Resistors

Precision Metal Film Resistors



RC series

- 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 5 ppm/°C
- Options for RoHS compliant and Lead bearing wire finishes

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

Electrical Data

Commercial		RC55	RC65	RC70	Notes
Power rating at 70˚C	watts	0.25	0.5	1.0	
Resistance range	ohm	1R to 4M	1R to 4M	1R to 10M	
Limiting element voltage	volts	350	350	500	
Isolation voltage	volts	500	750	700	
TCR (20 to +70˚C)	ppm/˚C	5, 10, 15, 25, 50, 100			See resistance
Resistance tolerance	%	0.05, 0.1, 0.25, 0.5 & 1			restrictions

EN140101-806 Requirements		B	C		
Power rating at 70˚C	watts	0.25	0.5		
Resistance range	ohms	56R – 820K	56R – 1M0		
Limiting element voltage	volts	350	350		
Isolation voltage	volts	500	750		
TCR	ppm/˚C	5, 10, 15, 25, 50, 100			See resistance
Resistance tolerance	%	0.05, 0.1, 0.25, 0.5 & 1			restrictions

IECQ-CECC 40101-004 Requirements		H	J	K	K	L	
Power rating at 70˚C	watts	0.063	0.125	0.25	0.25	0.5	
Resistance range	ohms	1R to 1M	1R to 1M	1R to 1M	10R to 1M	10R to 1M	
Limiting element voltage	volts	200	200	250	250	350	
Isolation voltage	volts	280	280	350	350	500	
TCR	ppm/˚C	15, 25, 50, 100					See resistance
Resistance tolerance	%	0.05, 0.1, 0.25., 0.5 & 1					restrictions

IECQ-CECC 40101-804 Requirements		A	B	B	C	
Power rating at 70˚C	watts	0.125	0.25	0.25	0.5	
Resistance range	ohms	1R to 1M	1R to 1M	10R to 1M	10R to 1M	
Limiting element voltage	volts	200	250	250	350	
Isolation voltage	volts	280	350	350	500	
TCR	ppm/˚C	15, 25, 50, 100				See resistance
Resistance tolerance	%	0.05, 0.1, 0.25, 0.5 & 1				restrictions

These tables indicate the EN140101 & CECC40101 specification requirements, and these are met or exceeded by the corresponding RC series products.

Standard values		E24, E96 preferred			Any value
Thermal impedance	˚C/watt	110	70	60	to order
Ambient temperature range	˚C	-55 to +155			

General Note

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

www.ttelectronics.com/resistors

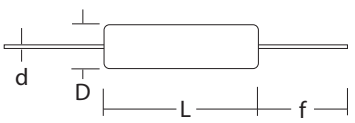
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RC series

Physical Data

Dimensions (mm) & Weight (g)

Type	L max	D max	f min [1]	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	10.0	3.7	30	0.6	12.7	0.6	0.40
RC70	15.5	5.5	30	0.8	18.4	1.2	1.15



Note 1 - dimension relates only to bulk packed product.

Construction
A metal film is deposited onto a high quality ceramic former. Nickel-plated steel caps are force fitted to the former 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.

Terminations
Material Solder coated copper wire
Strength The terminations meet the requirements of IEC 68.2.21.
Solderability The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2.

Marking
Type reference, TCR code, resistance value and tolerance code.

The resistance values conform to IEC 62.

Solvent Resistance
The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

Performance Data

		EN140101-806	IECQ-CECC 40101-004	IECQ-CECC 40101-804	*Actual Performance	
		Requirements	Requirements	Requirements	Maximum	Typical
Load at commercial rating: 1000 hours at 70˚C	ΔR%				0.3	0.1
Load at EN140101 & CECC40101 ratings 1000 hours at 70˚C	ΔR%	0.25	0.5	0.5	**0.3	0.05
Dry heat: 1000 hours at 155˚C	ΔR%	0.25	0.5	0.5	**1.0	0.15
Shelf life: 12 months at room temperature	ΔR%	Not Specified	Not specified	Not specified	0.1	0.03
Derating from rated power at 70˚C		Zero at 155˚C	Zero at 155˚C	50% at 125˚C	50% at 125˚C & Zero at 155˚C	
Short term overload	ΔR%	1	0.1	0.1	0.1	0.02
Climatic	ΔR%	0.25	0.5	0.5	**0.3	0.1
Climatic category		55/155/56	55/155/56	55/125/56	55/155/56	
Long term damp heat	ΔR%	0.25	0.5	0.5	**0.5	0.1
Temperature rapid change	ΔR%	1	0.1	0.1	**0.2	0.05
Resistance to solder heat	ΔR%	0.05	0.1	0.1	**0.06	0.03
Vibration and bump	ΔR%	0.05	0.1	0.1	**0.06	0.02
Noise (in a decade of frequency)	μV/V	Not Specified	Not specified	Not specified	1.0	0.1
Voltage coefficient of resistance	ppm/V	Not Specified	Not specified	Not specified		<1

Note: *An 0.01 ohm addition to be added to the performance claims of all resistors <10R.
** All products within the specified approved range meet EN140101 and CECC40101 requirements.

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Table of Resistance Restrictions

TCR ppm/°C	Tolerance								
	RC55			RC65			RC70		
	0.05%	0.1 - 0.25%	0.5%[3] - 1%[3]	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	10R to 500K	1R to 500K	10R to 500K	10R to 500K	1R to 500K	10R to 750K	10R to 750K	10R to 750K
10	10R to 1M	10R to 1M	1R to 1M	10R to 1M	10R to 1M	1R to 1M	10R to 1M	10R to 1M	1R to 1M
15	10R to 1M	2R49 to 1M	1R to 1M	10R to 1M	5R to 1M	1R to 1M	10R to 1M	10R to 2M	1R to 2M
25	10R to 1M	2R49 to 2M	1R to 2M	10R to 1M	5R to 2M	1R to 2M	10R to 1M	10R to 5M	1R to 5M
50[2]	10R to 1M	2R49 to 2M	1R to 4M	10R to 1M	5R to 2M	1R to 4M	10R to 1M	5R to 10M	1R to 10M
100[2]	10R to 1M	1R to 2M	1R to 4M	10R to 1M	1R to 2M	1R to 4M	10R to 1M	1R to 10M	1R to 10M

Note1:

1. Based on sampling. 100% screened product is available.
2. For maximum availability, where the ohmic value permits, 25ppm/°C is preferred to 50 or 100ppm/°C.
3. For maximum availability, where the ohmic value permits, 0.25% is preferred to 0.5% or 1%

Application Notes

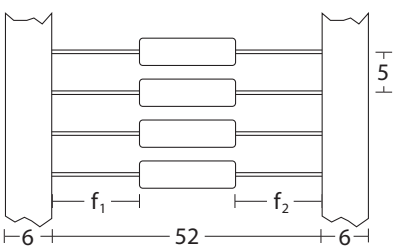
Matched Sets

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 ±0.02% and ±2ppm/°C.

Packaging

RC55 and RC65 standard packing is in tape, as shown below, whilst RC70 is bulk packed. Taped resistors on reel or loose packed components can also be supplied by special request.



Body location $f_1 - f_2 \leq 1.4$ mm

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Ordering Procedure

This product has two valid part numbers:

European (Welwyn) Part Number: RC55V-31K6BI (RC55 with TCR ±5ppm/°C at 31.6 kilohms ±0.1%, Pb-free)

R	C	5	5	V	-	3	1	K	6	B	I	
1				2		3				4	5	

1 Type	2 TCR (ppm/°C)	3 Value	4 Tolerance	5 Finish, Screening & Packing		
RC55	V = ±5	E24 = 3/4 characters E96 = 4/5 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)	
RC70	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	Ammo	Up to 5000/box
				RC65		Up to 2500/box
				RC70	Bulk	250/box

For product released to EN140101 or CECC40101, state on order the relevant number and style.
Examples: RC55Y-31K6BI EN140101-806 B
RC55Y-31K6BI CECC40101-004 JY

For CECC 40101-804 the TCR codes T and E relate to 15 and 25ppm/°C and are coded in the MPN as Y and D respectively. Also an additional suffix-804 is added after the Finish, Screening & Packing code, and, in the case of Pb-free, this code (I) is omitted. Example: RC65Y-31K6B-804 CECC 40101-804BT

USA (IRC) Part Number: RC55LFV3162BA (RC55 with TCR ±5ppm/°C at 31.6 kilohms ±0.1%, Pb-free)

R	C	5	5	L	F	V	3	1	6	2	B	A
1				2		3		4			5	6

1 Type	2 Termination	3 TCR (ppm/°C)	4 Value	5 Tolerance	6 Packing		
RC55	Omit for Sn(95)Pb(5)	V = ±5	3 digits + multiplier	A = ±0.05%	A	RC55	Ammo, up to 5000/box
RC65		T = ±10	R = ohms for values <100 ohms	B = ±0.1%		RC65	Ammo, up to 2500/box
RC70	LF = Pb-free	Y = ±15		C = ±0.25%	B	RC70	Bulk, 250/box
		D = ±25		D = ±0.5%			
		C = ±50		F = ±1%			
		Z = ±100					

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Authorized Distributor

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TT Electronics:

RC55Y-8K25BI RC55Y-243KBI RC55Y-20KBI RC55Y-5K62BI RC55Y-10K2BI RC55Y-1K3BI RC55Y-1K5BI RC55Y-681KBI RC55Y-1K0BI RC55Y-9K76BI RC55Y-10K7BI RC55Y-1K1BI RC55Y-1K24BI RC55Y-200KBI RC55Y-49K9BI RC55Y-27K4BI RC55Y-1K21BI RC55Y-9K09BI RC55Y-33K2BI RC55Y-200RBI RC55Y-499RBI RC55Y-20K5BI RC55Y-3K16BI RC55Y-4K02BI RC55Y-511RBI RC55Y-2K21BI RC55Y-3K65BI RC55Y-5K11BI RC55Y-12K1BI RC55Y-4K99BI RC55Y-40K2BI RC55Y-1K02BI RC55Y-1K05BI RC55Y-7K5BI RC55Y-909KBI RC55Y-432KBI RC55Y-22K1BI RC55Y-182RBI RC55Y-39K2BI RC55Y-2K67BI RC55Y-232RBI RC55Y-255KBI RC55Y-30K1BI RC55Y-24K9BI RC55Y-562KBI RC55Y-61K9BI RC55Y-475KBI RC55Y-750KBI RC55Y-48K7BI RC55Y-100KBI RC55Y-82K5BI RC55Y-100RBI RC55Y-3K32BI RC55Y-10KBI RC55Y-237KBI RC55Y-16K9BI RC55Y-2K49BI RC55Y-332KBI RC55Y-15KBI RC55Y-51R1BI RC55Y-301KBI RC55Y-80K6BI RC55Y-124RBI RC55Y-6K04BI RC55Y-332RBI RC55Y-16K2BI RC55Y-47K5BI RC55Y-4K75BI RC55Y-249KBI RC55Y-249RBI RC55Y-16K5BI RC55Y-1M0BI RC55Y-105RBI RC55Y-121RBI RC55Y-392KBI RC55Y-121KBI RC55Y-150KBI RC55Y-4K64BI RC55Y-11KBI RC55Y-221KBI RC55Y-1K82BI RC55Y-7K15BI RC55Y-14K7BI RC55Y-75KBI RC55Y-75RBI RC55Y-3K01BI RC55Y-4K32BI RC55Y-51K1BI RC55Y-150RBI RC55Y-2K0BI RC55Y-3K74BI RC55Y-110KBI RC55Y-2K61BI RC55Y-196RBI RC55Y-267KBI RC55Y-205RBI RC55Y-2K43BI RC55Y-237RBI RC55Y-97K6BI RC55Y-3K92BI