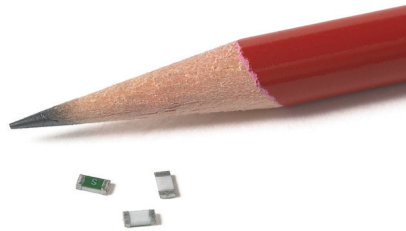


# Bussmann CC12H Series

## High I<sup>2</sup>t Chip™ fuses



### Product description:

- Halogen free, lead free, RoHS compliant
- High I<sup>2</sup>t 1206 footprint surface mount fuse
- High inrush withstand capability
- Excellent temperature and cycling characteristics
- RoHS compliant, and lead free and halogen free construction
- Compatible with solder reflow and wave solder

### Applications

- Flat panel displays and televisions
- Automotive infotainment and ECU
- Computer servers
- Portable electronics
- Mobile device chargers

### Agency information

- cURus Recognition File number: E19180, Guide JDYX2/JDYX8
- AEC-Q200 Automotive Grade Certified

### Ordering

- 3000 fuses on 8mm tape-and-reel on a 7 inch (178mm) reel per EIA Standard 481. Specify Catalog Symbol and package code suffix "-TR" (e.g., CC12H1A-TR)



### Electrical characteristics

Amp Rating	% of Amp Rating	Opening Time
750mA-20A	100%	4 Hours, min
1-3A	200%	1-60 Seconds
1-5A	250%	5 Seconds, max
1-5A	300%	0.1-3 Seconds
750mA, 6-20A	350%	5 Seconds, max
750mA-20A	1000%	0.2-20mS

### Specifications

Catalog Symbol	Current Rating (amps)	Voltage Rating (Vdc)	Interrupting Rating* (amps)	Resistance (Ω)** Typical	Typical Melt (I <sup>2</sup> t)† DC	Typical Voltage Drop (mV)‡	Alpha Marking
CC12H750mA	0.75	63	50	0.780	0.15	840	E
CC12H1A	1	63	50	0.470	0.18	490	H
CC12H1.5A	1.5	63	50	0.218	0.4	355	K
CC12H2A	2	63	50	0.133	1.1	305	N
CC12H2.5A	2.5	63	50	0.079	1.7	240	O
CC12H3A	3	63	50	0.049	2.2	185	P
CC12H3.5A	3.5	63	50	0.037	2.7	180	R
CC12H4A	4	63	50	0.033	3.2	169	S
CC12H4.5A	4.5	32	100	0.028	4.2	160	X
CC12H5A	5	32	100	0.023	6.0	140	T
CC12H6A	6	32	100	0.0155	8.0	140	F
CC12H7A	7	32	100	0.011	9.0	120	J
CC12H8A	8	32	100	0.007	12.0	80	M
CC12H10A	10	32	100	0.0065	33	90	U
CC12H12A	12	32	100	0.0045	45	80	W
CC12H15A	15	32	100	0.0030	40	70	Y
CC12H20A	20	32	100	0.0020	50	60	Q

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

\*\* DC Cold Resistance (Measured at 10% of rated current)

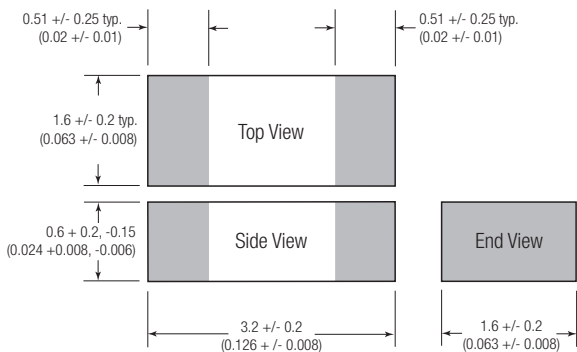
† Typical Melting I<sup>2</sup>t (Measured with a battery bank at rated DC voltage, 10x-rated current, not to exceed interrupting rating, time constant of calibrated circuit less than 50 microseconds)

‡ Typical Voltage Drop (Measured at rated current after temperature stabilizes)

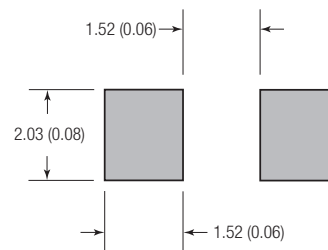
Device designed to carry rated current for four hours minimum. An operating current of 80% or less of rated current is recommended, with further derating required at elevated ambient temperatures.

### Dimensions - mm (in)

Drawing not to scale.



### Pad layout



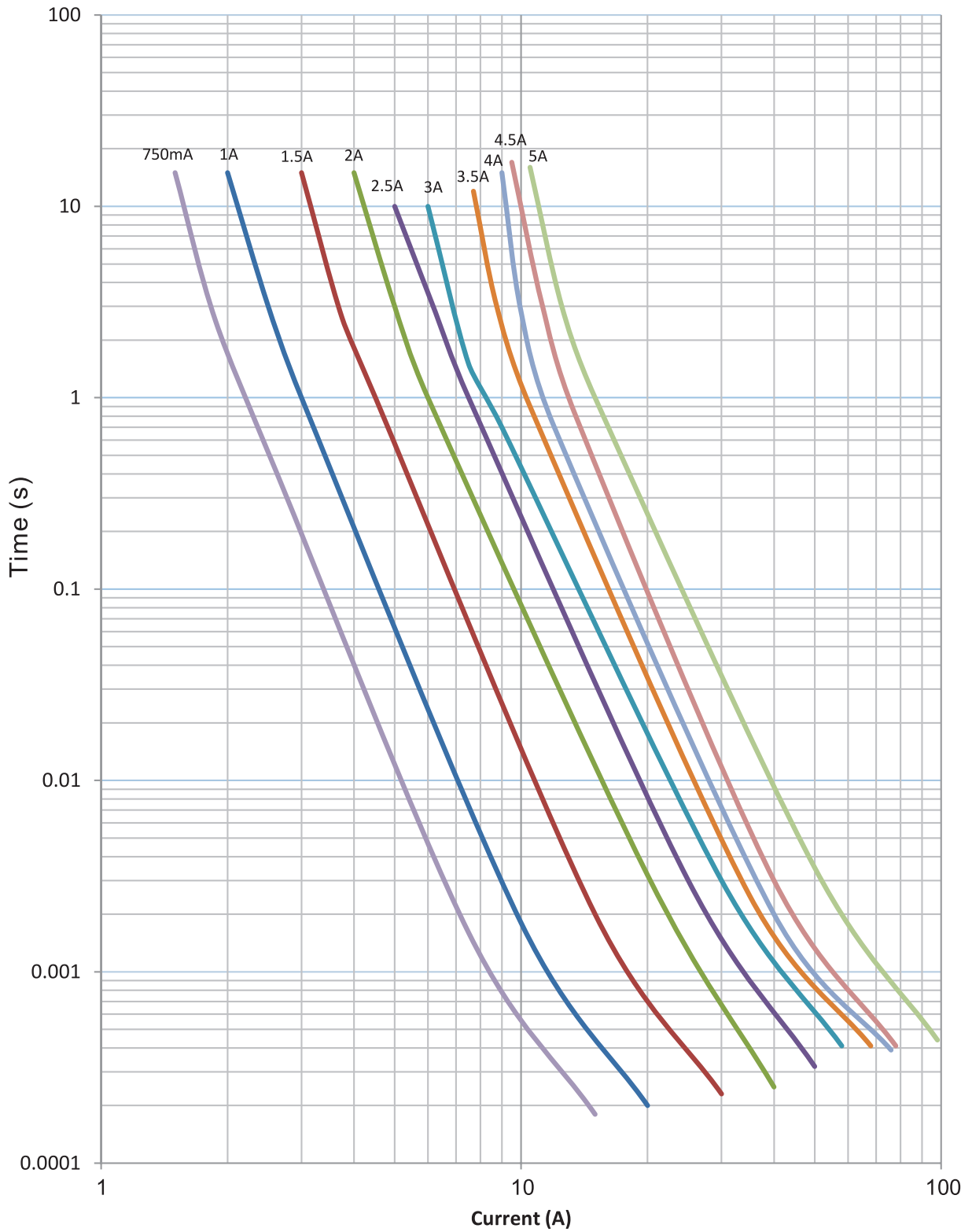
### Environmental data

- Thermal Shock: MIL-STD-202, Method 107, Test Condition B
- Vibration: MIL-STD-202, Method 204, Test Condition C
- Moisture Resistance: MIL-STD-202, Method 106, 50 day cycle
- Solderability: ANSI/J-STD-002, Test B
- Normal ambient temperature: 23°C
- Operating temperature range -40°C to +125°C

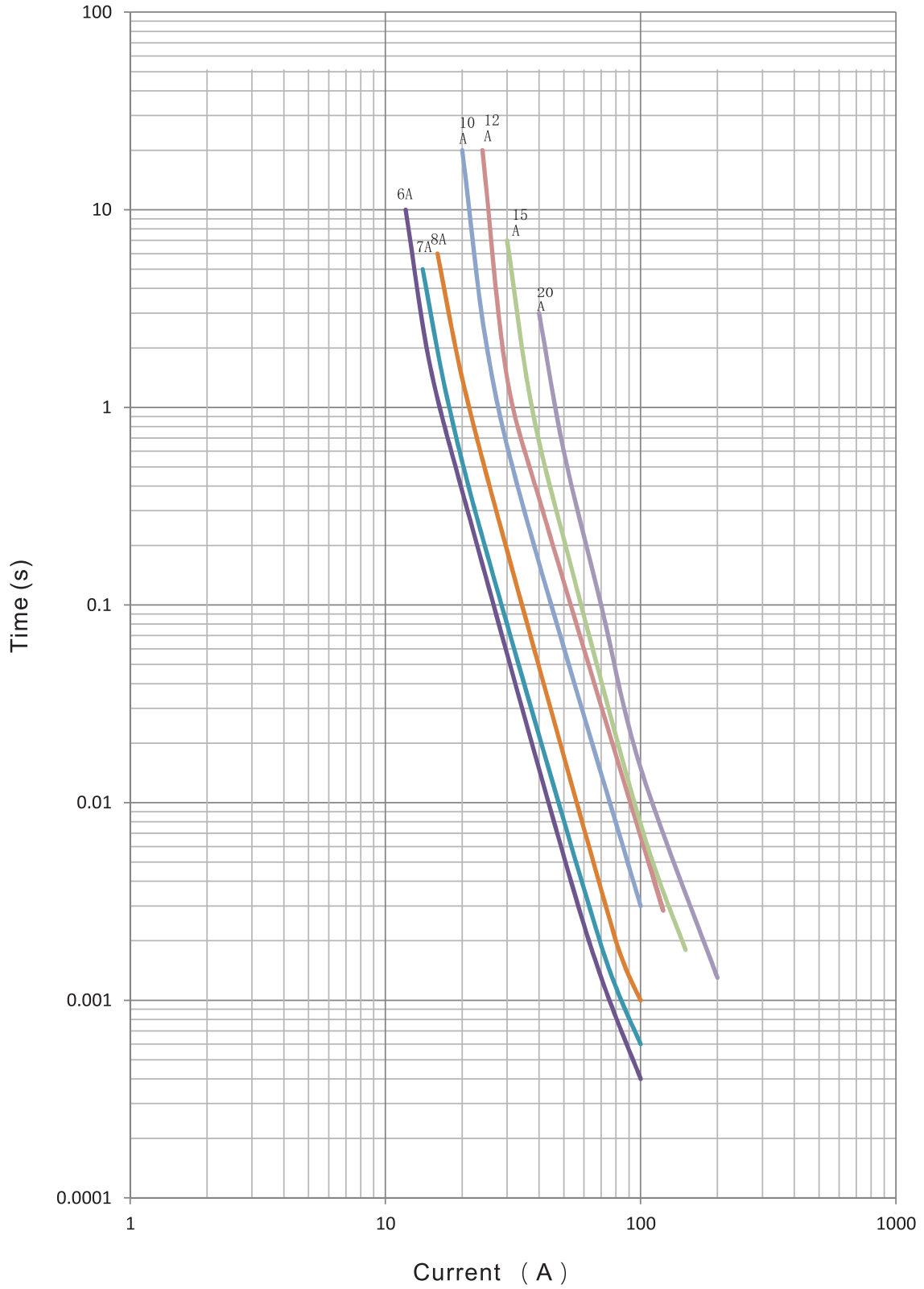
### Soldering method

- Wave Solder Immersion: 260°C, 10 seconds maximum.
- Solder Reflow: 260°C, 30 seconds maximum.

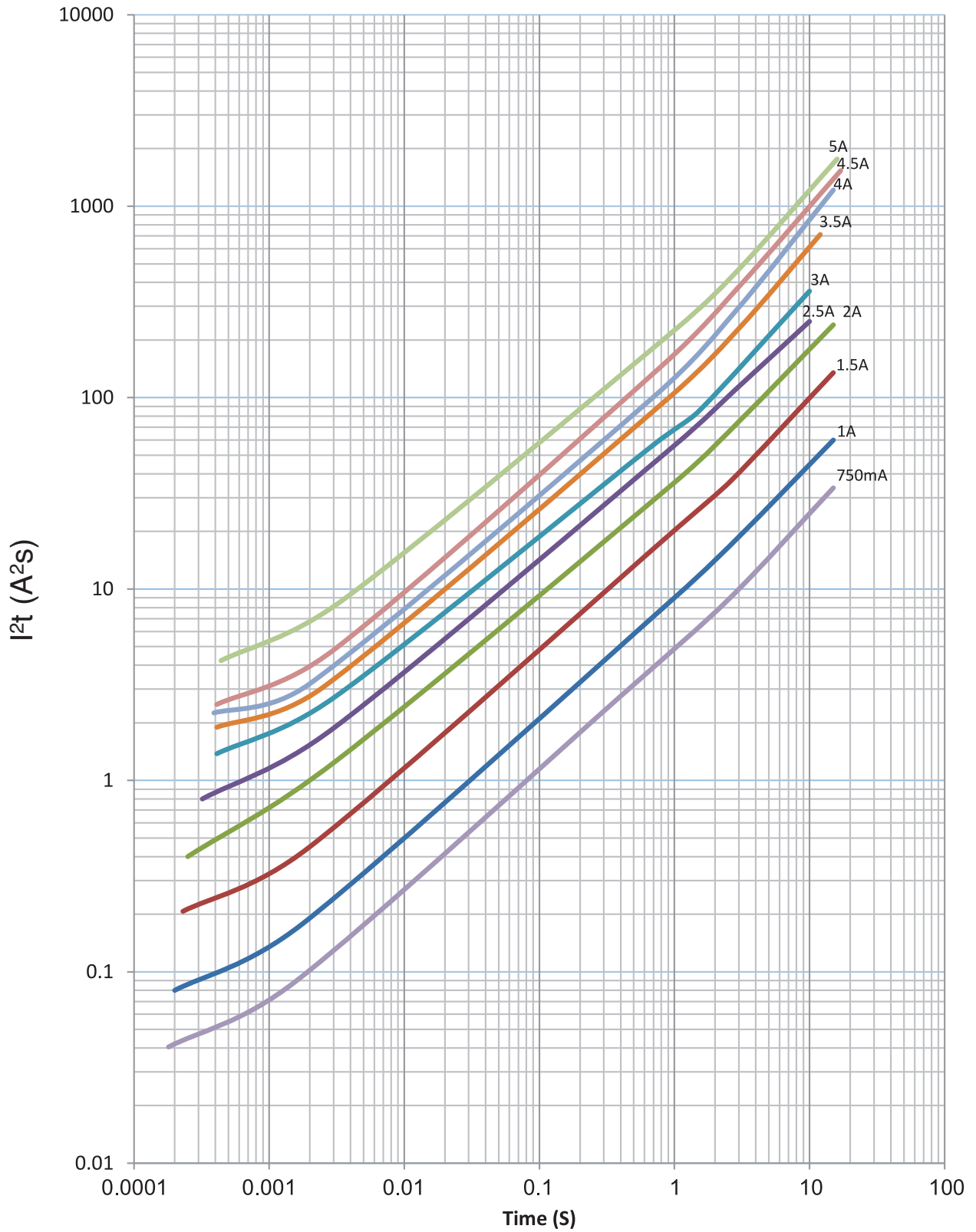
Time-current curves — 750mA-5A average melt



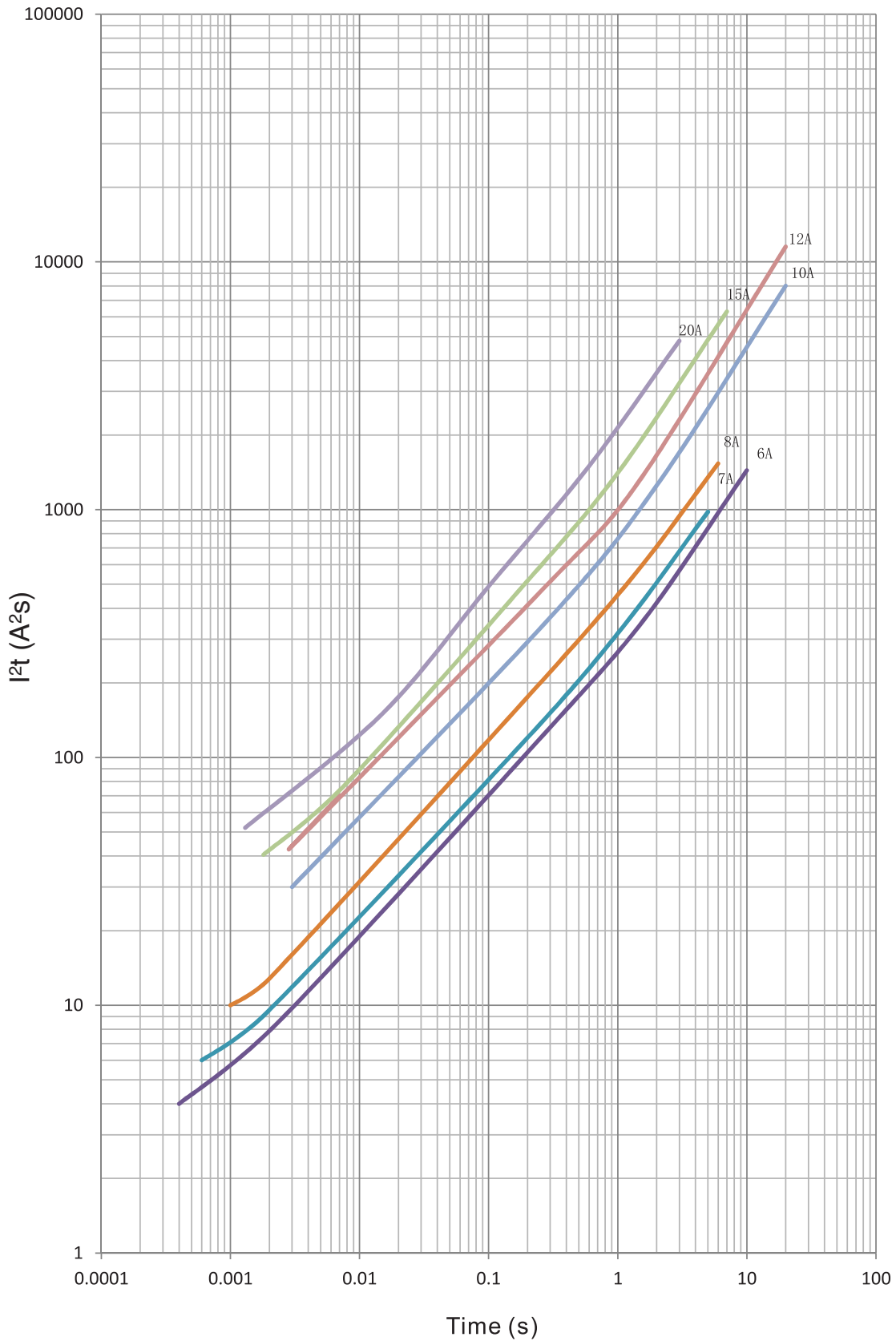
**Time-current curves — 6A-20A average melt**



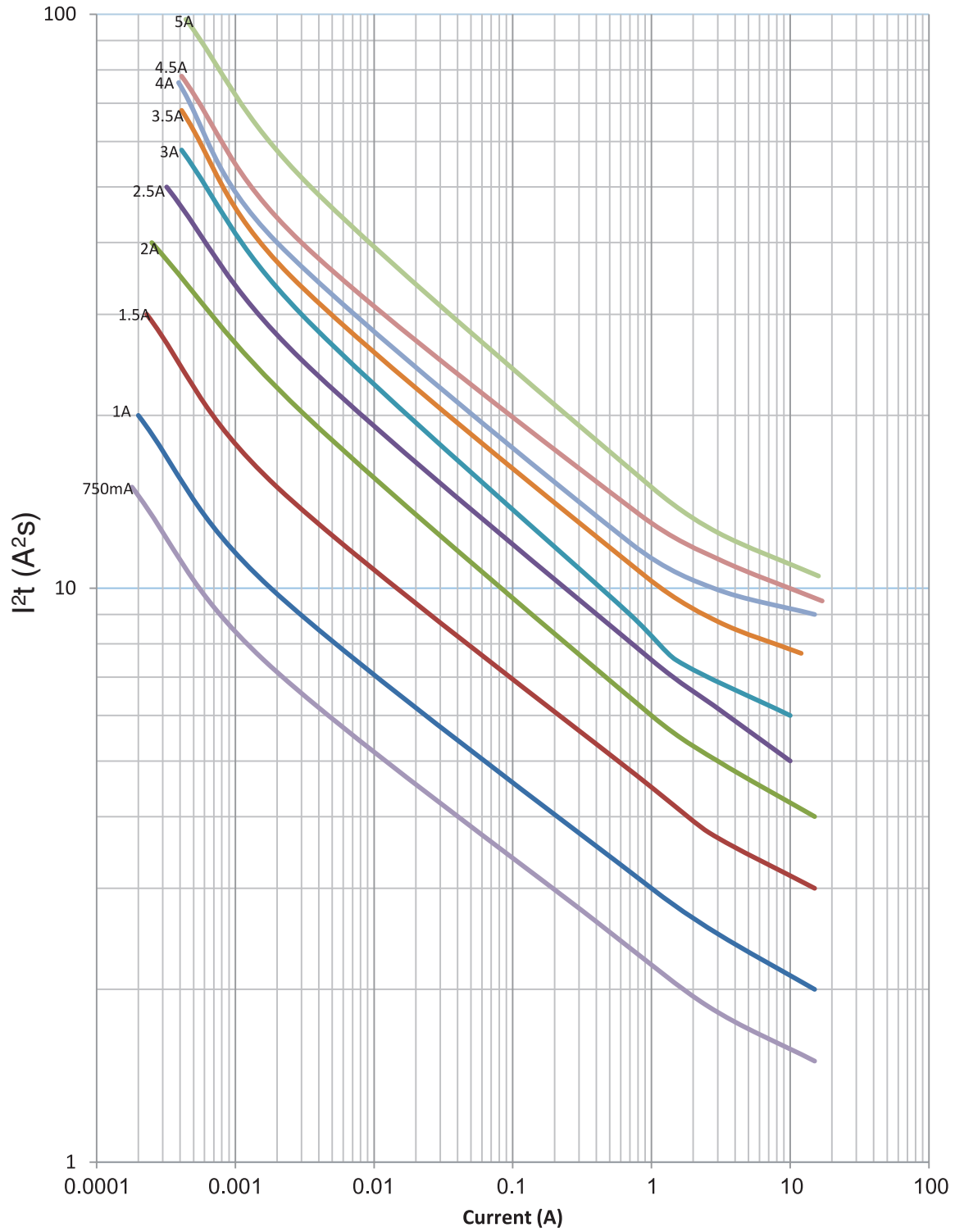
I<sup>2</sup>t vs. time curves — 750mA-5A



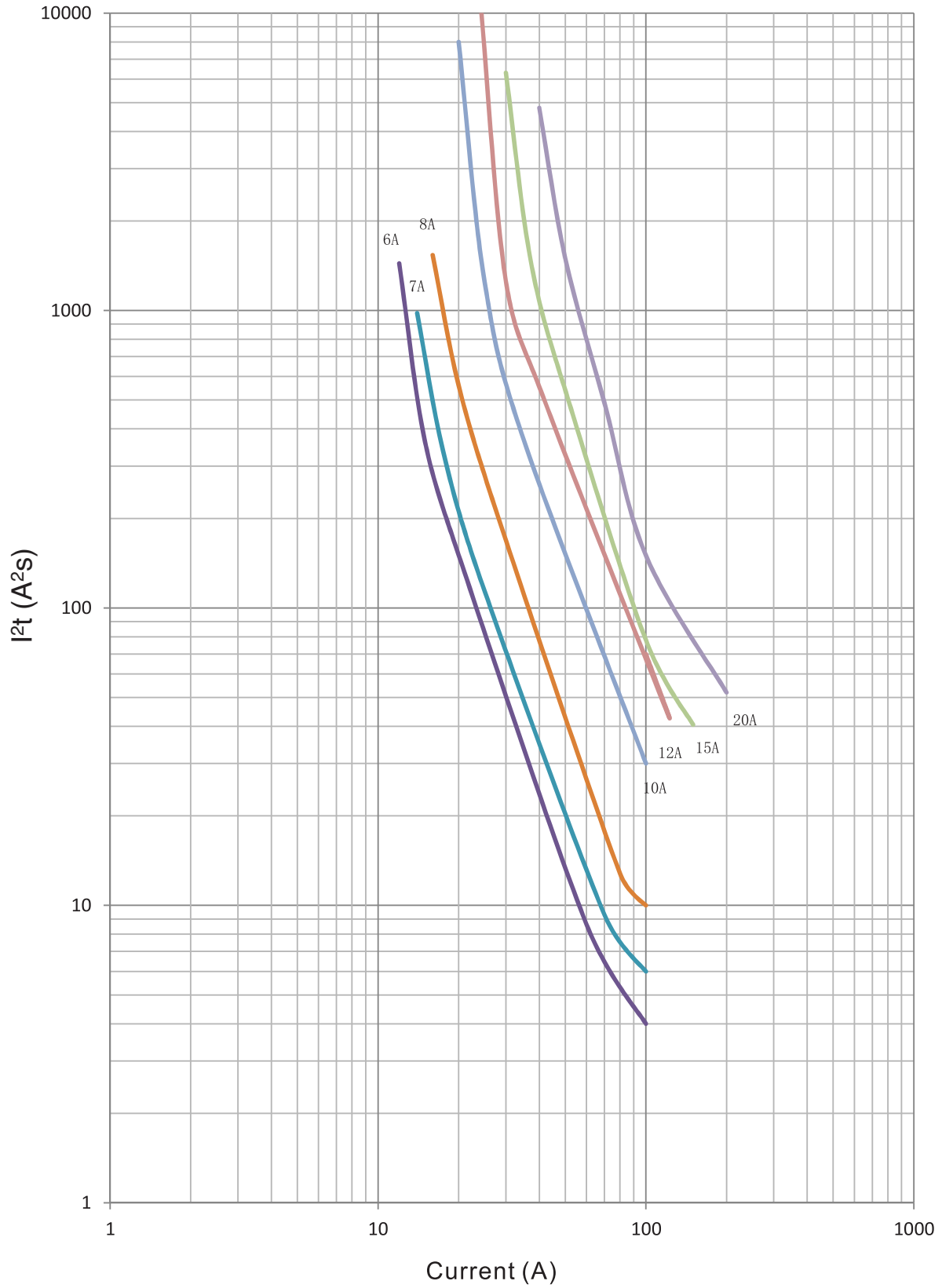
I<sup>2</sup>t vs. time curves — 6A-20A



I<sup>2</sup>t vs. current curves — 750mA-5A

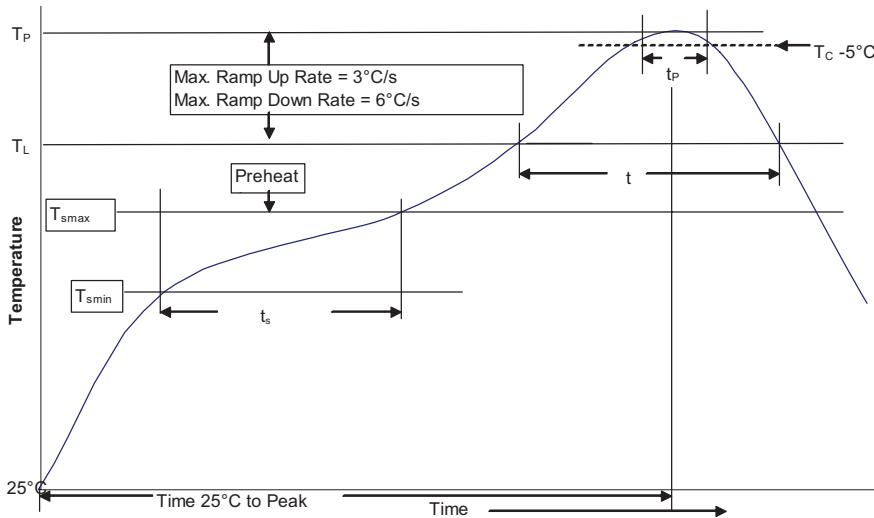


I<sup>2</sup>t vs. current curves — 6A-20A





**Solder reflow profile**



**Table 1 - Standard SnPb Solder (T<sub>c</sub>)**

Package Thickness	Volume <350 mm <sup>3</sup>	Volume ≥350 mm <sup>3</sup>
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

**Table 2 - Lead (Pb) Free Solder (T<sub>c</sub>)**

Package Thickness	Volume <350 mm <sup>3</sup>	Volume 350 - 2000 mm <sup>3</sup>	Volume >2000 mm <sup>3</sup>
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

**Reference JDEC J-STD-020D**

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. (T <sub>smin</sub> )	100°C	150°C
• Temperature max. (T <sub>smax</sub> )	150°C	200°C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 Seconds	60-120 Seconds
Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60-150 Seconds	60-150 Seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )** within 5 °C of the specified classification temperature (T <sub>c</sub> )	20 Seconds**	30 Seconds**
Average ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.

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