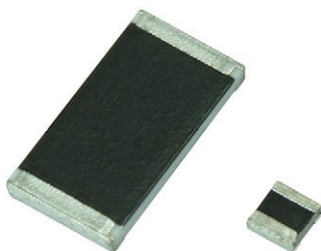




Thick Film Chip Resistors, Zero Ohm Jumper, Military / High Reliability MIL-PRF-32159 Qualified, Type RCZ

**FEATURES**

- Fully conforms to the requirements of MIL-PRF-32159
- High reliability - product levels M (military grade) and T (space level)
- 100 % group A screening per MIL-PRF-32159
- Termination style B - tin / lead wraparound over nickel barrier
- Operating temperature range is -65 °C to +150 °C
- For MIL-PRF-55342 chip resistors, see Vishay Dale's RCWPM (Military M/D55342) datasheet (www.vishay.com/doc?31010)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

HALOGEN
FREE**STANDARD ELECTRICAL SPECIFICATIONS**

VISHAY DALE MODEL	MIL-PRF-32159 STYLE	MIL SPEC. SHEET	TERM.	CASE SIZE	POWER RATING $P_{70^{\circ}\text{C}}$ W	CURRENT RATING A	MAXIMUM RESISTANCE Ω
RCWPM-0502-99, RCWPM-0502-5	RCZ0502	01	B	0502	0.05	1.3	30m
RCWPM-550-99, RCWPM-550-5	RCZ0505	02	B	0505	0.100	2.2	20m
RCWPM-5100-99, RCWPM-5100-5	RCZ1005	03	B	1005	0.20	2.8	25m
RCWPM-5150-99, RCWPM-5150-5	RCZ1505	04	B	1505	0.15	2.1	35m
RCWPM-7225-99, RCWPM-7225-5	RCZ2208	05	B	2208	0.225	2.5	35m
RCWPM-575-99, RCWPM-575-5	RCZ0705	06	B	0705 ⁽¹⁾	0.15	2.7	20m
RCWPM-1206-99, RCWPM-1206-5	RCZ1206	07	B	1206	0.25	3.2	25m
RCWPM-2010-99, RCWPM-2010-5	RCZ2010	08	B	2010	0.80	5.7	25m
RCWPM-2512-99, RCWPM-2512-5	RCZ2512	09	B	2512	1.0	6.3	25m
RCWPM-1100-99, RCWPM-1100-5	RCZ1010	10	B	1010	0.50	5.0	20m
RCWPM-0402-99, RCWPM-0402-5	RCZ0402	11	B	0402	0.04	1.2	30m
RCWPM-0603-99, RCWPM-0603-5	RCZ0603	12	B	0603	0.07	1.5	30m
RCWPM-0302-99, RCWPM-0302-5	RCZ0302	13	B	0302	0.035	1.1	30m

Notes

- DSCC has created a series of drawings to support the need for zero ohm jumper product. Vishay Dale is listed as a resource on these drawings as follows:

DSCC DRAWING NUMBER	VISHAY DALE MODEL	TERM.	MAXIMUM RESISTANCE $m\Omega$	MAX. CURRENT RATING A	MAXIMUM WORKING VOLTAGE V
03011	RCWPM0201..99	B	50	0.5	30
03012	RCWPM0302..99	B	20	1.1	15
03014	RCWPM0402..99	B	25	1.2	30
88032	RCWPM0502..99	B	20	1.3	40
03013	RCWPM0603..99	B	25	1.5	50
03002	RCWPM0550..99	B	25	2.2	40
90048	RCWPM0575..99	B	20	2.7	50
90049	RCWPM5100..99	B	30	2.8	75
94011	RCWPM1206..99	B	20	3.2	100
90092	RCWPM5150..99	B	40	2.1	125
87011	RCWPM1100..99	B	20	5.0	75
90047	RCWPM7225..99	B	40	2.5	175
03015	RCWPM2010..99	B	40	5.7	150
03016	RCWPM2512..99	B	40	6.3	200

These drawings can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg

⁽¹⁾ MIL case size 0705 and EIA case size 0805 are dimensionally the same



GLOBAL PART NUMBER INFORMATION

Part Number (MIL-PRF-32159): M32159B02MWB (preferred part number format)

M	3	2	1	5	9	B	0	2	M	W	B			
MIL STYLE	TERMINATION STYLE	SPEC SHEET	PRODUCT GRADE	PACKAGING ⁽¹⁾					SPECIAL					
M32159	B = pre-tinned nickel barrier, wraparound	(see Standard Electrical Specifications table)	C = industry grade M = military grade T = space level	TP = tin / lead, T/R (full), plastic tape TN = tin / lead, T/R (full), w/ESD S3 = tin / lead, T/R (1000 pieces) SV = tin / lead, T/R (1000 pieces), w/ESD UL = tin / lead, T/R, single lot date code WB = tin / lead, waffle tray WA = tin / lead, waffle tray, w/ESD WL = tin / lead, waffle tray, single lot date code S2 = tin / lead, T/R (500 pieces) SU = tin / lead, T/R (500 pieces), w/ESD S6 = tin / lead, T/R (300 pieces) ST = tin / lead, T/R (300 pieces), w/ESD					Blank = standard (dash number) (up to 3 digits) 5 = space level 96 = part marked ⁽²⁾ 7 = space level w/part marking ⁽²⁾					

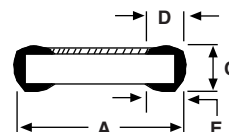
Part Number (DSCC Drawings): RCWPM5100WB99

R	C	W	P	M	5	1	0	0	W	B	9	9
GLOBAL MODEL				PACKAGING ⁽³⁾					SPECIAL			
RCWPM0201 RCWPM0302 RCWPM0402 RCWPM0502 RCWPM0550 RCWPM0575 RCWPM0603 RCWPM1100 RCWPM1206 RCWPM2010 RCWPM2512 RCWPM5100 RCWPM5150 RCWPM7225				TP = tin / lead, T/R (full), plastic tape S3 = tin / lead, T/R (1000 pieces), plastic tape UL = tin / lead, T/R, single lot date code WB = tin / lead, waffle tray WL = tin / lead, waffle tray, single lot date code S2 = tin / lead, T/R (500 pieces), plastic tape S6 = tin / lead, T/R (300 pieces), plastic tape UA = tin / lead, T/R (full), paper tape UD = tin / lead T/R (1000 pieces), paper tape UC = tin / lead, T/R (500 pieces), paper tape UB = tin / lead, T/R (300 pieces), paper tape					99 = 0 Ω jumper			

Notes

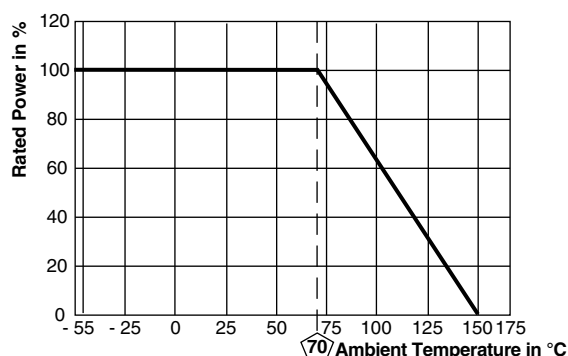
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543)
- ⁽¹⁾ Products with space level failure rates are only offered in packaging codes with ESD overpack and labeling. For all other failure rates, the ESD pack codes are an optional type of packaging
- ⁽²⁾ Optional MIL spec part marking is not offered for the slash sheet 01, 02, 11, and 13 sizes
- ⁽³⁾ Tape and reel packaging with plastic tape standard for all case sizes except 0201. For the 0201 case size, the product is only offered in tape and reel packaging with paper tape

DIMENSIONS in inches (millimeters)



VISHAY DALE MODEL	MIL-PRF-32159 STYLE	MIL. SPEC. SHEET	A (LENGTH)	B (WIDTH)	C (HEIGHT)	D (TOP TERM)	E (BOTTOM TERM)
RCWPM-0502	RCZ0502	01	0.055 ± 0.005 (1.40 ± 0.13)	0.023 ± 0.003 (0.58 ± 0.08)	0.015 ± 0.003 (0.38 ± 0.08)	0.010 ± 0.005 (0.25 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-550	RCZ0505	02	0.055 ± 0.005 (1.40 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-5100	RCZ1005	03	0.105 ± 0.005 (2.67 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-5150	RCZ1505	04	0.155 ± 0.005 (3.94 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-7225	RCZ2208	05	0.230 ± 0.005 (5.84 ± 0.13)	0.075 ± 0.005 (1.91 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCWPM-575	RCZ0705	06	0.080 ± 0.005 (2.03 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.016 ± 0.008 (0.41 ± 0.20)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-1206	RCZ1206	07	0.125 ± 0.005 (3.18 ± 0.13)	0.063 ± 0.005 (1.60 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-2010	RCZ2010	08	0.197 ± 0.006 (5.00 ± 0.15)	0.098 ± 0.005 (2.49 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCWPM-2512	RCZ2512	09	0.250 ± 0.006 (6.35 ± 0.15)	0.124 ± 0.005 (3.15 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCWPM-1100	RCZ1010	10	0.105 ± 0.005 (2.67 ± 0.13)	0.100 ± 0.005 (2.54 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-0402	RCZ0402	11	0.039 ± 0.003 (0.99 ± 0.08)	0.020 ± 0.003 (0.51 ± 0.08)	0.013 ± 0.003 (0.33 ± 0.08)	0.010 ± 0.005 (0.25 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)
RCWPM-0603	RCZ0603	12	0.063 ± 0.005 (1.60 ± 0.13)	0.032 ± 0.005 (0.81 ± 0.13)	0.018 ± 0.005 (0.46 ± 0.13)	0.012 ± 0.005 (0.30 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWPM-0302	RCZ0302	13	0.034 ± 0.004 (0.86 ± 0.10)	0.021 ± 0.003 (0.53 ± 0.08)	0.013 ± 0.003 (0.33 ± 0.08)	0.007 ± 0.005 (0.18 ± 0.13)	0.008 ± 0.005 (0.20 ± 0.13)
RCWPM-0201			0.024 ± 0.002 (0.61 ± 0.05)	0.012 ± 0.002 (0.30 ± 0.05)	0.009 ± 0.002 (0.23 ± 0.05)	0.006 ± 0.003 (0.15 ± 0.08)	0.006 ± 0.002 - 0.004 (0.15 ± 0.05 - 0.10)

DERATING CURVE



**CAGE CODE: 91637
and 2799A (formerly SH903)**

MATERIAL SPECIFICATIONS

Resistive element	Conductive metal
Encapsulation	Epoxy
Substrate	96 % alumina
Termination	Solder-coated nickel barrier
Solder finish	Tin / lead solder alloy



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.