

Precision Metal Film Resistors



RC Series



Features:

- RC55 available to EN140101 & IECQ-CECC40101 release
- Resistance tolerance down to 0.05%
- Wide resistance range
- Low noise and negligible voltage coefficient
- Screened parts available for critical applications
- Temperature coefficient of resistance down to 5ppm/°C
- Options for Pb-free and Pb-bearing wire finishes



All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

RC Actual Data	RC55	RC65
Power rating @70°C	W	0.4
Resistance range	ohms	1R0 – 4M0
Limiting element voltage	V	350
Isolation voltage	V	500
TCR (20 - 70°C) ¹	ppm/°C	5, 10, 15, 25, 50, 100
Resistance tolerance ¹	%	0.05, 0.1, 0.25, 0.5, 1
Standard values ²		E24 & E96 preferred
Thermal impedance	°C/W	110
Ambient temperature range	°C	-55 to 155

Note 1: See table of resistance restrictions.

Note 2: Non-standard values may be requested.

The requirements of the following standards are met or exceeded by the corresponding RC series products above.

EN140101-806 Requirements	B		
Required power rating @70°C	W	0.4	
Qualified resistance range	ohms	56R – 820K	
Required limiting element voltage	V	300	
Required isolation voltage	V	500	
Required TCR ¹	ppm/°C	10, 15, 25, 50	
Required resistance tolerance	%	0.1, 0.25, 0.5, 1	

IECQ-CECC 40101-004 Requirements	H	J	K
Required power rating @70°C	W	0.063	0.125
Qualified resistance range	ohms	1R0 – 1M0	
Required limiting element voltage	V	200	250
Required isolation voltage	V	280	350
Required TCR ¹	ppm/°C	15, 25, 50, 100	
Required resistance tolerance	%	0.05, 0.1, 0.25, 0.5, 1	

IECQ-CECC 40101-804 Requirements	A	B		
Required power rating @70°C	W	0.125	0.25	
Qualified resistance range	ohms	1R0 – 1M0		
Required limiting element voltage	V	200	250	
Required isolation voltage	V	280	350	
Required TCR ¹	ppm/°C	15, 25, 50		
Required resistance tolerance	%	0.1, 0.25, 0.5, 1		

Note 1: In these standards TCRs are not specified for values <5R0, and for values ≥5R0 and <10R the TCR limit is 2 x the stated figure.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability.

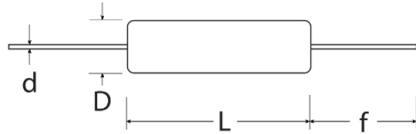
All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

BI Technologies IRC Welwyn

www.ttelelectronics.com/resistors

Physical Data

Dimensions in mm and weight in g							
Type	L max ¹	D max	f min ²	d nom	PCB mounting centres	Min. bend radius	Wt. nom
RC55	7.2	2.5	30	0.6	10.2	0.6	0.24
RC65	10	3.7	30	0.6	12.7	0.6	0.4



Note 1: Coating may extend up to 2mm along each lead.

Note 2: Dimension relates only to bulk packed products.

Construction

A metal film is deposited onto a high quality ceramic rod. Nickel-plated steel caps are force fitted to the rod and termination wires are welded to the caps. The resistor is adjusted to value by a helical cut in the film and the body is protected with a specially formulated epoxy coating.

Marking

Type reference, TCR code, resistance value and tolerance code are legend marked. The resistance values conform to IEC 60062.

Terminations

Terminations are copper wire with Sn or SnPb finish. They meet the strength requirements of IEC 60115-1 clause 9.5 and the solderability requirements of IEC 60115-1 clause 11.1.

Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuit boards.

Performance Data

	EN140101-806 Requirements	IECQ-CECC 40101-004 Requirements	IECQ-CECC 40101-804 Requirements	Actual Performance	
				Maximum ^{1,2}	Typical
Load at full rated power: P _r for 1000 hours at 70°C	±ΔR%	Not specified			0.3
Load at EN140101 & IECQ-CECC40101 ratings: 1000 hours at 70°C	±ΔR%	0.25 ³	0.5 ³	0.5 ³	0.3
Dry heat: No load, 1000 hours at 155°C	±ΔR%	0.25 ³	0.5 ³	0.5 ³	1
Shelf-life test: 12 months at room temperature	±ΔR%	Not specified			0.1
Derating from rated power at 70°C		Zero @125°C	Zero @155°C	50% @125°C	50% @125°C, zero @155°C
Short term overload: Lesser of 6.25xP _r or 2.5xLEV for 5s	±ΔR%	0.5 ²	0.1 ²	0.1 ³	0.1
Climatic	±ΔR%	0.25 ³	0.5 ³	0.5 ³	0.3
Climatic category		55/125/56	55/155/56	55/125/56	55/155/56
Long term damp heat	±ΔR%	0.25 ³	0.5 ³	0.5 ³	0.5
Temperature rapid change	±ΔR%	0.05 ²	0.1 ²	0.1 ²	0.2
Resistance to solder heat	±ΔR%	0.05 ²	0.1 ²	0.1 ²	0.06
Vibration	±ΔR%	0.05 ²	0.1 ²	0.1 ²	0.06
Bump	±ΔR%	Not specified			0.06
Noise in a decade of frequency	μV/V	<0.5	Not specified		1
Voltage coefficient of resistance	ppm/V	Not specified			

Note 1: All values within the qualified resistance range meet EN140101 and IECQ-CECC40101 requirements.

Note 2: Apply an ohmic addition of R01.

Note 3: Apply an ohmic addition of R05.

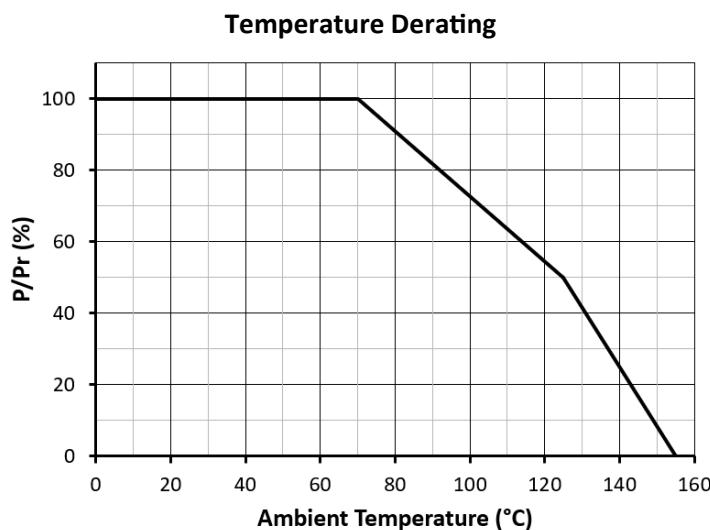


Table of Resistance Restrictions

TCR ppm/°C	Tolerance %					
	RC55			RC65		
0.05	0.1 - 0.25	0.5 ³ - 1 ³	0.05	0.1 - 0.25	0.5 ³ - 1 ³	
5 ¹	10R to 500K		1R0 to 500K	10R to 500K		1R0 to 500K
10	10R to 1M0	10R to 1M0	1R0 to 1M0	10R to 1M0	10R to 1M0	1R0 to 1M0
15			1R0 to 2M0		5R0 to 1M0	1R0 to 2M0
25		10R to 2M0	1R0 to 4M0		5R0 to 2M0	1R0 to 4M0
50 ²						
100 ²						

Note 1: Based on sampling, 100% screened product is available.

Note 2: For maximum availability, where the ohmic value permits, 25ppm/°C is preferred to 50 or 100ppm/°C.

Note 3: For maximum availability, where the ohmic value permits, 0.25% is preferred to 0.5 or 1%.

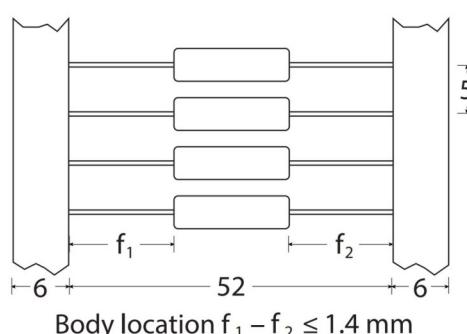
Application Notes

Matched Sets

TT Electronics has many years' experience in the supply of matched sets of precision resistors. Resistors can be supplied matched for tolerance and TCR down to $\pm 0.02\%$ and $\pm 2\text{ppm/}^{\circ}\text{C}$.

Packaging

RC55 and RC65 standard packing is in tape, as shown below. Taped resistors on reel or loose packed components can also be supplied by special request.



Ordering Procedure

Global Part Number Example: RC55V-31K6BI (RC55 with TCR $\pm 5\text{ppm}/^\circ\text{C}$ at 31.6 kilohms $\pm 0.1\%$, Pb-free)



1 Type	2 TCR (ppm/°C)	3 Value	4 Tolerance	5 Finish, Screening & Packing	
RC55	V = ±5	E24 = 3/4 characters E96 = 3/4 characters R = ohms K = kilohms M = megohms	W = ±0.05%	I	Pb-free (RoHS)
RC65	T = ±10		B = ±0.1%	SC	Pb-free with screened TCR (5ppm only)
	Y = ±15		C = ±0.25%	PB	Sn(95)Pb(5) finish
	D = ±25		D = ±0.5%	HL	Sn(60)Pb(40) high lead finish
	C = ±50		F = ±1%	All above in Standard Packing	
	Z = ±100			RC55	Up to 5000/box
				RC65	Up to 2500/box

Note: For product released to EN140101 or CECC40101, follow the MPN with text indicating the relevant release and style. For CECC40101-004 the style includes a TCR code which is the same as that used in the MPN. Note that this additional text does not form part of our MPN.

Examples: **RC55Y-31K6BI** EN140101-806 B
RC55Y-31K6BI CECC40101-004 JY

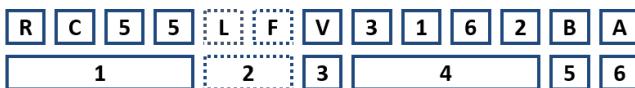
For CECC 40101-804 the TCR codes T and E are used in the style for 15 and 25ppm/°C, coded in the MPN as **Y** and **D** respectively. Also an additional suffix **-804** is added after, or in the case of Pb-free, instead of, the Finish, Screening & Packing code.

Examples: **RC55Y-31K6B-804** CECC 40101-804 BT
RC55D-31K6BPB-804 CECC 40101-804 AE

Legacy Part Numbers

This product has a legacy part number format. This is still available for ordering, but for new designs use of the Global Part Number is recommended.

Legacy Part Number Example: RC55LFV3162BA (RC55 with TCR $\pm 5\text{ppm}/^\circ\text{C}$ at 31.6 kilohms $\pm 0.1\%$, Pb-free)



1 Type ¹	2 Termination	3 TCR (ppm/°C)	4 Value	5 Tolerance	6 Packing		
RC55	Omit for	V = ±5	3 digits + multiplier	A = ±0.05%	A	RC55	Ammo, up to 5000/box
RC65	Sn(95)Pb(5)	T = ±10	R = ohms for values <100 ohms	B = ±0.1%		RC65	Ammo, up to 2500/box
	LF = Pb-free	Y = ±15		C = ±0.25%			
		D = ±25		D = ±0.5%			
		C = ±50		F = ±1%			
		Z = ±100					

Note 1: The optional family prefix RC- may be used, e.g. RC-RC55.

Note 2: For product released to EN1410101 or CECC40101 the global part number must be used – see above for details.