

Thick Film Chip Resistor – Low Value

Features

- Low resistance
- Battery charge current sensing
- Highly reliable multilayer electrode construction
- Higher component and equipment reliability
- Excellent performance at high frequency
- Reduced size of final equipment
- Small size and light weight
- Suitable for all soldering process
- RoHS compliant and Halogen Free



Applications

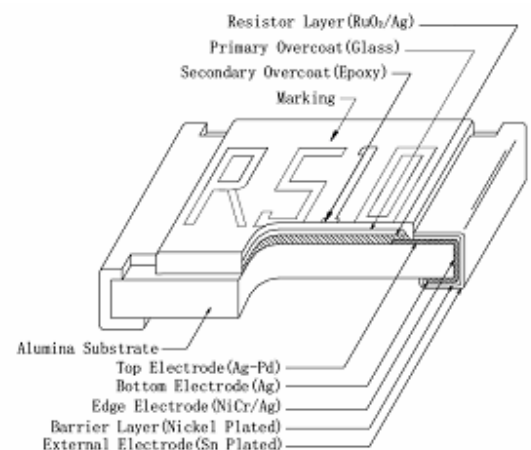
- For current protection circuits
- For laptop and notebook computer, memory module, digital camera and telecommunication equipment



**HALOGEN
FREE**

Constructions

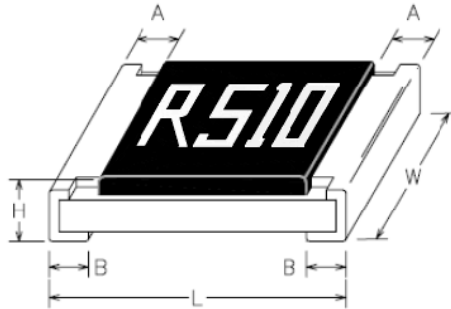
- The resistor is constructed on the alumina substrate body.
- Top electrodes are added to each end and connected with resistive paste on top surface of the alumina substrate.
- The resistive layer is made by resistive paste that is prepared to approach the nominal value.
- Laser trimming process makes the resistance meet the Nominal value
- The resistive layer is protected by primary overcoat and secondary overcoat.
- The barrier layer is added to edge electrodes for plating with external electrode, making the resistor easily mounted on the PCB



Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

Dimensions (in mm)



Type	Size Inch (mm)	L	W	H	A	B	Average Weight
RCL0402	0402(1005)	1.00 ± 0.05	0.50± 0.05	0.35 ± 0.05	0.20 ± 0.10	0.20 ± 0.10	0.62 mg
RCL0603	0603(1608)	1.60 ± 0.10	0.80± 0.10	0.45 ± 0.10	0.30 ± 0.20	0.30 ± 0.20	2.042 mg
RCL0805	0805(2012)	2.00 ± 0.10	1.25± 0.10	0.50 ± 0.10	0.35 ± 0.20	0.40 ± 0.20	4.368 mg
RCL1206	1206(3216)	3.10 ± 0.10	1.55± 0.10	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	8.947 mg
RCL1210	1210(3225)	3.20 ± 0.20	2.60± 0.15	0.55 ± 0.10	0.50 ± 0.25	0.50 ± 0.20	15.959mg
RCL2010	2010(5025)	5.00 ± 0.20	2.50± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	24.241 mg
RCL2512	2512(6432)	6.35 ± 0.20	3.20± 0.15	0.55 ± 0.10	0.60 ± 0.25	0.50 ± 0.20	39.448 mg

Marking Code

1. RCL0402 is without marking due to the size is too small.
2. RCL0603~RCL2512:
 - 2.1. E24 series,3 digits Code for 0603 size, Letter "R" is as decimal point;
 - 2.2. E24 series,4 digits Code for 0805~2512 size, Letter "R" is as decimal point;



No Marking
Item 1



R51 = 0.51 Ω
Item 2.1



051 = 0.051 Ω
Item 2.1



R051 = 0.051Ω
Item 2.2

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

Absolute Maximum Ratings & Electrical Characteristics

Type	Size Inch (mm)	Tolerance (E24)*	Power Rating @70°C	MAX. Working Voltage	MAX. Overload Voltage	TCR (ppm/°C)	Resistance Range	Operating Temperature Range
RCL0402	0402(1005)	J: ±5% F: ±1%	1/16W	50V	100V	±800	0.05Ω ~ 0.099Ω	-55°C~+125°C
						±500	0.10Ω ~ 0.499Ω	
						±200	0.50Ω ~ 0.976Ω	
RCL0603	0603(1608)	J: ±5% F: ±1%	1/10W	50V	100V	±1200	0.020Ω ~ 0.047Ω	-55°C~+155°C
						±800	0.050Ω ~ 0.099Ω	
						±500	0.1Ω ~ 0.499Ω	
						±200	0.5Ω ~ 0.976Ω	
RCL0805	0805(2012)	J: ±5% F: ±1%	1/8W	150V	300V	±1500	0.010Ω ~ 0.018Ω	-55°C~+155°C
						±1200	0.020Ω ~ 0.047Ω	
						±800	0.050Ω ~ 0.099Ω	
						±500	0.10Ω ~ 0.499Ω	
						±200	0.50Ω ~ 0.976Ω	
RCL1206	1206(3216)	J: ±5% F: ±1%	1/4W	200V	400V	±1500	0.010Ω ~ 0.018Ω	-55°C~+155°C
						±1200	0.020Ω ~ 0.047Ω	
						±800	0.050Ω ~ 0.099Ω	
						±500	0.10Ω ~ 0.499Ω	
						±200	0.50Ω ~ 0.976Ω	
RCL1210	1210(3225)	J: ±5% F: ±1%	1/3W	200V	400V	±1500	0.010Ω ~ 0.018Ω	-55°C~+155°C
						±800	0.020Ω ~ 0.099Ω	
						±200	0.10Ω ~ 0.976Ω	
RCL2010	2010(5025)	J: ±5% F: ±1%	3/4W	200V	400V	±1500	0.010Ω ~ 0.018Ω	-55°C~+155°C
						±800	0.020Ω ~ 0.099Ω	
						±200	0.10Ω ~ 0.976Ω	
RCL2512	2512(6432)	J: ±5% F: ±1%	1W	250V	500V	±1500	0.010Ω ~ 0.018Ω	-55°C~+155°C
						±800	0.020Ω ~ 0.099Ω	
						±200	0.10Ω ~ 0.976Ω	

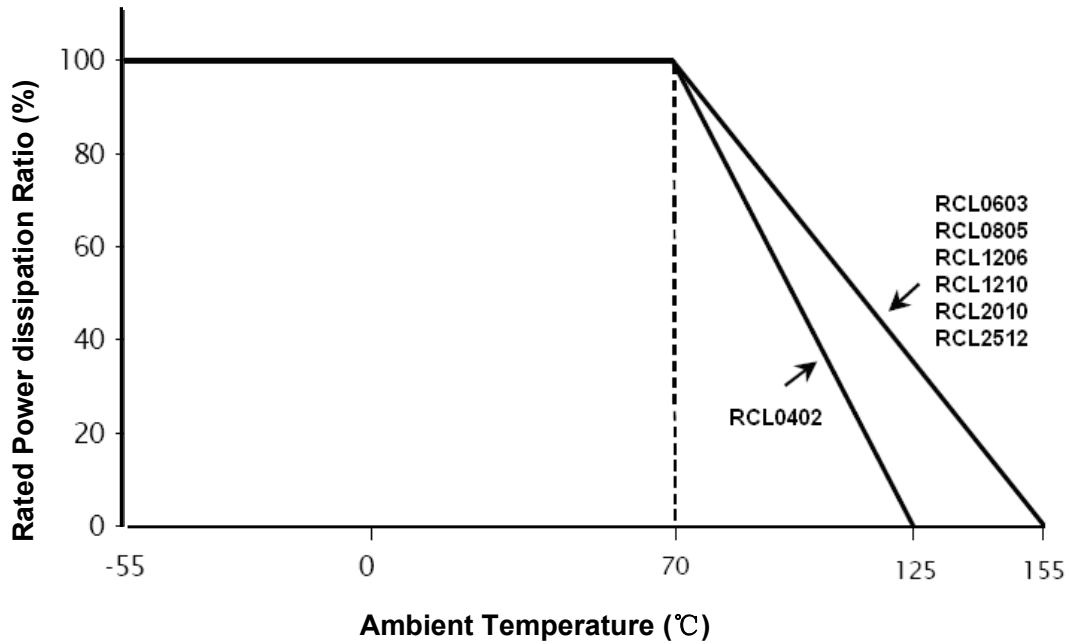
Note: ±1% Low Ohm in E-96 is available on special order

Thick Film Chip Resistor - Low Value

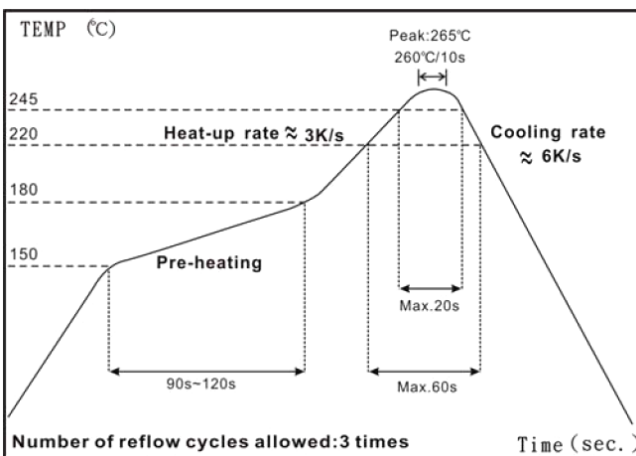
RCL0402~ RCL2512

Power Derating Curve

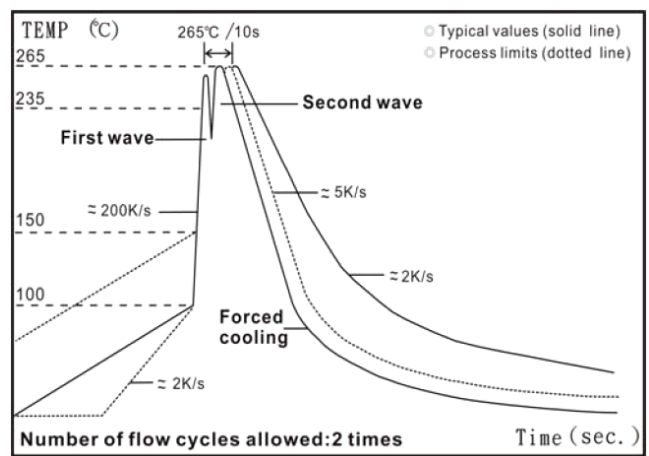
For resistors operate in the ambient temperature over 70°C, loading power ratio will derate in accordance with following curve.



Soldering Condition



IR Reflow soldering



Wave soldering (flow soldering)

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

Test and Requirements

Test Item	Test Method	Test Condition	Requirement	
			±1%	±5%
Temperature Coefficient of Resistance(T.C.R.)	JIS C 5201 4.8 IEC 60115-1 4.8	-55°C~+125°C/155°C,20°C is the reference temperature	Within the specification	
Short Time Overload	JIS C 5201 4.13 IEC 60115-1 4.13	2.5 times Vw or max. overload voltage for 5 seconds	±(1.0%+0.05Ω)	±(2.0%+0.05Ω)
Insulation Resistance	JIS C 5201 4.6 IEC 60115-1 4.6	Max. overload voltage for 1 minute	≥10G	
Voltage Proof	JIS C 5201 4.7 IEC 60115-1 4.7	1.42 times Vw (RMS) for 1 minute	no breakdown or flashover	
Substrate Bending Test	JIS C 5201 4.33 IEC 60115-1 4.33	Bending once for 5 Seconds,2010,2512 size: 3 mm,other size: 2mm	±(1.0%+0.05Ω)	±(1.0%+0.05Ω)
Resistance to soldering heat	JIS C 5201 4.18 IEC 60115 4.18	260±5°C for 10 seconds	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)
Leaching	JIS C 5201 4.18 IEC 60115 4.18	260±5°C for 60 seconds	no leaching	
Solderability	JIS C 5201 4.17 IEC 60115-1 4.17	245±5°C for 3 seconds.	>95% coverage	
Endurance at upper category temperature	JIS C 5201 4.23 IEC 60115-1 2.23.2	at +125°C/155°C for 1000 hrs	±(1.0%+0.05Ω)	±(1.5%+0.10Ω)
Rapid change of temperature	JIS C 5201 4.19 IEC 60115-1 4.19	-55°C to +125°C/155°C, 5 cycles	±(0.5%+0.05Ω)	±(1.0%+0.05Ω)
Damp heat with load	JIS 5201 4.24	40±2°C, 90~95% R.H. or max. working voltage for 1000 hrs with 1.5hrs "ON" and 0.5 hrs "OFF"	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)
Endurance	JIS C 5201 4.25 IEC 60115-1 4.25.1	70±2°C, Vw or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"	±(2.0%+0.10Ω)	±(3.0%+0.10Ω)

Note: Vw: Rated Continuous Working Voltage.

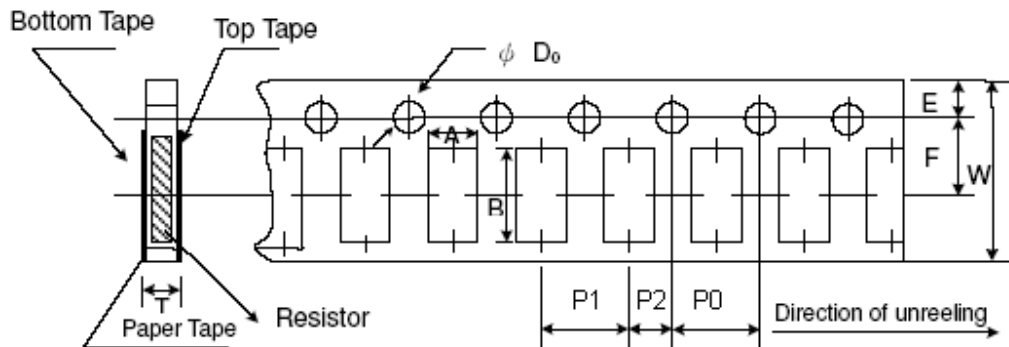
$$Vw = \sqrt{\text{Rated power (P)} \times \text{Resistance value (R)}}$$

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

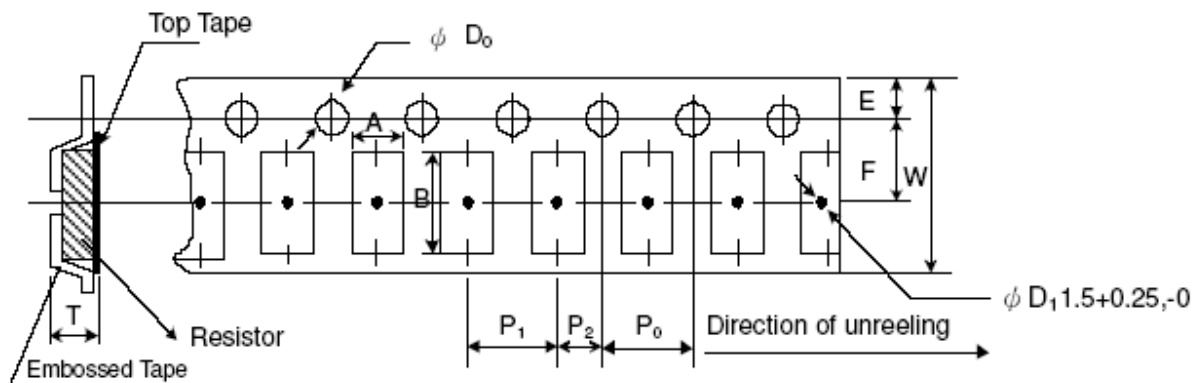
Packing Information:

Paper Tape Dimensions (in mm)



Type	A	B	W	E	F	P0	P1	P2	$\psi D0$	T
RCL0402	0.65±0.1	1.15±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5+0.1/-0	0.45±0.1
RCL0603	1.10±0.1	1.90±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.70±0.1
RCL0805	1.60±0.1	2.40±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1
RCL1206	1.90±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1
RCL1210	2.80±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5+0.1/-0	0.85±0.1

Embossed Plastic Tape Dimensions (in mm)

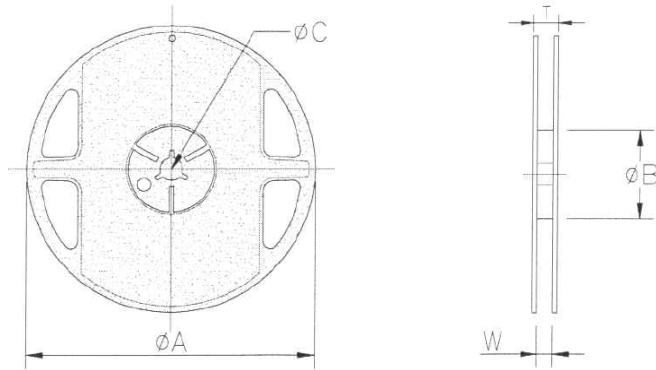


Type	A	B	W	E	F	P0	P1	P2	$\psi D0$	T
RCL2010	2.80±0.2	5.50±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5+0.1/-0	Max1.2
RCL2512	3.50±0.2	6.70±0.2	12.0±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5+0.1/-0	Max1.2

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

Reel Quantity & Dimensions (in mm)



Type	Reel Diameter	Reel Quantity	ψA	ψB	ψC	W	T
RCL0402	7"	10000	180+0/-3	60+1/-0	13.0±0.2	9.0±0.5	12.5±0.5
RCL0603							
RCL0805							
RCL1206							
RCL1210							
RCL2010							
RCL2512		4000					

Carton Information

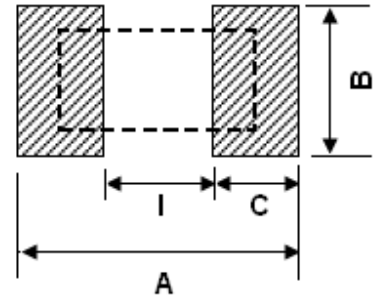
Type	PCS per Carton	Carton Size
RCL0402	600,000	400X400X200 (in mm)
RCL0603	300,000	
RCL0805		
RCL1206		
RCL1210		
RCL2010	192,000	
RCL2512		

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

Recommend Soldering PAD (in mm)

Type	A	B	C	I
RCL0402	1.40	0.60	0.45	0.50
RCL0603	2.10	0.90	0.60	0.90
RCL0805	2.60	1.30	0.70	1.20
RCL1206	3.80	1.60	0.90	2.00
RCL1210	3.80	2.80	0.90	2.00
RCL2010	5.60	2.80	0.90	3.80
RCL2512	7.00	3.50	1.60	3.80



E-24 Series of Resistance Value

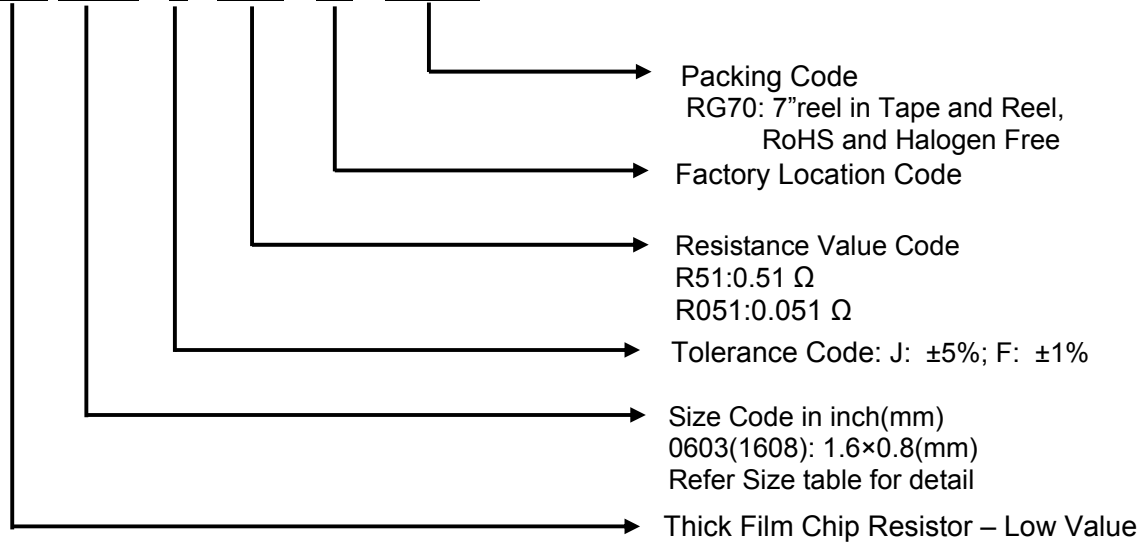
code	Ω	code	Ω	code	Ω	code	Ω	code	Ω	code	Ω
R010	0.010	R011	0.011	R012	0.012	R013	0.013	R015	0.015	R016	0.016
R018	0.018	R020	0.020	R022	0.022	R024	0.024	R027	0.027	R030	0.030
R033	0.033	R036	0.036	R039	0.039	R043	0.043	R047	0.047	R051	0.051
R056	0.056	R062	0.062	R068	0.068	R075	0.075	R082	0.082	R091	0.091
R10	0.10	R11	0.11	R12	0.12	R13	0.13	R15	0.15	R16	0.16
R18	0.18	R20	0.20	R22	0.22	R24	0.24	R27	0.27	R30	0.30
R33	0.33	R36	0.36	R39	0.39	R43	0.43	R47	0.47	R51	0.51
R56	0.56	R62	0.62	R68	0.68	R75	0.75	R82	0.82	R91	0.91

Thick Film Chip Resistor - Low Value

RCL0402~ RCL2512

How to Order

RCL 0603 J R51 - xx - RG70



How to contact us:

US HEADQUARTERS

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162

Tel: (800) TAITRON (800) 824-8766 (661) 257-6060

Fax: (800) TAITFAX (800) 824-8329 (661) 257-6415

Email: taitron@taitroncomponents.com

Http://www.taitroncomponents.com

TAITRON COMPONENTS MEXICO, S.A .DE C.V.

BOULEVARD CENTRAL 5000 INTERIOR 5 PARQUE INDUSTRIAL ATITALAQUIA, HIDALGO C.P. 42970
MEXICO

Tel: +52-55-5560-1519

Fax: +52-55-5560-2190

TAITRON COMPONETS INCORPORATED E REPRESENTAÇÕES DO BRASIL LTDA

RUA DOMINGOS DE MORAIS, 2777, 2.ANDAR, SALA 24 SAÚDE - SÃO PAULO-SP 04035-001 BRAZIL

Tel: +55-11-5574-7949

Fax: +55-11-5572-0052

TAITRON COMPONETS INCORPORATED, SHANGHAI REPRESENTATIVE OFFICE

METROBANK PLASA, 1160 WEST YAN'AN ROAD, SUITE 1502, SHANGHAI, 200052, CHINA

Tel: +86-21-5424-9942

Fax: +86-21-5424-9931