



贝特卫士®

更好的电路安全卫士!
You build electronics, We safeguard them!

承 认 书

APPROVAL SHEET

编号 No.	0410200000-A/0-T
日期 Date	2023.07.20

客 户 Customer	
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品 名 Product	0402 Size Chip Fuse
系 列 Series	041 series

料号 Part No.	规格描述 Specification	备注 Remark
贝特电子 Betterfuse	0402 Low BC, Fast-Acting current fuse	
客 户 Customer		

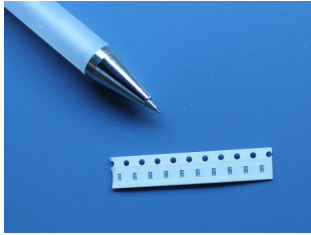
环保特别提示 Special instructions for environmental protection
本产品:

供应商-贝特电子 Supplier-Betterfuse	零件承认章 Approval Signet	客 户 Customer	零件承认章 Approval Signet
制 作 Make HongKun Huang			
审 核 Check Yongcong Jin			
确 认 Approval Weirong Xiang			

联络 Contact			
业务 Sales	电话 Telephone	手机 Cellphone	邮箱 E-mail
零件承认后敬请回签一份给我司留存, 或将承认后的封面传真(0769-8352 1857)至我司, 谢谢!			



1. SCOPE AND DESCRIPTION



Following electronic product specifications apply to SMD fuses of the 041 series. The 041 series is a fast-acting type SMD fuse for over-current protection.

With their small size and layout, 041 SMD fuses are ideal for industrial products. They are widely used in cellphones, DVD players, battery packs, hard disk drives and digital cameras.

2. GENERAL INFORMATION


General Description

The 041 SMD fuses stand out due to their ultra-small size and excellent electrical performance, reliability and quality. The solder-free design provides outstanding on-off and temperature cycling characteristics during operation and also makes our SMD fuses more heat and shock tolerant than typical SMD fuses.

Detailed Features

- Fast acting for excessive current
- AEC-Q200 automotive grade certified
- Comptible with reflow and wave solder
- Ceramic and glass constuction
- Excellent environmental integrity
- One time positive disconnect
- Lead-free, Halogen-free, RoHS compliant

3. AGENCY APPROVALS

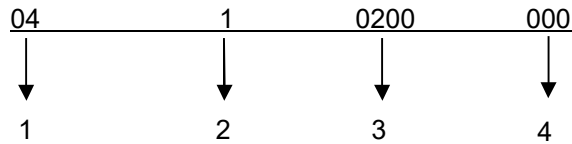
Agency	Agency File Number	Ampere/ Voltage Range
	E300003	32VDC:100mA~4A



4. PART NUMBERING SYSTEM

4.1 Part Number

Example: 0410200000



- | | |
|-------------------------------------|----------------------------|
| 1. Foot Print | 0402 |
| 2. Electrical characteristics | Fast-Acting (F) |
| 3. Ampere Rating | 0.2A (see table 4.3 below) |
| 4. Supplementary Code | See table 4.2 below |

4.2 Supplementary Code Table

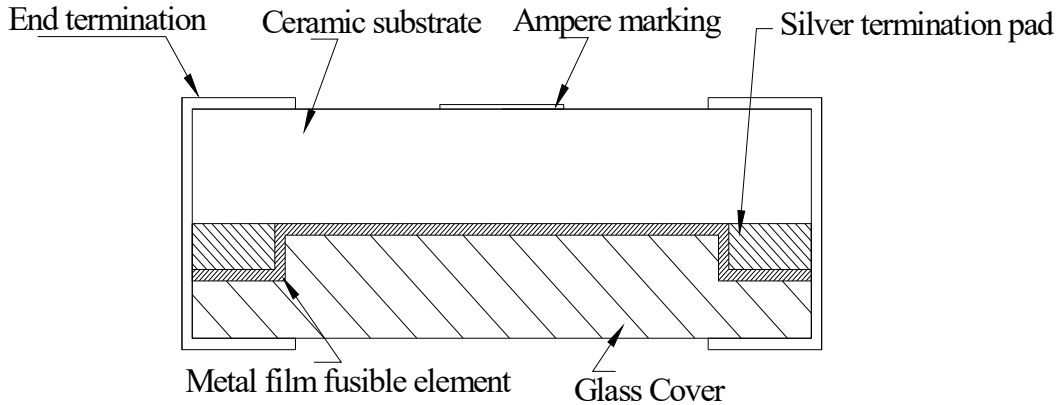
CODE	DESIGNATION
000	Tape-and-reel

4.3. Ampere / Voltage Rating Table

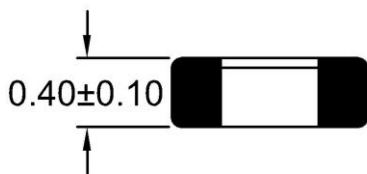
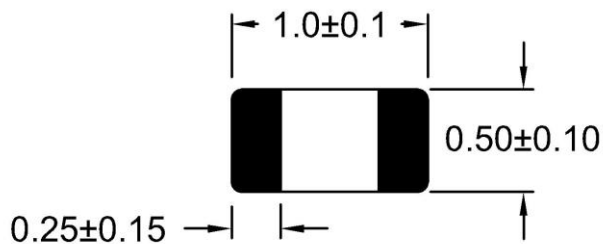
AMP CODE	AMPERE RATING	VOLTAGE RATING
0200	200mA	32V DC
0250	250mA	32V DC
0315	315mA	32V DC
0375	375mA	32V DC
0500	500mA	32V DC
0750	750mA	32V DC
1100	1.00A	32V DC
1150	1.50A	32V DC
1200	2.00A	32V DC
1250	2.50A	32V DC
1300	3.00A	32V DC
1350	3.50A	32V DC
1400	4.00A	32V DC
1500	5.00A	32V DC



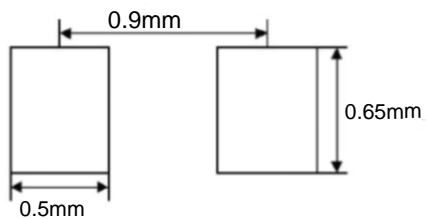
5. MECHANICAL SPECIFICATIONS



Dimensions (units: mm)



Recommended soldering pad



Note: Print solder in thickness of 0.08mm to 0.10mm

Operating Temperature:

-55°C to +150°C

Storage Conditions:

+10°C to +60°C

Relative humidity: ≤ 75% yearly average
without dew, maximum 30 days at 95%

Vibration Resistance:

120 cycles in 1 direction at 1 min. each

10-55Hz, 3 directions(X, Y, Z) in total

According to MIL-STD-202 Method 201A

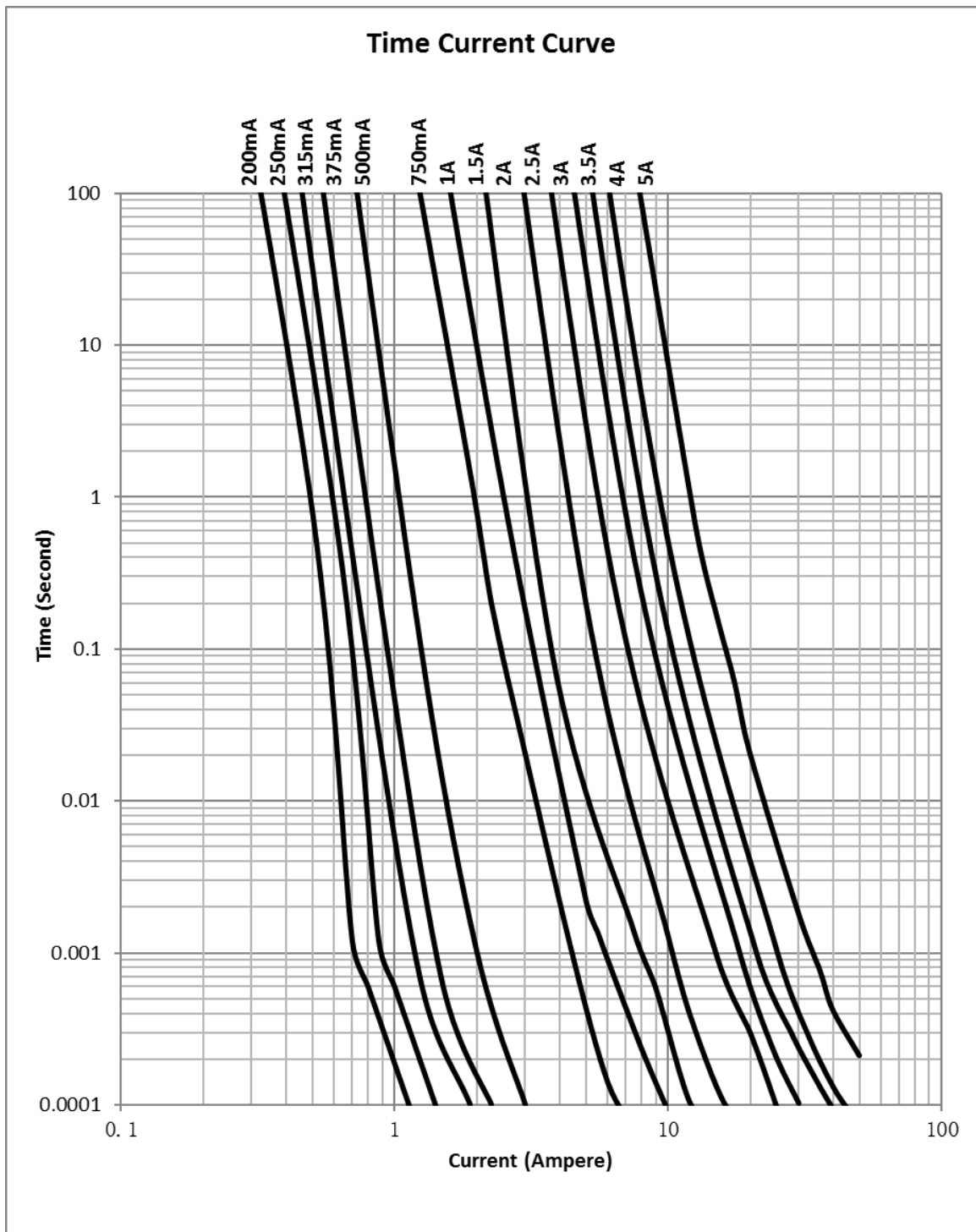


6. ELECTRICAL SPECIFICATIONS

Time vs Current Characteristics Table

(measured with constant current power supply)

Time VS Current Characteristics:UL248-14			
Rated Current	100%	250%	300%
200mA~750mA	>4H	-	<5s
1A~5A	>4H	<5s	-



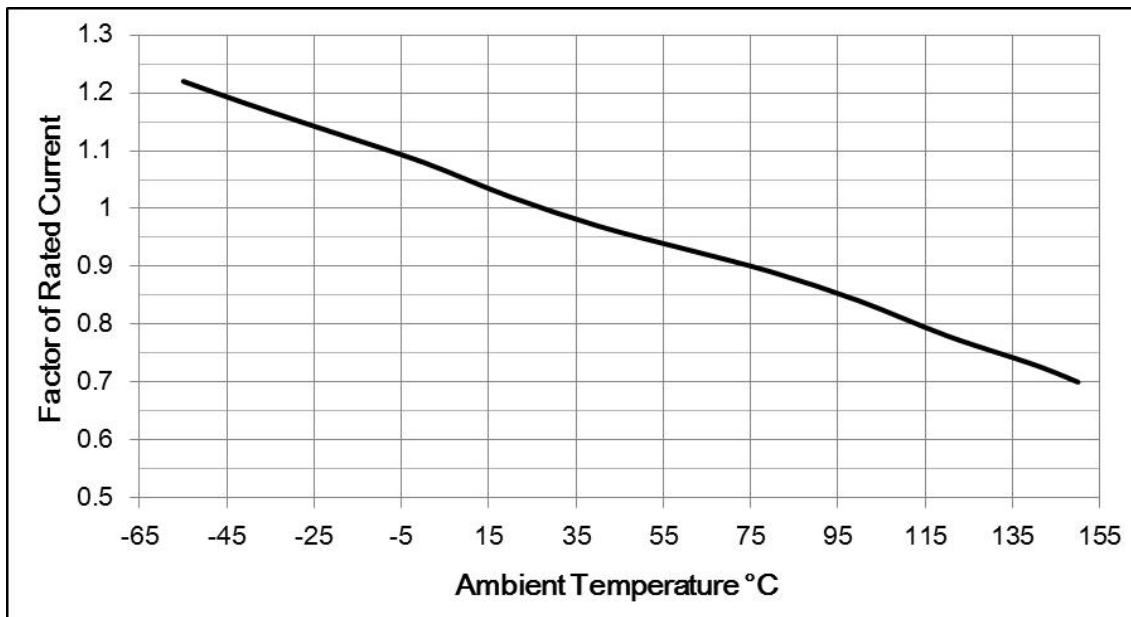


Electrical Characteristics at 25°C						
Amp Code	Rated Current	Rated Voltage	Typical Melting I ² T (A ² s)	Typical Cold Resistance (mΩ)	Breaking Capacity	Approvals
						cURus
0200	200mA	32V DC	0.0006	1750	35A@32V DC	•
0250	250mA		0.0010	1500		•
0315	315mA		0.0014	1000		•
0375	375mA		0.0018	780		•
0500	500mA		0.0043	500		•
0750	750mA		0.011	220		•
1100	1.00A		0.04	130		•
1150	1.50A		0.06	78.0		•
1200	2.00A		0.13	40.0		•
1250	2.50A		0.20	24.0		•
1300	3.00A		0.33	18.0		•
1350	3.50A		0.45	14.0		•
1400	4.00A		0.60	11.0		•
1500	5.00A		0.90	9.5		○

1. DC Interrupting Rating (Measured at rated voltage, time constant of less than 50 microseconds, battery source);
2. DC Cold Resistance are measured at <10% of rated current in ambient temperature of 25 degrees;
3. Typical Melting I²t (Measured with a battery bank at rated DC voltage, Measured at 1ms open time, time constant of calibrated circuit less than 50 microseconds).
4. UL Approval is pending for 5A.

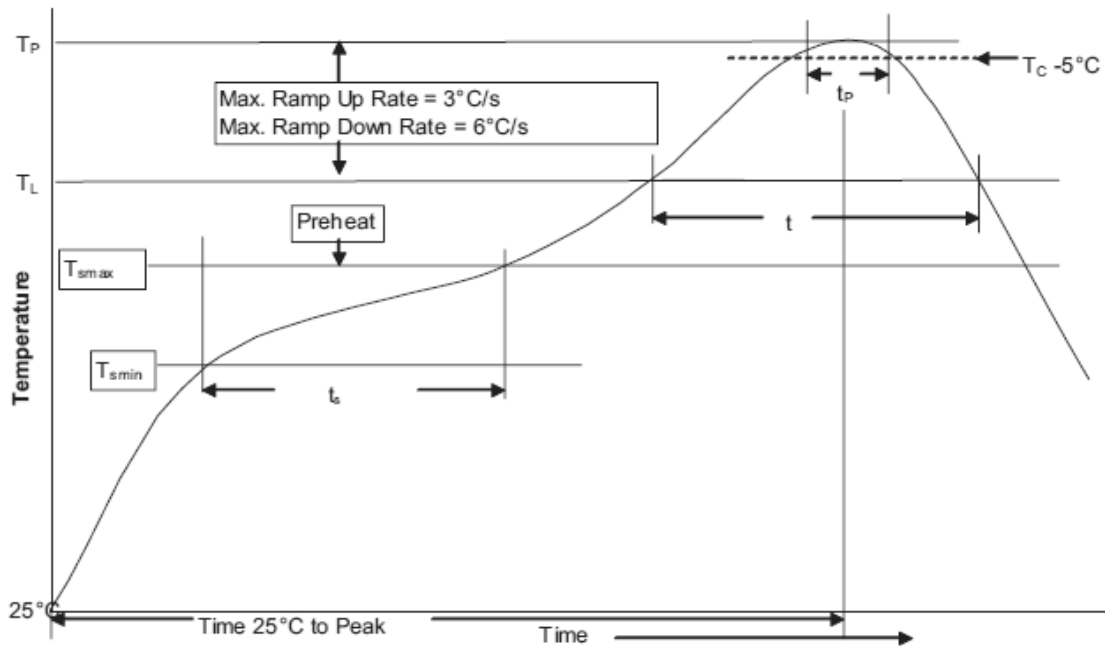
Temperature Derating Curve

- (1) Normal ambient temperature: 23+/-3°C
- (2) Operating temperature: -55 ~ +150°C, with proper correction factor applied





7. SOLDERING PARAMETERS



1. Infrared Reflow:

Temperature: 260°C
Time: 30 sec. Max.

2. Wave Soldering

Reservoir Temperature: 260°C
Time in Reservoir: 10 sec. Max.

Profile Feature		Lead(Pb)-Free Solder
Average ramp-up rate(T_{smax} to T_P)		3°C/s Max.
Preheat	Temperature Min(T_{smin})	150°C
	Temperature Max(T_{smax})	200°C
	Time(T_{smin} to T_{smax})	60 ~ 120 sec.
Liquidous temperature(T_L)		217°C
Time at liquidous(t_L)		60 ~ 150 sec.
Peak package body temperature(T_P)		260°C
Time(t_p) within 5°C of specified classification temperature(T_C)		30 sec.
Average ramp-down rate(T_P to T_{smax})		6°C/sec. Max.
Time(25°C to Peak Temperature)		8 minutes Max.

8. ORDERING INFORMATION

The following information are necessary in order to place your order with us correctly:

Series	Amp Code	Supplementary Code	Qty
041			

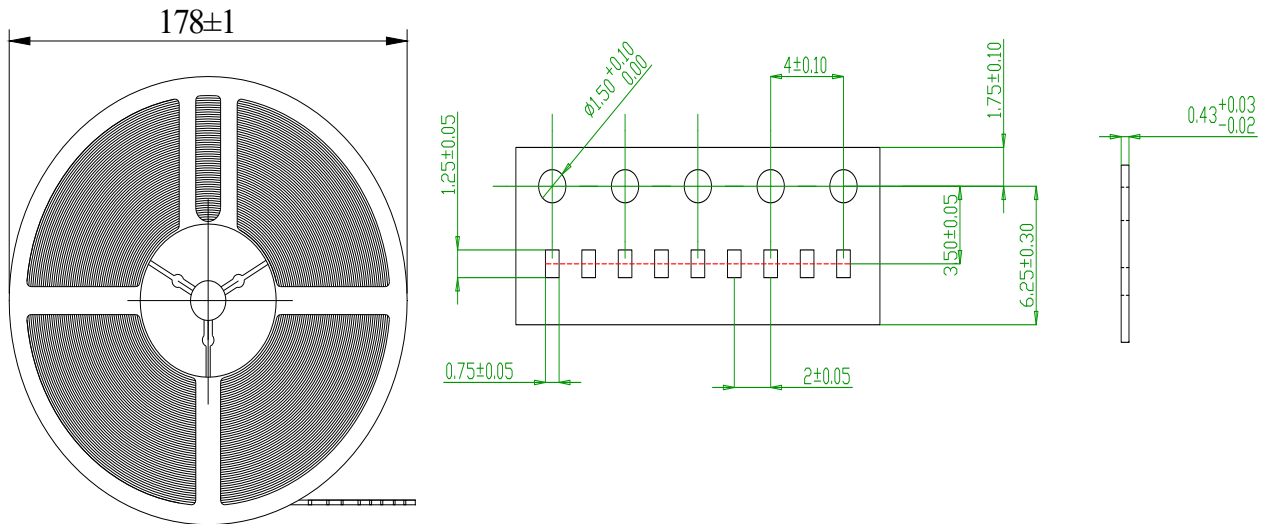


9. PACKING INFORMATION

Taping details

Packing

Unit:mm



Quantity Per Reel		Quantity Carton Box
10000		100000

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