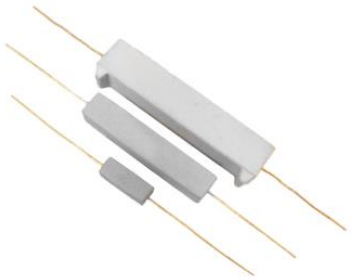
WCB / WCBF / NWCB Series

Welded Ceramic Housed Axial Leaded Wirewound Resistor

Stackpole Electronics, Inc.
Resistive Product Solutions

Features:

- Welded element on ceramic core
- Low noise, high reliability compared to fiberglass core wirewounds
- Fireproof power wirewound
- High thermal conductivity
- NWCB – Non-inductively Ayrton Perry winding
- Body standoffs available; add “F” after WCB
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant

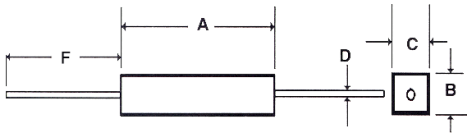


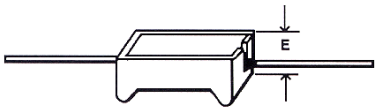
Electrical Specifications

Type/Code	Power Rating (W) @ 70ºC	TCR (ppm/ºC)	Ohmic Range (Ω) and Tolerance		
			0.5%	1%	5%
WCB5, WCBF5	5	0.1Ω to 10Ω = ± 50 ppm/ºC > 10Ω = ± 20 ppm/ºC	1 - 10K	0.1 - 10K	
WCB7, WCBF7	7		1 - 15K	0.1 - 15K	
WCB10, WCBF10	10		1 - 20K	0.1 - 20K	
WCB15, WCBF15	15				
WCB20, WCBF20	20				
WCB25, WCBF25	25				
NWCB5	5		-		0.1 - 4.7K
NWCB7	7				0.1 - 7.5K
NWCB10	10				0.1 - 10K
NWCB15	15				
NWCB20	20				
NWCB25	25				

Max Voltage Rating = $\sqrt{P*R}$

Mechanical Specifications



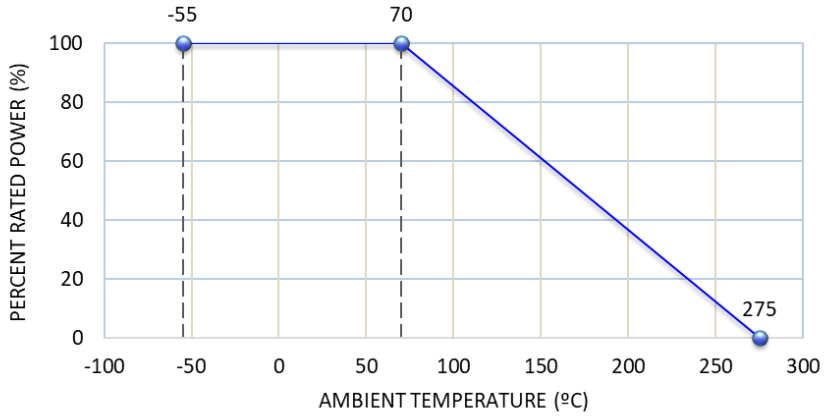


Type/Code	A Body Length	B Height	C Width	D Lead Diameter	E (WCBF only)	F Lead Length	Unit
WCB5, WCBF5, NWCB5	0.875 ± 0.039 22.23 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.410 ± 0.039 10.41 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCB7, WCBF7, NWCB7	1.400 ± 0.039 35.56 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.450 ± 0.039 11.43 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCB10, WCBF10, NWCB10	1.875 ± 0.039 47.63 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.375 ± 0.039 9.53 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.470 ± 0.039 11.94 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCB15, WCBF15, NWCB15	1.875 ± 0.039 47.63 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.610 ± 0.039 15.49 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCB20, NWCB20	2.500 ± 0.039 63.50 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	-	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCBF20	2.355 ± 0.039 59.82 ± 0.99	-	0.570 ± 0.039 14.48 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.660 ± 0.039 16.76 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCB25, NWCB25	2.500 ± 0.039 63.50 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.500 ± 0.039 12.70 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	-	1.500 ± 0.250 38.10 ± 6.35	inches mm
WCBF25	2.355 ± 0.039 59.82 ± 0.99	-	0.570 ± 0.039 14.48 ± 0.99	0.036 ± 0.002 0.91 ± 0.05	0.660 ± 0.039 16.76 ± 0.99	1.500 ± 0.250 38.10 ± 6.35	inches mm

Performance Characteristics	
Test	Test Results
Moisture Resistance	± 5%
Thermal Shock	± 2%
Load Life @ 70°C - 1000 hours	± 5%
Resistance to Soldering Heat	± 2%
Short Time Overload - 5 X Pn for 5 seconds	± 2%
Dielectric Withstanding Voltage	± 2%

Operating Temperature Range: -55°C to +275°C

Power Derating Curve:



Recommended Solder Profile

This information is intended as a reference for solder profiles for Stackpole resistive components. These profiles should be compatible with most soldering processes. These are only recommendations. Actual numbers will depend on board density, geometry, packages used, etc., especially those cells labeled with "*".

100% Matte Tin / RoHS Compliant Terminations

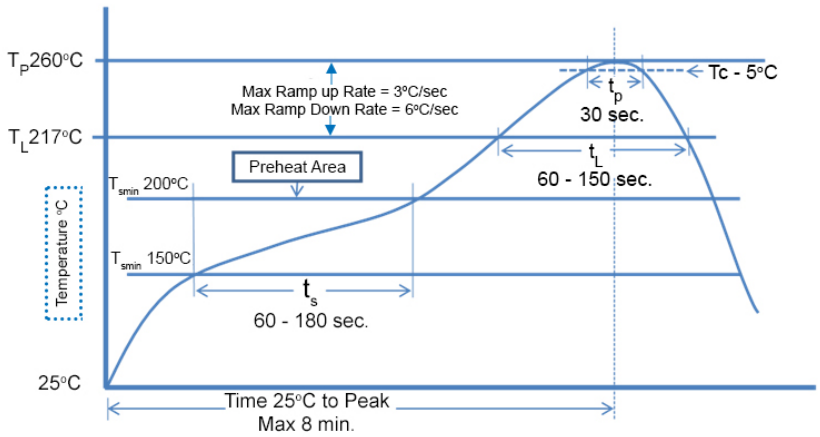
Soldering iron recommended temperatures: 330°C to 350°C with minimum duration.
Maximum number of reflow cycles: 3.

Wave Soldering			
Description	Maximum	Recommended	Minimum
Preheat Time	80 seconds	70 seconds	60 seconds
Temperature Diff.	140°C	120°C	100°C
Solder Temp.	260°C	250°C	240°C
Dwell Time at Max.	10 seconds	5 seconds	*
Ramp DN (°C/sec)	N/A	N/A	N/A

Temperature Diff. = Defference between final preheat stage and soldering stage.

Convection IR Reflow			
Description	Maximum	Recommended	Minimum
Ramp Up (°C/sec)	3°C/sec	2°C/sec	*
Dwell Time > 217°C	150 seconds	90 seconds	60 seconds
Solder Temp.	260°C	245°C	*
Dwell Time at Max.	30 seconds	15 seconds	10 seconds
Ramp DN (°C/sec)	6°C/sec	3°C/sec	*

Recommended Lead Free Resistor Reflow Profile



RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status

Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
WCB	Ceramic Housed with Axial Leads Wirewound Resistor	Axial	YES	100% Matte Sn	Jan-06	06/01
WCBF	Ceramic Housed with Axial Leads Wirewound Resistor	Axial	Yes	100% Matte Sn	Always	Always

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the Eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

1	2	3	4	5	6	7	8	9	10
W	**C**	**B**	**5**	**J**	**B**	**1**	**0**	**0**	**R**

Product Series	
WCB	Standard
WCBF	With standoff
NWCB	Non-inductive

Power Rating	
Code	(W)
5	5
7	7
10	10
15	15
20	20
25	25

Tolerance	
Code	Tol
D	0.5%
F	1%
J	5%

Packaging			
Code	Description	Size	Quantity
B	Bulk	5	500
		7, 10	250
		15	200
		20	200
		25	200

Resistance Value
Four characters with the multiplier used as the decimal holder.
0.1 ohm = R100 33 ohm = 33R0 3.32 Kohm = 3K32