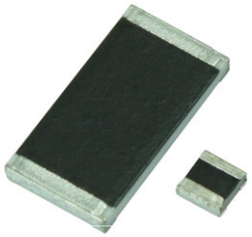
Thick Film Chip Resistors, Military / Established Reliability MIL-PRF-55342 Qualified, Type RM



FEATURES

HALOGEN FREE

- Fully conforms to the requirements of MIL-PRF-55342
- Established reliability - verified failure rate; M, P, R, U, S, V, and T levels
- Construction is sulfur impervious against a high sulfur environment (ASTM B 809-95 test method)
- 100 % group A screening per MIL-PRF-55342
- Termination style B - tin / lead wraparound over nickel barrier
- Operating temperature range is -65 °C to +150 °C
- For MIL-PRF-32159 zero ohm jumpers, see Vishay Dale's RCWPM Jumper (Military M32159) datasheet (www.vishay.com/doc?31028)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

LINKS TO ADDITIONAL RESOURCES

Related Documents

MATERIAL SPECIFICATIONS	
Resistive element	Ruthenium oxide
Encapsulation	Epoxy
Substrate	96 % alumina
Termination	Solder-coated nickel barrier
Solder finish	Tin / lead solder alloy

STANDARD ELECTRICAL SPECIFICATIONS

VISHAY DALE MODEL	MIL-PRF-55342 STYLE	MIL SPEC. SHEET	TERM.	CASE SIZE	POWER RATING $P_{70\,°C}$ W	MAX. WORKING VOLTAGE (1) V	RESISTANCE RANGE Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT (2) ± ppm/°C
RCWPM-0502, RCWPM-0502-98	RM0502	01	B	0502	0.05	40	1 to 9.1	2, 5, 10	200, 300
							10 to 22M	1, 2, 5, 10	100, 200, 300
							10 to 10M	0.5	100, 200, 300
RCWPM-550, RCWPM-550-98	RM0505	02	B	0505	0.125	40	1 to 9.1	2, 5, 10	200, 300
							10 to 22M	1, 2, 5, 10	100, 200, 300
							10 to 10M	0.5	100, 200, 300
RCWPM-5100, RCWPM-5100-98	RM1005	03	B	1005	0.20	75	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-5150, RCWPM-5150-98	RM1505	04	B	1505	0.15	125	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-7225, RCWPM-7225-98	RM2208	05	B	2208	0.225	175	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-575, RCWPM-575-98	RM0705	06	B	0705 (3)	0.15	50	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-1206, RCWPM-1206-98	RM1206	07	B	1206	0.25	100	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300

STANDARD ELECTRICAL SPECIFICATIONS

VISHAY DALE MODEL	MIL-PRF-55342 STYLE	MIL SPEC. SHEET	TERM.	CASE SIZE	POWER RATING $P_{70\,°C}$ W	MAX. WORKING VOLTAGE (1) V	RESISTANCE RANGE Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT (2) ± ppm/°C
RCWPM-2010, RCWPM-2010-98	RM2010	08	B	2010	0.80	150	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-2512, RCWPM-2512-98	RM2512	09	B	2512	1.0	200	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-1100, RCWPM-1100-98	RM1010	10	B	1010	0.50	75	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-0402, RCWPM-0402-98	RM0402	11	B	0402	0.05	30	1 to 9.1	2, 5, 10	200, 300
							10 to 22M	1, 2, 5, 10	100, 200, 300
							10 to 10M	0.5	100, 200, 300
RCWPM-0603, RCWPM-0603-98	RM0603	12	B	0603	0.10	50	1 to 5.1	2, 5, 10	200, 300
							5.6 to 22M	1, 2, 5, 10	100, 200, 300
							5.62 to 10M	0.5	100, 200, 300
RCWPM-0302, RCWPM-0302-98	RM0302	13	B	0302	0.04	15	1 to 9.1	2, 5, 10	200, 300
							10 to 22M	1, 2, 5, 10	100, 200, 300
							10 to 10M	0.5	100, 200, 300

Notes

- DSCC has created a series of drawings to support the need for 0201-sized product. Vishay Dale is listed as a resource on this drawing as follows:

DSCC DRAWING NUMBER	VISHAY DALE MODEL	TERM.	POWER RATING $P_{70\,°C}$ W	RES. RANGE Ω	RES. TOL. ± %	TEMP. COEF. ± ppm/°C	MAX. WORKING VOLTAGE (1) V
07009	RCWP-0201	B	0.05	10 to 46.4 47 to 1M	1, 5	200 100	30

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

(1) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less

(2) Characteristics: K = ± 100 ppm/°C; L = ± 200 ppm/°C; M = ± 300 ppm/°C

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

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: M55342M02B10E0RWB (preferred part number format)

M	5	5	3	4	2	M	0	2	B	1	0	E	0	R	W	B	

MIL STYLE	CHARACTERISTICS	SPEC. SHEET	TERMINATION STYLE	VALUE AND TOLERANCE	FAILURE RATE	PACKAGING [1]	SPECIAL
D55342 applies to Style 07 (RM1206) only. **M55342** applies to all other styles.	**K** = 100 ppm **L** = 200 ppm **M** = 300 ppm	(see Standard Electrical Specifications table)	**B** = pre-tinned nickel barrier, wraparound	(see Tolerance and Multipliers table)	**C** = non-ER **M** = 1.0 %/1000 h **P** = 0.1 %/1000 h **R** = 0.01 %/1000 h **U** = 0.01 %/1000 h [2] **S** = 0.001 %/1000 h **V** = 0.001 %/1000 h [2] **T** = space level	**TP** = tin / lead, T/R (full) **TN** = tin / lead, T/R (full), w/ESD **UL** = tin / lead, T/R single lot date code **S3** = tin / lead, T/R (1000 pieces) **SV** = tin / lead, T/R (1000 pieces), w/ESD **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 1 digits) **D** = 0.5 % tolerance [3] **S** = space level w/option 1 part marking (-97) [4] **T** = space level (-98) **2** = option 1 part marking (-20) [4] **3** = oiptions 2 and 3 part marking (-30) [4]

Historical Part Numbering: M55342M02B10E0R (will continue to be accepted)

M55342	M	02	B	10E0	R	WB
MIL STYLE	CHARACTERISTICS	SPEC. SHEET	TERMINATION STYLE	VALUE AND TOLERANCE	FAILURE RATE	PACKAGING CODE

Notes

- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543)

[4] 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

[5] Failure rates U and V require group A and B inspection ran on each production lot

[6] Add a “D” after the packaging code at the end of the global part number to specify Vishay Dale Thick Film product with a tolerance of 0.5 %

[7] MIL spec option 1, 2, and 3 part marking is not offered for the slash sheet 01, 02, 11, and 13 sizes

RESISTANCE TOLERANCE AND MULTIPLIERS

TOLERANCE					MULTIPLIER	VALUE RANGE (Ω)
± 0.5 %	± 1 %	± 2 %	± 5 %	± 10 %		
W	D	G	J	M	1	1 to 9xx
Y	E	H	K	N	1000	1K to 9xxK
Z	F	T	L	P	1 000 000	1M to 22M

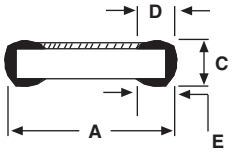
Examples:

38W8 = 38.8 Ω ± 0.5 %
10Y0 = 10 kΩ ± 0.5 %
988W = 988 Ω ± 0.5 %
2Z13 = 2.13 MΩ ± 0.5 %

11D3 = 11.3 Ω ± 1 %
10E0 = 10 kΩ ± 1 %
332D = 332 Ω ± 1 %
2F21 = 2.21 MΩ ± 1 %
51G0 = 51 Ω ± 2 %
10H0 = 10 kΩ ± 2 %
33H0 = 33 kΩ ± 2 %
22T0 = 22 MΩ ± 2 %

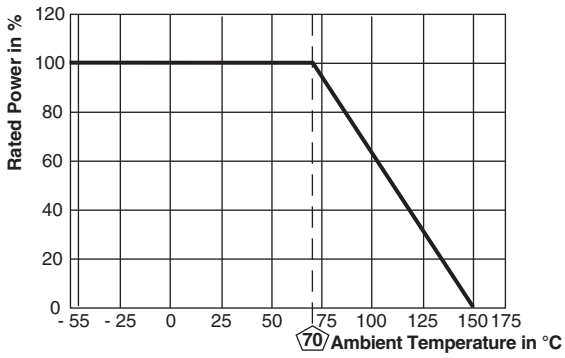
15J0 = 15 Ω ± 5 %
10K0 = 10 kΩ ± 5 %
560K = 560 kΩ ± 5 %
8L20 = 8.2 MΩ ± 5 %
10M0 = 10 Ω ± 10 %
10N0 = 10 kΩ ± 10 %
2P70 = 2.7 MΩ ± 10 %
8P20 = 8.2 MΩ ± 10 %

DIMENSIONS in inches (millimeters)



VISHAY DALE MODEL	MIL-PRF-55342 STYLE	MIL SPEC. SHEET	A (LENGTH)	B (WIDTH)	C (HEIGHT)	D (TOP TERM)	E (BOTTOM TERM)
RCWPM-0502	RM0502	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	RM0505	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	RM1005	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	RM1505	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	RM2208	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	RM0705	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	RM1206	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	RM2010	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	RM2512	09	0.250 ± 0.005 (6.35 ± 0.13)	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	RM1010	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	RM0402	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	RM0603	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	RM0302	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)
RCWP-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)

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