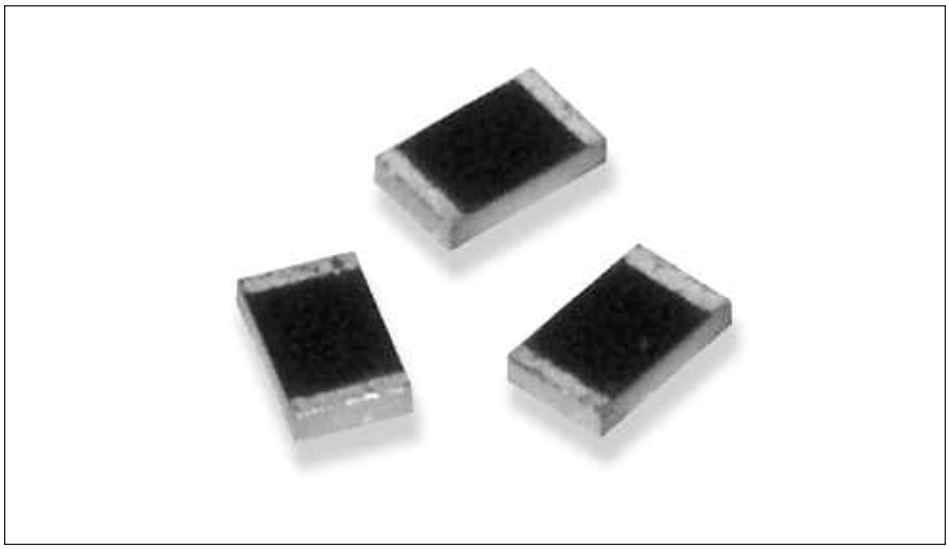
Type RP73 Series

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	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	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%				

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Type RP73 Series

		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% ΔR ±0.2% for high power rating	RCWV* 2.5 or max. overload voltage for 5 seconds
Insulation Resistance:	>1000MΩ		Apply 100VDC for 1 minute
Endurance:	ΔR ±0.05% >7kΩ ΔR ±0.5%	ΔR ±0.2% ΔR ±0.5% for high power rating	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% ΔR ±0.5% for high power rating	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% ΔR ±0.5% for high power rating	1 hour, -65°C, followed by 45 minutes of RCWV

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

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

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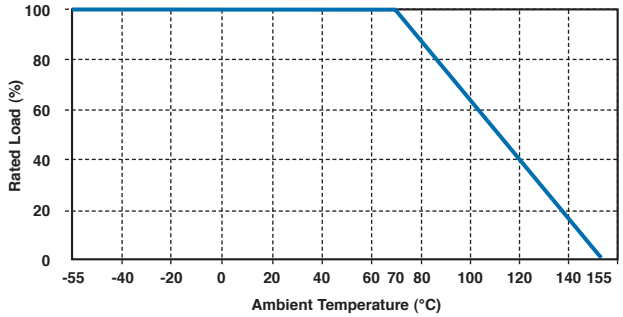
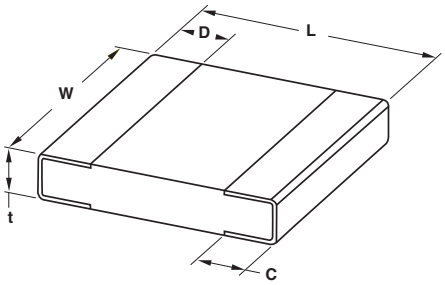
Type RP73 Series

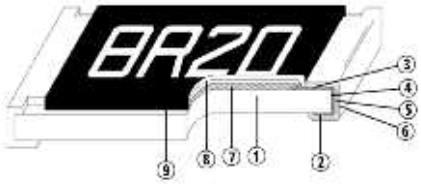
Power Derating Curve



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

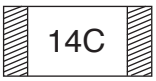
Resistance:	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
Marking Code:	1000	2201	1002	4992	1003

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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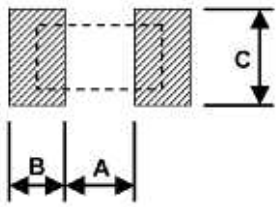
Type RP73 Series

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

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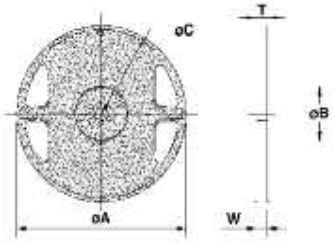
Type RP73 Series

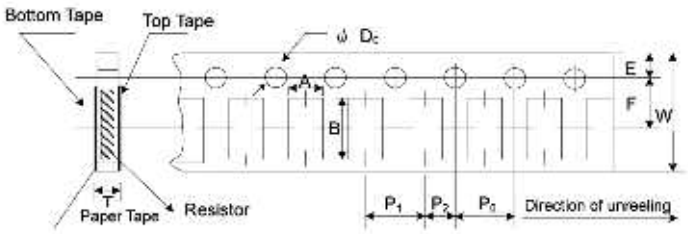
Packaging Quantity & Reel Specifications



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

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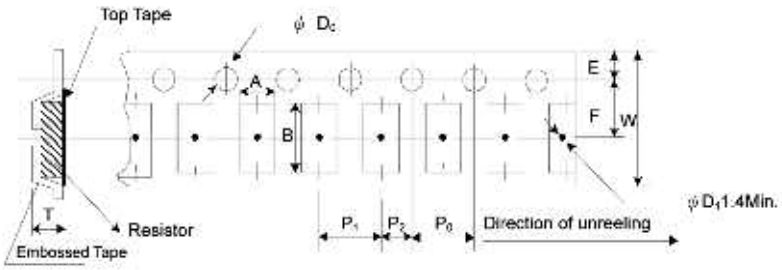
Type RP73 Series

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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