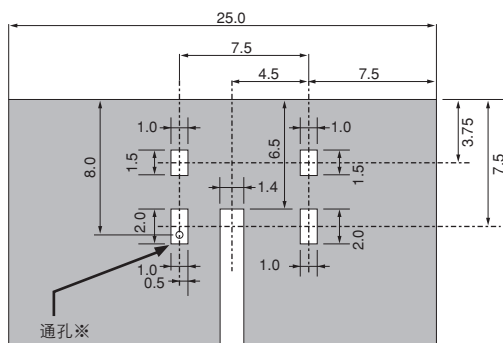
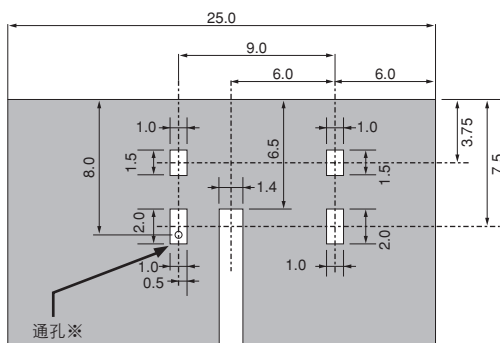


推荐焊盘布局 (参考) Recommended Land Pattern (Reference)

电极图形 (主板表面): AHD1103-244ST01



电极图形 (主板表面): AHD1403-244ST01



※通过通孔 (ø0.4mm) 将表面焊盘与背面GND连接。
※Connection to ground pattern via through hole (ø0.4mm) recommended.

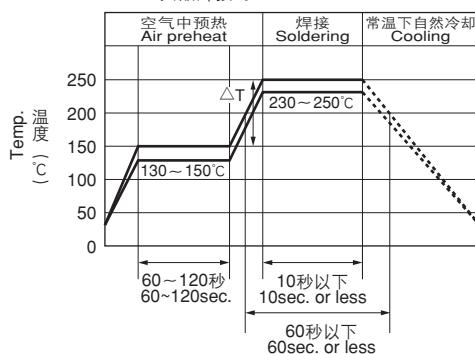
系列名
Series

焊接条件
Soldering conditions

AHD ※1

推荐温度图形 Recommended Temperature Profile

回流焊接 Reflow soldering conditions
共晶焊接时 Eutectic Solder

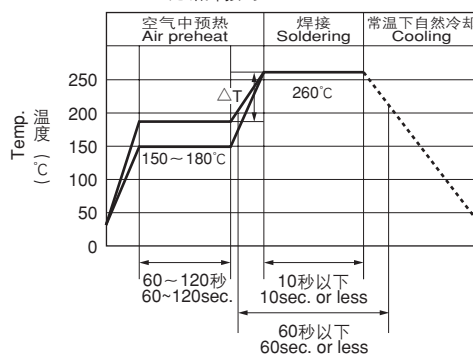


- 1) 保持时间为元件表面温度达到上述温度后起算的时间。
- 2) ΔT 应保持在110°C以内。
- 3) 焊接后切勿迅速冷却, 而应缓慢冷却。

- 1) Time shown in the above figures is measured from the point when chip surface reaches temperature.
- 2) Temperature difference in high temperature part should be within 100°C.
- 3) After soldering, do not force cool, allow the parts to cool gradually.

※1 AHD仅可进行回流焊接。

无铅焊接时 Lead free Solder



- 1) 保持时间为元件表面温度达到上述温度后起算的时间。
- 2) ΔT 应保持在110°C以内。
- 3) 焊接后切勿迅速冷却, 而应缓慢冷却。

- 1) Time shown in the above figures is measured from the point when chip surface reaches temperature.
- 2) Temperature difference in high temperature part should be within 110°C.
- 3) After soldering, do not force cool, allow the parts to cool gradually.

※1 AHD are reflow only.

【焊接时的一般注意事项】

- 若焊接温度过高、焊接时间过长, 端子电极处可能会发生浸析, 从而导致粘着力下降或性能劣化。
- 焊接时请参照上述温度曲线进行。
但超过 200°C 的温度应控制在 50 秒以内。
- 焊剂应使用活性度低 (Cl 含有率在 0.2wt% 以下) 的产品。如果焊剂为水溶性、且清洗不充分的话, 可能会损伤元件下部的绝缘, 应予以注意。

【清洗】

用超声波进行清洗时, 输出过大会引起主板共振, 振动可能会造成主板破裂或端子电极粘着力下降。故此, 推荐按以下条件进行清洗。

频率: 40kHz 以下
输出: 20W/liter
清洗时间: 5 分钟以内

General attention to soldering

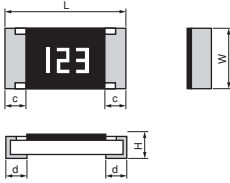
- High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur.
- For soldering, please refer to the soldering curves above.
However, please keep exposure to temperatures exceeding 200°C to under 50 seconds.
- Please use a mild flux(containing less than 0.2wt% Cl). Also, if the flux is water soluble, be sure to wash thoroughly to remove any residue from the underside of components, that could affect resistance.

Cleaning

When using ultrasonic cleaning, the board may resonate if the output power is too high. Since this vibration can cause cracking or a decrease in the adherence of the termination, we recommend that you use the conditions below.

Frequency:40kHz max.
Output power:20W/liter
Cleaning time:5minutes max.

■贴片电阻器(RMC Series)
FIXED THICK FILM CHIP RESISTORS ; RECTANGULAR TYPE

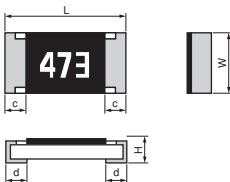


Unit : mm

形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
RMC 1/20	0603	0201	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
RMC 1/16S	1005	0402	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.10}
RMC 1/16	1608	0603	1.6±0.1	0.8 ^{+0.15} _{-0.05}	0.45±0.10	0.3±0.1	0.3±0.1
RMC 1/10	2012	0805	2.0±0.1	1.25±0.10	0.55±0.10	0.4±0.2	0.4±0.2
RMC 1/8	3216	1206	3.2±0.15	1.6±0.15	0.55±0.10	0.5±0.25	0.5±0.25
RMC 1/4	3225	1210	3.2±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25
RMC 1/2	5025	2010	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.2	0.6±0.2
RMC 1	6332	2512	6.3±0.15	3.2±0.15	0.55±0.15	0.6±0.2	0.6±0.2

形状 Style	额定功率 Rated Dissipation (at 70°C)	额定电阻范围 Rated Resistance Range	额定电阻偏差 Tolerance on Rated Resistance	跨接片额定电流 Rated Current of Jumper	元件最高电压 Limiting Element Voltage	绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range	
RMC 1/20	0.05W	10Ω ~ 1MΩ	F(±1%)	1A	25V	50V	-55°C ~ +125°C	
RMC 1/16S		1Ω ~ 10MΩ	J(±5%)					
RMC 1/16	0.1W	1Ω ~ 10MΩ	F(±1%)					
		1Ω ~ 4.7MΩ	J(±5%)					
RMC 1/10	0.125W	1Ω ~ 22MΩ	F(±1%)		2A	150V	100V	-55°C ~ +155°C
		1Ω ~ 10MΩ	J(±5%)					
RMC 1/8	0.25W	1Ω ~ 10MΩ	F(±1%)					
RMC 1/4		1Ω ~ 24MΩ	J(±5%)					
		1Ω ~ 10MΩ	F(±1%)					
RMC 1/2		1Ω ~ 22MΩ	J(±5%)					
RMC 1	1.0W	1Ω ~ 1MΩ	F(±1%)	200V		500V	-55°C ~ +125°C	
		1Ω ~ 22MΩ	J(±5%)					

■精密级贴片电阻器(RGC Series)
FIXED THICK FILM CHIP RESISTORS ; RECTANGULAR TYPE & PRECISION

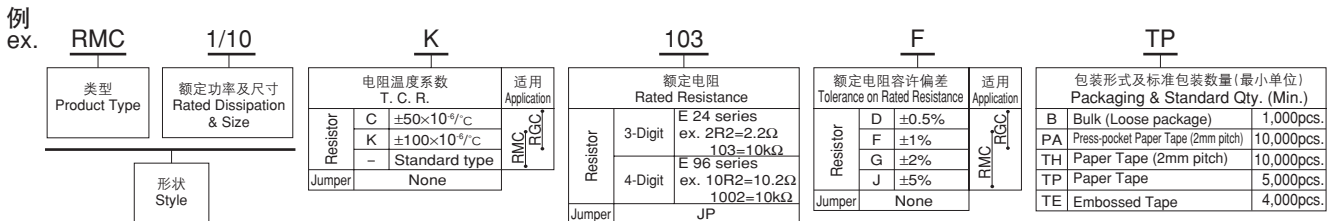


Unit : mm

形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
RGC 1/20	0603	0201	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
RGC 1/16S	1005	0402	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.10}
RGC 1/16	1608	0603	1.6±0.1	0.8 ^{+0.15} _{-0.05}	0.45±0.10	0.25±0.10	0.3±0.1
RGC 1/10	2012	0805	2.0±0.1	1.25±0.10	0.6±0.1	0.4±0.2	0.4±0.2
RGC 1/8	3216	1206	3.2±0.15	1.6±0.15	0.6±0.1	0.5±0.25	0.5±0.25

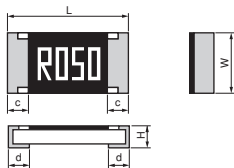
形状 Style	额定功率 Rated Dissipation (at 70°C)	电阻温度系数 Temperature Coefficient of Resistance	额定电阻范围 Rated Resistance Range	额定电阻偏差 Tolerance on Rated Resistance	元件最高电压 Limiting Element Voltage	绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range
RGC 1/20	0.05W	±50×10 ⁻⁹ /°C	1.02kΩ ~ 1MΩ	D(±0.5%)	25V	50V	-55°C ~ +125°C
RGC 1/16S		±100×10 ⁻⁹ /°C	100Ω ~ 1kΩ				
RGC 1/16	0.1W	±50×10 ⁻⁹ /°C	100Ω ~ 1MΩ	D(±0.5%), F(±1%)	50V		
		±100×10 ⁻⁹ /°C	10Ω ~ 97.6Ω				
RGC 1/10	0.125W	±50×10 ⁻⁹ /°C	1.02MΩ ~ 3.3MΩ	D(±0.5%), F(±1%)	150V	500V	
		±100×10 ⁻⁹ /°C	100Ω ~ 1MΩ				
RGC 1/8	0.25W	±50×10 ⁻⁹ /°C	10Ω ~ 97.6Ω	F(±1.0%)	200V		
		±100×10 ⁻⁹ /°C	3.3Ω ~ 9.76Ω				

●型号构成 Part Number Description (RMC,RGC Series)



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■低阻贴片电阻器(RLC Series)
FIXED THICK FILM CHIP RESISTORS ; RECTANGULAR TYPE & LOW OHM

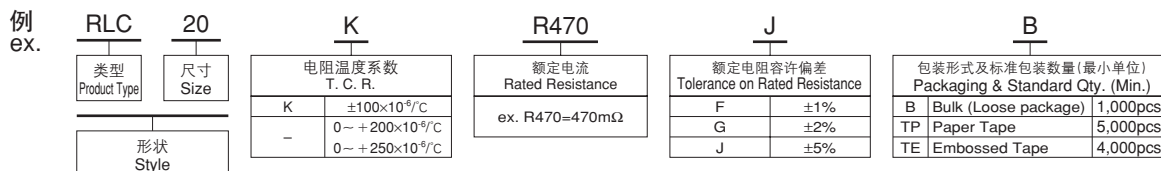


Unit : mm

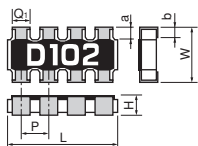
形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
RLC 10	1005	0402	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} / _{-0.10}
RLC 16	1608	0603	1.6±0.1	0.8 ^{+0.15} / _{-0.05}	0.45±0.10	0.3±0.1	0.3±0.1
RLC 20	2012	0805	2.0±0.15	1.25±0.10	0.6±0.1	0.4±0.2	0.4±0.2
RLC 32	3216	1206	3.1±0.2	1.6±0.15	0.6±0.1	0.5±0.25	0.3 ^{+0.2} / _{-0.1}
RLC 35	3225	1210	3.1±0.2	2.5±0.15	0.6±0.15	0.5±0.25	0.3 ^{+0.2} / _{-0.1}
RLC 50	5025	2010	5.0±0.2	2.5±0.15	0.6±0.15	0.6±0.2	0.6±0.2
RLC 63	6332	2512	6.3±0.2	3.2±0.15	0.6±0.15	0.6±0.2	0.6±0.2

形状 Style	额定功率 Rated Dissipation (at 70°C)	额定电流范围 Rated Current Range	额定电阻范围 Rated Resistance Range	额定电阻范围与电阻温度系数的组合 Combinations of Rated Resistance and T.C.R.		额定电阻偏差 Tolerance on Rated Resistance	绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range
				电阻温度系数 Temperature Coefficient of Resistance	额定电阻范围 Rated Resistance Range			
RLC 10	0.125W	0.43A~0.98A	130mΩ~680mΩ	0~+300×10 ⁻⁶ /°C	130mΩ~470mΩ	J(±5%)	100V	-55°C~+125°C
RLC 16		0.19A~1.11A	100mΩ~3.3Ω	0~+200×10 ⁻⁶ /°C	500mΩ~680mΩ	F(±1%),G(±2%),J(±5%)		
RLC 20	0.25W	0.27A~2.23A	50mΩ~3.3Ω	0~+250×10 ⁻⁶ /°C	50mΩ~180mΩ	F(±1%) G(±2%) J(±5%)	500V	
RLC 32	0.5W	0.38A~3.16A		0~+200×10 ⁻⁶ /°C	200mΩ~430mΩ			
RLC 35	0.66W	0.44A~3.63A		±100×10 ⁻⁶ /°C	470mΩ~3.3Ω			
RLC 50	0.75W	0.47A~3.87A						
RLC 63	1.0W	0.55A~4.47A						

●型号构成 Part Number Description



■贴片电阻网络(RAC Series)
FIXED CHIP RESISTOR NETWORKS ; RECTANGULAR TYPE



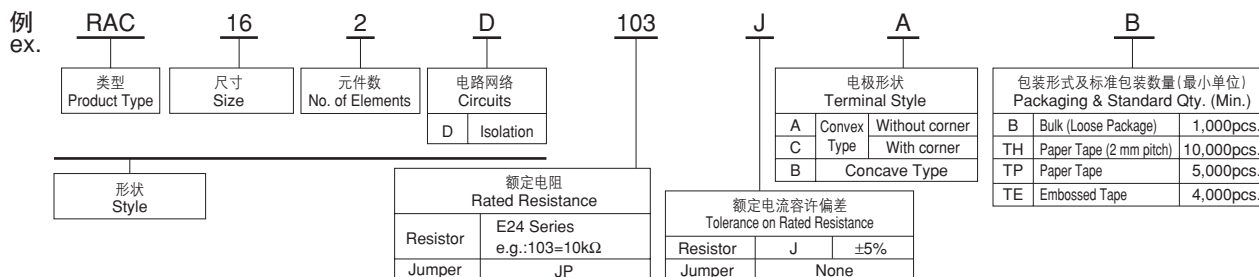
Unit : mm

形状 Style	电极形状 Terminal Style	L	W	H	Q ₁	※Q ₂	a	b	※P
RAC102D	C	1.0 ±0.05	1.0±0.05	0.35±0.05	-	0.33	0.15±0.10	0.25 ^{+0.05} / _{-0.10}	0.65
RAC104D	C	2.0 ±0.1	1.0±0.1	0.35±0.05	0.35±0.1	0.45	0.15±0.10	0.25±0.10	0.5
RAC162D	A	1.6 ±0.1	1.6±0.1	0.5 ±0.1	0.5 ±0.1	-	0.25±0.10	0.25 ^{+0.15} / _{-0.10}	0.8
	A	3.2 ±0.1	1.6±0.1	0.5 ±0.1	0.5 ±0.1	-	0.25±0.10	0.2 ±0.1	0.8
	B	3.2 ±0.1	1.6±0.1	0.6 ±0.1	0.45±0.05	-	0.35±0.15	0.45±0.10	0.8
RAC164D	C	3.2 ±0.1	1.6±0.1	0.5 ±0.1	0.4 ±0.15	0.6	0.3 ±0.2	0.25±0.15	0.8
	A	5.08±0.20	3.1±0.2	0.55±0.10	0.8 ±0.2	-	0.5 ±0.2	0.3 ±0.2	1.27

※参考值

形状 Style	额定电阻偏差 Rated Dissipation (at 70°C)	跨接片额定电流 Rated Current of Jumper	元件最高电压 Limiting Element Voltage	额定电阻范围 Rated Resistance Range	额定电阻容许偏差 Tolerance on Rated Resistance	绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range
	W/Element						
RAC102D	0.063	1.0A	25V	10Ω~1MΩ	J(±5%)	50V	-55°C~+125°C
RAC104D			50V				
RAC162D						100V	
RAC164D			400V				
RAC324D	0.125	2.0A	200V				

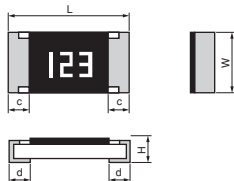
●型号构成 Part Number Description



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■低阻贴片电阻器(RVC Series)

FIXED THICK FILM CHIP RESISTORS ; RECTANGULAR TYPE & HIGH VOLTAGE



Unit : mm

形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
RVC16	1608	0603	1.6±0.1	0.8 ± $\frac{0.15}{0.05}$	0.45±0.10	0.3±0.1	0.3±0.1
RVC20	2012	0805	2.0±0.1	1.25±0.10	0.55±0.10	0.4±0.2	0.4±0.2
RVC32	3216	1206	3.2±0.15	1.6±0.15	0.55±0.10	0.5±0.25	0.5±0.25
RVC50	5025	2010	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.2	0.6±0.2
RVC63	6332	2512	6.3±0.15	3.2±0.15	0.55±0.15	0.6±0.2	0.6±0.2

形状 Style	额定功率 Rated Dissipation (at 70°C)	元件最高电压 Limiting Element Voltage	额定温度系数 Temperature Coefficient of Resistance	额定电阻范围与额定电阻容许偏差的组合 Combinations of Rated Resistance Range and Tolerance on Rated Resistance		绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range
				F(±1%), G(±2%)	J(±5%), K(±10%)		
RVC16	0.1W	200V	±100×10 ⁻⁶ /°C	470Ω~10MΩ		100V	-55°C ~ +125°C
			±200×10 ⁻⁶ /°C	47Ω~464Ω			
RVC20	0.125W	300V	±100×10 ⁻⁶ /°C	100Ω~10MΩ	100Ω~51MΩ	500V	
			±200×10 ⁻⁶ /°C	47Ω~97.6Ω			
RVC32	0.25W	400V	±100×10 ⁻⁶ /°C	100Ω~10MΩ	100Ω~51MΩ	500V	
			±200×10 ⁻⁶ /°C	47Ω~97.6Ω			
RVC50	0.5W	500V	±100×10 ⁻⁶ /°C	470Ω~20MΩ	470Ω~51MΩ	500V	
			±200×10 ⁻⁶ /°C	47Ω~464Ω			
RVC63	1.0W	800V	±100×10 ⁻⁶ /°C	560Ω~20MΩ	560Ω~51MΩ	500V	
			±200×10 ⁻⁶ /°C	100Ω~549Ω			
			+500~-200×10 ⁻⁶ /°C	47Ω~97.6Ω			

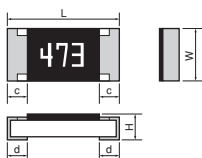
●型号构成 Part Number Description

例 ex. **RVC 20 K 475 F TP**

类型 Product Type	尺寸 Size	电阻温度系数 T. C. R.		额定电流 Rated Resistance	额定电阻容许偏差 Tolerance on Rated Resistance		包装形式及标准包装数量(最小单位) Packaging & Standard Qty. (Min.)		
		K	±100×10 ⁻⁶ /°C	E96 series ex.1005=10MΩ	F	±1%	B	Bulk (Loose package)	1,000pcs.
		-	Standard type	E24 series ex.475=4.7MΩ	G	±2%	TP	Paper Tape	5,000pcs.
					J	±5%	TE	Embossed Tape	4,000pcs.
					K	±10%			

■耐浪涌贴片电阻器(RPC Series)

FIXED THICK FILM CHIP RESISTORS ; RECTANGULAR TYPE & ANTI SURGE



Unit : mm

形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
RPC20	2012	0805	2.0±0.1	1.25±0.10	0.55±0.10	0.3±0.2	0.4±0.2
RPC32	3216	1206	3.2±0.15	1.6±0.15	0.55±0.10	0.3±0.2	0.5±0.25
RPC35	3225	1210	3.2±0.15	2.5±0.15	0.55±0.15	0.3±0.2	0.5±0.25
RPC50	5025	2010	5.0±0.15	2.5±0.15	0.55±0.15	0.3±0.15	0.6±0.2
RPC63	6332	2512	6.3±0.15	3.2±0.15	0.55±0.15	0.3±0.15	0.6±0.2

形状 Style	额定功率 Rated Dissipation (at 70°C)	元件最高电压 Limiting Element Voltage	电阻温度系数 Temperature Coefficient of Resistance	额定电阻范围 Rated Resistance Range	额定电阻容许偏差 Tolerance on Rated Resistance	绝缘电压 Isolation Voltage	类型温度范围 Category Temperature Range
RPC20	0.125W	200V	±200×10 ⁻⁶ /°C	0.27Ω~22MΩ	J(±5%) K(±10%) M(±20%)	500V	-55°C ~ +155°C
RPC32	0.25W						-55°C ~ +125°C
RPC35	0.25W						
RPC50	0.50W						
RPC63	1.00W						

●型号构成 Part Number Description

例 ex. **RPC 50 103 J TE**

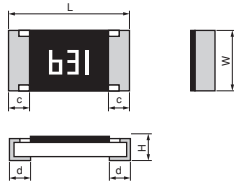
类型 Product Type	尺寸 Size	额定电阻 Rated Resistance		额定电阻容许偏差 Tolerance on Rated Resistance		包装形式及标准包装数量(最小单位) Packaging & Standard Qty. (Min.)		
		E24 Series e.g. : 2R2=2.2kΩ 103=10kΩ	3-Digit	J	±5%	B	Bulk (Loose Package)	1,000pcs.
				K	±10%	TP	Paper Tape	5,000pcs.
				M	±20%	TE	Embossed Tape	4,000pcs.

制造商/釜屋电机株式会社：详情请参见釜屋电机株式会社产品目录，以及釜屋电机株式会社网站(<http://www.kamaya.co.jp>)。

■贴片保险丝(FCC, FHC Series)
CHIP FUSES ; RECTANGULAR TYPE



●已获得UL, c-UL认证。
Certificated to meet UL and c-UL.
File No. : E176847



Unit : mm

形状 Style	公制 Metric	英制 Inch	L	W	H	c	d
FCC 10 FHC 10	1005	0402	1.0±0.05	0.5 ± 0.05	0.4 ± 0.10	0.2±0.10	0.25 ± 0.10
FCC 16 FHC 16	1608	0603	1.6±0.1	0.8 ± 0.15 0.05	0.45 ± 0.10	0.3±0.15	0.3 ± 0.1
FCC 20 FHC 20	2012	0805	2.0±0.1	1.25 ± 0.10	0.6 ± 0.1	0.4±0.2	0.4 ± 0.2
FCC 32 FHC 32	3216	1206	3.2±0.2	1.6 ± 0.15	0.6 ± 0.1 0.65 ± 0.10	0.5±0.25	0.5 ± 0.25

●选择码: AD Option Code : AD(速断型/Fast Acting Type)

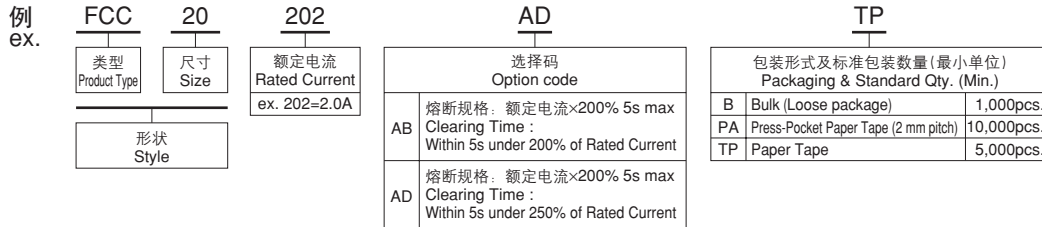
尺寸 Size		形状 Style	额定电流 Rated Current		内部电阻 Internal Resistance mΩ max.	额定断路容量 Interrupting Rating	熔断规格 Clearing Time	类型温度范围 Category Temperature Range	
公制 Metric	英制 Inch		记号 Code	额定电流 Rated Current A					
1005	0402	FCC10	201	0.2	1,000	24Vd.c. 35A	额定电流×250% Rated Current×250% 5s max.	-55°C ~ +125°C	
			251	0.25	750				
			321	0.315	620				
			401	0.4	340				
			501	0.5	290				
			631	0.63	210				
			801	0.8	150				
		FHC10	102	1.0	120				
			132	1.25	90				
			162	1.6	55				
			202	2.0	40				
			252	2.5	36				
			322	3.15	26				
			1608	0603	FCC16				201
251	0.25	1,000							
321	0.315	750							
401	0.4	330							
501	0.5	280							
631	0.63	200							
801	0.8	130							
FHC16	102	1.0			110				
	132	1.25			85				
	162	1.6			70				
	202	2.0			55				
	252	2.5			45				
	322	3.15			26				
	402	4.0			19				
2012	0805	FCC20	401	0.4	330	32Vd.c. 50A			
			501	0.5	270				
			631	0.63	190				
			801	0.8	130				
			102	1.0	100				
			132	1.25	80				
			162	1.6	65				
		FHC20	202	2.0	55				
			252	2.5	40				
			322	3.15	26				
			402	4.0	19				
			502	5.0	14				
			3216	1206	FCC32	201	0.2	1,800	50Vd.c. 50A
						251	0.25	1,000	
321	0.315	750							
401	0.4	350							
501	0.5	295							
631	0.63	200							
801	0.8	140							
102	1.0	110							
132	1.25	85							
152	1.5	78							
162	1.6	75							
202	2.0	65							
252	2.5	45							
FHC32	322	3.15				26			
	402	4.0			19				
	502	5.0			14				

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●选择码: AB Option Code : AB(速断型/Fast Acting Type)

公制 Metric	尺寸 Size		形状 Style	额定电流 Rated Current		内部电阻 Internal Resistance mΩ max.	额定断路容量 Interrupting Rating	熔断规格 Clearing Time	类型温度范围 Category Temperature Range					
	英制 Inch	记号 Code		额定电流 Rated Current A										
1005	0402	FCC10	251	0.25	1,000	24Vd.c. 35A	额定电流×200% Rated Current×200% 5s max.	-55°C ~ +125°C						
			321	0.315	750									
			401	0.4	620									
			501	0.5	340									
			631	0.63	290									
			801	0.8	210									
			102	1.0	150									
			132	1.25	120									
			152	1.5	100									
			162	1.6	90									
			FHC10	202	2.0				55					
				252	2.5				40					
				1608	0603				FCC16	251	0.25	1,800	32Vd.c. 35A	-55°C ~ +125°C
										321	0.315	1,000		
401	0.4	750												
501	0.5	330												
631	0.63	280												
801	0.8	200												
102	1.0	130												
132	1.25	110												
152	1.5	95												
162	1.6	85												
202	2.0	70												
FHC16	252	2.5	40											
	2012	0805	FCC20			501	0.5	330		50Vd.c. 50A	-55°C ~ +125°C			
631						0.63	270							
801				0.8	190									
102				1.0	130									
132				1.25	100									
162				1.6	80									
202				2.0	65									
FHC20				252	2.5	40								

●型号构成 Part Number Description

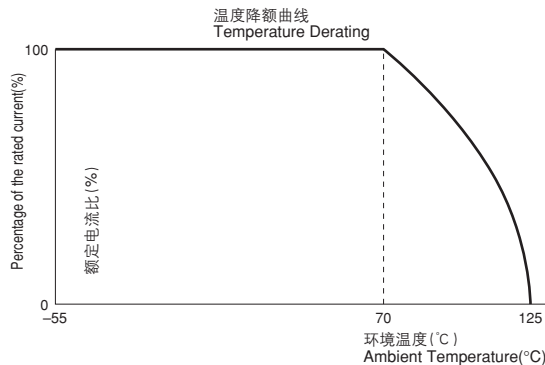


●额定电流的推荐降额 Recommended Derating for Rated Current

- 定常降额
AD:推荐定常降额不超过额定电流的80%。
AB:推荐定常降额不超过额定电流的70%。
- 温度降额
相对于环境温度的电流降额如下图曲线所示。

- Nominal Derating
Option Code AD:Nominal Derating ≤80% of Rated Current
Option Code AB:Nominal Derating ≤70% of Rated Current
- Temperature Derating
Please refer to the following graph regarding the current derating value for ambient temperature.
Ex.) If FCC16 102AB (Rated Current:1.0A) is used under ambient temperature 70°C, Kamaya recommends, less than the current value derated as below,
Rated Current : 1.0A×(Nominal Derating : 70%×Temperature Derating : 100%) =0.7A

例)AB系列的额定电流 环境温度70°C下使用1.0A产品时
推荐在降额后的电流值以下使用。
额定电流 1.0A×(定常降额:70%×温度降额:100%)=0.7A



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