



Material Declaration Data Sheet

RNCF0201 (Formerly RNCF 05)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **0.1356**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	0.123493	910,830	96.00%	0.1286	94.88%
	silicon oxide	7631-86-9	0.002573	18,976	2.00%		
	magnesium oxide	1309-48-4	0.001286	9,488	1.00%		
	calcium oxide	1305-78-8	0.001286	9,488	1.00%		
Inner termination layer	silver	7440-22-4	0.002834	20,900	100.00%	0.0028	2.09%
Resistive element	nickel	7440-02-0	0.000403	2,970	55.00%	0.0007	0.54%
	chromium	7440-47-3	0.000329	2,430	45.00%		
Under-coat	crystalline silica	14808-60-7	0.000976	7,200	100.00%	0.0010	0.72%
Over-coat	synthetic resin	25265-77-4	0.000990	7,300	100.00%	0.0010	0.73%
Marking	epoxy resin complex	9004-57-3	0.000542	4,000	100.00%	0.0005	0.40%
Side termination	nickel	7440-02-0	0.000001	11	55.00%	0.0000	0.00%
	chromium	7440-47-3	0.000001	9	45.00%		
Middle termination layer	nickel	7440-02-0	0.000271	2,000	100.00%	0.0003	0.20%
Outer termination layer	tin	7440-31-5	0.000597	4,400	100.00%	0.0006	0.44%
Total Weight			0.1356				

* Weights are approximate.



Material Declaration Data Sheet

RNCF0402 (Formerly RNCF 10)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **0.5492**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	0.499200	908,958	96.00%	0.5200	94.68%
	silicon oxide	7631-86-9	0.010400	18,937	2.00%		
	magnesium oxide	1309-48-4	0.005200	9,468	1.00%		
	calcium oxide	1305-78-8	0.005200	9,468	1.00%		
Inner termination layer	silver	7440-22-4	0.012380	22,542	100.00%	0.0124	2.25%
Resistive element	nickel	7440-02-0	0.001595	2,904	55.00%	0.0029	0.53%
	chromium	7440-47-3	0.001305	2,376	45.00%		
Under-coat	crystalline silica	14808-60-7	0.004180	7,611	100.00%	0.0042	0.76%
Over-coat	synthetic resin	25265-77-4	0.004080	7,429	100.00%	0.0041	0.74%
Marking	epoxy resin complex	9004-57-3	0.002180	3,969	100.00%	0.0022	0.40%
Side termination	nickel	7440-02-0	0.000007	13	55.00%	0.0000	0.00%
	chromium	7440-47-3	0.000006	11	45.00%		
Middle termination layer	nickel	7440-02-0	0.000987	1,797	100.00%	0.0010	0.18%
Outer termination layer	tin	7440-31-5	0.002480	4,516	100.00%	0.0025	0.45%
Total Weight			0.5492				

* Weights are approximate.



Material Declaration Data Sheet

RNCF0603 (Formerly RNCF 16)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **1.8500**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	1.680000	908,108	96.00%	1.7500	94.59%
	silicon oxide	7631-86-9	0.035000	18,919	2.00%		
	magnesium oxide	1309-48-4	0.017500	9,459	1.00%		
	calcium oxide	1305-78-8	0.017500	9,459	1.00%		
Inner termination layer	silver	7440-22-4	0.041600	22,486	100.00%	0.0416	2.25%
Resistive element	nickel	7440-02-0	0.005500	2,973	55.00%	0.0100	0.54%
	chromium	7440-47-3	0.004500	2,432	45.00%		
Under-coat	crystalline silica	14808-60-7	0.014200	7,676	100.00%	0.0142	0.77%
Over-coat	synthetic resin	25265-77-4	0.014000	7,568	100.00%	0.0140	0.76%
Marking	epoxy resin complex	9004-57-3	0.007700	4,162	100.00%	0.0077	0.42%
Side termination	nickel	7440-02-0	0.000022	12	55.00%	0.0000	0.00%
	chromium	7440-47-3	0.000018	10	45.00%		
Middle termination layer	nickel	7440-02-0	0.003740	2,022	100.00%	0.0037	0.20%
Outer termination layer	tin	7440-31-5	0.008720	4,714	100.00%	0.0087	0.47%
Total Weight			1.8500				

* Weights are approximate.



Material Declaration Data Sheet

RNCF0805 (Formerly RNCF 20)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **4.7500**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	4.310400	907,453	96.00%	4.4900	94.53%
	silicon oxide	7631-86-9	0.089800	18,905	2.00%		
	magnesium oxide	1309-48-4	0.044900	9,453	1.00%		
	calcium oxide	1305-78-8	0.044900	9,453	1.00%		
Inner termination layer	silver	7440-22-4	0.109500	23,053	100.00%	0.1095	2.31%
Resistive element	nickel	7440-02-0	0.014300	3,011	55.00%	0.0260	0.55%
	chromium	7440-47-3	0.011700	2,463	45.00%		
Under-coat	crystalline silica	14808-60-7	0.036500	7,684	100.00%	0.0365	0.77%
Over-coat	synthetic resin	25265-77-4	0.035700	7,516	100.00%	0.0357	0.75%
Marking	epoxy resin complex	9004-57-3	0.019600	4,126	100.00%	0.0196	0.41%
Side termination	nickel	7440-02-0	0.000055	12	55.00%	0.0001	0.00%
	chromium	7440-47-3	0.000045	9	45.00%		
Middle termination layer	nickel	7440-02-0	0.010000	2,105	100.00%	0.0100	0.21%
Outer termination layer	tin	7440-31-5	0.022600	4,758	100.00%	0.0226	0.48%
Total Weight			4.7500				

* Weights are approximate.



Material Declaration Data Sheet

RNCF1206 (Formerly RNCF 32)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **9.1000**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	8.265600	908,308	96.00%	8.6100	94.62%
	silicon oxide	7631-86-9	0.172200	18,923	2.00%		
	magnesium oxide	1309-48-4	0.086100	9,462	1.00%		
	calcium oxide	1305-78-8	0.086100	9,462	1.00%		
Inner termination layer	silver	7440-22-4	0.206400	22,681	100.00%	0.2064	2.27%
Resistive element	nickel	7440-02-0	0.026950	2,962	55.00%	0.0490	0.54%
	chromium	7440-47-3	0.022050	2,423	45.00%		
Under-coat	crystalline silica	14808-60-7	0.069200	7,604	100.00%	0.0692	0.76%
Over-coat	synthetic resin	25265-77-4	0.068200	7,495	100.00%	0.0682	0.75%
Marking	epoxy resin complex	9004-57-3	0.037200	4,088	100.00%	0.0372	0.41%
Side termination	nickel	7440-02-0	0.000127	14	55.00%	0.0002	0.00%
	chromium	7440-47-3	0.000104	11	45.00%		
Middle termination layer	nickel	7440-02-0	0.017590	1,933	100.00%	0.0176	0.19%
Outer termination layer	tin	7440-31-5	0.042180	4,635	100.00%	0.0422	0.46%
Total Weight			9.1000				

* Weights are approximate.



Material Declaration Data Sheet

RNCF1210 (Formerly RNCF 50)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **15.8000**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	14.526394	919,394	96.00%	15.1317	95.77%
	silicon oxide	7631-86-9	0.302633	19,154	2.00%		
	magnesium oxide	1309-48-4	0.151317	9,577	1.00%		
	calcium oxide	1305-78-8	0.151317	9,577	1.00%		
Inner termination layer	silver	7440-22-4	0.200660	12,700	100.00%	0.2007	1.27%
Resistive element	nickel	7440-02-0	0.090090	5,702	55.00%	0.1638	1.04%
	chromium	7440-47-3	0.073710	4,665	45.00%		
Under-coat	crystalline silica	14808-60-7	0.052900	3,348	100.00%	0.0529	0.33%
Over-coat	synthetic resin	25265-77-4	0.052900	3,348	100.00%	0.0529	0.34%
Marking	epoxy resin complex	9004-57-3	0.065500	4,146	100.00%	0.0655	0.41%
Side termination	nickel	7440-02-0	0.000304	19	55.00%	0.0006	0.00%
	chromium	7440-47-3	0.000249	16	45.00%		
Middle termination layer	nickel	7440-02-0	0.039000	2,468	100.00%	0.0390	0.25%
Outer termination layer	tin	7440-31-5	0.093000	5,886	100.00%	0.0930	0.59%
Total Weight			15.8000				

* Weights are approximate.



Material Declaration Data Sheet

RNCF2010 (Formerly RNCF 57)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **24.0060**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	21.792000	907,773	96.00%	22.7000	94.56%
	silicon oxide	7631-86-9	0.454000	18,912	2.00%		
	magnesium oxide	1309-48-4	0.227000	9,456	1.00%		
	calcium oxide	1305-78-8	0.227000	9,456	1.00%		
Inner termination layer	silver	7440-22-4	0.607000	25,285	100.00%	0.6070	2.53%
Resistive element	nickel	7440-02-0	0.061600	2,566	55.00%	0.1120	0.47%
	chromium	7440-47-3	0.050400	2,099	45.00%		
Under-coat	crystalline silica	14808-60-7	0.172000	7,165	100.00%	0.1720	0.72%
Over-coat	synthetic resin	25265-77-4	0.173000	7,207	100.00%	0.1730	0.72%
Marking	epoxy resin complex	9004-57-3	0.084000	3,499	100.00%	0.0840	0.35%
Side termination	nickel	7440-02-0	0.001100	46	55.00%	0.0020	0.01%
	chromium	7440-47-3	0.000900	37	45.00%		
Middle termination layer	nickel	7440-02-0	0.034000	1,416	100.00%	0.0340	0.14%
Outer termination layer	tin	7440-31-5	0.122000	5,082	100.00%	0.1220	0.51%
Total Weight			24.0060				

* Weights are approximate.



Material Declaration Data Sheet

RNCF2512 (Formerly RNCF 63)

Precision Thin Film Chip Resistor

Date: **November 7, 2012**
 Component Weight (mg): **38.4000**

Max Temp: **260°C** (Contact factory for detailed soldering recommendations.)

BOM Item	Material	CAS Number	Material Weight (mg)	Material PPM of Component	Material % of BOM Item	BOM Item Weight (mg)	BOM Item % of Component
Ceramic substrate	aluminum oxide	1344-28-1	34.886400	908,500	96.00%	36.3400	94.64%
	silicon oxide	7631-86-9	0.726800	18,927	2.00%		
	magnesium oxide	1309-48-4	0.363400	9,464	1.00%		
	calcium oxide	1305-78-8	0.363400	9,464	1.00%		
Inner termination layer	silver	7440-22-4	0.874000	22,760	100.00%	0.8740	2.28%
Resistive element	nickel	7440-02-0	0.112750	2,936	55.00%	0.2050	0.53%
	chromium	7440-47-3	0.092250	2,402	45.00%		
Under-coat	crystalline silica	14808-60-7	0.295000	7,682	100.00%	0.2950	0.77%
Over-coat	synthetic resin	25265-77-4	0.287000	7,474	100.00%	0.2870	0.75%
Marking	epoxy resin complex	9004-57-3	0.154000	4,010	100.00%	0.1540	0.40%
Side termination	nickel	7440-02-0	0.001100	29	55.00%	0.0020	0.01%
	chromium	7440-47-3	0.000900	23	45.00%		
Middle termination layer	nickel	7440-02-0	0.069000	1,797	100.00%	0.0690	0.18%
Outer termination layer	tin	7440-31-5	0.174000	4,531	100.00%	0.1740	0.45%
Total Weight			38.4000				

* Weights are approximate.