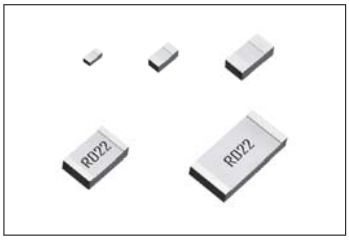
Thick Film Low Ohmic Chip Resistors for Current Detection

UCR Series

●Features

1) Very-low ohmic resistance from 11mΩ is in lineup by thick-film resistive element.
2) Resistive element is located at bottom side, which reduces the resistance shift during mounting process.
3) ROHM's unique structure achieved improvement of heat.
4) ROHM resistors have obtained ISO9001 / ISO / TS16949 certification.
5) Corresponds to AEC-Q200. (UCR01/10)



●Products List

Part No.	Size (mm)	Size (inch)	Rated Power (70°C) (W)	Resistance Tolerance (%)	Temperature Coefficient (ppm / °C)	Resistance Range	Series	Operating Temperature Range (°C)
☆**UCR006**	0603	0201	0.1	J(±5%) F(±1%)	0 to 300	0.1Ω to 1Ω	E24	–55 to +155
UCR01	1005	0402	0.125	J(±5%) F(±1%)	0 to 300	0.068Ω to 0.091Ω		
					0 to 250	0.1Ω to 0.2Ω		
					0 to 200	0.22Ω to 0.91Ω		
UCR03	1608	0603	0.25	J(±5%) F(±1%)	0 to 250	0.020Ω to 0.047Ω		
					0 to 200	0.051Ω to 0.091Ω		
					0 to 150	0.1Ω to 0.2Ω		
			0.2	J(±5%) F(±1%)	0 to 150	0.22Ω to 0.91Ω		
UCR10	2012	0805	0.33	J(±5%)	250 ± 200	0.011Ω to 0.018Ω		
					0 to 250	0.020Ω to 0.047Ω		
					0 to 150	0.051Ω to 0.1Ω		
				F(±1%)	0 to 250	0.020Ω to 0.047Ω		
					0 to 150	0.051Ω to 0.1Ω		
UCR18	3216	1206	0.5	J(±5%) F(±1%)	0 to 350	0.011Ω to 0.018Ω		
					0 to 200	0.020Ω to 0.039Ω		
					0 to 150	0.043Ω to 0.1Ω		

☆ : Under development
∗Design and specifications are subject to change without notice.
Carefully check the specification sheet supplied with the product before using or ordering it.

●Part Number Description

U C R | 1 0 | E V H | J | L | R 1 0

Part No.
UCR
(Thick Film Low Ohmic Chip Resistors)

Size (mm [inch])
006 (0603 [0201])
01 (1005 [0402])
03 (1608 [0603])
10 (2012 [0805])
18 (3216 [1206])

Packaging Specifications Code

Part No.	Code	Packaging specifications	Quantity / Reel
UCR006	YVP	Paper tape (4mm Pitch)	15,000
UCR01	MVP	Paper tape (2mm Pitch)	10,000
UCR03	EWP (20 to 47mΩ)	Paper tape (4mm Pitch)	5,000
	EVP (51 to 910mΩ)		
UCR10	EVH	Paper tape (4mm Pitch)	5,000
UCR18	EVH	Paper tape (4mm Pitch)	5,000

Resistance Tolerance
F (±1%)
J (±5%)

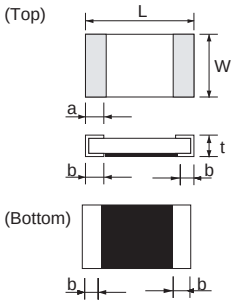
Special part code
S : 0.011 to 0.091Ω
L : 0.1Ω to

Nominal Resistance
Resistance code, 3 or 4 digits.

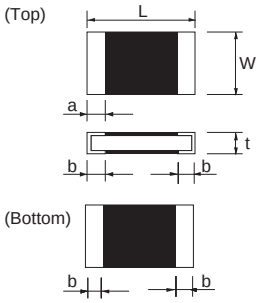
Resistance tolerance + Special code	Resistance code
FS,FL,JS :	4 digits
JL :	3 digits

●Chip Resistor Dimensions and Markings

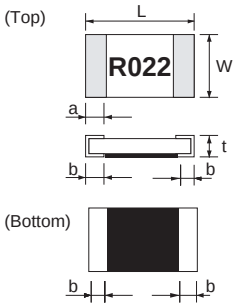
■ **UCR006/01**
■ **UCR03** (50mΩ ≦ R ≦ 910mΩ)



■ **UCR03** (20mΩ ≦ R < 50mΩ)



■ **UCR10 / 18**



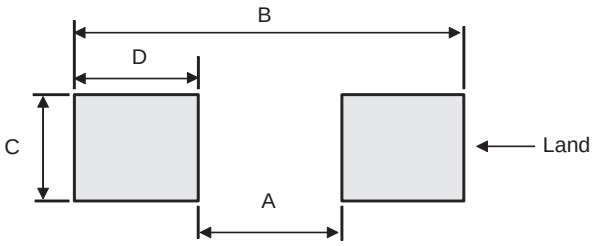
<Marking method>
There are three or four digits used for the calculation number according to IEC code and “R”is used for the decimal point.
Ex.) 4digits……0.1Ω=R100
3digits……0.1Ω=R10

(Unit : mm)

Part No.	(mm)	(inch)	L	W	t	a	b	Marking existence
☆**UCR006**	0603	0201	0.64±0.05	0.34±0.05	0.28±0.05	0.16±0.1	0.22±0.1	No
UCR01	1005	0402	1.0±0.1	0.55±0.1	0.37±0.05	0.28±0.1	0.34±0.1	No
UCR03	1608	0603	1.6±0.1	0.87±0.1	0.5±0.1	0.45±0.2	0.45±0.2	No
UCR10	2012	0805	2.0±0.1	1.25±0.1	0.55±0.1	0.24±0.2	0.5±0.2	Yes
UCR18	3216	1206	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.2	0.9±0.25	Yes

☆: Under development

●Land pattern Example



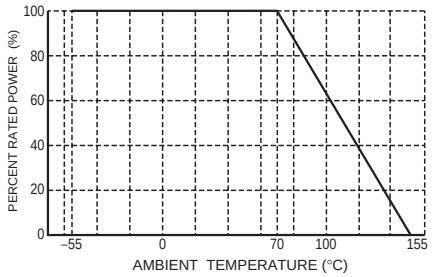
(Unit : mm)

Dimensions / Part No.	A	B	C	D
UCR01	0.5	1.8	0.5	0.65
UCR03	0.5	2.5	0.9	1.0
UCR10	0.8	3.4	1.3	1.3
UCR18	1.4	4.0	1.8	1.3

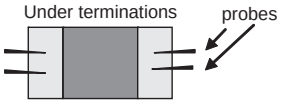
●Derating Curve

When the ambient temperature exceeds 70°C, power dissipation must be adjusted according to the derating curves below.

■ UCR006 / 01 / 03 / 10 / 18



●Characteristics (UCR01 / 03 / 10 / 18)

Test Items	Guaranteed Value Resistor Type	Test Conditions
Resistance	See P.1	20°C Measuring method : Measure under terminations by 4 probes. 
Variation of resistance with temperature	See P.1	Measurement : +20 / –55 / +20 / +125°C
Overload	± (2.0%+0.005Ω)	Rated voltage (current) ×2.5, 2s
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.	Rosin·Ethanol : 25% (Weight) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s
Resistance to soldering heat	± (1.0%+0.005Ω) No remarkable abnormality on the appearance.	Soldering condition : 260±5°C Duration of immersion : 10±1s
Rapid change of temperature	± (1.0%+0.005Ω)	Test temp. : –55°C to +125°C 5cycle
Damp heat, steady state	± (3.0%+0.005Ω)	40°C, 93%RH (Relative Humidity) Test time : 1,000h to 1,048h
Endurance at 70°C	± (3.0%+0.005Ω)	70°C Rated voltage (current) 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.005Ω)	155°C Test time : 1,000h to 1,048h
Resistance to solvent	± (0.5%+0.005Ω)	23±5°C, Immersion cleaning, 5±0.5min Solvent : 2–propanol
Bend strength of the end face plating	Without mechanical damage such as breaks.	–

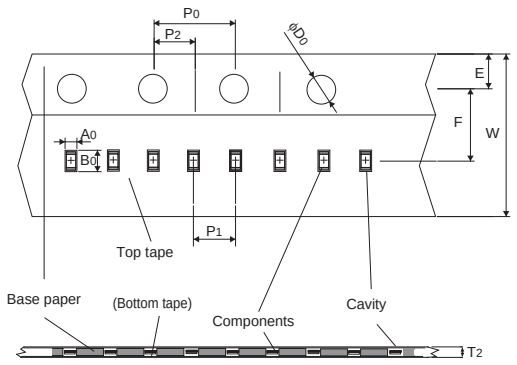
Compliance Standard(s) : IEC60115–8
JISC 5201–8

●Chip weight (typical value)

Parameter	Unit	UCR01	UCR03	UCR10	UCR18
Weight	mg/pc	0.848	2.53 (20 to 47mΩ) 3.06 (51 to 910mΩ)	5.27	10.16

●Tape Dimensions

■ Paper Tape

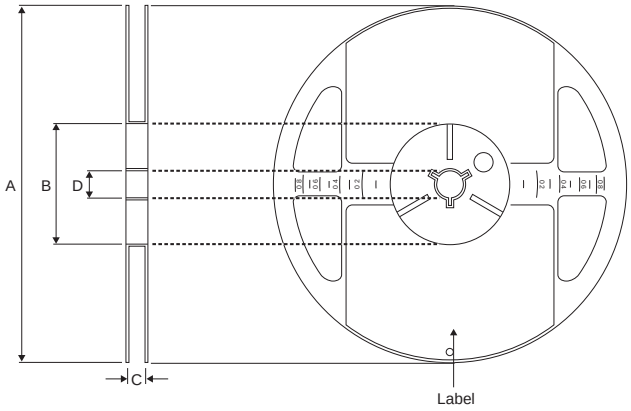


(Unit : mm)

Part No.	W	F	E	A0	B0
UCR01	8.0±0.3	3.5±0.05	1.75±0.1	0.7±0.1	1.2±0.1
UCR03	8.0±0.3	3.5±0.05	1.75±0.1	1.1±0.1	1.9±0.1
UCR10	8.0±0.3	3.5±0.05	1.75±0.1	$1.65^{+0.2}_{-0.1}$	$2.4^{+0.2}_{-0.1}$
UCR18	8.0±0.3	3.5±0.05	1.75±0.1	$1.95^{+0.1}_{-0.05}$	$3.5^{+0.15}_{-0.05}$

Part No.	D0	P0	P1	P2	T2
UCR01	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	2.0±0.05	2.0±0.05	Max 1.1
UCR03	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.05	2.0±0.05	Max 1.1
UCR10	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
UCR18	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

●Reel Dimensions



ACCORDING TO EIAJ ET-7200B

(Unit : mm)

Part No.	A	B	C	D
☆**UCR006**	$\phi 180^{0}_{-1.5}$	$\phi 60^{+1.0}_{0}$	$9^{+1.0}_{0}$	φ13±0.2
UCR01				
UCR03				
UCR10				
UCR18				

☆: Under development

Notes

1) The information contained herein is subject to change without notice.

2) Before you use our Products, please contact our sales representative and verify the latest specifications :

3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Poducts beyond the rating specified by ROHM.

4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.

6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.

7) The Products specified in this document are not designed to be radiation tolerant.

8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.

9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.

10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.

11) ROHM has used reasonable care to ensur the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.

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ROHM SEMICONDUCTOR

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