APPROVAL SHEET

WLPN505040 Series
SMD Shielded Power Inductors

*Contents in this sheet are subject to change without prior notice.

Features

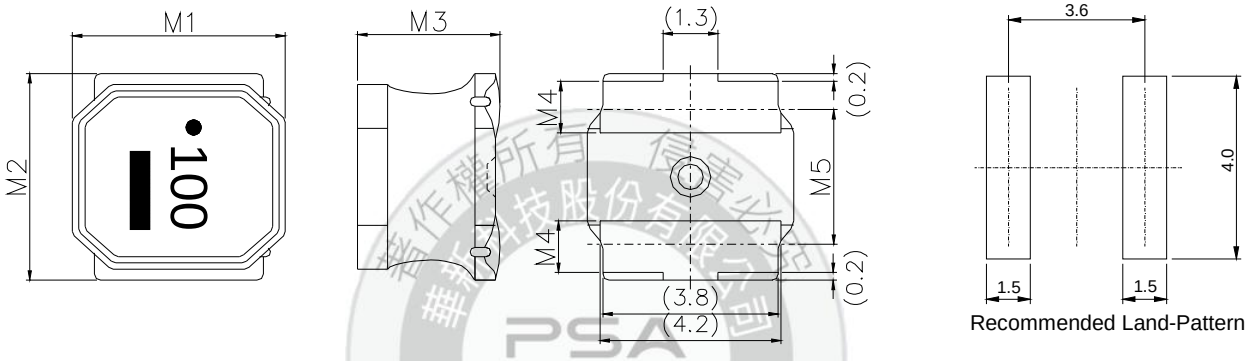
1. Close magnetic loop with magnetic resin shielded.
2. High inductance.

Applications

1. General propose power inductor in DC power system.
2. Inductor in DC/DC converter.
3. LC filter in Audio D class Amplifier.
4. Use in STB、Notebook、Radio、LCDs 、other electrical devices.

Shape and Dimension

Unit: mm



Package Size	M1	M2	M3 (N1R5~M100)	M3 (M150~M470)	M4	M5
WLPN505040	4.9±0.2	4.9±0.2	4.1 MAX.	4.0 MAX.	1.2±0.2	3.3±0.2

Ordering Information

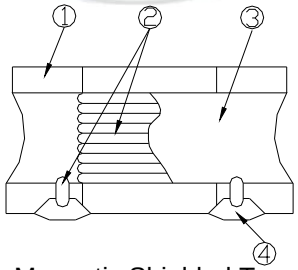
WL	PN	5050	40	N	1R5	L	B
Product Code WL: Inductor	**Series** SMD Shielded Power Inductors	**Dimensions** 4.9 * 4.9 mm	**Thickness** 4.1 mm	**Tolerance** M: ± 20% N: ± 30%	**Value** 1R5 = 1.5uH 150 = 15.0uH	**Packing Code** L=13” Reeled (Embossed tape)	B:STD

Electrical Characteristics

WLPN505040 Series	L (uH)	Inductance Tolerance	Test Freq (KHz)	DCR (Ω) ±20%.	SRF Min. (MHz)	Rated Current (mA)	
						Saturation Current Idc1	Temperature Rise Current Idc2
WLPN505040N1R5LB	1.5	N	100	0.017	60	6400	4500
WLPN505040N2R2LB	2.2	N	100	0.022	42	5000	3700
WLPN505040N3R3LB	3.3	N	100	0.027	32	4000	3300
WLPN505040N4R7LB	4.7	N	100	0.029	28	3300	3100
WLPN505040M6R8LB	6.8	M	100	0.049	21	2800	2400
WLPN505040M100LB	10	M	100	0.056	18	2300	2100
WLPN505040M150LB	15	M	100	0.080	13	2000	1800
WLPN505040M220LB	22	M	100	0.126	9	1500	1400
WLPN505040M330LB	33	M	100	0.180	7	1300	1200
WLPN505040M470LB	47	M	100	0.310	6	1100	900

1. Test Frequency: 100KHz
2. Test Equipment:
   Inductance: Chroma3302+1320+16502. or equivalent.
   DCR: Chroma16502 or equivalent.
   SRF: HP4291B or equivalent.
3. Saturation Current Idc1: The value of current causes a 30% inductance reduction from initial value.
4. Temperature rise current Idc2: The value of current causes a 40℃ temperature rise.
5. Rated Current: Either Idc1 or Idc2 whichever is smaller.
6. Operating Temperature Range:-25℃ to +125℃ (Including self-temperature rise)
7. Storage Temp. Range：-40℃ to +85℃.
8. MSL：Level 1

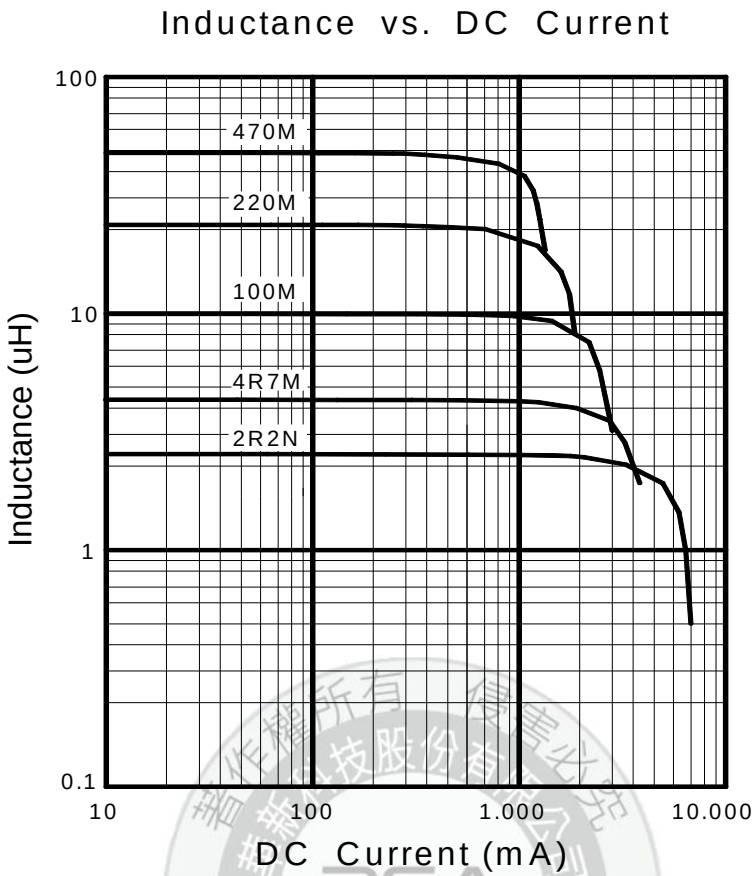
Structural Drawing:



Magnetic Shielded Type

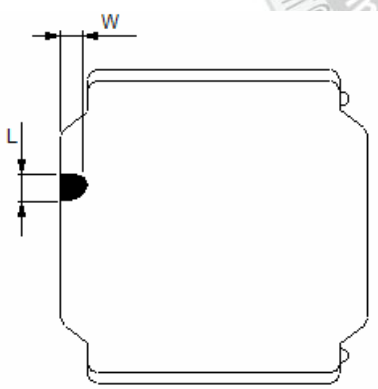
① Ferrite core.	Ni-Zn ferrite	
② Winding wire	Polyurethane-copper wire	
③ Over-coating resin.	Epoxy resin, containing ferrite powder	
④ Electrode	External electrode (substrate)	Ag
	External electrode (base plating)	Ni-Sn
	External electrode (top surface solder coating)	Sn-Ag-Cu

ELECTRICAL CURVE

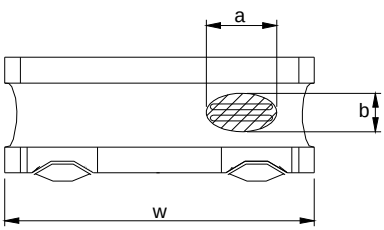


Core Chipping

The appearance standard of the chipping size in top side, of bottom side ferrite core is following dimension.

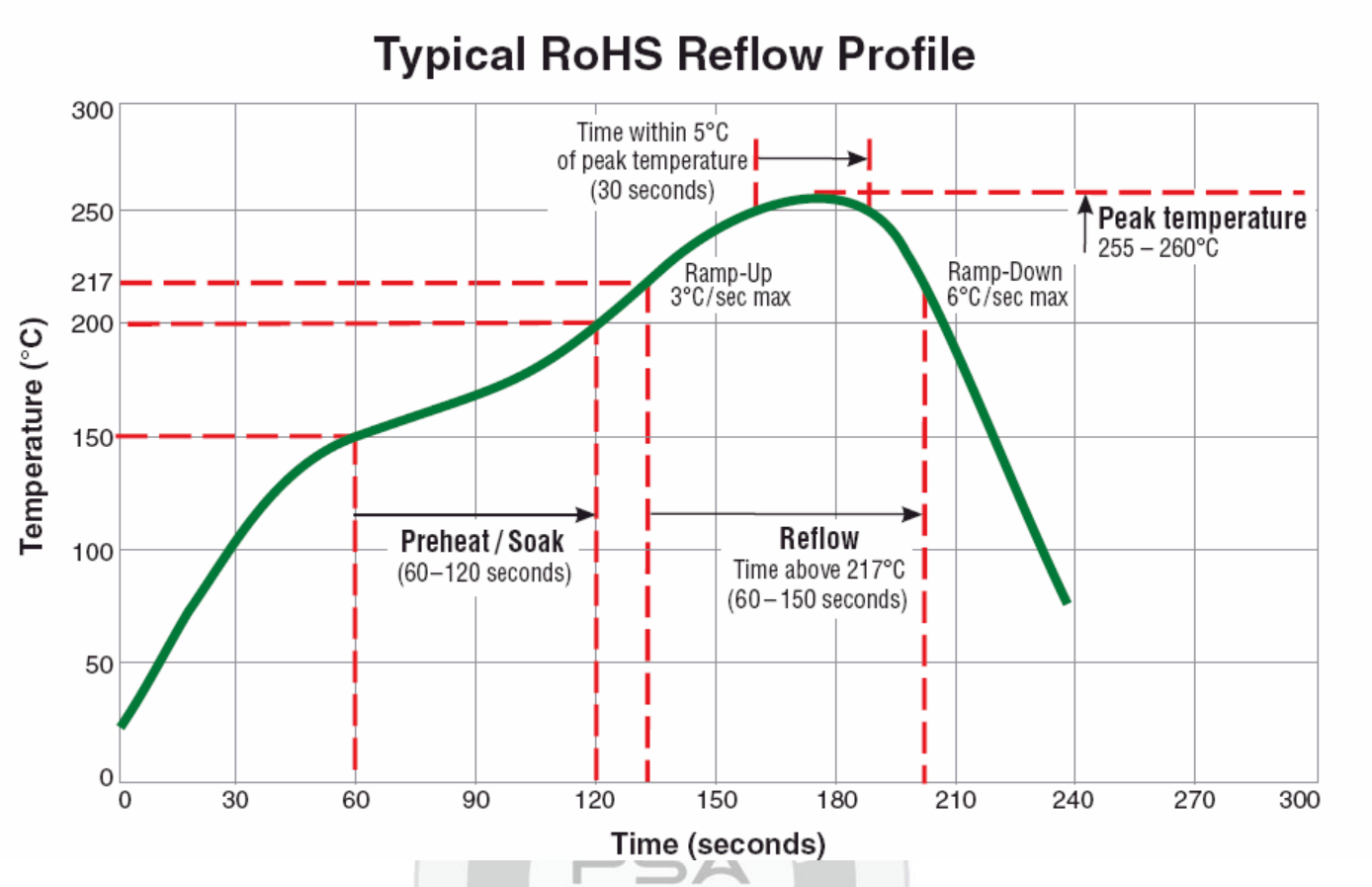


L	W
1.5mmMax.	1.5mmMax.

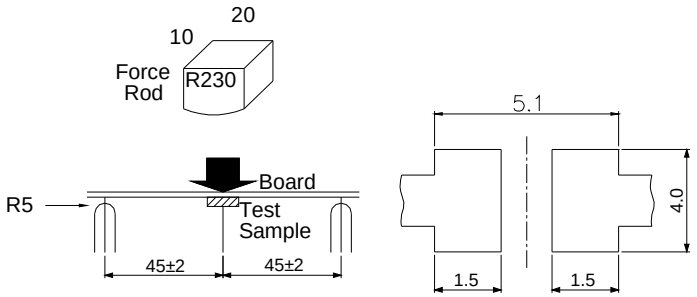
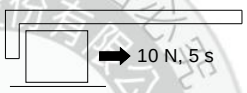
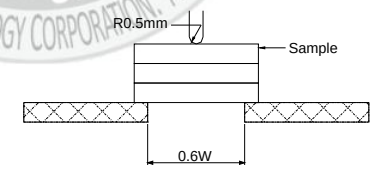


① Width direction (dimension a): Acceptable when a<=w/2
Nonconforming when a>w/2
② Length direction (dimension b): Dimension b is not specified.
③ When total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

TYPICAL RoHS REFLOW PROFILE



Mechanical Performance /Environmental Test Performance Specifications: (WLPN505040 series)

	Test Item	Standard	Test method
MECHANICAL CHARACTERISTICS	Resistance to Deflection	No damage.	 The test samples shall be soldered to the test board by the reflow soldering conditions show in Table 1. As illustrated below, apply force in the direction of the Arrow indicating until deflection of the test board Reaches to 2 mm. Land dimensions Test board size :100×40×10 Test board material l: glass epoxy-resin Solder cream thickness:0.1 Unit: mm
	Adhesion of Terminal Electrode	Shall not come off PC board	The test samples shall be soldered to the test board By the reflow soldering conditions shown in Table 1.  Applied force:10 N to X and Y directions Duration:5 s. Solder cream thickness:0.1 mm (Refer to recommended Land Pattern Dimensions Defined in “Precaution”)
	Body strength	No damage	Applied force :20 N Duration :10 s 

<table>
<tr><th></th><th>Test Item</th><th>Standard</th><th>Test method</th></tr>
<tr><td rowspan="4"></td><td>Resistance to Vibration</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to the test board by
The reflow soldering conditions shown in Table 1.Then
It shall be submitted to below test conditions
<table>
<tr><td>Frequency range</td><td>10Hz~55Hz</td></tr>
<tr><td>Total Amplitude</td><td>1.5mm(May not exceed acceleration 196 m/S^2)</td></tr>
<tr><td>Sweeping Method</td><td>10Hz to 55Hz to 10 Hz for 1 min.</td></tr>
<tr><td>Time</td><td>For 2 hours on each X,Y, and Z axis.</td></tr>
</table></td></tr>
<tr><td>Resistance to Soldering heat (Reflow)</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test sample shall be exposed to reflow oven at
230±5 deg C for 40 seconds, with peak temperature at
260±5 deg C for 5 seconds, 2 times.

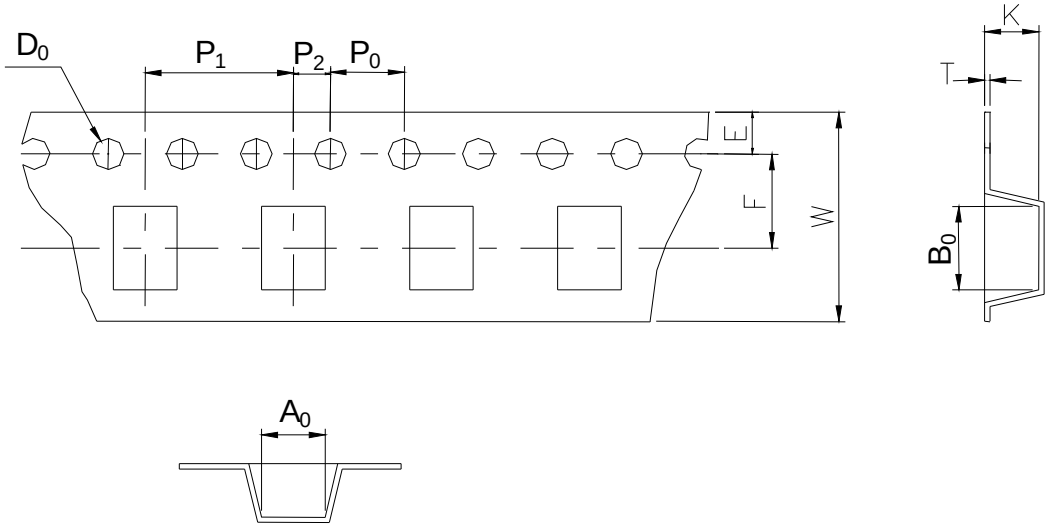
Test board thickness:1.0 mm
Test board material :glass epoxy-resin</td></tr>
<tr><td>Solder ability</td><td>At least 90% of surface of terminal electrode is covered by new solder.</td><td>The test samples shall be dipped in flux, and then
Immersed in molten solder as shown in below table.
Flux: Methanol solution containing rosin 25%
<table>
<tr><td>Solder Temperature</td><td>245±deg C</td></tr>
<tr><td>Time</td><td>5±1.0 S.</td></tr>
<tr><td>Immersing Speed</td><td>25 mm/s</td></tr>
</table></td></tr>
<tr><td>Temperature Characteristics</td><td>△L/L:within±20%
No abnormality observed
In appearance</td><td>Measurement of inductance shall be taken at temperature
Range within -25 deg C to +85 deg C.
With reference to inductance value at +20 deg C, change
Rate shall be calculated.</td></tr>
<tr><td rowspan="2"></td><td>Thermal shock</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to test board
By the reflow soldering conditions shown in Table 1.
The test samples shall be placed at specified
Shown in below table in sequence.
The temperature cycle shall be repeated 100 cycles.

Conditions of steps for 1 cycle
<table>
<tr><th>Step</th><th>Temperature</th><th>Time(min)</th></tr>
<tr><td>1</td><td>-40±3 deg C</td><td>30±3</td></tr>
<tr><td>2</td><td>Room Temp</td><td>3 maximum</td></tr>
<tr><td>3</td><td>85±2 deg C</td><td>30±3</td></tr>
<tr><td>4</td><td>Room Temp</td><td>3 maximum</td></tr>
</table></td></tr>
<tr><td>Low Temperature life Test</td><td>△L/L:within±10%
No abnormality observed
In appearance</td><td>The test samples shall be soldered to the test board by
The reflow soldering conditions shown in Table 1.
After that, the test samples shall be placed at test
Conditions as shown in below table.
<table>
<tr><td>Temperature</td><td>-40±2 deg C</td></tr>
<tr><td>Time</td><td>500 +24/-0 h</td></tr>
</table></td></tr>
</table>

<table>
<tr><th></th><th>Test Item</th><th>Standard</th><th>Test method</th></tr>
<tr><td rowspan="3">ENVIRONMENT TESTS</td><td>Loading at high temperature life test</td><td>△L/L:within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Table 1.
The test samples shall be placed in thermostatic oven set at specified temperature and applied the rated current continuously as shown in below table.
<table><tr><td>Temperature</td><td>85±2 deg C</td></tr><tr><td>Applied current</td><td>Rated current
(Refer to Page 3)</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
<tr><td>Damp heat life test</td><td>△L/L:within±10%
No abnormality observed
in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Table 1.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.
<table><tr><td>Temperature</td><td>60±2 deg C</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
<tr><td>Loading under Damp heat life test</td><td>△L/L:within±10%
No abnormality observed
in appearance.</td><td>The test samples shall be soldered to the test board by the reflow soldering conditions shown in Table 1.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below table.
<table><tr><td>Temperature</td><td>60±2 deg C</td></tr><tr><td>Humidity</td><td>90~95%RH</td></tr><tr><td>Applied current</td><td>Rated current
(Refer to Page 3)</td></tr><tr><td>Time</td><td>500+24/-0 h</td></tr></table></td></tr>
</table>

Tape & Reel Packaging Dimensions:

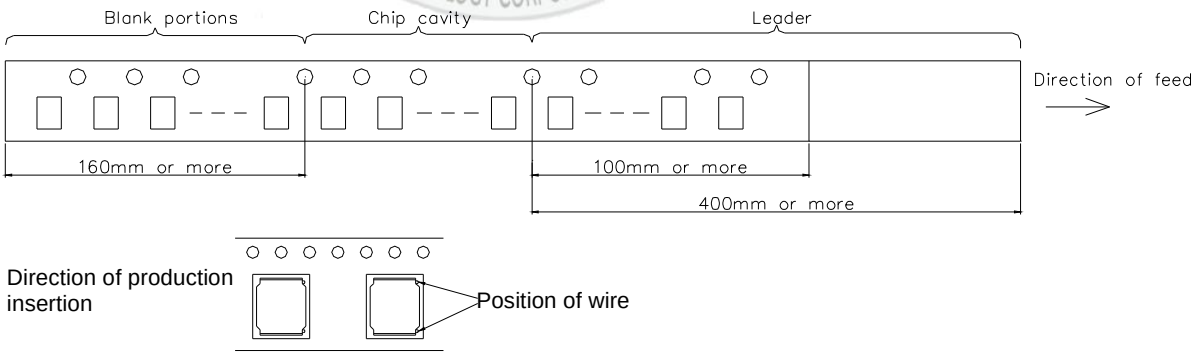
Dimensions



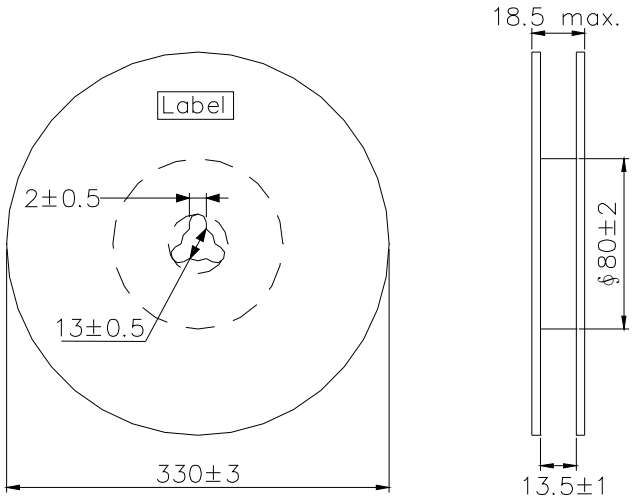
Unit：mm

A_0	B_0	W	F	E	P_1	P_2	P_0	D_0	T	K
5.15 ±0.1	5.15 ±0.1	12.0 ±0.3	5.5 ±0.1	1.75 ±0.1	8.0 ±0.1	2.0 ±0.1	4.0 ±0.1	Φ1.5 +0.1 -0	0.4 ±0.1	4.2 ±0.1

Direction of rolling

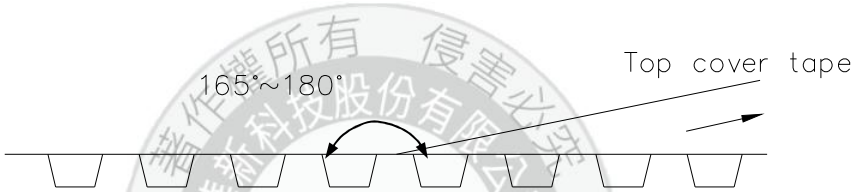


Reel



Label position: on the opposite side of sprocket holes side of reel

Top tape strength



Peel-off strength: 0.1N~1.3N

Peel-off angle:165°~180°

Peel-off speed: 300mm/mm

Quantity per reel：1.5K pcs

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Walsin:

WLPN505040M100LB WLPN505040N4R7LB WLPN505040M150LB WLPN505040N3R3LB WLPN505040M330LB WLPN505040M220LB WLPN505040N1R5LB WLPN505040N2R2LB WLPN505040M470LB WLPN505040M6R8LB