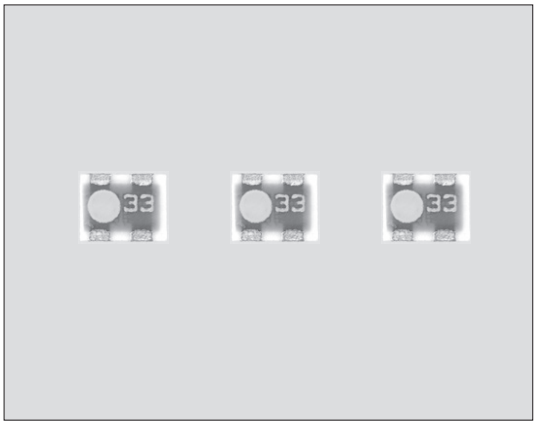
CHIP NETWORKS

EU RoHS

CNN 薄膜片式网络电阻器
Thin Film Chip Networks

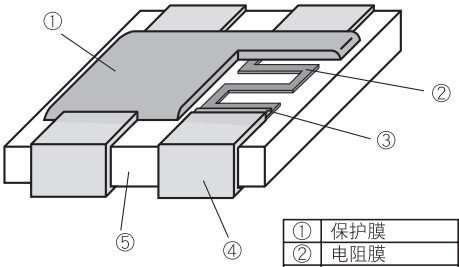


外观颜色：绿色 (CNN)　Coating color：Green (CNN)

■ 特点　Features

- 具有金属薄膜的片状网络电阻器。
- 相对于T.C.R.，具有更优异的相对精度。
- 高精度OP Amp用配对电阻。
- 适用于定制组合1kΩ到100kΩ之间任意的电阻值。
- 适用于回流焊接。
- 端子无铅品，对应欧盟RoHS。
- Metal film chip network resistors.
- Excellent in relative T.C.R. and relative accuracy.
- Pair resistors for high precision OP-Amplifiers.
- As custom products, any pairs between 1kΩ and 100kΩ are available on request.
- Suitableforreflow soldering.
- Products with lead free termination meet EU-RoHS requirements.

■ 结构图　Construction



①	保护膜	Protective coating
②	电阻膜	Resistive film
③	内部电极	Inner electrode
④	外部电极	Outer electrode
⑤	陶瓷基板	Ceramic substrate

■ 品名构成　Type Designation

实例　Example

CNN	2A	2	T	TE	103/103	B	A
品种 Product Code	形状 Style	元件数 Number of Elements	端子表面材质 Terminal Surface Material	二次加工 Taping	公称电阻值 Nominal Resistance	绝对阻值允许偏差 Absolute Resistance Tolerance	相对阻值允许偏差 Resistance Ratio
CNN		2	T:Sn (L:Sn/Pb)	TE:4mm pitch plastic embossed BK:Bulk	3 digits/ 3 digits	B:± 0.1% C:±0.25%	A : 0.05% B : 0.1%

端子表面材质，以无铅品为准。
预知关于此产品含有的环境负荷物质详情（除EU-RoHS以外），请与我们联系。
编带细节请参考卷末附录C.
The terminal surface material lead free is standard.
Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.
For further information on taping, please refer to APPENDIX C on the back pages.

■ 参考标准　Reference Standards

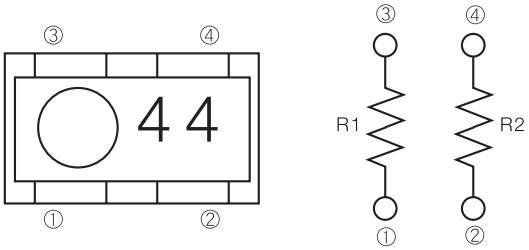
IEC 60115-1
JIS C 5201-1

■ 额定值　Ratings

型　号 Type	额定功率 Power Rating	电阻值 Resistance (Ω)	阻值允许偏差 Resistance Tolerance		电阻温度系数 T.C.R.（×10⁻⁶/K）		最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage	额定周围温度 Max. Overload Voltage	使用温度范围 Max. Overload Voltage	编带和包装数/卷 Taping & Q'ty /Reel（pcs）
			绝对 Absolute	相对 Relative	绝对 Absolute	相对 Relative					TE
CNN2A	0.05W/ Element	1k, 10k, 100k	B:±0.1% C:±0.25%	A:0.05% B:0.1%	±25	5	50V	100V	+70℃	−55℃～+125℃	4,000

额定电压是√额定功率×公称电阻值所算出的值或表中最高使用电压两者中小的值成为额定电压。
Rated voltage = √Power Rating×Resistance value or Max. working voltage, whichever is lower.

■ 电路构成　Circuit Construction



● 标准品　Standard

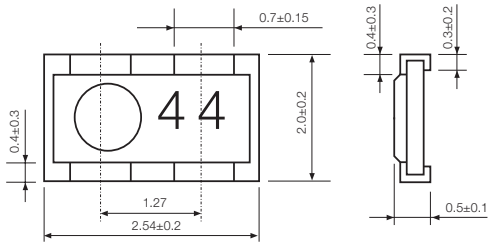
电阻值　Resistance						
R1	1kΩ	1kΩ	1kΩ	10kΩ	10kΩ	100kΩ
R2	1kΩ	10kΩ	100kΩ	10kΩ	100kΩ	100kΩ

R1表示 First marking number	3	3	3	4	4	5
R2表示 Second marking number	3	4	5	4	5	5

● 定制品　Custom

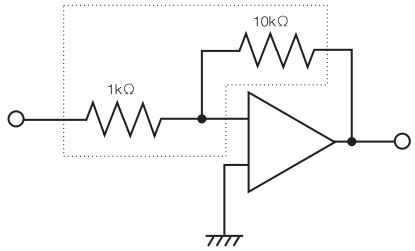
可以适用于定制1kΩ到100kΩ之间任意电阻值。
Custom products of any pairs between 1kΩ and 100kΩ are available on request.

■ 外形尺寸　Dimensions

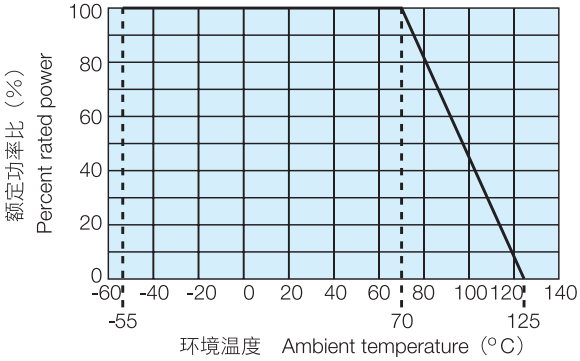


Weight 9.70g/1000pcs

■ 应用范例　Examples For Application



■ 负荷特性曲线　Derating Curve



在环境温度70℃以上使用时，应按照上图负荷特性曲线，减小额定功率。
For resistors operated at an ambient temperature of 70ºC or above, a power rating shall be derated in accordance with the above derating curve.

■ 性能　Performance

试验项目 Test Items	标准值　Performance Requirements Absolute ΔR±（%+0.05 Ω）		试验方法 Test Methods
	保证值　Limit	代表值　Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	–	25℃
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	–	+25℃/-55℃ and +25℃/+125℃
过载（短时间） Overload（Short time）	0.1	0.01	额定电压的2.5倍或者最高过载电压，择其低者施加5秒 Rated voltage×2.5 or Max. overload vol., whichever less, for 5s
耐焊接热 Resistance to soldering heat	0.1	0.02	260℃±5℃, 10s±1s
温度突变 Rapid change of temperature	0.25	0.01	-55℃ (30min.) /+125℃ (30min.) 5 cycles
耐湿负荷 Moisture resistance	0.25	0.03	40℃±2℃, 90%～95%RH, 1000h 1.5小时ON、0.5小时OFF的周期　1.5h ON/0.5h OFF cycle
在70℃时的耐久性 Endurance at 70℃	0.25	0.03	70℃±2℃, 1000h 1.5小时ON、0.5小时OFF的周期　1.5h ON/0.5h OFF cycle
高温放置 High temperature exposure	0.25	0.02	CNN：125℃, 100h

■ 使用注意事项　Precautions for Use

- 对于产品的编带材料已经采用了防止静电的合适措施，但在实际安装时，如果遇到特别干燥的场合，或者由于长时间包装在编带内并加之振动，产品会从上层编带吸附静电，这些情况将会导致安装失败，或者部件受到静电（人体模型100pF，1.5kΩ相当于1KV）破坏电阻发生变化等情况的危险，请务必加以注意。在PCB表面安装时，同样请注意不要受到过度静电的影响。
- 如果本产品及进行表面安装的PCB附着有焊剂等离子性的不纯物质，其耐湿性和耐腐蚀性将受到影响。在焊剂内，包含着氯离子、氢离子等离子性物质。请清洗产品以去除这些离子性物质。特别是在无铅焊接的场合，为了提高湿润程度，会有含有较多离子性物质的情形。如果使用RMA系的焊药或者焊剂，请进行彻底地清洗。此外，由于保管环境、安装条件和安装环境的不同，会发生产品附着有汗、盐等离子性物质的情况，这会影响产品的耐湿性和耐腐蚀性。对于这种污损的情况，为了除去离子性物质，请务必进行清洗。产品会受到人的汗液和唾液所含的钠离子、氯离子等离子性不纯物质的污染。经确认可能发生电腐蚀情况。请在保存和安装时防止污染的发生。特别实在涂层了防潮涂层的场合，产品和防潮涂层之间会残留有上述不纯物质，经确认可能发生进一步的电腐蚀情况。如果发现了污染情况，请使用纯水加以清洗并干燥，确保不会有离子性物质的残留。请勿使铁质物品直接接触到产品。否则有可能导致电阻值发生变化。
- 此外，请注意，如果烙铁直接接触了保护涂层，保护涂层有可能发生瞬时碳化，这将降低对电腐蚀的抵抗性以及保护涂层的绝缘性。更需要注意的是，烙铁的温度很高时，同样会影响保护涂层的性能。
- 产品存放时，请避免日光直射、高温和潮湿。日光直射会引起编带的变质，难以维持适当的编带强度，请务必加以注意。在5～35℃/35～75%RH以下的场合，购入12个月之内，其焊接性不会降低。由于凝露、有毒气体（硫化氢、亚硫酸气体、氯化氢）和灰尘会导致焊接性降低，在保管时请加以注意。
- 耐热胶带连接到安装的芯片电阻器，上部电极可能被剥离。据证实，由于暴露载在高温下安装附着力变得更加牢固。因此，我们建议用控制使用胶带。如果耐热胶带不可避免被使用，请确保胶带上的粘合剂不直接与产品接触。
- The properly and electrostatically measured taping materials are used for the components, but attention should be paid to the fact that there is some danger the parts absorb on the top tapes to cause a failure in the mounting and the parts are destructed by static electricity (more than 1kV, Human Body Model 100pF 1.5kΩ) to change the resistance in the conditions of an excessive dryness or after the parts are given vibration for a long time as they are packaged on the tapes. Similarly, care should be given not to apply the excessive static electricity when mounting on the boards.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. while perspiration and saliva include ionic impurities like sodium (Na^+), chrorine (Cl^-) etc. Therefore these kinds of ionic substances may induce electrical corrosion when they invade into the products. Either thorough washing or using RMA solder and flux are necessary since lead free solder contains ionic substances. Washing process is needed, before putting on moisture proof material in order to prevent electrical corrosion.
- Please pay attention that the top of an iron does not direct touch to the components. There is a risk that may cause a change in resistance. Take care that another risk may happen that the protecting coat is carbonized in an instant when touched directly by the top of the iron, also climatic-proof for electric corrosion or insulation of protecting coat may be dropped down. Be sure not to give high temperature on the top of the iron as it will degrade the protecting coat.
- Avoid storing components under direct sun rays, high temperature/humidity. Direct sun rays will cause quality change of taping and difficulty of keeping appropriate peeling strength. In the case of 5～35℃/35～75%RH, there is no deterioration of solderability for 12 months, but take special care for storing, because condensation, dust, and toxic gas like hydrogen sulfide, sulfurous acid gas, hydrogen chloride, etc. may drop solderability.
- The upper electrodes could be peeled off when a heat-resistant masking tape is attached to the mounted chip resistors and then detached from them. It is confirmed that the adhesiveness gets stronger due to the exposure to heat under mounting. Accordingly, we recommend the use of masking tape be refrained. If the use of heat-resistant masking tape is unavoidable, please make sure that the adhesives on the tape do not directly come in contact with the product.