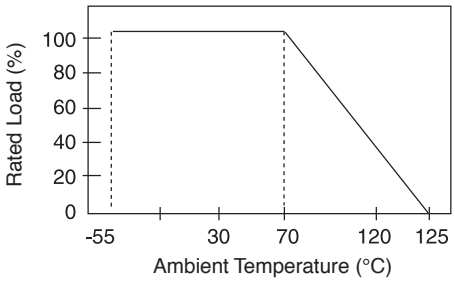
1% Thick Film Chip Resistors (RoHS Compliant) CR1-RC Series

FEATURES

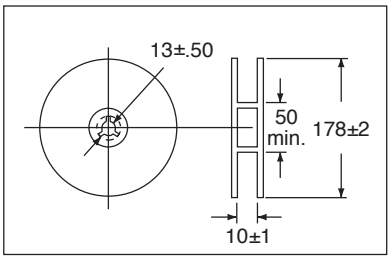
- Temperature Range: -55°C ~ +125°C
- High purity alumina substrate
- Wave or flow solderable
- Excellent high frequency characteristics
- Wrap around termination
- Inner electrode protection

RoHS Compliant

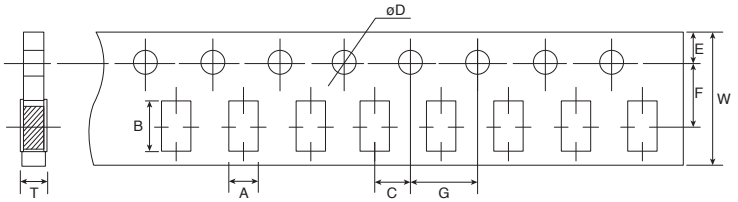
DERATING CURVE



REEL DIMENSIONS (mm)



TAPING DIMENSIONS (mm)



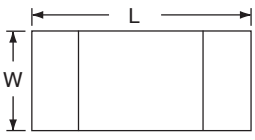
A ± 0.2	B ± 0.2	C ± 0.05	øD ± 0.1	E ± 0.1	F ± 0.05	G ± 0.1	W ± 0.2	T ± 0.1
2.00	3.60	2.0	1.5	1.75	3.5	4.0	8.0	0.81

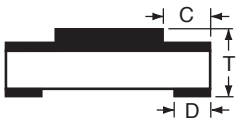
PART NUMBERING SYSTEM

2	9	0	–	1	0	K	-	R	C

Series | Value | Suffix (RoHS Compliant)

SERIES, SIZE, WATTAGE, VOLTAGE, AND DIMENSIONS





Series	Case Size	Watts (W)	Voltage (V) (max.)		Dimensions (mm)				
			W.V.	O.V.	L	W	C	D	T
290	1206	1/8	200	400	3.1 ± .15	1.55 ± .15	.45 ± .20	.45 ± .20	.55 ± .10
292	0805	1/10	150	300	2.0 ± .15	1.25 ± .15	.40 ± .20	.40 ± .20	.55 ± .10
302	0603	1/10	50	100	1.6 ± .10	.80 ± .15	.30 ± .20	.30 ± .20	.45± .10
304	0402	1/16	25	50	1.0 ± .10	.50 ± .05	.20 ± .10	.25 ± .10	.35 ± .05

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■ STANDARD STOCKED VALUES (Ω)

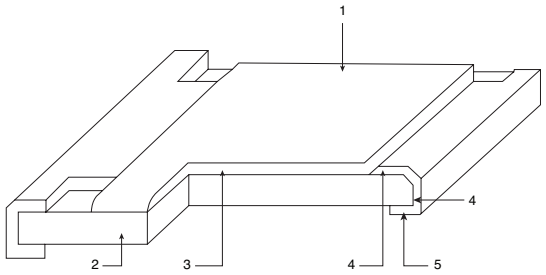
10	16.9	28.7	48.7	82.5	140	237	392	665	1.13K	1.91K	3.16K	5.36K	9.09K	15.4K	26.1K						
10.2	17.4	29.4	49.9	84.5	143	243	402	681	1.15K	1.96K	3.24K	5.49K	9.31K	15.8K	26.7K						
10.5	17.8	30.1	51.1	86.6	147	249	412	698	1.18K	2.0K	3.32K	5.62K	9.53K	16.2K	27.4K						
10.7	18.2	30.9	52.3	88.7	150	255	422	715	1.21K	2.05K	3.4K	5.76K	9.76K	16.5K	28K						
11	18.7	31.6	53.6	90.9	154	261	432	732	1.24K	2.1K	3.48K	5.9K	10K	16.9K	28.7K						
11.3	19.1	32.4	54.9	93.1	158	267	442	750	1.27K	2.15K	3.57K	6.04K	10.2K	17.4K	29.4K						
11.5	19.6	33.2	56.2	95.3	162	274	453	768	1.3K	2.21K	3.65K	6.19K	10.5K	17.8K	30K						
11.8	20	34	57.6	97.6	165	280	464	787	1.33K	2.26K	3.74K	6.34K	10.7K	18.2K	30.1K						
12.1	20.5	34.8	59	100	169	287	475	806	1.37K	2.32K	3.83K	6.49K	11.K	18.7K							
12.4	21	35.7	60.4	102	174	294	487	825	1.40K	2.37K	3.92K	6.65K	11.3K	19.1K							
12.7	21.5	36.5	61.9	105	178	300	499	845	1.43K	2.43K	4.02K	6.81K	11.5K	19.6K							
13	22.1	37.4	63.4	107	182	301	511	866	1.47K	2.49K	4.12K	6.98K	11.8K	20K							
13.3	22.6	38.3	64.9	110	187	309	523	887	1.5K	2.55K	4.22K	7.15K	12.1K	20.5K							
13.7	23.2	39.2	66.5	113	191	316	536	909	1.54K	2.61K	4.32K	7.32K	12.4K	21.K							
14	23.7	40.2	68.1	115	196	324	549	931	1.58K	2.67K	4.42K	7.5K	12.7K	21.5K							
14.3	24.3	41.2	69.8	118	200	332	562	953	1.62K	2.74K	4.53K	7.68K	13K	22.1K							
14.7	24.9	42.2	71.5	121	205	340	576	976	1.65K	2.8K	4.64K	7.87K	13.3K	22.6K							
15	25.5	43.2	73.2	124	210	348	590	1.0K	1.69K	2.87K	4.75K	8.06K	13.7K	23.2K							
15.4	26.1	44.2	75	127	215	357	604	1.02K	1.74K	2.94K	4.87K	8.25K	14.K	23.7K							
15.8	26.7	45.3	76.8	130	221	365	619	1.05K	1.78K	3.0K	4.99K	8.45K	14.3K	24.3K							
16.2	27.4	46.4	78.7	133	226	374	634	1.07K	1.82K	3.01K	5.11K	8.66K	14.7K	24.9K							
16.5	28	47.5	80.6	137	232	383	649	1.1K	1.87K	3.09K	5.23K	8.87K	15K	25.5K							

1M

■ NOTE: RoHS Compliant by Exemption

■ CONSTRUCTION

No.	Part Name
1	Protective coating: Epoxy
2	Al_2O_3 high purity alumina substrate: Al 96fi
3	Resistive element: metal film
4	Termination (Inner): Ag/Pd
5	Termination (Between): Ni plating film
6	Termination (Outer): Sn plating film



■ CHARACTERISTICS

Characteristics	Limits	Test Methods (JIS C 5201-1)
Temperature coefficient	1Ω ~ 10Ω ≤ ±400 PPM / °C 11Ω ~ 10MΩ ≤ ±200 PPM / °C	5.2 Natural resistance change per temp. degree centigrade. $\frac{R_2-R_1}{R_1(t_2-t_1)} \times 10^6$ (PPM/°C) R_1: Resistance value at room temperature (t_1) R_2: Resistance value at room temp.plus 100°C (t_2)
Short time overload	Resistance change rate is ± (2.0 % + 0.1Ω) Max.	5.5 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds.
Insulation resistance	1,000M Ω or more	5.6 Apply 500V DC between protective coating and termination for 1 minute
Dielectric withstanding voltage	No evidence of flashover mechanical damage,arcing or insulation break down.	5.7 Apply 500V AC between protective coating and termination for 1 minute
Terminal bending	±(1.0% +0.05Ω) Max.	6.1.4 Twist of Test Board: Y/X=5/90mm for 10 seconds

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CHARACTERISTICS (Cont.)

<table>
<tr><th>Characteristics</th><th>Limits</th><th colspan="3">Test Methods (JIS C 5201-1)</th></tr>
<tr><td rowspan="6">Temperature cycling</td><td rowspan="6">± (1.0% + 0.05Ω) Max.</td><td colspan="3">7.4 Resistance change after continuous 5 cycles for duty shown below:</td></tr>
<tr><td>Step</td><td>Temperature</td><td>Time</td></tr>
<tr><td>1</td><td>-55°C ±3°C</td><td>30 mins</td></tr>
<tr><td>2</td><td>Room temp.</td><td>10~15 mins</td></tr>
<tr><td>3</td><td>+155°C ±2°C</td><td>30 mins</td></tr>
<tr><td>4</td><td>Room temp.</td><td>10~15 mins</td></tr>
<tr><td>Load life in humidity</td><td>Resistance change rate is ± (3.0% + 0.1Ω) Max.</td><td colspan="3">7.9 Resistance change after 1,000 hours (1.5 hours "on", 0.5 hour "off") at RCWV in a humidity chamber controlled at 40°C ± 2°C and 90 to 95 % relative humidity</td></tr>
<tr><td>Load life</td><td>Resistance change rate is ± (3.0% + 0.1Ω) Max.</td><td colspan="3">7.10 Permanent resistance change after 1,000 hours operating at RCWV, with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70°C ± 2°C ambient</td></tr>
<tr><td>Soldering Heat</td><td>Electrical characteristics shall be satisfied. Without distinct deformation in appearance.</td><td colspan="3">Solder bath method
Pre-Heat: 100 ro 105°C, 30 ±5 sec.
Temperature: 265 ± 3°C, 5 +1/-0 sec

Reflow soldering method
Peak: 250 +5/-0°C
230°C or higher, 30 ±10Sec.

Solder iron method
Bit temperature: 350° ±10°C
Application time of soldering iron: 3 +1/-0 seconds</td></tr>
<tr><td>Solderability</td><td>95% Coverage min.</td><td colspan="3">6.5 Test temperature of solder: 245° ±3°C
Dipping them solder: 2~3 seconds</td></tr>
</table>

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Authorized Distributor

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Xicon:

290-15K-RC 302-1.21K-RC 302-1.3K-RC 290-10-RC 290-1.0K-RC 292-10K-RC 290-10K-RC 292-40.2-RC 292-1.0K-RC 292-2.0K-RC 302-499-RC 292-324-RC 292-1.0M-RC 292-681-RC 302-383K-RC 290-1.21K-RC 292-49.9-RC 292-28-RC 302-24.9K-RC 302-221K-RC 290-5.11K-RC 302-22.6K-RC 302-150-RC 302-2.74K-RC 292-22.1-RC 292-1.21K-RC 290-39.2K-RC 302-5.11K-RC 290-392-RC 304-649-RC 290-22.6K-RC 290-1.13K-RC 290-86.6K-RC 290-80.6K-RC 302-649-RC 304-143-RC 290-31.6K-RC 290-53.6K-RC 290-57.6K-RC 290-97.6K-RC 304-124K-RC 304-324K-RC 290-127K-RC 304-750K-RC 304-150K-RC 304-115-RC 302-115-RC 304-10.2-RC 304-40.2-RC 304-47.5-RC 290-133K-RC 304-698-RC 292-42.2-RC 302-698-RC 302-19.1K-RC 302-68.1K-RC 304-4.99K-RC 292-604-RC 304-931K-RC 290-604-RC 302-88.7K-RC 302-48.7K-RC 304-12.7-RC 302-9.53K-RC 302-28.7K-RC 302-18.7K-RC 302-4.53K-RC 302-78.7K-RC 290-8.25K-RC 304-8.66K-RC 290-255K-RC 290-20.5-RC 290-10.5-RC 302-38.3-RC 304-953K-RC 292-93.1-RC 292-105K-RC 292-205K-RC 302-536K-RC 302-422K-RC 290-9.31K-RC 292-442-RC 304-24.9-RC 304-64.9-RC 304-54.9-RC 290-442-RC 292-147-RC 290-147-RC 292-16.9-RC 292-511K-RC 304-4.12K-RC 292-768K-RC 290-1.82K-RC 290-158-RC 290-768K-RC 302-64.9-RC 302-54.9-RC 292-158-RC 292-255K-RC 292-10.5-RC