



## Power Inductor ECDH RF Series Product Specifications

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### ■ Power Inductor — ECDH RF Series



### ■ Parts Number Explanation

Example:

<b>ECD</b>	<b>H103R</b>	<b>F</b>	<b>R47</b>	<b>M</b>	<b>T</b>	<b>W</b>	<b>Z</b>
<b>Product Type</b>	<b>Size (mm)</b>	<b>Application</b>	<b>Inductance (uH)</b>	<b>Tolerance</b>	<b>Package</b>	<b>Internal Code</b>	<b>Optional</b>
Wire-wound Power Inductor	H103R H104R H105R		R47 : 0.47uH R68 : 0.68uH 220 : 22.0uH	N : ±30% M : ±20% K : ±10%	T : Taping		Z : Default Code



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**Standard Electrical Specifications**

Part No.	Inductance	DCR (mΩ)	DCR (mΩ)	Isat (A)
	L (μH)	MAX	TYP	$\Delta L/L_0 \leq 35\%$
ECDH103RF-1R0M-TWZ	1.0	9	7	7.50
ECDH103RF-1R5M-TWZ	1.5	11	8.8	7.00
ECDH103RF-2R2M-TWZ	2.2	16.9	12.5	6.70
ECDH103RF-3R3M-TWZ	3.3	24.0	17	5.56
ECDH103RF-3R6M-TWZ	3.6	26.0	20	5.56
ECDH103RF-4R7M-TWZ	4.7	30.0	24	4.65
ECDH103RF-6R8M-TWZ	6.8	35.0	26	3.84
ECDH103RF-8R2M-TWZ	8.2	50.0	40	3.54
ECDH103RF-100M-TWZ	10	59.0	45	3.18
ECDH103RF-150M-TWZ	15	91.0	70	2.60
ECDH103RF-220M-TWZ	22	143.0	85	2.16
ECDH103RF-270M-TWZ	27	180.0	115	1.80
ECDH103RF-330M-TWZ	33	202.0	120	1.74
ECDH103RF-470M-TWZ	47	299.0	200	1.43
ECDH103RF-560M-TWZ	56	325.0	220	1.36
ECDH103RF-680M-TWZ	68	429.0	290	1.22
ECDH103RF-101M-TWZ	100	683.0	420	1.02
ECDH103RF-151M-TWZ	150	876.3	668	0.70
ECDH103RF-221M-TWZ	220	1625.0	1150	0.60
ECDH103RF-301M-TWZ	300	1700.0	1180	0.55
ECDH103RF-331M-TWZ	330	1700.0	1250	0.50
ECDH103RF-391M-TWZ	390	1900.0	1600	0.30
ECDH103RF-102M-TWZ	1000	4500.0	3600	0.23
ECDH104RF-1R0M-TWZ	1.0	6.5	5	10.50
ECDH104RF-1R5M-TWZ	1.5	10.5	7	9.50
ECDH104RF-1R8M-TWZ	1.8	10.5	8.8	9.50
ECDH104RF-2R2M-TWZ	2.2	10.5	8.8	7.50
ECDH104RF-2R5M-TWZ	2.5	10.5	8.8	7.50
ECDH104RF-3R3M-TWZ	3.3	13.0	11.2	6.00
ECDH104RF-3R8M-TWZ	3.8	15.0	14	6.00
ECDH104RF-4R7M-TWZ	4.7	23.0	18	5.80



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Part No.	Inductance	DCR (mΩ)	DCR (mΩ)	Isat (A)
	L (μH)	MAX	TYP	$\Delta L/L_0 \leq 35\%$
ECDH104RF-5R2M-TWZ	5.2	23.0	19	5.50
ECDH104RF-6R8M-TWZ	6.8	27.0	23	4.80
ECDH104RF-7R0M-TWZ	7.0	27.0	23	4.80
ECDH104RF-8R2M-TWZ	8.2	35.0	26	4.40
ECDH104RF-100M-TWZ	10	35.0	30	4.40
ECDH104RF-120M-TWZ	12	46.0	35	4.00
ECDH104RF-150M-TWZ	15	50.0	42	3.60
ECDH104RF-180M-TWZ	18	70.0	58	3.10
ECDH104RF-220M-TWZ	22	73.0	63	2.90
ECDH104RF-270M-TWZ	27	89.0	72	2.60
ECDH104RF-330M-TWZ	33	93.0	85	2.30
ECDH104RF-390M-TWZ	39	125.0	100	2.20
ECDH104RF-470M-TWZ	47	128.0	120	2.10
ECDH104RF-560M-TWZ	56	188.0	150	1.65
ECDH104RF-680M-TWZ	68	213.0	180	1.50
ECDH104RF-820M-TWZ	82	300.0	240	1.40
ECDH104RF-101M-TWZ	100	304.0	265	1.35
ECDH104RF-121M-TWZ	120	420.0	320	1.18
ECDH104RF-151M-TWZ	150	506.0	410	1.15
ECDH104RF-181M-TWZ	180	650.0	500	1.00
ECDH104RF-221M-TWZ	220	756.0	610	0.92
ECDH104RF-271M-TWZ	270	1020.0	800	0.80
ECDH104RF-331M-TWZ	330	1090.0	900	0.70
ECDH104RF-391M-TWZ	390	1500.0	1100	0.60
ECDH104RF-471M-TWZ	470	1690.0	1140	0.50
ECDH104RF-561M-TWZ	560	2550.0	1600	0.45
ECDH104RF-681M-TWZ	680	2600.0	1800	0.45
ECDH104RF-821M-TWZ	820	3800.0	3000	0.45
ECDH104RF-102M-TWZ	1000	4050.0	3350	0.40
ECDH104RF-152M-TWZ	1500	5200.0	4800	0.14
ECDH104RF-202M-TWZ	2000	7800.0	5800	0.12



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Part No.	Inductance	DCR (mΩ)	DCR (mΩ)	Isat (A)
	L (μH)	MAX	TYP	$\Delta L/L_0 \leq 35\%$
ECDH105RF-1R5M-TWZ	1.5	6.5	5.5	10.50
ECDH105RF-2R2M-TWZ	2.2	7.2	6.8	9.25
ECDH105RF-3R3M-TWZ	3.3	10.4	8.9	7.80
ECDH105RF-4R7M-TWZ	4.7	12.3	10.5	6.40
ECDH105RF-6R8M-TWZ	6.8	18.0	14	5.40
ECDH105RF-8R2M-TWZ	8.2	24.0	19	4.85
ECDH105RF-100M-TWZ	10	26.0	22	4.50
ECDH105RF-120M-TWZ	12	33.0	25	4.00
ECDH105RF-150M-TWZ	15	41.0	34	3.60
ECDH105RF-180M-TWZ	18	60.0	40.7	3.20
ECDH105RF-220M-TWZ	22	61.0	53	2.95
ECDH105RF-270M-TWZ	27	69.0	63	2.60
ECDH105RF-330M-TWZ	33	84.0	78	2.50
ECDH105RF-390M-TWZ	39	106.0	86	2.30
ECDH105RF-470M-TWZ	47	130.0	110	2.00
ECDH105RF-560M-TWZ	56	149.0	115	1.80
ECDH105RF-680M-TWZ	68	201.0	140	1.65
ECDH105RF-820M-TWZ	82	227.0	180	1.45
ECDH105RF-101M-TWZ	100	253.0	230	1.35
ECDH105RF-121M-TWZ	120	350.0	260	1.20
ECDH105RF-151M-TWZ	150	370.0	330	1.10
ECDH105RF-181M-TWZ	180	419.0	370	1.04
ECDH105RF-221M-TWZ	220	484.0	450	0.75
ECDH105RF-331M-TWZ	330	812.0	730	0.73
ECDH105RF-391M-TWZ	390	953.0	800	0.70
ECDH105RF-471M-TWZ	470	1289.0	970	0.60
ECDH105RF-561M-TWZ	560	1430.0	1230	0.50
ECDH105RF-681M-TWZ	680	1600.0	1480	0.50
ECDH105RF-821M-TWZ	820	1768.0	1580	0.48
ECDH105RF-102M-TWZ	1000	1989.0	1730	0.42



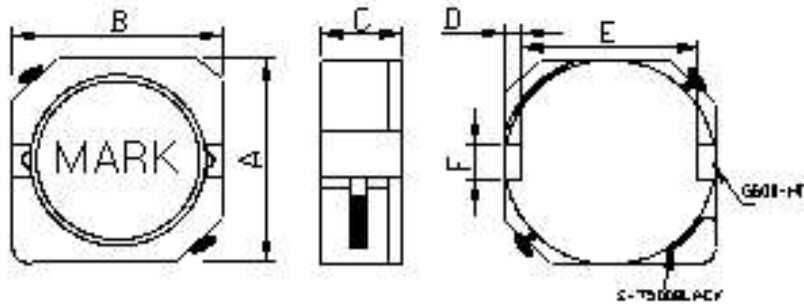
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### Notes :

1. Test Frequency : 100KHZ/0.25V
2. Tolerance : N:  $\pm 30\%$  ; M:  $\pm 20\%$ ; K:  $\pm 10\%$

### ■ Dimensions



Note : Using Ink for marking

Unit: mm

Type	A	B	C	D	E	F
ECDH103RF	10.0 $\pm$ 0.3	10.0 $\pm$ 0.5	3.0 max.	1.2 typ.	7.7 typ.	3.0 typ.
ECDH104RF	10.0 $\pm$ 0.3	10.0 $\pm$ 0.5	4.0 max.	1.2 typ.	7.7 typ.	3.0 typ.
ECDH105RF	10.0 $\pm$ 0.3	10.0 $\pm$ 0.5	5.1 max.	1.2 typ.	7.7 typ.	3.0 typ.

### ■ Marking

- The inductor is marked with a 3-digit code

Nominal Inductance	
Example	Nominal Value
1R0	1.0 $\mu$ H
100	10 $\mu$ H
101	100 $\mu$ H



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● **Reliability test and requirement**

Mechanical		
Item	Specification and Requirement	Test Method
Substrate bending	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage or electrical damage.	<p>The sample shall be soldered onto the printed circuit board in figure 1 and a load applied until the figure in the arrow direction is made approximately 3 mm. (keep time 30 seconds).</p> <p style="text-align: center;">F(Pressurization)</p> <p style="text-align: center;">PRESSURE ROD figure-1</p>
Vibration	$\Delta L/L_0 \leq \pm 5\%$ There shall be no mechanical damage.	<p>The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated. Should be applied to the 3 directions (X, Y, Z) for 2 hours each. (A total of 6 hours)</p>
Solderability	New solder More than 90%.	<p>Flux (rosin, isopropyl alcohol {JIS-K-1522}) shall be coated over the whole of the sample before hard, the sample shall then be preheated for about 2 minutes in a temperature of 130~150°C and after it has been immersed to a depth 0.5mm below for 3±0.2 seconds fully in molten solder M705 with a temperature of 245±2°C.</p> <p>More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath.</p>



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**Mechanical**

Item	Specification and Requirement	Test Method
Resistance to soldering heat. (reflow soldering)	There shall be no damage or problems.	<p>Temperature profile of reflow soldering</p> <p>Soldering (Peak temperature 260±3°C 10 sec)</p> <p>30 sec Min 230 (230<sup>+0</sup> °C)</p> <p>Pre-heating 150 ~ 180°C 2 min</p> <p>10sec</p> <p>2 min. or more</p> <p>Slow cooling (Stored at room temperature)</p> <p>The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.</p>

**ELECTRICAL**

Item	Specification and Requirement	Test Method
Insulation resistance	There shall be no other damage or problems.	DC 100V voltage shall be applied across this sample of top surface and the terminal. The insulation resistance shall be more than $1 \times 10^8 \Omega$ .
Dielectric withstand voltage	There shall be no other damage or problems.	AC 100V voltage shall be applied for 1minute across set the top surface and the terminal of this sample.
Temperature characteristics	$\Delta L / L 20^\circ C \leq \pm 10\%$ 0 ~ 2000 ppm/°C	The test shall be performed after the sample has stabilized in an ambient temperature of - 40 to + 125°C, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L / L 20^\circ C \leq \pm 10\%$ .



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**ENVIROMENT CHARACTERISTICS**

Item	Specification and Requirement	Test Method															
High temperature storage.	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 500 hours in an atmosphere with a temperature of $125 \pm 2^\circ\text{C}$ and a normal humidity. Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Low temperature storage.	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 500 hours in an atmosphere with a temperature of $-40 \pm 3^\circ\text{C}$ . Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Change of temperature.	$\Delta L/Lo \leq \pm 5\%$ There shall be no other damage of problems.	The sample shall be subject to 5 continuous cycles, such as shown in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made.  Table 2 <table border="1"> <thead> <tr> <th></th> <th>Temperature</th> <th>Duration</th> </tr> </thead> <tbody> <tr> <td>1</td> <td><math>-40 \pm 3^\circ\text{C}</math> (Thermostat No.1)</td> <td>10 min.</td> </tr> <tr> <td>2</td> <td>Standard atmospheric</td> <td>5 sec. or less No.1→No.2</td> </tr> <tr> <td>3</td> <td><math>125 \pm 2^\circ\text{C}</math> (Thermostat No.2)</td> <td>30 min.</td> </tr> <tr> <td>4</td> <td>Standard atmospheric</td> <td>5 sec. or less No.2→No.1</td> </tr> </tbody> </table>		Temperature	Duration	1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	10 min.	2	Standard atmospheric	5 sec. or less No.1→No.2	3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.	4	Standard atmospheric	5 sec. or less No.2→No.1
	Temperature	Duration															
1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	10 min.															
2	Standard atmospheric	5 sec. or less No.1→No.2															
3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.															
4	Standard atmospheric	5 sec. or less No.2→No.1															
Moisture storage.	$\Delta L/Lo \leq \pm 5\%$ There shall be no mechanical damage.	The sample shall be left for 500 hours in a temperature of $40 \pm 2^\circ\text{C}$ and a humidity(RH) of 90~95%. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.															

Test conditions :

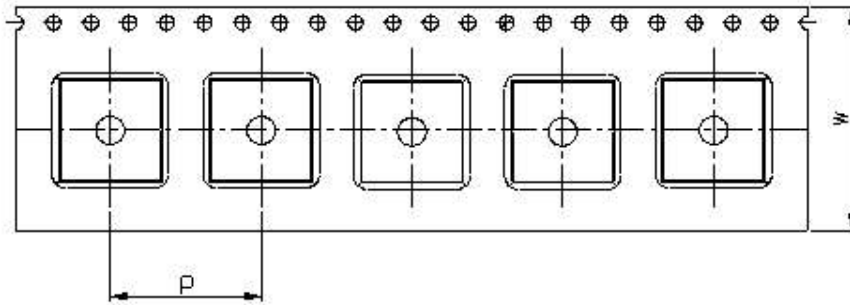
The sample shall be reflow soldered onto the printed circuit board in every test.



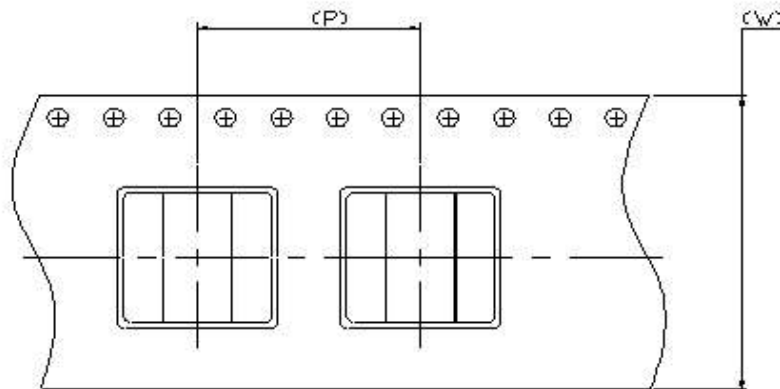
## ■ Packaging Information

### (1) CARRIER TAPE DIMENSIONS (Unit : mm)

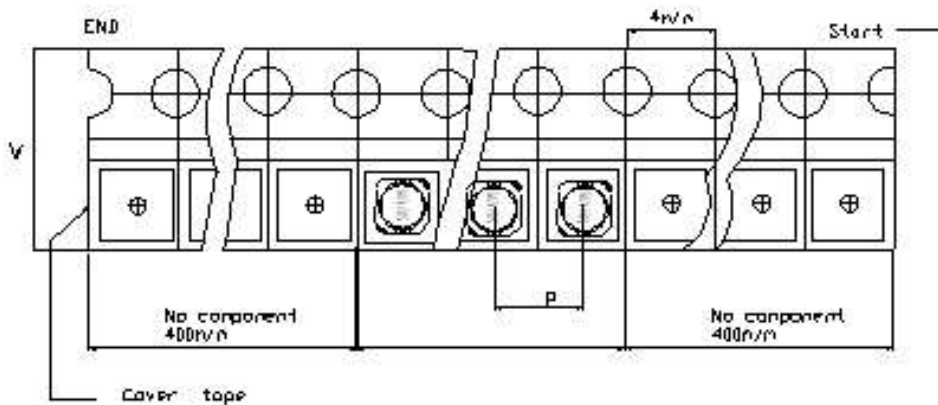
#### ■ ECDH103RF · ECDH104RF



#### ■ ECDH105RF



### (2) TAPING DIMENSIONS (Unit : mm)



<b>W</b>	24
<b>P</b>	16

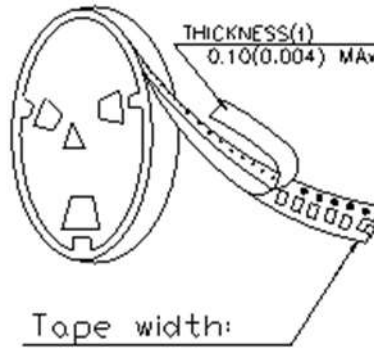
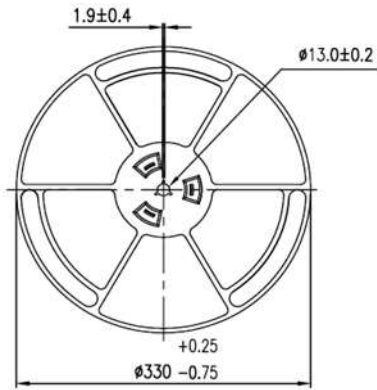
**Note:** After the product is ready, the outermost layer of the reel is 400mmMIN and the innermost layer is 400mmMIN.



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### (3) REEL DIMENSIONS (Unit : mm)



**Tape Width : 24mm**

### (4) Quantity (PCS)

Type	pcs / Reel
ECDH103RF	1000
ECDH104RF	1000
ECDH105RF	750