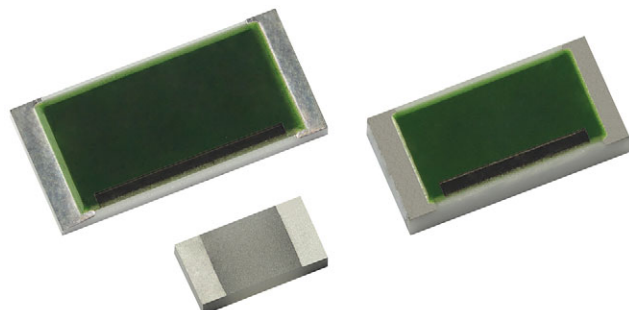


High Frequency and High Power Thick Film Chip Resistors



LINKS TO ADDITIONAL RESOURCES



Vishay Barry RP wraparound thick film resistors offer outstanding performance by minimizing parasitics while maximizing power dissipation through use of three different types of substrate materials. These options allow the customer to select the device most suited for their needs and offers some of the highest power ratings of any device in their class.

FEATURES

- DC to high frequency RF applications
- 0302 to 2512 case sizes with wraparound terminals
- Available substrate materials: Al_2O_3 , AlN, and BeO
- 30 % higher power rating on select BeO versions vs. AlN
- Many terminal options available
- Solder or wirebond attachment
- Customization options available (please inquire about any unique case size, power rating, RF requirements, testing, etc.)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS*
Available
**HALOGEN
FREE**

Note

* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

POWER RATING BY SUBSTRATE PROPERTIES (W)

CASE SIZE ⁽¹⁾	SUBSTRATE THICKNESS AND MATERIAL: GLOBAL P/N MATERIAL CODE (LEGACY P/N CODE) / THICKNESS / MATERIAL					
	A (90) 0.010" Al_2O_3	B (91) 0.015" Al_2O_3	C (93) 0.025" Al_2O_3	L (2Q) 0.015" AlN	F (96) 0.015" BeO	G (98) 0.025" BeO
0302		0.15				
0402	0.25	0.25		1	2	
0502		0.25			3.5	
0503	0.35	0.35				
0505	1	1		4	5	
0603	1	1		3	4	
0805	1.5	1.5	1.5		8	8
1005		2		8	12	
1010		4	5	20	25	
1206		4	4	8	14	14
2010		5	5		30	35
2512		5	5		30	40

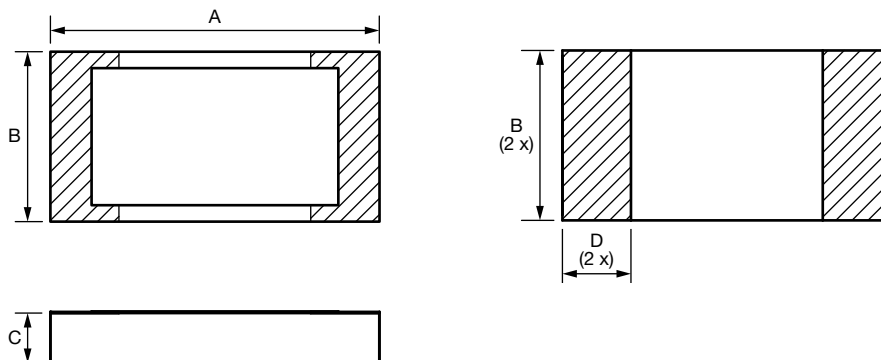
Notes

- Legacy notations in brackets
- For a complete list of all available options, please refer to document www.vishay.com/doc?50502
- (1) Imperial - refer to Dimensions table for metric



TECHNICAL SPECIFICATIONS

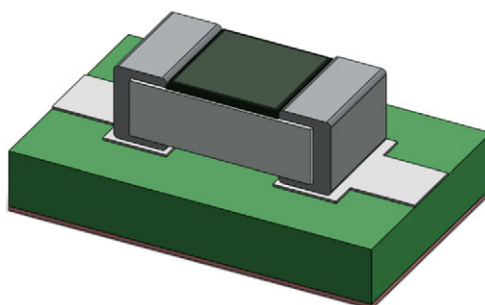
MODEL	SIZE	RESISTANCE RANGE Ω	SUBSTRATE				RATED POWER P_n	OPERATING TEMPERATURE $^{\circ}\text{C}$	TOLERANCE $\pm \%$
			CODE	CODE (LEGACY PN)	MATERIAL Al_2O_3 / AlN / BeO	THICKNESS MIL			
B-RP0302	0302	0.1 to 10M	B	91	Al_2O_3	15	0.15	-55 to +150	1, 2, 5
B-RP0402	0402	0.1 to 10M	A	90	Al_2O_3	10	0.1	-55 to +150	1, 2, 5
		0.1 to 10M	B	91	Al_2O_3	15	0.1	-55 to +150	1, 2, 5
		10 to 6K	L	2Q	AlN	15	1	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	1	-55 to +150	1, 2, 5
B-RP0502	0502	0.1 to 10M	B	91	Al_2O_3	15	0.15	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	0.35	-55 to +150	1, 2, 5
B-RP0503	0503	0.1 to 10M	A	90	Al_2O_3	10	0.35	-55 to +150	1, 2, 5
		0.1 to 10M	B	91	Al_2O_3	15	0.35	-55 to +150	1, 2, 5
B-RP0504	0504	0.1 to 10M	B	91	Al_2O_3	15	0.2	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	0.75	-55 to +150	1, 2, 5
B-RP0505	0505	0.1 to 10M	A	90	Al_2O_3	10	1	-55 to +150	1, 2, 5
		0.1 to 10M	B	91	Al_2O_3	15	1	-55 to +150	1, 2, 5
		10 to 6K	L	2Q	AlN	15	4	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	5	-55 to +150	1, 2, 5
B-RP0603	0603	0.1 to 10M	A	90	Al_2O_3	10	1	-55 to +150	1, 2, 5
		0.1 to 10M	B	91	Al_2O_3	15	1	-55 to +150	1, 2, 5
		10 to 6K	L	2Q	AlN	15	3	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	4	-55 to +150	1, 2, 5
B-RP0702	0702	0.1 to 10M	A	90	Al_2O_3	10	0.2	-55 to +150	1, 2, 5
B-RP0805	0805	0.1 to 10M	A	90	Al_2O_3	10	1.5	-55 to +150	1, 2, 5
		0.1 to 10M	B	91	Al_2O_3	15	1.5	-55 to +150	1, 2, 5
		0.1 to 10M	C	93	Al_2O_3	25	1.5	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	8	-55 to +150	1, 2, 5
		0.1 to 10M	G	98	BeO	25	8	-55 to +150	1, 2, 5
B-RP1005	1005	0.1 to 10M	B	91	Al_2O_3	15	0.5	-55 to +150	1, 2, 5
		10 to 6K	L	2Q	AlN	15	1	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	1	-55 to +150	1, 2, 5
B-RP1010	1010	0.1 to 10M	B	91	Al_2O_3	15	1	-55 to +150	1, 2, 5
		0.1 to 10M	C	93	Al_2O_3	25	0.5	-55 to +150	1, 2, 5
		10 to 6K	L	2Q	AlN	15	2	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	2	-55 to +150	1, 2, 5
B-RP1206	1206	0.1 to 10M	B	91	Al_2O_3	15	4	-55 to +150	1, 2, 5
		0.1 to 10M	C	93	Al_2O_3	25	4	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	14	-55 to +150	1, 2, 5
		0.1 to 10M	G	98	BeO	25	14	-55 to +150	1, 2, 5
B-RP1505	1505	0.1 to 10M	B	91	Al_2O_3	15	0.75	-55 to +150	1, 2, 5
B-RP2010	2010	0.1 to 10M	B	91	Al_2O_3	15	8	-55 to +150	1, 2, 5
		0.1 to 10M	C	93	Al_2O_3	25	4	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	32	-55 to +150	1, 2, 5
		0.1 to 10M	G	98	BeO	25	20	-55 to +150	1, 2, 5
B-RP2512	2512	0.1 to 10M	B	91	Al_2O_3	15	5	-55 to +150	1, 2, 5
		0.1 to 10M	C	93	Al_2O_3	25	5	-55 to +150	1, 2, 5
		0.1 to 10M	F	96	BeO	15	10	-55 to +150	1, 2, 5
		0.1 to 10M	G	98	BeO	25	10	-55 to +150	1, 2, 5

DIMENSIONS


MODEL	SIZE	RESISTANCE RANGE Ω	SUBSTRATE		A INCH (mm)	B INCH (mm)	C INCH (mm)	D INCH (mm)
			CODE	CODE (LEGACY PN)				
B-RP0302	0302	0.1 to 10M	B	91	0.030 (0.762)	0.020 (0.508)	0.015 (0.381)	0.007 (0.178)
B-RP0402	0402	0.1 to 10M	A	90	0.040 (1.016)	0.020 (0.508)	0.010 (0.254)	0.011 (0.279)
		0.1 to 10M	B	91	0.040 (1.016)	0.020 (0.508)	0.015 (0.381)	0.011 (0.279)
		10 to 6K	L	2Q	0.040 (1.016)	0.020 (0.508)	0.015 (0.381)	0.011 (0.279)
		0.1 to 10M	F	96	0.040 (1.016)	0.020 (0.508)	0.015 (0.381)	0.011 (0.279)
B-RP0502	0502	0.1 to 10M	B	91	0.050 (1.270)	0.025 (0.635)	0.015 (0.381)	0.013 (0.330)
B-RP0503	0503	0.1 to 10M	F	96	0.050 (1.270)	0.025 (0.635)	0.015 (0.381)	0.013 (0.330)
		0.1 to 10M	A	90	0.050 (1.270)	0.030 (0.762)	0.010 (0.254)	0.010 (0.254)
B-RP0504	0504	0.1 to 10M	B	91	0.050 (1.270)	0.030 (0.762)	0.015 (0.381)	0.010 (0.254)
		0.1 to 10M	F	96	0.050 (1.270)	0.040 (1.016)	0.015 (0.381)	0.010 (0.254)
B-RP0505	0505	0.1 to 10M	B	91	0.050 (1.270)	0.040 (1.016)	0.015 (0.381)	0.010 (0.254)
		0.1 to 10M	F	96	0.050 (1.270)	0.050 (1.270)	0.015 (0.381)	0.012 (0.305)
		10 to 6K	L	2Q	0.050 (1.270)	0.050 (1.270)	0.015 (0.381)	0.012 (0.305)
		0.1 to 10M	A	90	0.060 (1.524)	0.030 (0.762)	0.010 (0.254)	0.010 (0.254)
B-RP0603	0603	0.1 to 10M	B	91	0.060 (1.524)	0.030 (0.762)	0.015 (0.381)	0.010 (0.254)
		10 to 6K	L	2Q	0.060 (1.524)	0.030 (0.762)	0.015 (0.381)	0.010 (0.254)
		0.1 to 10M	F	96	0.060 (1.524)	0.030 (0.762)	0.015 (0.381)	0.010 (0.254)
B-RP0702	0702	0.1 to 10M	A	90	0.075 (1.905)	0.025 (0.635)	0.010 (0.254)	0.020 (0.508)
B-RP0805	0805	0.1 to 10M	A	90	0.075 (1.905)	0.050 (1.270)	0.010 (0.254)	0.013 (0.330)
		0.1 to 10M	B	91	0.075 (1.905)	0.050 (1.270)	0.015 (0.381)	0.013 (0.330)
		0.1 to 10M	C	93	0.075 (1.905)	0.050 (1.270)	0.025 (0.635)	0.013 (0.330)
		0.1 to 10M	F	96	0.075 (1.905)	0.050 (1.270)	0.015 (0.381)	0.013 (0.330)
		0.1 to 10M	G	98	0.075 (1.905)	0.050 (1.270)	0.025 (0.635)	0.013 (0.330)
B-RP1005	1005	0.1 to 10M	B	91	0.100 (2.540)	0.050 (1.270)	0.015 (0.381)	0.015 (0.381)
		10 to 6K	L	2Q	0.100 (2.540)	0.050 (1.270)	0.015 (0.381)	0.015 (0.381)
		0.1 to 10M	F	96	0.100 (2.540)	0.050 (1.270)	0.015 (0.381)	0.015 (0.381)
B-RP1010	1010	0.1 to 10M	B	91	0.100 (2.540)	0.100 (2.540)	0.015 (0.381)	0.015 (0.381)
		0.1 to 10M	C	93	0.100 (2.540)	0.100 (2.540)	0.025 (0.635)	0.015 (0.381)
		10 to 6K	L	2Q	0.100 (2.540)	0.100 (2.540)	0.015 (0.381)	0.015 (0.381)
		0.1 to 10M	F	F	0.100 (2.540)	0.100 (2.540)	0.015 (0.381)	0.015 (0.381)
B-RP1206	1206	0.1 to 10M	B	91	0.120 (3.048)	0.062 (1.575)	0.015 (0.381)	0.025 (0.635)
		0.1 to 10M	C	93	0.120 (3.048)	0.062 (1.575)	0.025 (0.635)	0.025 (0.635)
		0.1 to 10M	F	96	0.120 (3.048)	0.062 (1.575)	0.015 (0.381)	0.025 (0.635)
		0.1 to 10M	G	98	0.120 (3.048)	0.062 (1.575)	0.025 (0.635)	0.025 (0.635)
B-RP1505	1505	0.1 to 10M	B	91	0.150 (3.810)	0.050 (1.270)	0.015 (0.381)	0.015 (0.381)
B-RP2010	2010	0.1 to 10M	B	91	0.206 (5.232)	0.100 (2.540)	0.015 (0.381)	0.019 (0.483)
		0.1 to 10M	C	93	0.206 (5.232)	0.100 (2.540)	0.025 (0.635)	0.019 (0.483)
		0.1 to 10M	F	96	0.206 (5.232)	0.100 (2.540)	0.015 (0.381)	0.019 (0.483)
		0.1 to 10M	G	98	0.206 (5.232)	0.100 (2.540)	0.025 (0.635)	0.019 (0.483)
B-RP2512	2512	0.1 to 10M	B	91	0.250 (6.350)	0.120 (3.048)	0.015 (0.381)	0.020 (0.508)
		0.1 to 10M	C	93	0.250 (6.350)	0.120 (3.048)	0.025 (0.635)	0.020 (0.508)
		0.1 to 10M	F	96	0.250 (6.350)	0.120 (3.048)	0.015 (0.381)	0.020 (0.508)
		0.1 to 10M	G	98	0.250 (6.350)	0.120 (3.048)	0.025 (0.635)	0.020 (0.508)

PERFORMANCE		
TESTS	CONDITIONS	RESULTS
Short time overload	Apply 1.1 x rated power for 5 s	≤ 5.0 % resistance shift
Rated load life	Apply 1/2 power under $40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$, 90 min on / 30 min off, repeat for 100 h	≤ 5.0 % resistance shift
Moisture resistance	MIL-PRF-55342 paragraph 4.8.9, 95 % RH, $25\text{ }^{\circ}\text{C}$ to $65\text{ }^{\circ}\text{C}$	≤ 5.0 % resistance shift
Resistance to soldering heat	MIL-STD-202 method 210 and MIL-PRF-55342 paragraph 4.8.8.1	≤ 5.0 % resistance shift
Resistance to bonding exposure	MIL-PRF-55342 paragraph 4.8.8.2	≤ 5.0 % resistance shift
Solderability	MIL-PRF-55342 paragraph 4.8.12	> 95 % covered
High temperature storage	$125\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 500 h	1) ≤ 5.0 % resistance shift 2) No significant abnormality (visual)
Thermal shock	$-65\text{ }^{\circ}\text{C}$ to $+150\text{ }^{\circ}\text{C}$, 30 minutes dwell, 5 cycles	1) ≤ 5.0 % resistance shift 2) No significant abnormality (visual)

RECOMMENDED MOUNTING CONFIGURATION (Full Wraparound)





GLOBAL PART NUMBER INFORMATION

Part Number Example: B-RP1206T50R0JG00T

B-	RP	1206	T	50R0	J	G	00	T
0	1	2	3	4	5	6	7	8
0	VISHAY BARRY PREFIX							
1	PRODUCT FAMILY			RP = resistor - wraparound				
2	SIZE, mil							
3	TERMINAL METALLIZATION FINISH			A (AS) = tin / lead over platinum gold P (BA) = palladium silver B (CB) = tin / lead over nickel over silver G (GA) = gold (alumina only) T (CT) = tin over nickel over silver C (CC) = tin over copper over silver				
4	RESISTANCE / ATTENUATION, Ω / dB			Resistance		Attenuation		
				Examples: 1R10 = 1.1 Ω 1R00 = 1 Ω 10R0 = 10 Ω 1000 = 100 Ω 1001 = 1 kΩ 1002 = 10 kΩ 1004 = 1 MΩ		Examples: 0100 = 1 dB 0250 = 2.5 dB 1200 = 12 dB 1850 = 18.5 dB		
5	TOLERANCE, %Ω / dB			F = 1 % / ± 0.25 dB G = 2 % / ± 0.50 dB J = 5 % / ± 1.00 dB				
6	MATERIAL AND THICKNESS			A (90) = 0.010" Al B (91) = 0.015" Al C (93) = 0.025" Al F (96) = 0.015" BeO G (98) = 0.025" BeO L (2Q) = 0.015" AlN				
7	OPTION CODE			00 (blank) = standard option 1 to 99 / A1 to ZZ = assigned by Vishay				
8	PACKAGING			Z (blank) = bulk W (WP) = waffle pack				
				Tape and reel active face up				
				T (TR) = tape and reel, 100 min. / 1 mult. / 1000 max. per tape A (TRA) = tape and reel, 100 min. / 100 mult. / 100 max. per cut tape B (TRB) = tape and reel, 1000 min. / 1000 mult. / 1000 max. per tape				

Notes

- For a complete list of all available options, please refer to document www.vishay.com/doc?50502
- Legacy notations in brackets



LEGACY BARRY PART NUMBER INFORMATION

Part Number Example: RP1206CT-50R0JN-98-TR

RP	1206	CT	-	50R0	J	N	-	98	-		TR
1	2	3		4	5	6		7		8	9
1	PRODUCT FAMILY				RP = resistor - wraparound						
2	SIZE, mil										
3	TERMINAL METALLIZATION FINISH				AS (A) = tin / lead over platinum gold BA (P) = palladium silver CB (B) = tin / lead over nickel over silver GA (G) = gold (alumina only) CT (T) = tin over nickel over silver CC (C) = tin over copper over silver						
4	RESISTANCE / ATTENUATION, Ω / dB				Resistance				Attenuation		
					Examples: 1R10 = 1.1 Ω 1R00 = 1 Ω 10R0 = 10 Ω 1000 = 100 Ω 1001 = 1 kΩ 1002 = 10 kΩ 1004 = 1 MΩ				Examples: 0100 = 1 dB 0250 = 2.5 dB 1200 = 12 dB 1850 = 18.5 dB		
5	TOLERANCE, %Ω / dB				F = 1 % / ± 0.25 dB G = 2 % / ± 0.50 dB J = 5 % / ± 1.00 dB						
6	INSPECTION ⁽¹⁾				N = normal						
7	MATERIAL AND THICKNESS				90 (A) = 0.010" Al 91 (B) = 0.015" Al 93 (C) = 0.025" Al 96 (F) = 0.015" BeO 98 (G) = 0.025" BeO 2Q (L) = 0.015" AlN						
8	OPTION CODE				Blank (00) = standard option						
9	PACKAGING				Blank (Z) = bulk WP (W) = waffle pack						
					Tape and reel active face up						
					TR (T) = tape and reel, 100 min. / 1 mult. / 1000 max. per tape TRA (A) = tape and reel, 100 min. / 100 mult. / 100 max. per cut tape TRB (B) = tape and reel, 1000 min. / 1000 mult. / 1000 max. per tape						

Notes

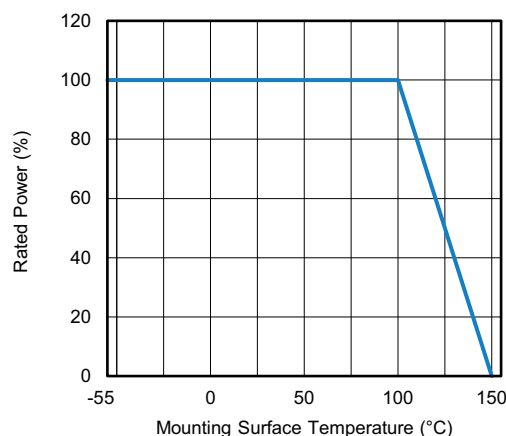
- For a complete list of all available options, please refer to document www.vishay.com/doc?50502
- Vishay notations in brackets
- ⁽¹⁾ Removed from Vishay P/N

**TERMINAL METALLIZATION**

CODE	LEGACY CODE	METALLIZATION	RoHS-COMPLIANT	BeO	ALUMINA	AIN	NON-MAGNETIC	SOLDER	EPOXY	WIREBOND
B	CB	Sn62 over nickel over silver	No	Yes	Yes	Yes	No	Yes	No	No
C	CC	100 % matte tin over copper over silver	Yes	Yes	Yes	Yes	Yes	Yes	No	No
T	CT	100 % matte tin over nickel over silver	Yes	Yes	Yes	Yes	No	Yes	No	No
A	AS	Tin / lead over platinum palladium gold	No	Yes	Yes	Yes	Yes	Yes	No	No
P	BA	Palladium silver	Yes	Yes	Yes	Yes	Yes	Yes ⁽¹⁾	Yes	No
G	GA	Gold	Yes	No	Yes	Yes	Yes	No	Yes	Yes
K	JA	Gold over platinum palladium gold	Yes	Yes	No	No	Yes	No	Yes	Yes

Note

(1) One time solder with care

POWER DERATING CURVE**PACKAGING OPTIONS**

MODEL	SIZE	PACKAGING OPTIONS	BULK PACK QUANTITY			WAFFLE PACK QUANTITY			TAPE AND REEL QUANTITY ⁽¹⁾			TAPE WIDTH
			MIN.	MAX.	MULT.	MIN.	MAX.	MULT.	MIN.	MAX.	MULT.	
B-RP0302	0302	Bulk / waffle pack	100	1000	1	1	100	1	-	-	-	-
B-RP0402	0402	Bulk / tape and reel / waffle pack	100	1000	1	1	400	1	100	1000	1	8 mm
B-RP0502	0502	Bulk / tape and reel / waffle pack	100	1000	1	1	100	1	100	1000	1	8 mm
B-RP0503	0503	Bulk / tape and reel / waffle pack	100	1000	1	1	100	1	100	1000	1	8 mm
B-RP0504	0504	Bulk / tape and reel / waffle pack	100	1000	1	1	1000	1	100	1000	1	8 mm
B-RP0505	0505	Bulk / tape and reel / waffle pack	100	1000	1	1	1000	1	100	1000	1	8 mm
B-RP0603	0603	Bulk / tape and reel / waffle pack	100	1000	1	1	100	1	100	1000	1	8 mm
B-RP0702	0702	Bulk / tape and reel / waffle pack	100	500	1	1	100	1	100	1000	1	8 mm
B-RP0805	0805	Bulk / tape and reel / waffle pack	100	500	1	1	170	1	100	1000	1	8 mm
B-RP1005	1005	Bulk / tape and reel / waffle pack	100	500	1	1	170	1	100	1000	1	8 mm
B-RP1010	1010	Bulk / tape and reel / waffle pack	100	500	1	1	88	1	100	1000	1	8 mm
B-RP1206	1206	Bulk / tape and reel / waffle pack	100	250	1	1	170	1	100	1000	1	8 mm
B-RP1505	1505	Bulk / tape and reel / waffle pack	100	250	1	1	90	1	100	1000	1	12 mm
B-RP2010	2010	Bulk / tape and reel / waffle pack	50	250	1	1	45	1	100	1000	1	12 mm
B-RP2512	2512	Bulk / tape and reel / waffle pack	50	250	1	1	45	1	100	1000	1	12 mm

Note

(1) See Global Part Number Information table for tape and reel options



Disclaimer

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