

# THICK FILM RESISTORS

## CRCW-HP e3 Series



### Pulse-Proof, High-Power Thick Film Chip Resistors



#### KEY BENEFITS

- Combines high power ratings with small case sizes: CRCW0603-HP is rated for 0.25 W, the same power rating as the standard 1206
- Superior anti-surge and pulse characteristics compared to D/CRCW e3 series
- Small component size allows higher number of temperature cycles
- 0R (Jumper) component allows very high current (2-3 times higher than standard)
- AEC-Q20 qualified
- Halogen-free

#### APPLICATIONS

- High and repetitive surge and pulse loading applications
- Densely populated PCBs
- Automotive
- Ignition/switching circuits
- AC mains protection
- Industrial equipment
- Test and measurement equipment
- Telecom infrastructure

#### RESOURCES

- Datasheet: CRCW-HP e3 Series - <http://www.vishay.com/doc?20043>
- For technical questions contact [thickfilmchip@vishay.com](mailto:thickfilmchip@vishay.com)
- Material categorization: For definitions of compliance please see <http://www.vishay.com/doc?99912>


 RoHS  
COMPLIANT

 HALOGEN  
FREE

One of the World's Largest Manufacturers of  
Discrete Semiconductors and Passive Components



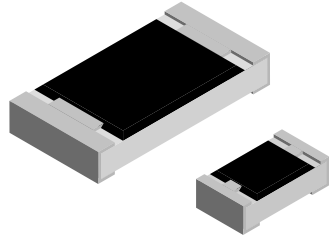
# THICK FILM RESISTORS

## CRCW-HP e3 Series



Resistors - AEC-Q200 Qualified, High Power Design

### Pulse-Proof, High-Power Thick Film Chip Resistors



#### FEATURES

- Excellent pulse load capability
- Enhanced power rating
- Double side printed resistor element
- Protective overglaze
- Pure tin solder contacts on Ni barrier layer provides compatibility with lead (Pb)-free and lead containing soldering processes
- Compliant to RoHS Directive 2011/65/EU
- Halogen-free according to IEC 61249-2-21 definition
- AEC-Q200 qualified, rev. C compliant

STANDARD ELECTRICAL SPECIFICATIONS								
MODEL	SIZE		RATED DISSIPATION $P_{70}$ W	LIMITING ELEMENT VOLTAGE $U_{max. AC/DC}$	TEMPERATURE COEFFICIENT ppm/K	TOLERANCE %	RESISTANCE RANGE $\Omega$	SERIES
	INCH	METRIC						
CRCW0402-HP e3	0402	RR1005	0.125 <sup>(1)</sup>	50	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.010 \Omega$ , $I_{max.} = 3 A$								
CRCW0603-HP e3	0603	RR1608	0.25	75	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.008 \Omega$ , $I_{max.} = 5 A$								
CRCW0805-HP e3	0805	RR2012	0.33	150	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.005 \Omega$ , $I_{max.} = 6 A$								
CRCW1206-HP e3	1206	RR3216	0.5	200	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.005 \Omega$ , $I_{max.} = 10 A$								
CRCW1210-HP e3	1210	RR3225	0.75	200	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.004 \Omega$ , $I_{max.} = 12 A$								
CRCW1218-HP e3	1218	RR3246	1.5	200	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.004 \Omega$ , $I_{max.} = 20 A$								
CRCW2010-HP e3	2010	RR5025	1.0	400	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.005 \Omega$ , $I_{max.} = 12 A$								
CRCW2512-HP e3	2512	RR6332	1.5	500	$\pm 100$	$\pm 1$	1R to 1M	E24; E96 E24
					$\pm 200$	$\pm 5$		
Zero-Ohm-Resistor: $R_{max.} = 0.005 \Omega$ , $I_{max.} = 16 A$								

#### 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.
  - Marking: See document "Surface Mount Resistor Marking" (document number 20020).
  - Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.
- (1) CRCW0402-HP resistors feature a single side printed resistive layer only.

TECHNICAL SPECIFICATIONS									
PARAMETER	UNIT	CRCW 0402-HP	CRCW 0603-HP	CRCW 0805-HP	CRCW 1206-HP	CRCW 1210-HP	CRCW 1218-HP	CRCW 2010-HP	CRCW 2512-HP
Rated dissipation $P_{70}$ <sup>(2)</sup>	W	0.125	0.25	0.33	0.5	0.75	1.5	1.0	1.5
Limiting element voltage $U_{max. AC/DC}$	V	50	75	150	200	200	200	400	500
Insulation voltage $U_{ins.}$ (1 min)	V	> 75	> 100	> 200	> 300	> 300	> 300	> 300	> 300
Insulation resistance	$\Omega$	> $10^9$							
Category temperature range	$^{\circ}C$	- 55 to + 155							
Weight	mg	0.65	2	5.5	10	18	31	25.5	42

#### Note

- (2) The power dissipation on the resistors 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  $^{\circ}C$  is not exceeded.