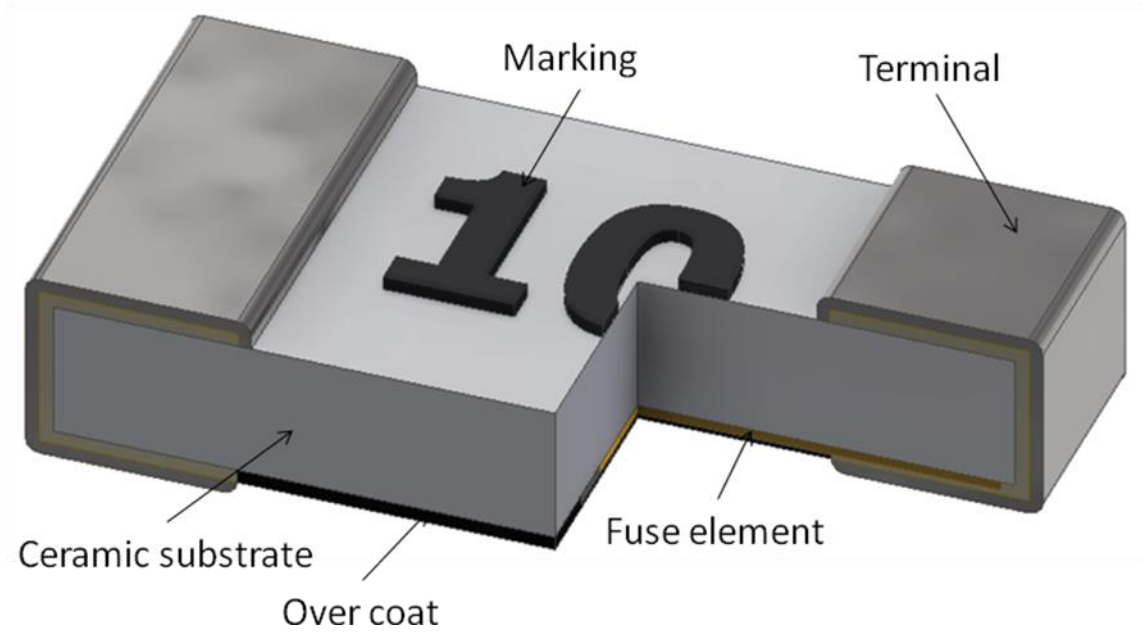
1.Scope

This specification applies for the high current chip fuse series of surface mount fuse made by TA-I.

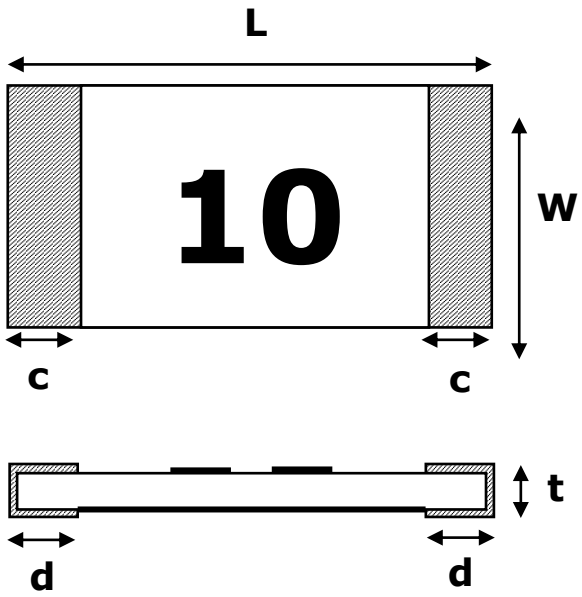
2.Construction



3.Type Designation

CFMH	12	V5	E	10R0
Metal foil Chip Fuse (High Power)	**Size**	**Rated Voltage**	**Packaging**	**Rated Current**
Metal foil	12:1206(3216)	V2:24V V3:32V V5:50V	E : Embossed Tape (3K)	8A 10A 12A 15A 20A 25A 30A

4.Dimensions



Series	L	W	C	d	t
CFMH12	3.20±0.20	1.65±0.20	0.65±0.20	0.65±0.20	1.00±0.20

5. Applications and ratings

Part Designation	Marking	Rated Current	Resistance(mΩ) Tolerance ±25%	Typical I^2t (A^2 s)	Fusing Time	Rated Voltage	Breaking Capacity
CFMH12V5E8R00	8	8A	4.50	18.4	250% rated current < 5 sec 350% rated current < 1 sec	AC 50V DC 50V	(AC/DC) 50V/100A
CFMH12V5E10R0	10	10A	4.00	29.1			
CFMH12V5E12R0	12	12A	3.20	44.0			
CFMH12V5E15R0	15	15A	2.60	77.0			
CFMH12V5E20R0	20	20A	2.15	105.6			
CFMH12V5E25R0	25	25A	1.30	171.7	350% rated current < 1 sec		(AC/DC) 50V/200A
CFMH12V5E30R0	30	30A	1.00	280.2			

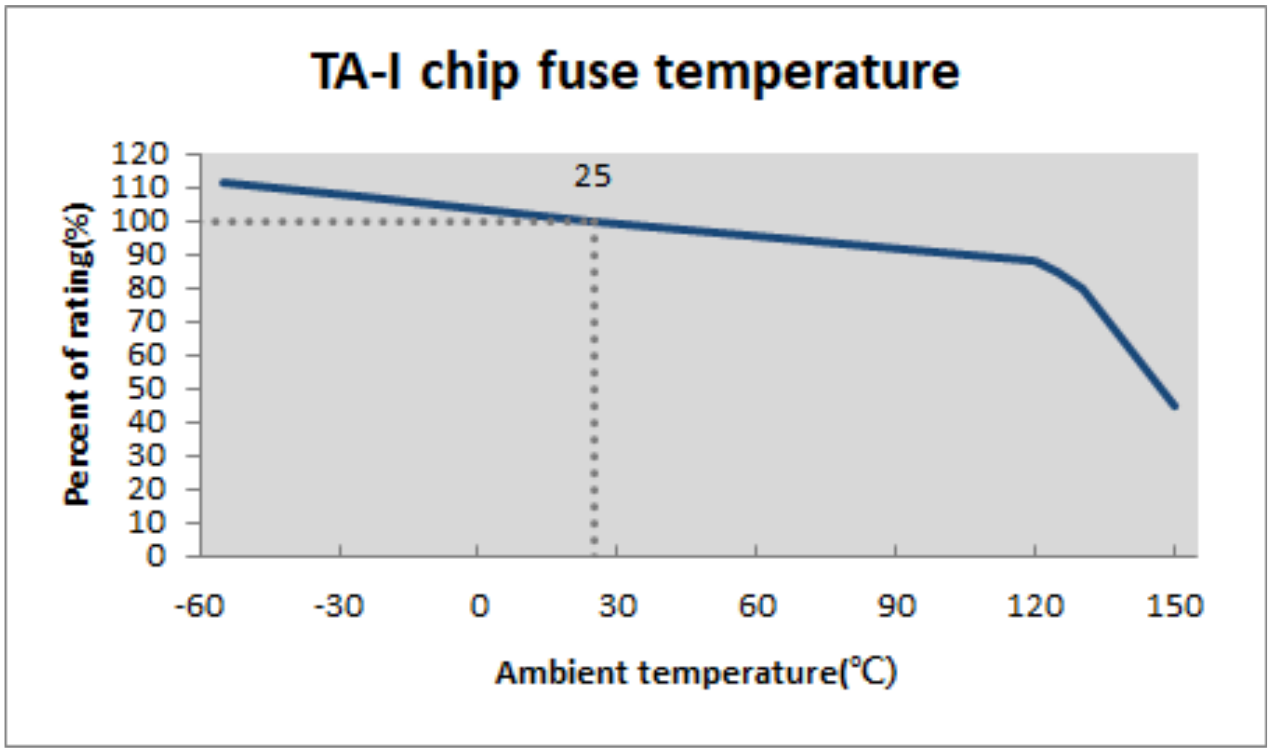
Note:

1.Typical I^2t value is measured at 10x-rated current, Application with surge over 10x-rated current.

6.Temperature Derating Curve

6.1 Normal Ambient Temperature: 25℃

6.2 Operating Temperature: -55℃~150℃, whit proper Derating factor as below:



7.Reliability Tests

No.	Parameter	Reference Standard	Test Method	Requirement
#1	Solderability	J-STD-002,	Aging 4 hours at 155 ℃ dry heat Lead-free solder bath at (1) Method B1: 245 ±5℃ solder, 5±0.5 sec dwell. (2) Method D: 260 ±5℃ solder, 30 ±0.5 sec dwell.	95% coverage minimum
#2	Resistance to solder Heat	MIL-STD-202 Method 210	Condition K: 250±5℃ solder, 30±5 sec dwell. Time above 217 ℃, 60~150 sec.	±10%
#3	Mechanical Shock	MIL-STD-202, Method 213,	Wave Form: Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration(D) is 6(ms)	±10%
#4	Vibration	MIL-STD-202, Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. (Note: Test from 10-2000 Hz.)	±10%
#5	Terminal Strength	AEC-Q200-006	Force of 1.8kg for 1206/0603 Force of 1.0kg for 0402	±10%
#6	High Temperature Storage	MIL-STD-202, Method 108	With exemptions 1000 hrs. @ T=150℃. Unpowered.	±20%
#7	Temperature Cycling	JESD22 -A-104	1000 Cycles (-40℃ to +125°C) 30min maximum dwell time at each temperature extreme. Measurement at 24±4 hours after test conclusion.	±10%
#8	Humidity Bias	MIL-STD-202, Method 103	1000 hours 85℃/85%RH. Note: Specified conditions: 10% of operating current. Measurement at 24±2 hours after test conclusion.	±10%
#9	Operational Life	MIL-STD-202 Method 108	1000 hours TA=85°C at 70% rated current. Measurement at 24±2 hours after test conclusion	±10%
#10	Resistance to Solvent	MIL-STD-202 Method 215	a:Isopropyl Alcohol：Mineral Spirits= 1：3 b:Terpene Defluxer c:Deionized water：Propylene Glycol： Monomethyl Ether：monoethanolamine = 42：1：1	No evident damages on protective coating
#11	Board Flex (Bending)	AEC-Q200-005	3mm deflection	±10%
#12	Carrying capacity	UL248-14	Rated current ,4hr	±10%
#13	Fusing Time	UL248-14	200% of its rated current	1~120 sec
#14	Interrupting Ability	UL248-14	After the fuse is interrupted, rated voltage, applied for 30sec again	No mechanical damages
#15	Temperature Rise	UL248-14	100% of its rated current, Measure of surface temperature	ΔT<75℃
#16	Residual Resistance	UL248-14	Measure DC resistance after fusing	10kΩ and more
#17	Low Temperature Storage	JESD22-A119	1000 hrs. @ T=-55°C. Unpowered. Measurement at 24±2 hours after test conclusion.	±10%
#18	High Temperature Operating Life	MIL-STD-202 Method 108	1,000 hours, 150°C. Biased at the derated nominal 45% of fuse current rating. Measurement at 24±2 hours after test conclusion.	±20%
#19	Flammability	UL-94	V-0 or V-1 are acceptable. Electrical test not required.	V-0 or V-1
#20	External Visual	MIL-STD-883 Method 2009	Inspect device construction, marking and workmanship. Pre and Post Electrical Test not required	
#21	Physical Dimensions	JESD22-B100	Verify physical dimensions to the applicable component specification. Pre and Post Electrical Test not required.	

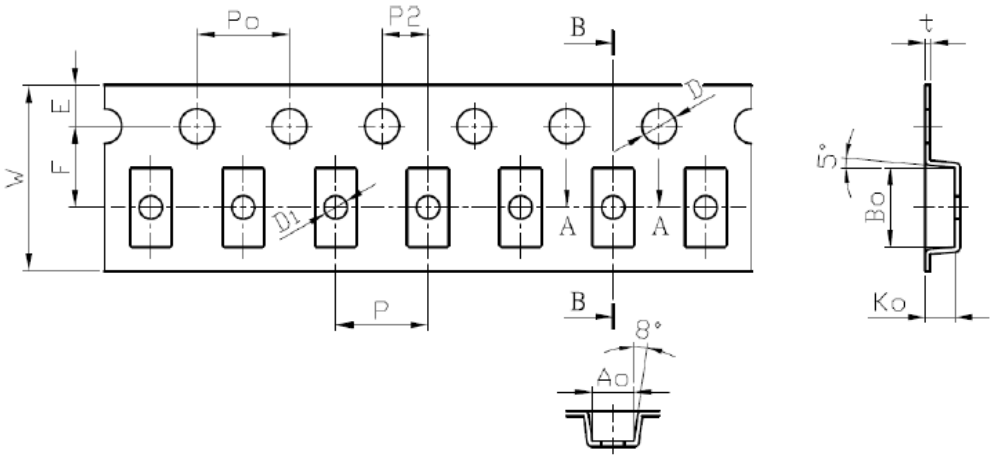
8.Marking

Symbol for Rating Current

Symbol	8	10	12	15	20	25	30
Rating Current(A)	8.0	10.0	20.0	15.0	20.0	25.0	30.0

9.Taping & Reel

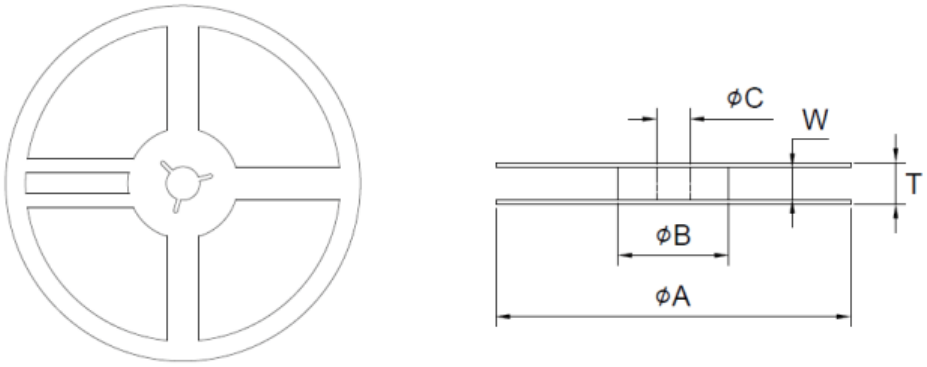
9.1 Taping Dimensions



Packing				Embossed Tape							
Type				CFMH12							
A0	B0	K0	t	W	F	E	P	P2	P0	D	D1
1.78±0.1	3.5±0.1	1.27±0.1	0.22±0.05	8.0±0.2	3.5±0.05	1.75±0.1	4.0±0.1	2.0±0.05	4.0±0.1	ϕ1.5 (+0.1/-0)	1.0±0.1

Unit: mm

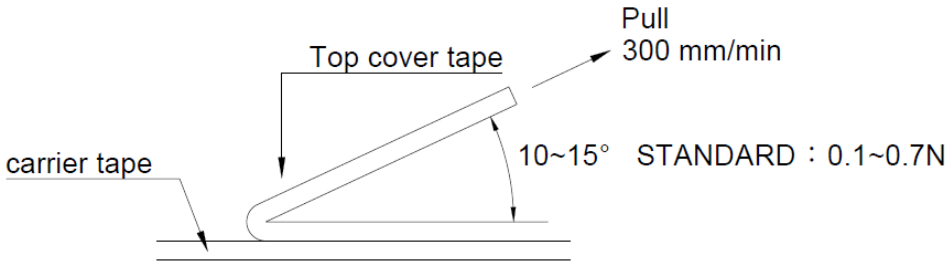
9.2 Reel Specifications



Series	ψA	ψB	ψC	W	T
CFMH12	178±2.0	60.0±1.0	13.0±1.0	9.0±1.0	11.4±2.0

Unit: mm

9.3 Peel –off force:



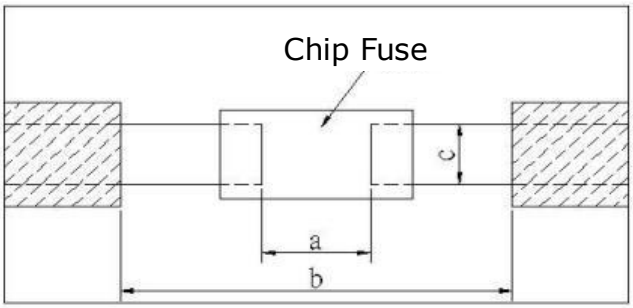
10.Storage Conditions:

Temperature: 5℃~35℃, Humidity: 40%~75%.

11.Shelf Life:

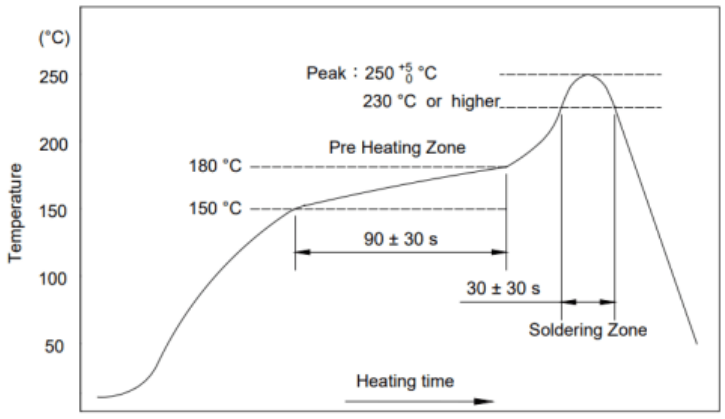
2 years from manufacturing date.

12.Recommended land patterns



Land pattern / Type	Size	Dimension a	Dimension b	Dimension c
CFMH	12 (1206)	2.0~2.4	4.4~5.0	1.5~1.8

13.Recommend IR – Reflow profile: (solder: Sn96.5 / Ag3 / Cu0.5)

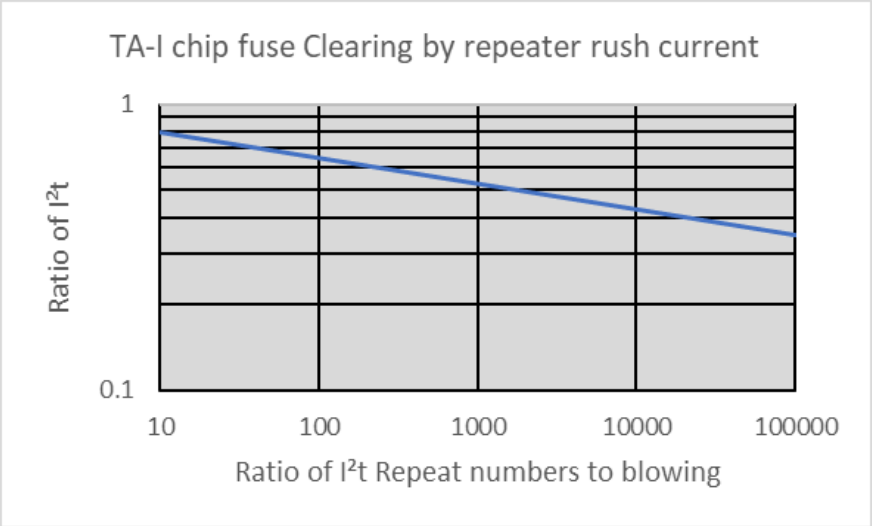


Peak: 250 $^{+5}_{-0}$℃, 5 sec

Pre – heat Zone: 150 to 180 ℃, 90±30 sec

Soldering Zone: 230℃ or higher, 30±10 sec

14.Pulses derating curve:



15.ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

16.Manufacturing Country & City:

TA-I TECHNOLOGY CO., LTD. (Taiwan– Tao Yuan)

Tel: (+886) 3-3246169 Fax: (+886) 3-3246167

Associated companies:

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(2) TA-I TECHNOLOGY ELECTRONIC (DONGGUAN) CO., LTD. (China –Dongguan)

Tel : (+86) 769-8339-4790～3Fax : (+86) 769-8339-4794

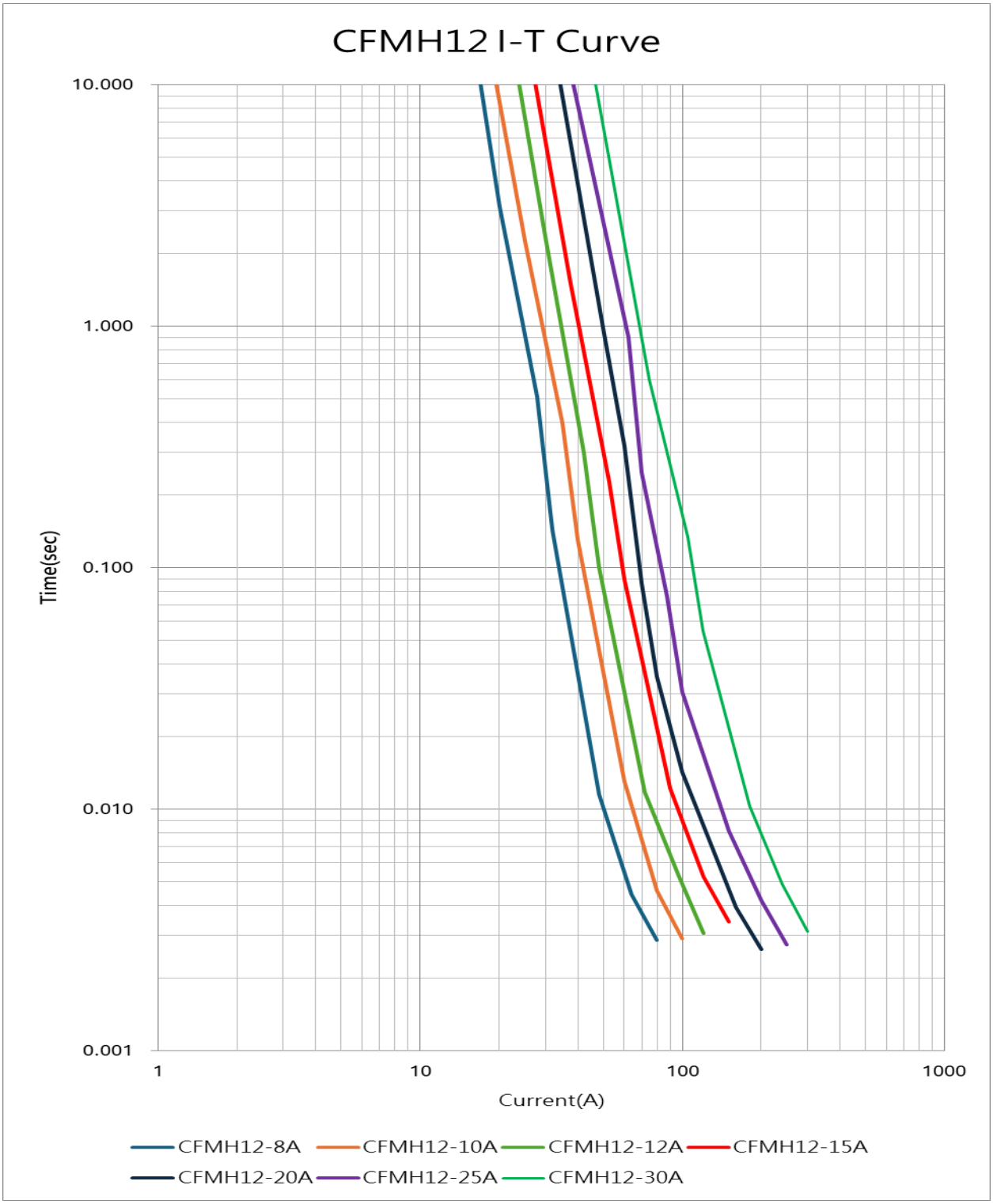
(3) FORTUNE TASK ENTERPRISES LIMITED (China – Dongguan)

Tel : (+86) 769-8339-4790～3Fax : (+86) 769-8339-4794

(4) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Penang)\

Tel: (+60) 4- 3900480 Fax: (+60) 4-3901481

17.TA-I 1206 Chip Fuse I-t Curve



18.TA-I 1206 Chip Fuse I2-t Curve