

CUSTOMER:

SolidMatrix® Surface Mount Fuses FA Series 0603 Size

AEM Part Number: F0603FA0500V032T

1 Operating Temperature Range

-55°C ~ +150°C

2 Ratings

AEM Part Number	Current Rating (A)	Voltage Rating (VDC)	Nominal Cold DCR (Ω) ¹	DCR Min (Ω)	DCR Max (Ω)	Nominal I^2t (A^2s) ²
F0603FA0500V032T	0.5	32	0.485	0.340	0.631	0.003

1. Measured at $\leq 10\%$ rated current and 25°C ambient..

2. Melting I^2t at 0.001 second pre-arcing time.

3 Clear-Time Characteristics:

% of current rating	Clear-time at 25 °C
100%	4 hours (min)
250%	5 seconds (max)
400%	0.05 seconds (max)

4 Interrupting Ratings:

0.5A 50A at rated voltage

5 Marking(Optional):

Without marking

6 Agency Approval:

Recognized Under the Components Program of Underwriters Laboratories.

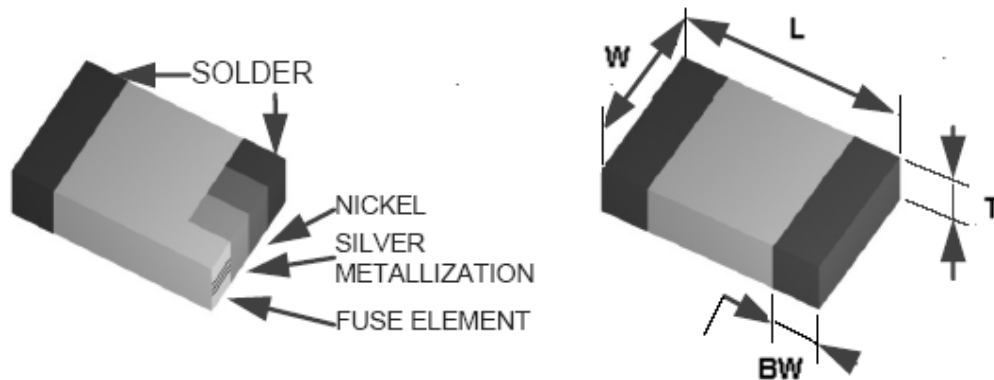
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7 Shape and Dimensions: Inch (mm)



Size	L	W	T	BW
0603 (1608)	0.063±0.006 (1.60±0.15)	0.031±0.006 (0.80±0.15)	0.031±0.006 (0.80±0.15)	0.014±0.006 (0.36±0.15)

8 Product Identification

E 0603 FA 0500 V032 I

(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: FA Series

(4) Current rating code: 0500 - 500 mA

(5) Voltage rating code: V032 - 32 VDC

(6) Package code:

T - Tape & Reel

B - Bulk

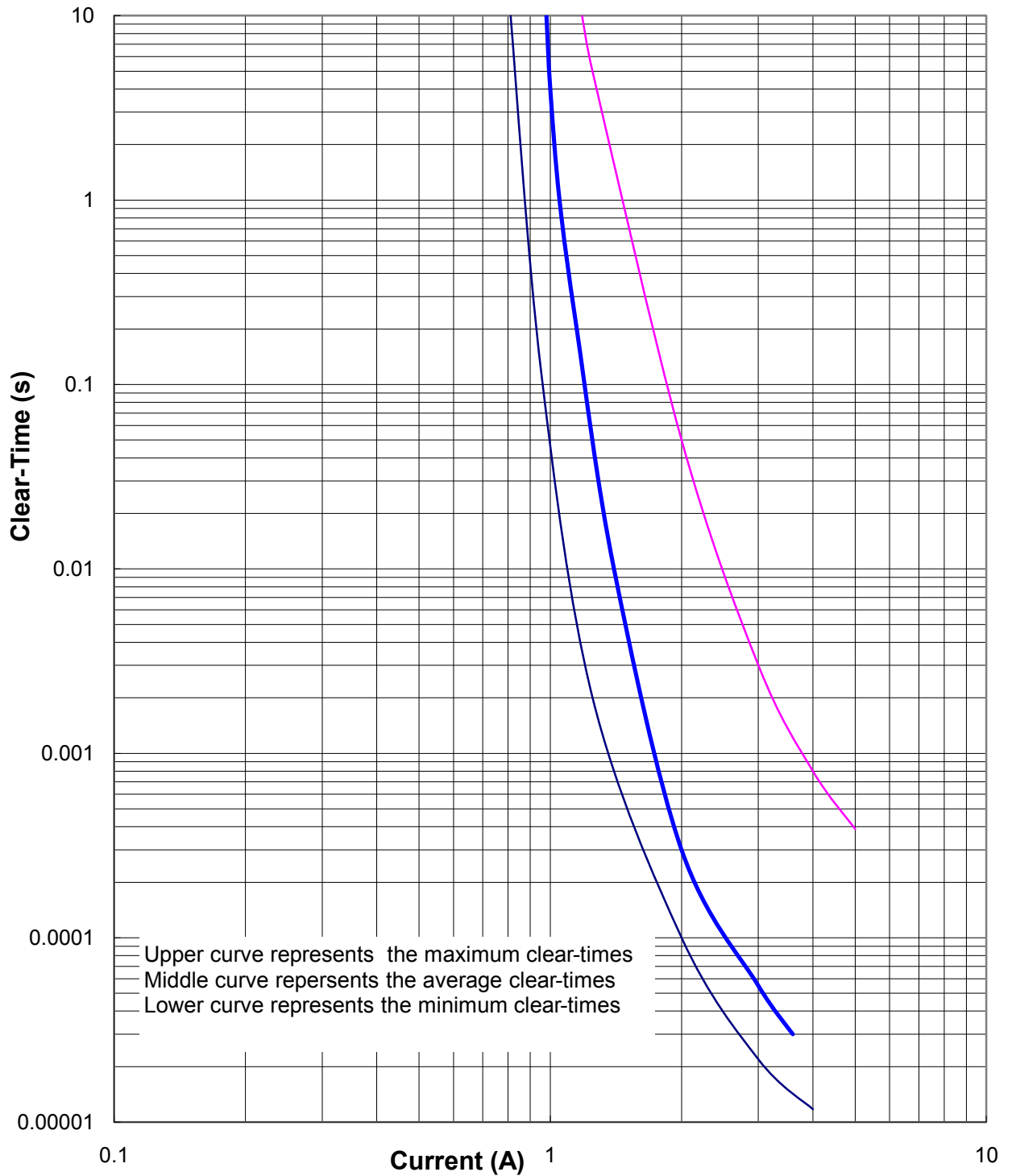
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9 Clear Time Curves:

F0603FA0500V032T



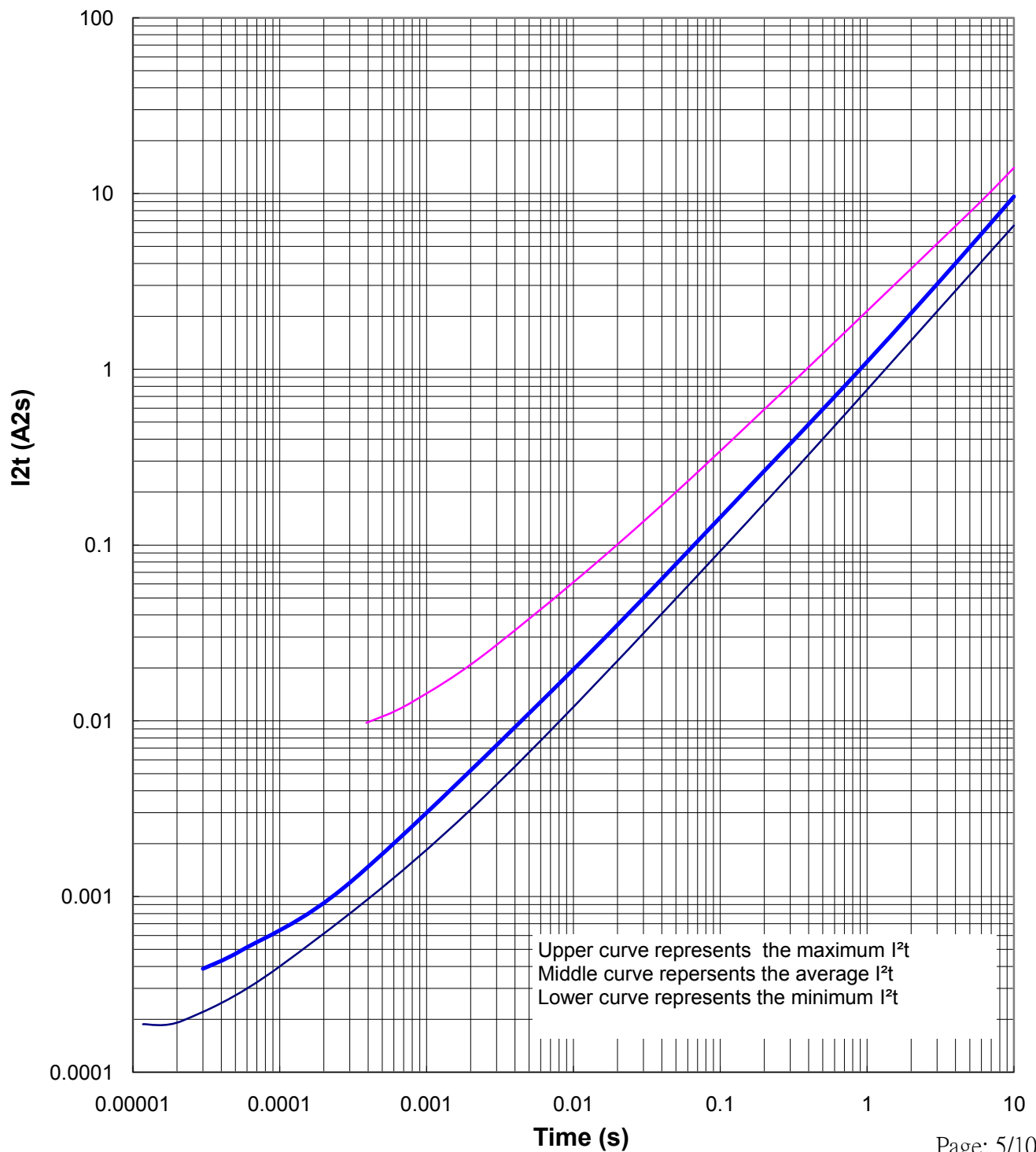
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10 I²t vs .t Curves:

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11 Features

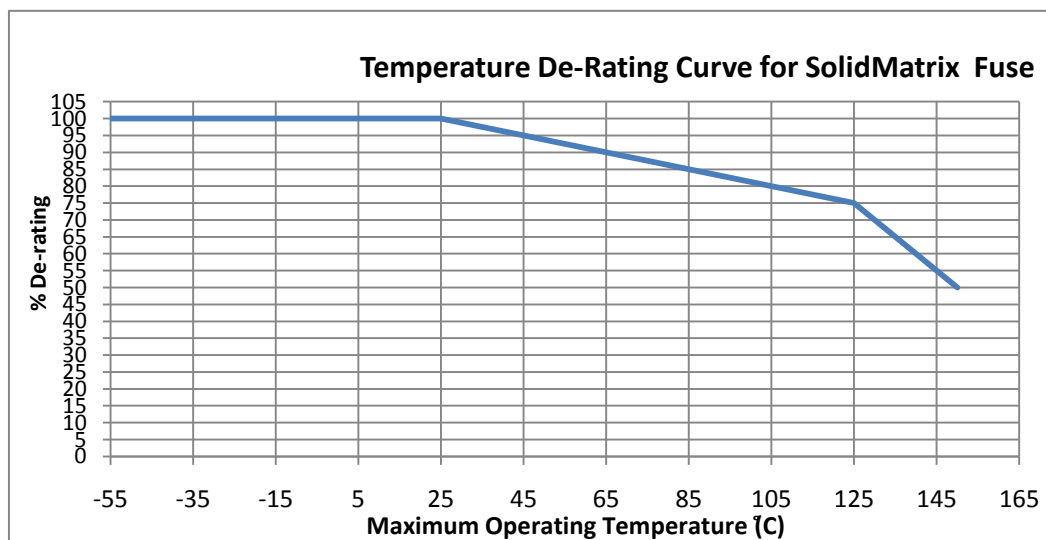
- 11.1 Multilayer monolithic structure with glass ceramic body and silver fusing element
- 11.2 Silver termination with nickel and solder plating (lead free), providing excellent solderability
- 11.3 Compatible with both wave and reflow soldering processes

12 Typical Applications

- 12.1 Consumer Electronics, e.g. CD-/LD-Disc drives, portable sets (drives)
- 12.2 Communication Technology, e.g. ISDN-line card protection, PCM-cards, mobile phones tuner input, satellite receivers, cards in GSM-base stations
- 12.3 Data-Processing, e.g. disc drives, keyboard/mouse ports, LAN-/PC-cards, modems
- 12.4 Measurement and Control Technology, e.g. communication ports, measurement inputs/probes/sensors, analysis units, PLCs
- 12.5 Medical Technology, e.g. communication ports, measurement in & out probes
- 12.6 Power Supply Technology, e.g. low voltage section of power supplies/chargers

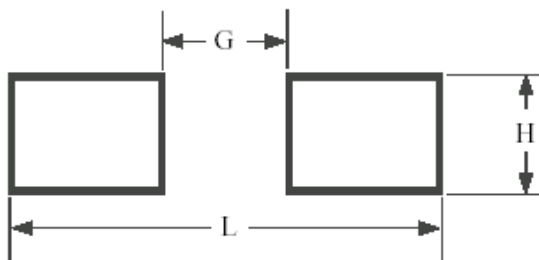
13 Temperature De-rating Guideline

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” according to the de-rating curve.



14 Recommended PC Board Land Pattern

Chip Size	0603 (1608)
L INCH (mm)	0.087 (2.20)
G INCH (mm)	0.031 (0.80)
H INCH (mm)	0.039 (1.00)



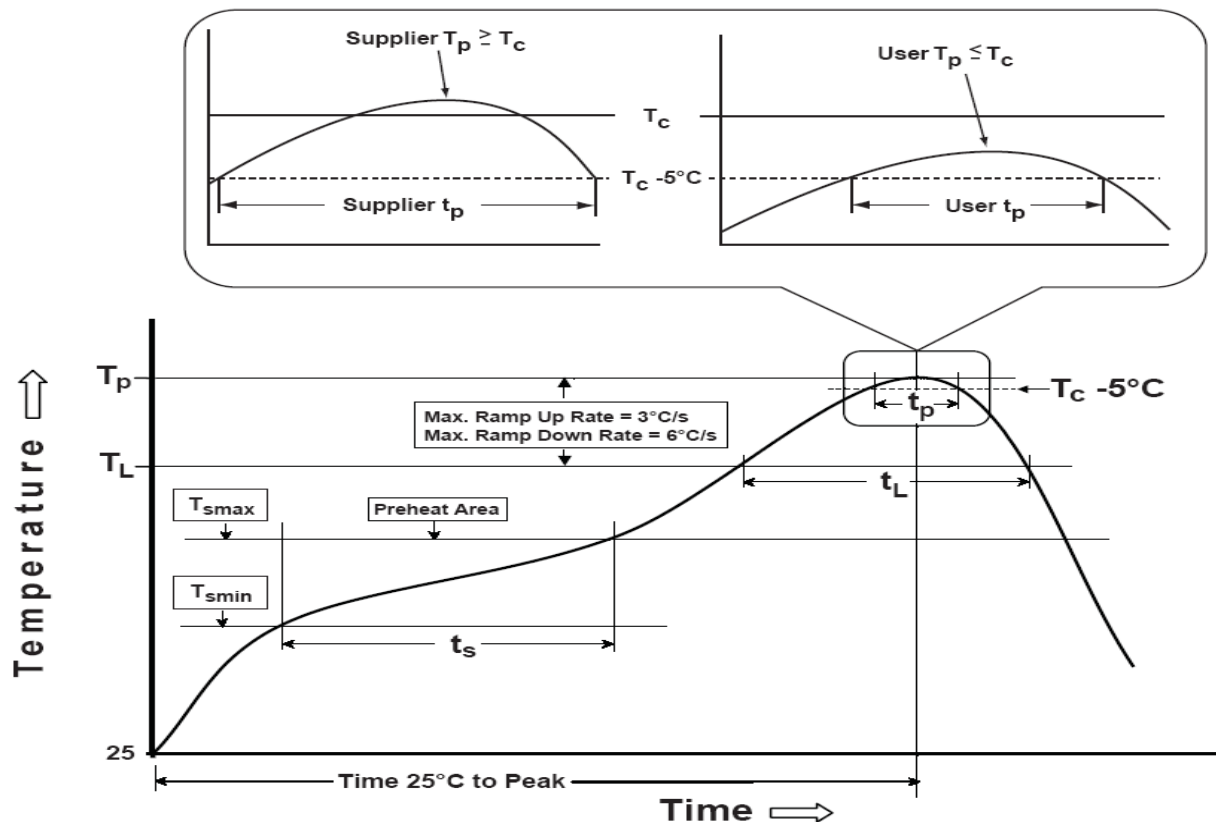
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15 Recommended Temperature Profile for Reflow Soldering

Profile Feature	Pb-Free Assembly
Preheat/Soak	
Temperature Min (T_{smin})	150°C
Temperature Max (T_{smax})	200°C
Time (t_s) from (T_{smin} to T_{smax})	60-120 seconds
Ramp-up rate (T_L to T_p)	3°C/ second max.
Liquidous temperature (T_L)	217°C
Time (t_L) maintained above T_L	60-150 seconds
Peak package body temperature (T_p)	260°C
Time (t_p)*within 5°C of the specified classification temperature (T_c), see Figure 5-4	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	



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.

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16 Special Measuring Equipment

16.1 Clear Time

Clear time is measured with clear time tester.

16.2 DC Resistance

DC resistance is measured with Keithley 580/Keithley 2010.

16.3 Interrupting Capability

Interrupting capability is measured with short circuit tester.

17 Reliability Tests

Reliability Test	Test Condition and Requirement
Bending	Board: 94x94x1.6 mm, 2 mm bend for 5 seconds, 10% DCR change max.
Solderability	255°C, 5 seconds, 95% coverage min.
Soldering Heat Resistance	260°C, 60 seconds, 10% DCR change max.
Terminal Strength	0603 – 0.5 kg 30 second hanging, no damage
Life	25°C, 2000 hours, 75% rated current, no open circuit, voltage drop change $\leq \pm 10\%$
Thermal Shock	-65°C to +150°C, 100 cycles, no mechanical damage, 10% DCR change max.
Mechanical Vibration	5 – 3000 Hz, 0.4 inch double amplitude or 30 G peak, 10% DCR change max.
Mechanical Shock	1500 G, 0.5 milliseconds, half-sine shocks 10% DCR change max.
Salt Spray	5% salt solution, 48 hour exposure
Moisture Resistance	10 cycles, 10% DCR change max., no excessive corrosion

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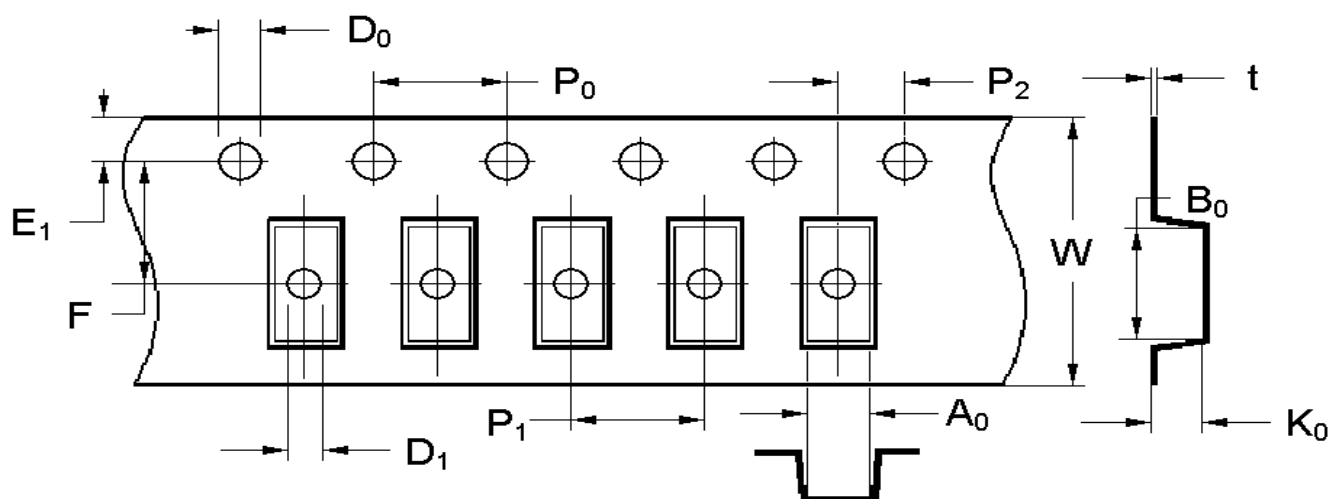
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18 Packaging

18.1 Surface mount chip fuses are provided on tape-and-reel for use in pick-and-place machines or in bulk for special applications. The reel size is 7 inches.

18.2 Tape Dimensions: Inch (mm)



Size	Ao	Bo	Ko	Type
0603 (1608)	0.039 ± 0.004 (1.00 ± 0.10)	0.071 ± 0.004 (1.80 ± 0.10)	0.037 ± 0.003 (0.95 ± 0.08)	Paper

E1	F	W	P1	P0	P2	D0	D1	t
0.069 ± 0.004 (1.75 ± 0.10)	0.138 ± 0.002 (3.50 ± 0.05)	0.315 ± 0.008 (8.00 ± 0.20)	0.157 ± 0.004 (4.00 ± 0.10)	0.157 ± 0.004 (4.00 ± 0.10)	0.079 ± 0.002 (2.00 ± 0.05)	$0.059 \pm 0.004/-0.00$ ($1.50 \pm 0.10/-0.00$)	N/A	N/A

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18.3 Quantity Per Reel

Chip Size	Parts on 7 inch (178 mm) Reel
0603 (1608)	4,000

19 Storage

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