



# Power Metal Strip® and Power Metal Plate™ Series

## PURPOSE

This document outlines the WSL series product marking that includes all families of the WSL series, such as WSL-18, WSLS, WSLT, WSLP, etc. These product marking methods have been used since 01-Aug-2008.

MANUFACTURING LOCATION		
<p>Manufacturing location is identified by a line above the resistance code. If a line is included above the resistance code, then the part was manufactured in Israel. If a line is included below the product marking, then the part was manufactured in Mexico. If no line is present, then the parts were manufactured in Columbus, NE USA. Unmarked parts will not have an identification.</p> <p>Example:</p>		
<b>R050</b>	<b>R050</b>	<b>R050</b>
Israel (line above)	Mexico (line below)	Columbus, NE (no line)

WSL0603
No marking on the component

WSL0805						
<ul style="list-style-type: none"> <li>Maximum of 3, minimum of 2 characters per part and no DALE</li> <li>No tolerance is printed</li> <li>Values below 10 mΩ printed with "L"</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-0805 0.04 Ω</td> <td>1 % printed as: <b>R04</b></td> </tr> <tr> <td>WSL-0805 0.015 Ω</td> <td>1 % printed as: <b>015</b></td> </tr> <tr> <td>WSL-0805 0.009 Ω</td> <td>1 % printed as: <b>9L0</b></td> </tr> </table>	WSL-0805 0.04 Ω	1 % printed as: <b>R04</b>	WSL-0805 0.015 Ω	1 % printed as: <b>015</b>	WSL-0805 0.009 Ω	1 % printed as: <b>9L0</b>
WSL-0805 0.04 Ω	1 % printed as: <b>R04</b>					
WSL-0805 0.015 Ω	1 % printed as: <b>015</b>					
WSL-0805 0.009 Ω	1 % printed as: <b>9L0</b>					

WSL0612
No marking on the component

WSL1206						
<ul style="list-style-type: none"> <li>Maximum of 4, minimum of 3 characters per part and no DALE</li> <li>No tolerance is printed</li> <li>Values below 10 mΩ printed with "L"</li> <li>&lt; 1 mΩ; no marking on the component</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-1206 0.006 Ω</td> <td>1 % printed as: <b>6L0</b></td> </tr> <tr> <td>WSL-1206 0.02 Ω</td> <td>1 % printed as: <b>R02</b></td> </tr> <tr> <td>WSL-1206 0.0249 Ω</td> <td>1 % printed as: <b>0249</b></td> </tr> </table>	WSL-1206 0.006 Ω	1 % printed as: <b>6L0</b>	WSL-1206 0.02 Ω	1 % printed as: <b>R02</b>	WSL-1206 0.0249 Ω	1 % printed as: <b>0249</b>
WSL-1206 0.006 Ω	1 % printed as: <b>6L0</b>					
WSL-1206 0.02 Ω	1 % printed as: <b>R02</b>					
WSL-1206 0.0249 Ω	1 % printed as: <b>0249</b>					

WSL1020
No marking on the component

WSL2010						
<b>0.001 Ω to 0.0069 Ω</b>						
<ul style="list-style-type: none"> <li>Maximum of 4, minimum of 3 characters per part and no DALE</li> <li>No tolerance is printed</li> <li>Values below 10 mΩ printed with "L"</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-2010 0.005 Ω</td> <td>1 % printed as: <b>5L0</b></td> </tr> <tr> <td>WSL-2010 0.00499 Ω</td> <td>1 % printed as: <b>4L99</b></td> </tr> </table>	WSL-2010 0.005 Ω	1 % printed as: <b>5L0</b>	WSL-2010 0.00499 Ω	1 % printed as: <b>4L99</b>		
WSL-2010 0.005 Ω	1 % printed as: <b>5L0</b>					
WSL-2010 0.00499 Ω	1 % printed as: <b>4L99</b>					
<b>0.007 Ω to 0.5 Ω</b>						
<ul style="list-style-type: none"> <li>Maximum of 5, minimum of 4 characters per part and no DALE</li> <li>Tolerance may be printed on 1 % parts only</li> <li>Values below 10 mΩ printed with "L"</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-2010 0.5 Ω</td> <td>1 % printed as: <b>R50F</b></td> </tr> <tr> <td>WSL-2010 0.055 Ω</td> <td>1 % printed as: <b>R055F</b></td> </tr> <tr> <td>WSL-2010 0.007 Ω</td> <td>1 % printed as: <b>7L0F</b></td> </tr> </table>	WSL-2010 0.5 Ω	1 % printed as: <b>R50F</b>	WSL-2010 0.055 Ω	1 % printed as: <b>R055F</b>	WSL-2010 0.007 Ω	1 % printed as: <b>7L0F</b>
WSL-2010 0.5 Ω	1 % printed as: <b>R50F</b>					
WSL-2010 0.055 Ω	1 % printed as: <b>R055F</b>					
WSL-2010 0.007 Ω	1 % printed as: <b>7L0F</b>					

WSL2512								
<b>0.0005 Ω to 0.00099 Ω</b>								
No marking on the component								
<b>0.001 Ω to 0.0049 Ω</b>								
<ul style="list-style-type: none"> <li>Maximum of 4, minimum of 3 characters per part and no DALE</li> <li>No tolerance is printed</li> <li>Values below 10 mΩ printed with "L"</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-2512 0.004 Ω</td> <td>1 % printed as: <b>4L0</b></td> </tr> <tr> <td>WSL-2512 0.0031 Ω</td> <td>1 % printed as: <b>3L1</b></td> </tr> </table>	WSL-2512 0.004 Ω	1 % printed as: <b>4L0</b>	WSL-2512 0.0031 Ω	1 % printed as: <b>3L1</b>				
WSL-2512 0.004 Ω	1 % printed as: <b>4L0</b>							
WSL-2512 0.0031 Ω	1 % printed as: <b>3L1</b>							
<b>0.005 Ω to 0.5 Ω</b>								
<ul style="list-style-type: none"> <li>Maximum of 5, minimum of 4 characters per part and no DALE</li> <li>Tolerance may be printed on 1 % parts only, otherwise blank indicates different tolerance</li> <li>Values below 10 mΩ printed with "L"</li> </ul> <p>Examples:</p> <table> <tr> <td>WSL-2512 0.5 Ω</td> <td>1 % printed as: <b>R50F</b></td> </tr> <tr> <td>WSL-2512 0.055 Ω</td> <td>1 % printed as: <b>R055F</b></td> </tr> <tr> <td>WSL-2512 0.022 Ω</td> <td>5 % printed as: <b>R022</b></td> </tr> <tr> <td>WSL-2512 0.005 Ω</td> <td>1 % printed as: <b>5L0F</b></td> </tr> </table>	WSL-2512 0.5 Ω	1 % printed as: <b>R50F</b>	WSL-2512 0.055 Ω	1 % printed as: <b>R055F</b>	WSL-2512 0.022 Ω	5 % printed as: <b>R022</b>	WSL-2512 0.005 Ω	1 % printed as: <b>5L0F</b>
WSL-2512 0.5 Ω	1 % printed as: <b>R50F</b>							
WSL-2512 0.055 Ω	1 % printed as: <b>R055F</b>							
WSL-2512 0.022 Ω	5 % printed as: <b>R022</b>							
WSL-2512 0.005 Ω	1 % printed as: <b>5L0F</b>							



**WSLF2512**  
No marking on the component

**WSLS2512**  
**0.010 Ω to 0.100 Ω**

- Contains 4 digits
- First 3 digits will be resistance value
- Fourth digit will be the stability code, refer to table below

Stability Code	Life Stability	TCR	Derating Curve
G	0.25 %	± 75 ppm/°C	70 ° to 170 °C
H	0.5 %	± 75 ppm/°C	70 ° to 170 °C

Examples:  
 WSLS-2512 0.1 Ω      G stability    0.5 % printed as: **100G**  
 WSLS-2512 0.010 Ω    H stability    1.0 % printed as: **010H**

**WSL2816**  
**0.002 Ω to 0.1 Ω**

- Maximum of 5, minimum of 2 characters per part and no DALE
- Tolerance may be printed on 1 % parts only
- Values below 10 mΩ printed with “L”

Examples:  
 WSL-2816 0.1 Ω                    1 % printed as: **R1F**  
 WSL-2816 0.055 Ω                1 % printed as: **R055F**  
 WSL-2816 0.055 Ω                5 % printed as: **R055**  
 WSL-2816 0.005 Ω                1 % printed as: **5L0F**

**WSL3637**  
**0.001 Ω to 0.00199 Ω**

- Maximum of 5, minimum of 3 characters per part and no DALE
- Tolerance may be printed on 1 % parts only
- All values printed with “L”

Examples:  
 WSL-3637 0.001 Ω                1 % printed as: **1L0F**  
 WSL-3637 0.00199 Ω            1 % printed as: **1L99F**  
 WSL-3637 0.00199 Ω            5 % printed as: **1L99**

**0.002 Ω to 0.01 Ω**

- Maximum of 5, minimum of 2 characters per part and DALE is printed on the part
- Tolerance may be printed on 1 % parts only

Examples:  
 WSL-3637 0.01 Ω                1 % printed as: **DALE R01F**  
 WSL-3637 0.022 Ω               5 % printed as: **DALE R022**  
 WSL-3637 0.002 Ω               1 % printed as: **DALE 2L0F**

**WSL2726 / WSL4026**  
**0.0003 Ω to 0.005 Ω**

- Maximum of 12 characters (including spaces) per line and no DALE
- Date code printed based upon week and year of manufacture

Examples:  
 WSL-2726 0.0003 Ω               1 % printed as: **WSL2726 .0003Ω 1% 1119**  
 WSL-4026 0.0052 Ω               1 % printed as: **WSL4026 .005Ω 1% 1119**

**WSL3921 / WSL5931**  
No marking on the component

**WSL-9 COPPER JUMPER**

- 2512, 2010, 1206, 0805 marked with 0L0
- 0603 is not marked

**WSK0612**  
No marking on the component

**WSKW0612**  
No marking on the component

**WSK1206**

- Maximum of 4, minimum of 3 characters per part and no DALE
- No tolerance is printed
- Values below 10 mΩ printed with “L”

Examples:  
 WSK-1206 0.006 Ω                1 % printed as: **6L0**  
 WSK-1206 0.02 Ω                 1 % printed as: **R02**  
 WSK-1206 0.0249 Ω              1 % printed as: **0249**

**WSK2512**  
**0.0005 Ω to 0.00099 Ω**

No marking on the component

**0.001 Ω to 0.2 Ω**

- Maximum of 4, minimum of 3 characters per part and no DALE
- No tolerance is printed
- Values below 10 mΩ printed with “L”

Examples:  
 WSK-2512 0.022 Ω                5 % printed as: **R022**  
 WSK-2512 0.005 Ω                1 % printed as: **5L0**  
 WSK-2512 0.00311 Ω             1 % printed as: **3L11**



<b>WSC01/2</b>		
<b>0.1 Ω to 4.99 Ω</b>		
<ul style="list-style-type: none"> <li>Maximum of 5 characters</li> <li>Line 1 Dale, line 2 resistance</li> </ul>		
<u>Examples:</u>		
DALE 0.1 Ω	DALE 1 Ω	DALE 4.99 Ω

<b>WSC2515</b>		
<b>0.1 Ω to 2.5 kΩ</b>		
<ul style="list-style-type: none"> <li>Maximum of 10 characters</li> <li>Line 1 model and size</li> <li>Line 2 ohm value and tolerance</li> <li>Line 3 date code consists of location (M); year, week code (YYWW)</li> </ul>		
<u>Examples:</u>		
WSC2515 0.1 Ω 1 % M1843	WSC2515 800 Ω 1 % M1843	WSC2515 2.5 kΩ 1 % M1825

<b>WSC0002</b>	<b>WSC4527</b>	<b>WSC6927</b>
<b>0.1 Ω to 4.92 kΩ</b>	<b>0.1 Ω to 4.92 kΩ</b>	<b>0.1 Ω to 8 kΩ</b>
<ul style="list-style-type: none"> <li>Maximum of 12 characters (WSC0002 and WSC4527), maximum of 15 characters (WSC6927)</li> <li>Line 1 DALE</li> <li>Line 2 model and size</li> <li>Line 3 ohm value and tolerance</li> <li>Line 4 date code consists of location (M); year, week code (YYWW)</li> </ul>		
<u>Examples:</u>		
DALE WSC0002 0.1 Ω 1 % M1843	DALE WSC4527 900 Ω 1 % M1843	DALE WSC6927 1.2 kΩ 1 % M1843

<b>WSHM2818</b>	
<ul style="list-style-type: none"> <li>Maximum of 8 characters. No DALE</li> <li>Line 1 model and size, line 2 value tolerance, and line 3 is date code YYWW</li> <li>Resistance value has leading zero if ≤ 3 digits. &gt; 3 digits will omit the leading zero. (0.xxx Ω or .xxxx Ω)</li> </ul>	
<u>Examples:</u>	
WSHM2818 0.033Ω1% 1632	WSHM2818 .0332Ω1% 1632

<b>WSHP2818</b>	
<ul style="list-style-type: none"> <li>Maximum of 8 characters. No DALE</li> <li>Line 1 model and size, line 2 value tolerance, and line 3 is date code YYWW</li> <li>Resistance value has leading zero if ≤ 3 digits. &gt; 3 digits will omit the leading zero. (0.xxx Ω or .xxxx Ω)</li> </ul>	
<u>Examples:</u>	
WSHP2818 0.033Ω1% 1632	WSHP2818 .0332Ω1% 1632

<b>WSR2</b>
<ul style="list-style-type: none"> <li>Maximum of 11 characters. See example below</li> <li>Line 1 Dale</li> <li>Line 2 model and size</li> <li>Line 3 up to 10 digit, value tolerance. If number of digits after decimal exceeds 3 and tolerance 0.5 %, then the leading zero is omitted from tolerance. Example: 0.0332 Ω, 0.5 % will be marked as 0.0332 Ω .5 %</li> <li>Line 4. Date code consists of location (I); year, week code (YYWW). Date code always has alpha suffix (alpha suffix is defined lot control)</li> </ul>
<u>Examples:</u>
DALE WSR-2 0.0332 Ω .5 % I1414AK

<b>WSR3</b>
<ul style="list-style-type: none"> <li>Maximum of 11 characters. See example below</li> <li>Line 1 Dale</li> <li>Line 2 model and size</li> <li>Line 3 up to 10 digit, value tolerance. If number of digits after decimal exceeds 3 and tolerance 0.5 %, then the leading zero is omitted from tolerance. Example: 0.0332 Ω, 0.5 % will be marked as 0.0332 Ω .5 %</li> <li>Line 4. Date code consists of location (I); year, week code (YYWW). Date code always has alpha suffix (alpha suffix is defined lot control)</li> </ul>
<u>Examples:</u>
DALE WSR-3 0.0125 Ω 1 % I1346AD



<b>WSR5</b>
<b>0.001 Ω to 0.00749 Ω</b>
<ul style="list-style-type: none"> <li>• Maximum of 11 characters. See example below</li> <li>• Line 1 Dale</li> <li>• Line 2 model and size</li> <li>• Line 3, up to 10 digits, value tolerance. If number of digits after decimal exceeds 3 and tolerance 0.5 %, then the leading zero is omitted from tolerance. Example: 0.0332 Ω, 0.5 % will be marked as 0.0332 Ω .5 %</li> <li>• Line 4, date code consists of location (I); year, week code (YYWW). Date code always has alpha suffix (alpha suffix is defined lot control).</li> </ul> <p><u>Examples:</u> DALE WSR-5 0.003 Ω 1 % I1346AD</p>
<b>0.0075 Ω to 0.3 Ω</b>
<ul style="list-style-type: none"> <li>• Maximum of 11 characters. No DALE</li> <li>• Line 1 model and size</li> <li>• Line 2 up to 10 digit, value and tolerance. If number of digits after decimal exceeds 3 and tolerance 0.5 %, then the leading zero is omitted from tolerance. Example: 0.0332 Ω, 0.5 % will be marked as 0.0332 Ω .5 %</li> <li>• Line 3. Date code consists of location (I); year, week code (YYWW). Date code always has alpha suffix (alpha suffix is defined lot control).</li> </ul> <p><u>Examples:</u> WSR-5 0.1 Ω 1 % I1351AA</p>

<b>WFM 2512, WFM 2010</b>								
<ul style="list-style-type: none"> <li>• 5 characters</li> <li>• No tolerance is printed</li> <li>• Values below 10 mΩ printed with “L”</li> </ul> <p>R marking decimal point of value in Ω L marking decimal point of value in mΩ</p> <p><u>Examples:</u></p> <table border="0"> <thead> <tr> <th><b>Resistance Value</b></th> <th><b>Marking</b></th> </tr> </thead> <tbody> <tr> <td>0.470 Ω</td> <td>R4700</td> </tr> <tr> <td>0.033 Ω</td> <td>R0330</td> </tr> <tr> <td>0.0068 Ω</td> <td>6L800</td> </tr> </tbody> </table>	<b>Resistance Value</b>	<b>Marking</b>	0.470 Ω	R4700	0.033 Ω	R0330	0.0068 Ω	6L800
<b>Resistance Value</b>	<b>Marking</b>							
0.470 Ω	R4700							
0.033 Ω	R0330							
0.0068 Ω	6L800							

<b>ADDITIONAL RESOURCES</b>	
WSL product search	<a href="http://www.vishay.com/search?query=wsl">www.vishay.com/search?query=wsl</a>
Decade tables	<a href="http://www.vishay.com/doc?30117">www.vishay.com/doc?30117</a>
Product overview	<a href="http://www.vishay.com/doc?49581">www.vishay.com/doc?49581</a>