



The DNA of tech.™

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: CRCW0805-HP is rated for 0.5 W, the same power rating as the standard CRCW1210
- 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 to 3 times higher than standard)
- AEC-Q200 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 - www.vishay.com/ppg?20043
- For technical questions contact thickfilmchip@vishay.com
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

HALOGEN
FREE

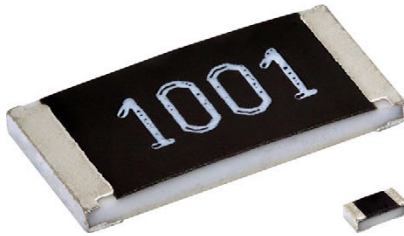


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LINKS TO ADDITIONAL RESOURCES



The pulse proof, high power thick film chip resistors series is the perfect choice for most fields of power measurement electronics where reliability, stability, high power rating and excellent pulse load performance are of major concern. Typical applications include battery management systems in automotive appliances.

FEATURES

- Excellent pulse load capability
- Enhanced power rating
- Double side printed resistor element
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT HALOGEN FREE

APPLICATIONS

- Automotive
- Industrial
- Commercial
- High power

TECHNICAL SPECIFICATIONS

DESCRIPTION	CRCW0402-HP e3	CRCW0603-HP e3	CRCW0805-HP e3	CRCW1206-HP e3	CRCW1210-HP e3	CRCW1218-HP e3	CRCW2010-HP e3	CRCW2512-HP e3
Imperial size	0402	0603	0805	1206	1210	1218	2010	2512
Metric size code	RR1005M	RR1608M	RR2012M	RR3216M	RR3225M	RR3246M	RR5025M	RR6332M
Resistance range	1 Ω to 1 MΩ; jumper (0 Ω)							
Resistance tolerance	± 5 %; ± 1 %; ± 0.5 %							
Temperature coefficient	± 200 ppm/K; ± 100 ppm/K							
Rated dissipation, P_{70} ⁽¹⁾	0.2 W ⁽²⁾	0.33 W	0.5 W	0.75 W ⁽³⁾	0.75 W	1.5 W	1.0 W	1.5 W
Operating voltage, U_{max} , AC/RMS/DC	50 V	75 V	150 V	200 V	200 V	200 V	400 V	500 V
Permissible film temperature, $\vartheta_{F max}$ ⁽¹⁾	155 °C							
Operating temperature range	-55 °C to +155 °C							
Max. resistance change at P_{70} for resistance range, $ \Delta R/R $ after:								
1000 h	≤ 2.0 %							
8000 h	≤ 4.0 %							
Permissible voltage against ambient (insulation):								
1 min, U_{ins}	75 V	100 V	200 V	300 V	300 V	300 V	300 V	300 V
Failure rate: FIT _{observed}	≤ 0.1 x 10 ⁻⁹ /h							

Notes

- Marking: see document "Surface Mount Resistor Marking" (www.vishay.com/doc?20020)
- ⁽¹⁾ Please refer to APPLICATION INFORMATION below
- ⁽²⁾ CRCW0402-HP resistors feature a single side printed resistive layer only
- ⁽³⁾ Specified power rating requires a thermal resistance of $R_{th} \leq 110$ K/W

APPLICATION INFORMATION

When the resistor dissipates power, a temperature rise above the ambient temperature occurs, dependent on the thermal resistance of the assembled resistor together with the printed circuit board. The rated dissipation applies only if the permitted film temperature is not exceeded.

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.

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TEMPERATURE COEFFICIENT AND RESISTANCE RANGE				
TYPE / SIZE	TCR	TOLERANCE	RESISTANCE	E-SERIES
CRCW0402-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 3$ A	≤ 10 mΩ	0 Ω	-
CRCW0603-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 5$ A	≤ 8 mΩ	0 Ω	-
CRCW0805-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 6$ A	≤ 5 mΩ	0 Ω	-
CRCW1206-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 10$ A	≤ 5 mΩ	0 Ω	-
CRCW1210-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 12$ A	≤ 4 mΩ	0 Ω	-
CRCW1218-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 20$ A	≤ 4 mΩ	0 Ω	-
CRCW2010-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 12$ A	≤ 5 mΩ	0 Ω	-
CRCW2512-HP e3	± 200 ppm/K	± 5 %	1 Ω to 1 MΩ	E24
	± 100 ppm/K	± 1 % ± 0.5 %	1 Ω to 1 MΩ	E24; E96
	Jumper, $I_{max} = 16$ A	≤ 5 mΩ	0 Ω	-

Note

- The temperature coefficient of resistance (TCR) is not specified for 0 Ω jumpers

PACKAGING							
TYPE / SIZE	CODE	QUANTITY	PACKAGING STYLE	WIDTH	PITCH	PACKAGING DIMENSIONS	
CRCW0402-HP e3	ED = ET7	10 000	Paper tape acc. to IEC 60286-3, type 1a	8 mm	2 mm	Ø 180 mm / 7"	
	EE = EF4	50 000				Ø 330 mm / 13"	
CRCW0603-HP e3	EI = ET2	5000			4 mm	2 mm	Ø 180 mm / 7"
	ED = ET3	10 000					Ø 180 mm / 7"
	EL = ET4	20 000					Ø 285 mm / 11.25"
	EE = ET8	20 000					Ø 330 mm / 13"
	EA = ET1	5000					Ø 180 mm / 7"
	EB = ET5	10 000					Ø 285 mm / 11.25"
CRCW0805-HP e3	EC = ET6	20 000			4 mm	4 mm	Ø 330 mm / 13"
	EA = ET1	5000					Ø 180 mm / 7"
	EB = ET5	10 000	Ø 285 mm / 11.25"				
CRCW1206-HP e3	EC = ET6	20 000	4 mm	4 mm	Ø 330 mm / 13"		
	EA = ET1	5000			Ø 180 mm / 7"		
	EB = ET5	10 000			Ø 285 mm / 11.25"		
CRCW1210-HP e3	EC = ET6	20 000	4 mm	4 mm	Ø 330 mm / 13"		
	EA = ET1	5000			Ø 180 mm / 7"		
	EB = ET5	10 000			Ø 285 mm / 11.25"		
CRCW1218-HP e3	EK = ET9	4000	Blister tape acc. to IEC 60286-3, type 2a	12 mm	4 mm	Ø 180 mm / 7"	
	CRCW2010-HP e3	EF = E02				4000	Ø 180 mm / 7"
		EJ = E08				16 000	Ø 330 mm / 13"
CRCW2512-HP e3	EG = E67	2000			8 mm	Ø 180 mm / 7"	
	EH = E82	4000			4 mm		

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