low or rated voltage conditions), AEM SolidMatrix fuses provide sufficient after clearing insulation resistance values for circuit protection.)
Current Carrying Capacity:
100% rated current at +25°C ambient for 4 hours minimum when evaluated per MIL-PRF-23419
Interrupt Ratings:
Same as specified in this catalog.

Fuse Selection and Temperature De-rating Guideline:

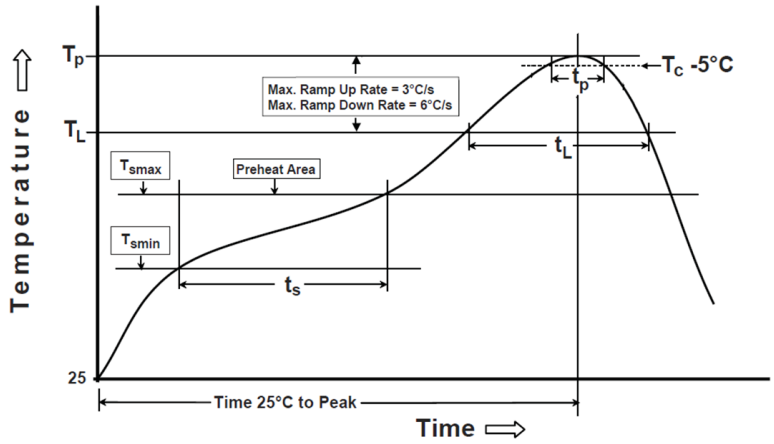
The ambient temperature affects the current carrying capacity of fuses. When a fuse is operating at a temperature higher than 25°C, the fuse shall be "de-rated".
To select a fuse from the catalog, the following rule may be followed:
Catalog Fuse Current Rating = Nominal Operating Current / 0.75 / % De-rating at the maximum operating temperature.
Example: At maximum operating temperature of 65°C, % De-rating is 90%. The nominal operating current is 4 A. The current rating for fuse selected from the catalog shall be: 4 / 0.75 / 90% = 5.9 or 6 A. Specifications and descriptions in this literature are as accurate as known at the time of publish, but are subject to change without notice.



SolidMatrix® Surface Mount Fuses

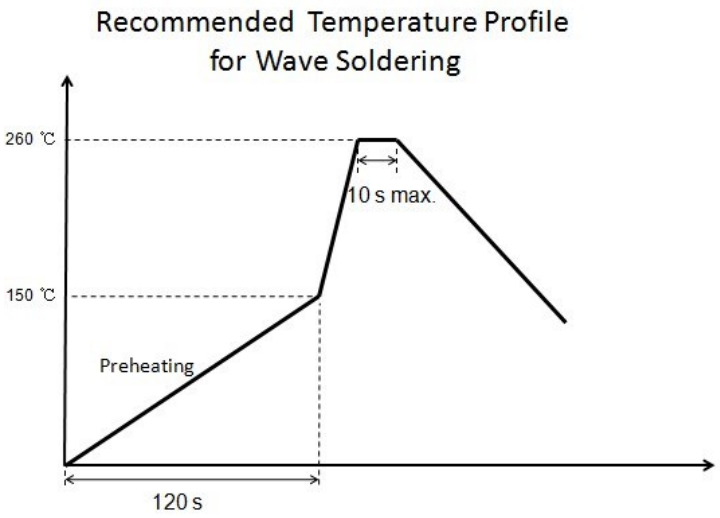
Soldering Temperature Profile:

* Recommended Temperature Profile for Reflow Soldering



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 Wave Soldering



Notice: Wave Soldering is suitable for 1206 and 0603 size.

Packaging:

Chip Size	Parts on 7 inch (178 mm) Reel
0402 (1005)	10,000
0603 (1608)	4,000
0603FF (1608)	6,000
1206 (3216)	3,000

Disclaimer

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