

# Type 0ABA

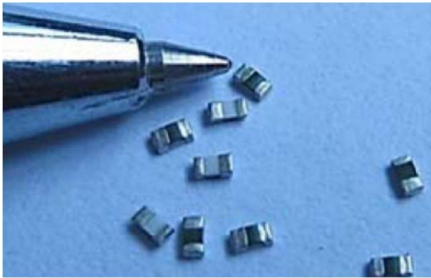
## Surface Mount Fast Acting Chip Fuse

HF  0ABA Series – 0402 Size

RoHS Compliant

### Features

- Fast Acting for excessive current, set the industry standard for performance, reliability and quality
- Small size, 0402 SMD
- Current rating from 200mA to 4A
- Wide operating temperature range from -55°C to 125°C
- Tape and Reel for automatic SMD placement
- Compatible with 260°C Pb-free IR and wave soldering process
- Excellent environmental integrity
- One time positive disconnect
- Full compliance with EU Directive 2011/65/EU and amending directive 2015/863 (MSL = 1)
- Halogen Free
- Lead Free
- Meets Bel automotive qualification\*
- \* - Largely based on internal AEC-Q test plan



UK  
CA  
CE  
c  <sup>®</sup> US  
AEC-Q Compliant

### Applications

- Electronic device and Battery


LEAD FREE = 

HALOGEN FREE = 

### Electrical Characteristics (UL STD. 248-14)



Rated Current	1.0In	2.5In	3.0In
1A~4A	4 hours minimum	5 sec	
200mA~750mA	4 hours minimum		5 sec

### Safety Agency Approvals

Safety Agency	Safety Agency Certificate	Voltage Rating (V)	Ampere Range / Volt @ I.R. ability*
	E20624	200mA–4A/32V DC	200mA–4A/35A@ 32V DC

\* DC Interrupting Rating (Measured at rated voltage, time constant of less than 50 microseconds, battery source)

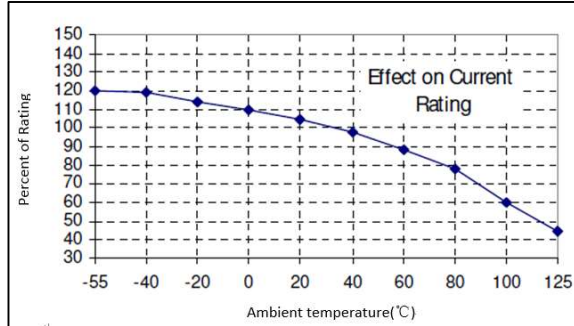
### Physical Specifications

Materials	Body : Ceramic Substrate
	Terminations : Ag / Ni / Sn (100% Lead-free)
	Element Cover Coating : Lead-free Glass
Marking	On Fuse :
	None
	On Label :
	"bel", "0ABA", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and "  ", "  " (China RoHS compliant).

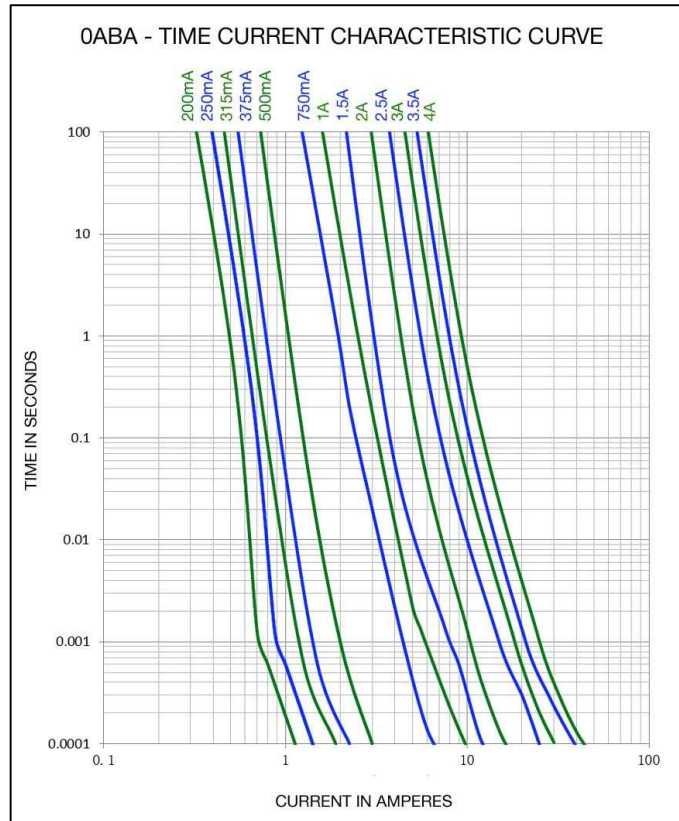
## Temperature Derating Curve

Normal ambient temperature:  $23 \pm 3^\circ\text{C}$


Operating temperature:  $-55 \sim 125^\circ\text{C}$ , with proper correction factor applied



## Average Time Current Curve



## Electrical Specifications

Part Number	Ampere Rating	Resistance (ohms)** Typ.	Typical Melt I <sup>2</sup> t *** DC (A <sup>2</sup> s)	Voltage and Interrupting Ratings	Agency Approvals
					
0ABA-0200-XX	200mA	1.75	0.0006	See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings	Y
0ABA-0250-XX	250mA	1.50	0.0010		Y
0ABA-0315-XX	315mA	1.00	0.0014		Y
0ABA-0375-XX	375mA	0.78	0.0018		Y
0ABA-0500-XX	500mA	0.50	0.0043		Y
0ABA-0750-XX	750mA	0.22	0.011		Y
0ABA-1000-XX	1A	0.13	0.04		Y
0ABA-1500-XX	1.5A	0.078	0.06		Y
0ABA-2000-XX	2A	0.040	0.13		Y
0ABA-2500-XX	2.5A	0.024	0.20		Y
0ABA-3000-XX	3A	0.018	0.33		Y
0ABA-3500-XX	3.5A	0.014	0.45		Y
0ABA-4000-XX	4A	0.011	0.60		Y

Consult manufacturer for other ratings

\*\*DC Cold Resistances are measured at <10% of rated current in ambient temperature of  $25^\circ\text{C}$ .

\*\*\*Typical Melting I<sup>2</sup>t (Measured with a battery bank at rated DC voltage, Measured at 1ms open time, time constant of calibrated circuit less than 50 microseconds).



Specifications subject to change without notice

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## Environmental Specifications

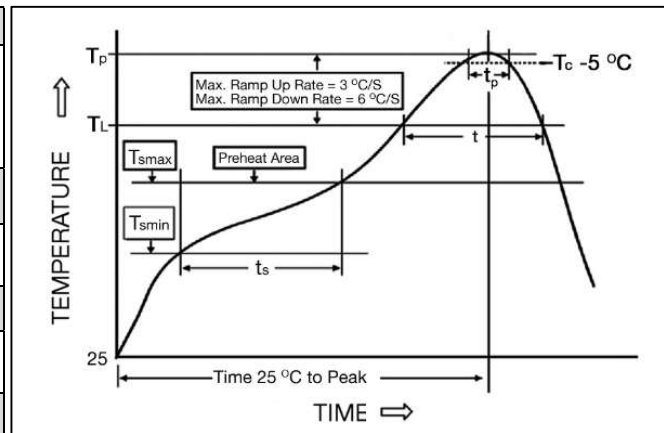
High temperature storage	MIL-STD-202 Method 108
Temperature cycling	JESD22 Method JA-104, Test Condition B
Biased humidity	MIL-STD-202 Method 103, 85C/85% RH with 10% operating power for 1000 hrs.
Operational life	MIL-STD-202 Method 108, Test Condition D
Resistance to solvents	MIL-STD-202 Method 215
Mechanical shock	MIL-STD-202 Method 213, Test Condition C
Vibration	MIL-STD-202G Method 204 Test condition D ( 10-2k HZ ,20G's for 20minutes )
Resistance to soldering heat	MIL-STD-202 Method 210, Test condition B
Thermal shock	MIL-STD-202 Method 107
Solderability	J-STD-002 Test B
Board flex(SMD)	AEC-Q200-005
Terminal strength	AEC-Q200-006
Electrical characterization	3 Temperature Electrical

## Soldering Method

Wave solder	Reservoir temperature: 260°C
	Time in reservoir: 10 seconds maximum
Infrared reflow	Temperature: 260°C
	Time: 30 seconds maximum

## Solder Reflow Profile

Profile Feature	
<b>Preheat &amp; Soak</b>	
Temperature min (T <sub>smin</sub> )	150°C
Temperature max (T <sub>smax</sub> )	200°C
Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 seconds
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.
Liquidous temperature (T <sub>L</sub> )	217°C
Time at liquidous (t <sub>L</sub> )	60-150 seconds
Peak package body temperature (T <sub>p</sub> )	260°C
Time (t <sub>p</sub> ) within 5°C of the specified classification temperature (T <sub>c</sub> )	30 seconds
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	6°C/second max.
Time 25°C to peak temperature	8 minutes max.



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## Fuse FGNO Explanation

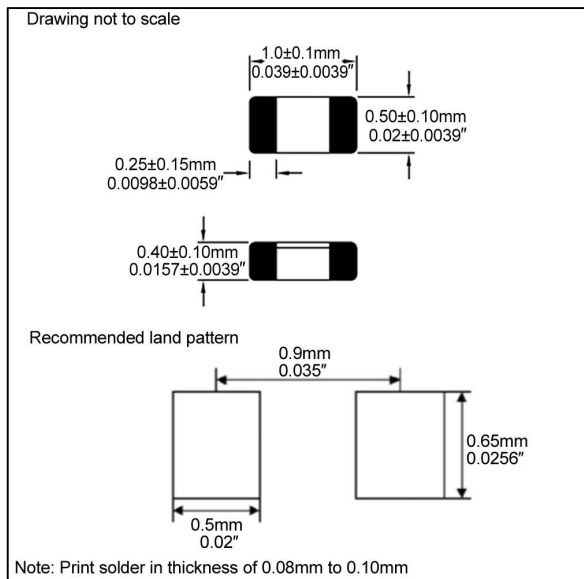
0ABA - [XXXX] X XX

0ABA=0ABA; [XXXX]=Ampere Rating; XX=See Ordering Information as below

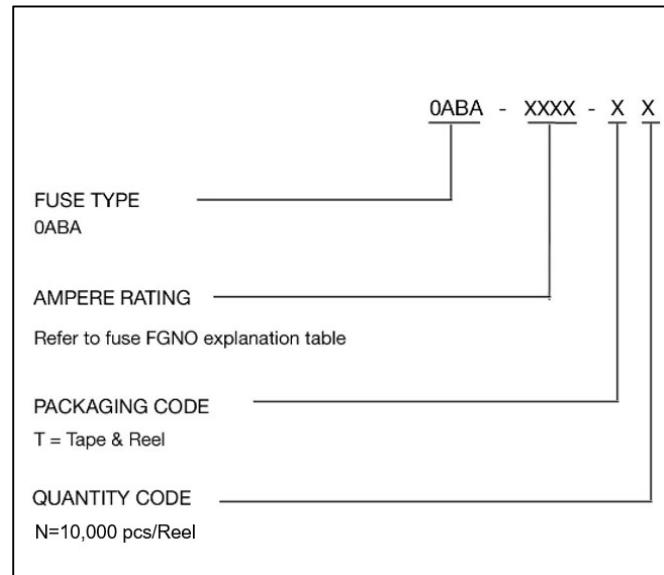
Fraction	Decimal	Milliamps	Bel FGNO[XXXX]
1/5	0.200	200	0200
1/4	.250	250	0250
	.315	315	0315
3/8	.375	375	0375
1/2	.500	500	0500
3/4	.750	750	0750

Fraction	Decimal	Amps	Bel FGNO[XXXX]
	1.0	1	1000
1-1/2	1.50	1.5	1500
	2.0	2	2000
2-1/2	2.5	2.5	2500
	3.0	3	3000
3-1/2	3.5	3.5	3500
	4.0	4	4000

## Mechanical Dimensions



## Ordering Information



## Packaging

Packaging Tape & Reel	Packaging Specification	Quantity	Packaging Code& Quantity Code
8 mm wide tape with 7 inches Diameter reel	EIA Standard 481-E	10,000 pcs	TN