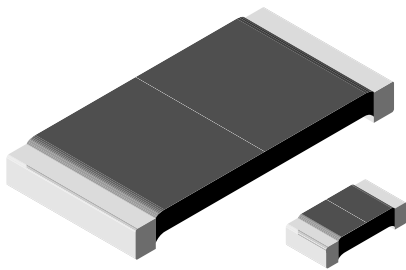


## Power Metal Strip® Resistors, Low Value, Surface Mount



### FEATURES

- Ideal for all types of current sensing, voltage division and pulse applications including switching and linear power supplies, instruments, power amplifiers
- Proprietary processing technique produces extremely low resistance values
- All welded construction
- Solid metal Nickel-chrome or Manganese-copper alloy resistive element
- 60/40 tin/lead copper terminations
- Very low inductance 0.5nH to 5nH
- Excellent frequency response
- Low thermal EMF

### STANDARD ELECTRICAL SPECIFICATIONS

| MODEL   | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ |             |                |
|---------|-----------------------------------------------|------------------------------|-------------|----------------|
|         |                                               | $\pm 0.5\%$                  | $\pm 1.0\%$ | $\pm 5.0\%$    |
| WSL0805 | 0.125                                         | 0.01 - 0.2                   | 0.01 - 0.2  | —              |
| WSL1206 | 0.25                                          | 0.01 - 0.2                   | 0.003 - 0.2 | 0.002 - 0.0029 |
| WSL2010 | 0.5                                           | 0.01 - 0.5                   | 0.003 - 0.5 | 0.001 - 0.0029 |
| WSL2512 | 1.0*                                          | 0.01 - 0.5                   | 0.003 - 0.5 | 0.001 - 0.0029 |

\*For values above 0.1 $\Omega$  derate linearly to 80% rated power at 0.5 $\Omega$

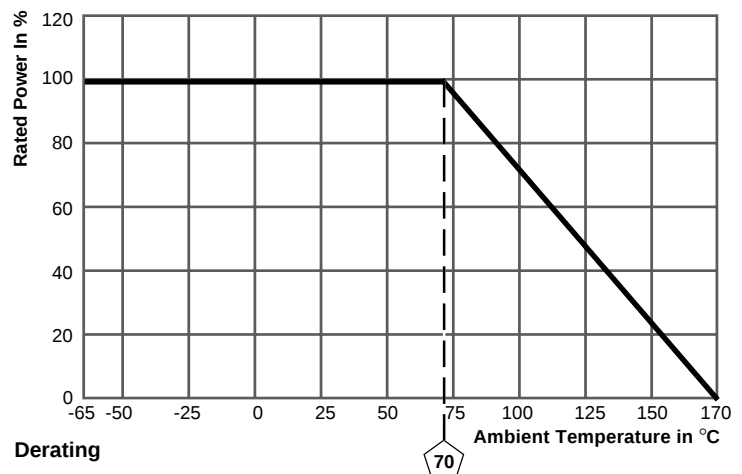
• Part Marking: DALE, Model, Value, Tolerance; due to resistor size limitations some resistors will be marked with only the resistance value

### TECHNICAL SPECIFICATIONS

| PARAMETER                    | UNIT                    | WSL0805              | WSL1206                                                                                                                                                                                  | WSL2010                                                                                                                                                                                  | WSL2512                                                                                                                                                                                  |
|------------------------------|-------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient      | ppm/ $^{\circ}\text{C}$ | $\pm 75$             | 0.002 $\Omega$ - 0.0029 $\Omega$ = $\pm 275$<br>0.003 $\Omega$ - 0.0049 $\Omega$ = $\pm 150$<br>0.005 $\Omega$ - 0.0069 $\Omega$ = $\pm 110$<br>0.007 $\Omega$ - 0.2 $\Omega$ = $\pm 75$ | 0.001 $\Omega$ - 0.0029 $\Omega$ = $\pm 275$<br>0.003 $\Omega$ - 0.0049 $\Omega$ = $\pm 150$<br>0.005 $\Omega$ - 0.0069 $\Omega$ = $\pm 110$<br>0.007 $\Omega$ - 0.5 $\Omega$ = $\pm 75$ | 0.001 $\Omega$ - 0.0029 $\Omega$ = $\pm 275$<br>0.003 $\Omega$ - 0.0049 $\Omega$ = $\pm 150$<br>0.005 $\Omega$ - 0.0069 $\Omega$ = $\pm 110$<br>0.007 $\Omega$ - 0.5 $\Omega$ = $\pm 75$ |
| Operating Temperature Range  | $^{\circ}\text{C}$      | - 65 / + 170         |                                                                                                                                                                                          |                                                                                                                                                                                          |                                                                                                                                                                                          |
| Maximum Working Voltage      | V                       | $(P \times R)^{1/2}$ |                                                                                                                                                                                          |                                                                                                                                                                                          |                                                                                                                                                                                          |
| Weight/1000 pieces (typical) | g                       | 4.8                  | 16.2                                                                                                                                                                                     | 38.9                                                                                                                                                                                     | 63.6                                                                                                                                                                                     |

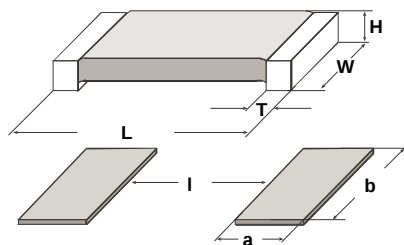
### ORDERING INFORMATION

**WSL2010**      **0.01 $\Omega$**       **1.0%**      **R86**  
 MODEL    RESISTANCE    TOLERANCE    PACKAGING  
                   $\Omega$                      $\pm \%$                     B43 = Bulk Pack  
                                                                                          R86 = Tape and Reel





## DIMENSIONS



| MODEL   | DIMENSIONS - in inches [millimeters] |                                         |                                         |                                          |                                          |
|---------|--------------------------------------|-----------------------------------------|-----------------------------------------|------------------------------------------|------------------------------------------|
|         | RESISTANCE RANGE $\Omega$            | L                                       | W                                       | H                                        | T                                        |
| WSL0805 | 0.01 - 0.2                           | $0.080 \pm 0.010$<br>[2.03 $\pm$ 0.254] | $0.050 \pm 0.010$<br>[1.27 $\pm$ 0.254] | $0.013 \pm 0.005$<br>[0.330 $\pm$ 0.127] | $0.015 \pm 0.010$<br>[0.381 $\pm$ 0.254] |
| WSL1206 | 0.002 - 0.2                          | $0.126 \pm 0.010$<br>[3.20 $\pm$ 0.254] | $0.063 \pm 0.010$<br>[1.60 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.020 \pm 0.010$<br>[0.508 $\pm$ 0.254] |
| WSL2010 | 0.001 - 0.0069                       | $0.200 \pm 0.010$<br>[5.08 $\pm$ 0.254] | $0.100 \pm 0.010$<br>[2.54 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.058 \pm 0.010$<br>[1.47 $\pm$ 0.254]  |
|         | 0.007 - 0.5                          | $0.200 \pm 0.010$<br>[5.08 $\pm$ 0.254] | $0.100 \pm 0.010$<br>[2.54 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.020 \pm 0.010$<br>[0.508 $\pm$ 0.254] |
| WSL2512 | 0.001 - 0.0049                       | $0.250 \pm 0.010$<br>[6.35 $\pm$ 0.254] | $0.125 \pm 0.010$<br>[3.18 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.087 \pm 0.010$<br>[2.21 $\pm$ 0.254]  |
|         | 0.005 - 0.0069                       | $0.250 \pm 0.010$<br>[6.35 $\pm$ 0.254] | $0.125 \pm 0.010$<br>[3.18 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.047 \pm 0.010$<br>[1.19 $\pm$ 0.254]  |
|         | 0.007 - 0.5                          | $0.250 \pm 0.010$<br>[6.35 $\pm$ 0.254] | $0.125 \pm 0.010$<br>[3.18 $\pm$ 0.254] | $0.025 \pm 0.010$<br>[0.635 $\pm$ 0.254] | $0.030 \pm 0.010$<br>[0.762 $\pm$ 0.254] |

| MODEL   | SOLDER PAD DIMENSIONS - in inches [millimeters] |              |              |              |
|---------|-------------------------------------------------|--------------|--------------|--------------|
|         | RESISTANCE RANGE $\Omega$                       | a            | b            | l            |
| WSL0805 | 0.01 - 0.2                                      | 0.040 [1.02] | 0.050 [1.27] | 0.020 [0.50] |
| WSL1206 | 0.002 - 0.2                                     | 0.050 [1.27] | 0.070 [1.78] | 0.055 [1.40] |
| WSL2010 | 0.001 - 0.0069                                  | 0.093 [2.36] | 0.120 [3.05] | 0.055 [1.40] |
|         | 0.007 - 0.5                                     | 0.055 [1.40] | 0.120 [3.05] | 0.130 [3.30] |
| WSL2512 | 0.001 - 0.0049                                  | 0.120 [3.05] | 0.145 [3.68] | 0.050 [1.27] |
|         | 0.005 - 0.0069                                  | 0.083 [2.11] | 0.145 [3.68] | 0.125 [3.18] |
|         | 0.007 - 0.5                                     | 0.065 [1.65] | 0.145 [3.68] | 0.160 [4.06] |

## PERFORMANCE

| TEST                      | CONDITIONS OF TEST                                                  | TEST LIMITS                           |
|---------------------------|---------------------------------------------------------------------|---------------------------------------|
| Thermal Shock             | - 55°C to + 150°C, 1000 cycles, 15 minutes at each extreme          | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Short Time Overload       | 5 x rated power for 5 seconds                                       | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Low Temperature Storage   | - 65°C for 24 hours                                                 | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| High Temperature Exposure | 1000 hours @ + 170°C                                                | $\pm (1.0\% + 0.0005\Omega) \Delta R$ |
| Bias Humidity             | + 85°C, 85% RH, 10% Bias, 1000 hours                                | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Mechanical Shock          | 100g's for 6 milliseconds, 5 pulses                                 | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Vibration                 | Frequency varied 10 to 2000Hz in one minute, 3 directions, 12 hours | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Load Life                 | 1000 hours @ rated power, + 70°C, 1.5 hours "ON", 0.5 hours "OFF"   | $\pm (1.0\% + 0.0005\Omega) \Delta R$ |
| Resistance to Solder Heat | + 260°C Solder, 10 - 12 second dwell, 25mm/second emergence         | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |
| Moisture Resistance       | MIL-STD-202, Method 106, 0% power, 7a and 7b not required           | $\pm (0.5\% + 0.0005\Omega) \Delta R$ |

## PACKAGING

| MODEL   | REEL                  |          |             |      |
|---------|-----------------------|----------|-------------|------|
|         | TAPE WIDTH            | DIAMETER | PIECES/REEL | CODE |
| WSL0805 | 8mm/Punched Paper     | 178mm/7" | 5000        | RT1  |
| WSL1206 | 8mm/Embossed Plastic  | 178mm/7" | 4000        | R86  |
| WSL2010 | 12mm/Embossed Plastic | 178mm/7" | 4000        | R86  |
| WSL2512 | 12mm/Embossed Plastic | 178mm/7" | 2000        | R86  |

Embossed carrier tape per EIA-481-1A