

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
Code Letter:	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								
	Max:	30K	511K	30K	511K	1M0	30K	511K	1M0	1M0	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
Code Letter:	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%									

Type RP73 Series

	1210					2010					2512			
Rated Power @ 70°C:	0.3W					0.3W					1W			
Resistance Range (Ohms)	Min: 24R9 4R7					Min: 24R9 4R7					Min: 4R7 1R0			
	Max: 50K 1M0					Max: 50K 1M0					Max: 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: Max:	10R						10R					
	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
2. Bottom Electrode (Ag)
3. Top Electrode (Ag-Pd)

4. Edge Electrode (NiCr)
5. Barrier Layer (Ni)
6. External Electrode (Sn)

7. Resistor Layer (NiCr)
8. Overcoat (Epoxy)
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



Type RP73 Series

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 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶	10 ⁷	10 ⁻¹	10 ⁻²	10 ⁻³

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

Type RP73 Series

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 ₀	P ₁	P ₂	øD ₀	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

Type RP73 Series

Embossed Plastic Tape Specifications



Type	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	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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