

## Type RP73 Series

### Key Features

- High precision - tolerances down to 0.05%
- Low TCR - down to 5ppm/°C
- Stable high frequency performance
- Operating temperature -55°C to +155°C
- Increased power rating - up to 1.0W
- Up to 200V DC operating voltage
- Range of packaging options
- Terminal finish - electroplated 100% matte Sn



### Applications

- Communications
- Instrumentation
- Industrial Controls
- Medical

The RP73 resistor series is a stable thin film chip resistor range offering increased power dissipation, higher temperature capabilities and increased working voltages compared to the standard RN73 series. The resistor is produced by sputtering a metal film onto high grade alumina and protecting with three complete printed layers. Values are normally offered in E96 and E24 series. The RP73 resistor has accurate and uniform physical dimensions to reduce placement problems.

### Characteristics - Electrical - RP73 Series - Standard

	0402												0603												
Rated Power @ 70°C:	0.063W												0.1W												
Resistance Range (Ohms) Min:	49R9	49R9	49R9	49R9	49R9	49R9	10R	49R9	49R9	10R	24R9	4R7	24R9	4R7	4R7	24R9	4R7	4R7							
Max:	5K0	15K	100K	5K0	15K	70K	255K	5K0	15K	255K	15K	332K	15K	332K	1M0	15K	332K	1M0							
Tolerance (%):	0.05			0.1			0.5 / 1			0.05			0.1			0.5 / 1									
Code Letter:	A			B			D / F			A			B			D / F									
Selection Series:	E24 & E96												E24 & E96												
Temp. Coefficient (ppm/°C):	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50
Code Letter:	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G
Limiting Element Voltage:	25V												75V												
Max. Overload Voltage:	50V												150V												
Operating Temp. Range:	-55 to +155°C												-55 to +155°C												
Climatic Category (°C):	55/125/55												55/125/55												
Insulation Resistance Dry Min:	1000MΩ												1000MΩ												
Stability:	0.5%												0.5%												

	0805												1206												
Rated Power @ 70°C:	0.125W												0.25W												
Resistance Range (Ohms) Min:	24R9	4R7	24R9	4R7	4R7	24R9	4R7	4R7	1R0	24R9	4R7	4R7	4R7	4R7	4R7										
Max:	30K	511K	30K	511K	1M0	30K	511K	1M0	1M0	50K	50K	50K	50K	50K	1M0										
Tolerance (%):	0.05			0.1			0.5 / 1			0.05 / 0.1 / 0.5 / 1															
Code letter:	A			B			D / F			A / B / D / F															
Selection Series:	E24 & E96												E24 & E96												
Temp. Coefficient (ppm/°C):	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50	5	10	15	25	50
Code Letter:	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G	A	C	D	F	G
Limiting Element Voltage:	150V												200V												
Max. Overload Voltage:	300V												400V												
Operating Temp. Range:	-55 to +155°C												-55 to +155°C												
Climatic Category (°C):	55/125/55												55/125/55												
Insulation Resistance Dry Min:	1000MΩ												1000MΩ												
Stability:	0.5%												0.5%												

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	1210					2010					2512				
Rated Power @ 70°C:	0.3W					0.3W					1W				
Resistance Range (Ohms)	Min:	24R9	4R7				24R9	4R7				4R7	1R0		
	Max:	50K	1M0				50K	1M0				100R	100R		
Tolerance (%):	0.05 / 0.1 / 0.5 / 1					0.05 / 0.1 / 0.5 / 1					0.1		0.5 / 1		
Code Letter:	A / B / D / F					A / B / D / F					B		D / F		
Selection Series:	E24 & E96					E24 & E96					E24 & E96				
Temp. Coefficient (ppm/°C):	5	10	15	25	50	5	10	15	25	50	25	50	25	50	
Code Letter:	A	C	D	F	G	A	C	D	F	G	F	G	F	G	
Limiting Element Voltage:	200V					200V					200V				
Max. Overload Voltage:	400V					400V					400V				
Operating Temp. Range:	-55 to +155°C					-55 to +155°C					-55 to +155°C				
Climatic Category (°C):	55/125/55					55/125/55					55/125/55				
Insulation Resistance Dry Min:	1000MΩ					1000MΩ					1000MΩ				
Stability:	0.5%					0.5%					0.5%				

### Characteristics - Electrical - RP73P Series - High Power

	0603						0805						
Rated Power @ 70°C:	0.166W						0.25W						
Resistance Range (Ohms)	Min:	10R						10R					
	Max:	332K						500K					
Tolerance (%):	0.1		0.5		1		0.1		0.5		1		
Code Letter:	B		D		F		B		D		F		
Selection Series:	E24 & E96						E24 & E96						
Temp. Coefficient (ppm/°C):	25	50	25	50	25	50	25	50	25	50	25	50	
Code Letter:	F	G	F	G	F	G	F	G	F	G	F	G	
Limiting Element Voltage:	100V						150V						
Max. Overload Voltage:	150V						300V						
Operating Temp. Range:	-55 to +155°C						-55 to +155°C						
Climatic Category (°C):	55/125/55						55/125/55						
Insulation Resistance Dry Min:	1000MΩ						1000MΩ						
Stability:	0.5%						0.5%						

### Characteristics - Environmental

Item	Requirement		Test Method
	Tol. ≤ 0.05%	Tol. > 0.05%	
Temperature Coefficient of Resistance (TCR):	As per TCRs specified in value range table on page 1		+25/-55/+25/+125/+25°C
Short Time Overload:	ΔR ±0.05%	ΔR ±0.2%	RCWV* 2.5 or max. overload voltage for 5 seconds
Insulation Resistance:	ΔR ±0.2% for high power rating >1000MΩ		Apply 100VDC for 1 minute
Endurance:	ΔR ±0.05%	ΔR ±0.2%	70 ±2°C, max. working voltage for 1000hrs with 1.5hrs "ON" and 0.5 hrs "OFF"
Damp Heat with Load:	ΔR ±0.05%	ΔR ±0.3%	40 ±2°C, 90 - 95% R.H. max. working voltage hrs with 1.5hrs "ON" and 0.5hrs "OFF"
Bending Strength:	ΔR ±0.05%	ΔR ±0.2%	Bending amplitude 3mm for 10 seconds
Solderability:	95% min. coverage		245 ±5°C for 3 seconds
Resistance to Soldering Heat:	ΔR ±0.05%	ΔR ±0.2%	260 ±5°C for 10 seconds
Dielectric Withstand Voltage:	By Type		Max. overload voltage for 1 minute
Thermal Shock:	ΔR ±0.05%	ΔR ±0.25%	-55°C to +150°C, 100 cycles
Low Temperature Operation:	ΔR ±0.05%	ΔR ±0.2%	1 hour, -65°C, followed by 45 minutes of RCWV
	ΔR ±0.5% for high power rating		

Reference Standards: MIL-STD-202, JIS-C 5201-1

Storage Temperature: 25±3°C; Humidity < 80%RH

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### Power Derating Curve



For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.

### Dimensions



- |                          |                            |                          |
|--------------------------|----------------------------|--------------------------|
| 1. Alumina Substrate     | 4. Edge Electrode (NiCr)   | 7. Resistor Layer (NiCr) |
| 2. Bottom Electrode (Ag) | 5. Barrier Layer (Ni)      | 8. Overcoat (Epoxy)      |
| 3. Top Electrode (Ag-Pd) | 6. External Electrode (Sn) | 9. Marking               |

Part Number	L	W	t	D	C	Weight (g) 1000 pieces
RP73 1E (0402)	1.00 ±0.05	0.50 ±0.05	0.30 ±0.05	0.20 ±0.10	0.20 ±0.10	0.54
RP73(P) 1J (0603)	1.55 ±0.10	0.80 ±0.10	0.45 ±0.10	0.30 ±0.20	0.30 ±0.20	1.83
RP73(P) 2A (0805)	2.00 ±0.15	1.25 ±0.15	0.55 ±0.10	0.30 ±0.20	0.40 ±0.25	4.71
RP73 2B (1206)	3.05 ±0.15	1.55 ±0.15	0.55 ±0.10	0.42 ±0.20	0.35 ±0.25	9.02
RP73 2E (1210)	3.10 ±0.15	2.40 ±0.15	0.55 ±0.10	0.40 ±0.20	0.55 ±0.25	10.00
RP73 2H (2010)	4.90 ±0.15	2.40 ±0.15	0.55 ±0.10	0.60 ±0.30	0.50 ±0.25	23.61
RP73 3A (2512)	6.30 ±0.15	3.10 ±0.15	0.55 ±0.10	0.60 ±0.30	0.50 ±0.25	38.08

### Marking Codes - Case Sizes 0805 to 2512

#### IEC 4 Digit Marking

Resistance:	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
Marking Code:	1000	2201	1002	4992	1003

### Case Sizes 0603

#### E24 3 Digit Marking - Example: 101=100Ω 102=1KΩ

E24	10	11	12	13	15	16	18	20	22	24	27	30
	33	36	39	43	47	51	56	62	68	75	82	91

#### E96 3 Digit Marking - Examples: 14C=13K7Ω, 13C=13K3Ω, 68B=4K99Ω, 68X=49.9Ω



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0603 E96 Marking Code Table

Code	E96	Code	E96	Code	E96	Code	E96				
01	100	25	178	49	316	73	562				
02	102	26	182	50	324	74	576				
03	105	27	187	51	332	75	590				
04	107	28	191	52	340	76	604				
05	110	29	196	53	348	77	619				
06	113	30	200	54	357	78	634				
07	115	31	205	55	365	79	649				
08	118	32	210	56	374	80	665				
09	121	33	215	57	383	81	681				
10	124	34	221	58	392	82	698				
11	127	35	226	59	402	83	715				
12	130	36	232	60	412	84	732				
13	133	37	237	61	422	85	750				
14	137	38	243	62	432	86	768				
15	140	39	249	63	442	87	787				
16	143	40	255	64	453	88	806				
17	147	41	261	65	464	89	825				
18	150	42	267	66	475	90	845				
19	154	43	274	67	487	91	866				
20	158	44	280	68	499	92	887				
21	162	45	287	69	511	93	909				
22	165	46	294	70	523	94	931				
23	169	47	301	71	536	95	953				
24	174	48	309	72	549	96	976				
Code	A	B	C	D	E	F	G	H	X	Y	Z
Multiplier	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>	10 <sup>7</sup>	10 <sup>-1</sup>	10 <sup>-2</sup>	10 <sup>-3</sup>

### Recommend Land Pattern



Type	A	B	C
RP73 1E (0402)	0.5	0.5	0.60 ±0.2
RP73(P) 1J (0603)	0.8	1.0	0.90 ±0.2
RP73(P) 2A (0805)	1.0	1.0	1.35 ±0.2
RP73 2B (1206)	2.0	1.15	1.70 ±0.2
RP73 2E (1210)	2.0	1.15	2.50 ±0.2
RP73 2H (2010)	3.6	1.4	2.50 ±0.2
RP73 3A (2512)	4.9	1.6	3.10 ±0.2

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### Packaging Quantity & Reel Specifications



Type	øA	øB	øC	W	T	Paper Tape (EA)	Embossed Plastic Tape (EA)
RP73 1E (0402)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RP73(P) 1J (0603)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RP73(P) 2A (0805)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RP73 2B (1206)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RP73 2E (1210)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	*250 / 1000 / 5000	-
RP73 2H (2010)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	13.5 ±1.0	15.5 ±1.0	-	1000 / 4000
RP73 3A (2512)	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	13.5 ±1.0	15.5 ±1.0	-	1000 / 4000

\* 250 piece packs supplied in sealed bags of cut tape length

### Paper Tape Specification



Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	øD <sub>0</sub>	T
RP73 1E (0402)	0.70 ±0.05	1.16 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	2.00 ±0.05	2.00 ±0.05	1.55 ±0.05	0.40 ±0.03
RP73(P) 1J (0603)	1.10 ±0.05	1.90 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.60 ±0.03
RP73(P) 2A (0805)	1.60 ±0.05	2.37 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
RP73 2B (1206)	2.00 ±0.05	3.55 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
RP73 2E (1210)	2.75 ±0.05	3.40 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.60 ±0.10	0.75 ±0.05

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### Embossed Plastic Tape Specifications



Type	A	B	W	E	F	P <sub>0</sub>	P <sub>1</sub>	P <sub>2</sub>	øD <sub>0</sub>	T
RP73 2H (2010)	2.85 ±0.10	5.45 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20
RP73 3A (2512)	3.40 ±0.10	6.65 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20

### How to Order

RP73	C	2A	1K0	B	TG
Common Part	Temp. Coefficient	Package Size	Resistor Value	Tolerance	Packaging
RP73 - Standard RP73P - High Power	A - ±5ppm/°C C - ±10ppm/°C D - ±15ppm/°C F - ±25ppm/°C G - ±50ppm/°C	1E - 0402 1J - 0603 2A - 0805 2B - 1206 2E - 1210 2H - 2010 3A - 2512	100R (100 Ohms) 1K0 (1000 Ohms) 10K (10,000 Ohms) 100K (100,000 Ohms) 1M0 (1,000,000 Ohms)	A - ±0.05% B - ±0.1% D - ±0.5% F - ±1%	TG - Cut Tape (250 pcs) TDF - Reel (1000 pcs) TD - Reel (5000 pcs) TDG - Reel (250 pcs) TE - Reel (4000 pcs) 2H & 3A only

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