

# CRCW1206820RFKEAC Datasheet

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DiGi Electronics Part Number	CRCW1206820RFKEAC-DG
Manufacturer	<a href="#">Vishay Dale</a>
Manufacturer Product Number	CRCW1206820RFKEAC
Description	RES 820 OHM 1% 1/4W 1206
Detailed Description	820 Ohms ±1% 0.25W, 1/4W Chip Resistor 1206 (3216 Metric) Thick Film

This model CRCW1206820RFKEAC is available at DiGi Electronics.

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## Purchase and inquiry

Manufacturer Product Number:

CRCW1206820RFKEAC

Series:

CRCW-C

Resistance:

820 Ohms

Power (Watts):

0.25W, 1/4W

Features:

-

Operating Temperature:

-55°C ~ 155°C

Supplier Device Package:

1206

Height - Seated (Max):

0.026" (0.65mm)

Failure Rate:

-

Manufacturer:

Vishay Dale

Product Status:

Active

Tolerance:

±1%

Composition:

Thick Film

Temperature Coefficient:

±100ppm/°C

Package / Case:

1206 (3216 Metric)

Size / Dimension:

0.120" L x 0.061" W (3.05mm x 1.55mm)

Number of Terminations:

2

Base Product Number:

CRCW1206

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8533.21.0030

Moisture Sensitivity Level (MSL):

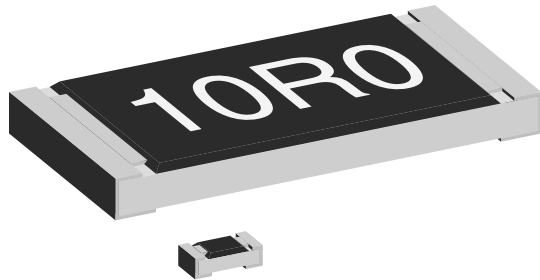
1 (Unlimited)

ECCN:

EAR99



## Lead (Pb)-free Thick Film, Rectangular Commodity Chip Resistors



### FEATURES

- High volume product suitable for commercial applications
- Stability ( $\Delta R/R \leq 1\%$  for 1000 h at  $70^\circ\text{C}$ )
- Lead (Pb)-free solder contacts on Ni barrier layer
- Metal glaze on ceramic
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### STANDARD ELECTRICAL SPECIFICATIONS

MODEL	CASE SIZE INCH	CASE SIZE METRIC	POWER RATING $P_{70^\circ\text{C}}$ W	LIMITING ELEMENT VOLTAGE MAX. V $\equiv$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE $\Omega$	E-SERIES
CRCW0402...C	0402	RR 1005M	0.063	50	$\pm 100$	$\pm 1$	1R0 to 10M	E24; E96
					$\pm 200$	$\pm 5$	1R0 to 10M	E24
					Zero-Ohm-Resistor: $R_{\text{max.}} = 20\text{ m}\Omega$ , $I_{\text{max.}}$ at $70^\circ\text{C} = 1.5\text{ A}$			
CRCW0603...C	0603	RR 1608M	0.10	75	$\pm 100$	$\pm 1$	1R0 to 10M	E24; E96
					$\pm 200$	$\pm 5$	1R0 to 10M	E24
					Zero-Ohm-Resistor: $R_{\text{max.}} = 20\text{ m}\Omega$ , $I_{\text{max.}}$ at $70^\circ\text{C} = 2.0\text{ A}$			
CRCW0805...C	0805	RR 2012M	0.125	150	$\pm 100$	$\pm 1$	1R0 to 10M	E24; E96
					$\pm 200$	$\pm 5$	1R0 to 10M	E24
					Zero-Ohm-Resistor: $R_{\text{max.}} = 20\text{ m}\Omega$ , $I_{\text{max.}}$ at $70^\circ\text{C} = 2.5\text{ A}$			
CRCW1206...C	1206	RR 3216M	0.25	200	$\pm 100$	$\pm 1$	1R0 to 10M	E24; E96
					$\pm 200$	$\pm 5$	1R0 to 10M	E24
					Zero-Ohm-Resistor: $R_{\text{max.}} = 20\text{ m}\Omega$ , $I_{\text{max.}}$ at $70^\circ\text{C} = 3.5\text{ A}$			

#### Notes

- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material

### TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	CRCW0402...C	CRCW0603...C	CRCW0805...C	CRCW1206...C
Rated dissipation at $70^\circ\text{C}$ <sup>(1)</sup>	W	0.063	0.10	0.125	0.25
Limiting element voltage $U_{\text{max. AC/DC}}$	V	50	75	150	200
Insulation voltage $U_{\text{ins.}}$ (1 min)	V	> 75	> 100	> 200	> 300
Insulation resistance	$\Omega$	> $10^9$			
Category temperature range	$^\circ\text{C}$	- 55 to + 155			
Failure rate	$\text{h}^{-1}$	$0.1 \times 10^{-9}$			
Weight/1000 pieces	g	0.65	2	5.5	10

#### Note

- <sup>(1)</sup> The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of  $155^\circ\text{C}$  is not exceeded



PART NUMBER AND PRODUCT DESCRIPTION																	
PART NUMBER: CRCW0603562RFKECC																	
C	R	C	W	0	6	0	3	5	6	2	R	F	K	E	C	C	
MODEL/SIZE	VALUE			TOLERANCE		TCR		PACKAGING		SPECIAL							
CRCW0402 CRCW0603 CRCW0805 CRCW1206	R = decimal K = thousand M = million 0000 = jumper			F = $\pm 1.0\%$ J = $\pm 5.0\%$ Z = jumper		K = $\pm 100$ ppm/K N = $\pm 200$ ppm/K 0 = jumper		EA, EB, EC, ED, EE		Up to 2 digits C = commodity							
PRODUCT DESCRIPTION: CRCW0603-C 100 562R 1% ET6 E3																	
CRCW0603-C	100	562R	1%	ET6	e3												
MODEL	TCR		RESISTANCE VALUE		TOLERANCE		PACKAGING		LEAD (Pb)-FREE								
CRCW0402-C CRCW0603-C CRCW0805-C CRCW1206-C	$\pm 200$ ppm/K $\pm 100$ ppm/K		10R = 10 $\Omega$ 562R = 562 $\Omega$ 10K = 10.0 k $\Omega$ 1M = 1 M $\Omega$ OR0 = jumper		$\pm 5\%$ $\pm 1\%$		ET1, ET5, ET6, ET7, EF4		e3 = pure tin termination finish								

PACKAGING						
TYPE / SIZE	CODE	QUANTITY	PACKAGING STYLE	WIDTH	PITCH	PACKAGING DIMENSIONS
CRCW0402...C	ED = ET7	10 000	Paper tape acc. to IEC 60286-3, Type 1a	8 mm	2 mm	$\varnothing$ 180 mm/7"
	EE = EF4	50 000				$\varnothing$ 330 mm/13"
CRCW0603...C	EA = ET1	5000			4 mm	$\varnothing$ 180 mm/7"
	EB = ET5	10 000				$\varnothing$ 254 mm/10"
CRCW0805...C	EC = ET6	20 000			4 mm	$\varnothing$ 330 mm/13"
	EA = ET1	5000				$\varnothing$ 180 mm/7"
	EB = ET5	10 000				$\varnothing$ 254 mm/10"
CRCW1206...C	EC = ET6	20 000			4 mm	$\varnothing$ 330 mm/13"
	EA = ET1	5000				$\varnothing$ 180 mm/7"
	EB = ET5	10 000				$\varnothing$ 254 mm/10"
	EC = ET6	20 000			$\varnothing$ 330 mm/13"	

## DIMENSIONS



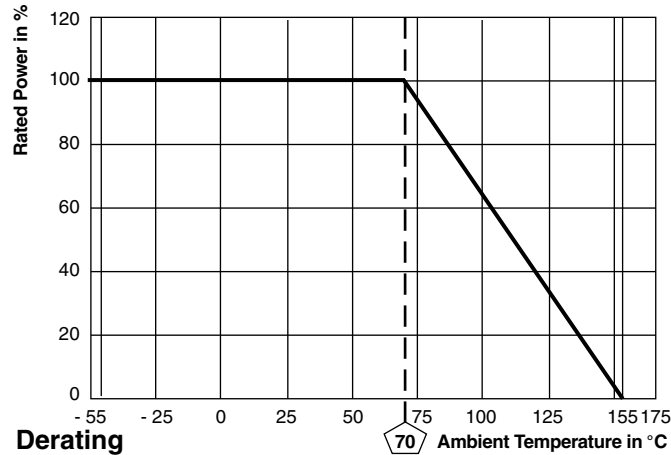
SIZE		DIMENSIONS (in millimeters)					SOLDER PAD DIMENSIONS <sup>(1)</sup> (in millimeters)					
							REFLOW SOLDERING			WAVE SOLDERING		
INCH	METRIC	L	W	H	T1	T2	a	b	l	a	b	l
0402	1005	1.0 $\pm$ 0.10	0.5 $\pm$ 0.05	0.30 $\pm$ 0.05	0.25 $\pm$ 0.10	0.2 $\pm$ 0.1	0.4	0.6	0.5			
0603	1608	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.45 $\pm$ 0.10	0.3 $\pm$ 0.2	0.3 $\pm$ 0.2	0.5	0.9	1.0	0.9	0.9	1.0
0805	2012	2.0 $\pm$ 0.10	1.25 $\pm$ 0.15	0.50 $\pm$ 0.10	0.35 $\pm$ 0.15	0.35 $\pm$ 0.2	0.7	1.3	1.2	0.9	1.3	1.3
1206	3216	3.05 $\pm$ 0.10	1.55 $\pm$ 0.10	0.55 $^{+0.10}_{-0.05}$	0.35 $\pm$ 0.15	0.45 $\pm$ 0.2	0.9	1.7	2.0	1.1	1.7	2.3

### Note

(1) The rated dissipation applies only if the permitted film temperature is not exceeded. Furthermore, a high level of ambient temperature or of power dissipation may raise the temperature of the solder joint, hence special solder alloys or board materials maybe required to maintain the reliability of the assembly. Specified power rating above 125 °C requires dedicated heat-sink pads, which depend on board materials. The given solder pad dimensions reflect the considerations for board design and assembly as outlined e.g. in standards IEC 61188-5-x, or in publication IPC-7351. They do not guarantee any supposed thermal properties, particularly as these are also strongly influenced by many other parameters. Still the given solder pad dimensions will be found adequate for most general applications



## FUNCTIONAL PERFORMANCE



TEST PROCEDURES AND REQUIREMENTS						
EN 60115-1 CLAUSE	IEC 60068-2 TEST METHOD	TEST	PROCEDURE		REQUIREMENTS PERMISSIBLE CHANGE ( $\Delta R$ )	
					STABILITY CLASS 1 OR BETTER	STABILITY CLASS 2 OR BETTER
			Stability for product types:			
			<b>CRCW...C e3</b>		1 $\Omega$ to 10 M $\Omega$	1 $\Omega$ to 10 M $\Omega$
4.5	-	Resistance	-		$\pm 1\%$	$\pm 5\%$
4.8.4.2	-	Temperature coefficient	(20/- 55/20) °C and (20/125/20) °C		$\pm 100$ ppm/K	$\pm 200$ ppm/K
4.13	-	Short time overload	$U = 2.5 \times \sqrt{P_{70} \times R} \leq 2 \times U_{max.}; 5\text{ s}$		$\pm (2\% R + 0.1 \Omega)$	
4.17.5	58 (Td)	Solderability	Pre-aging 4 h at 155 °C, dryheat	Solder bath method; Sn60Pb40 non activated flux; (235 $\pm$ 5) °C (2 $\pm$ 0.2) s	Good tinning ( $\geq 95\%$ covered) no visible damage	
				Solder bath method; Sn96.5Ag3Cu0.5 non activated flux; (245 $\pm$ 5) °C (3 $\pm$ 0.3) s	Good tinning ( $\geq 95\%$ covered) no visible damage	
4.18.2	58 (Td)	Resistance to soldering heat	Solder bath method (260 $\pm$ 5) °C; (10 $\pm$ 1) s		$\pm (1\% R + 0.05 \Omega)$	
4.19	14 (Na)	Rapid change of temperature	30 min. at -55 °C; 30 min. at 125 °C; 5 cycles		$\pm (0.25\% R + 0.05 \Omega)$	$\pm (0.5\% R + 0.05 \Omega)$
4.24	78 (Cab)	Damp heat, steady state	(40 $\pm$ 2) °C; 56 days; (93 $\pm$ 3) % RH		$\pm (1\% R + 0.05 \Omega)$	$\pm (2\% R + 0.1 \Omega)$
4.36	-	Operation at low temperature	-55 °C, 1 h		$\pm (1\% R + 0.05 \Omega)$	
4.25.1	-	Endurance at 70 °C	$U = \sqrt{P_{70} \times R} \leq U_{max.};$ 1.5 h on; 0.5 h off;		$\pm (1\% R + 0.05 \Omega)$	$\pm (2\% R + 0.1 \Omega)$
			70 °C; 1000 h 70 °C; 8000 h		$\pm (2\% R + 0.1 \Omega)$	$\pm (4\% R + 0.1 \Omega)$
4.25.3	-	Endurance at upper category temperature	155 °C, 1000 h		$\pm (1\% R + 0.05 \Omega)$	$\pm (2\% R + 0.1 \Omega)$

**APPLICABLE SPECIFICATIONS**

- |                 |  |
|-----------------|--|
| • EN 60115-1    | Generic specification                    |
| • EN 140400     | Sectional specification                  |
| • EN 140401-802 | Detail specification                     |
| • IEC 60068-2-X | Variety of environmental test procedures |
| • IEC 60286-3   | Packaging of SMD components              |



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