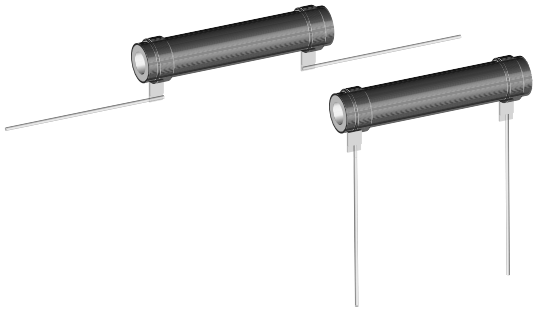
# Wirewound Resistor, Industrial Power, Silicone Coated, Tubular



## FEATURES

- High temperature silicone coating
- Complete welded construction
- Excellent for intermittent power and pulsing application
- Available in non-inductive style (special “NI”) with Ayrton-Perry winding
- Various lead and terminal options
- Excellent stability in operation (< 3 % change resistance)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{25\,°C}$ W | RESISTANCE RANGE Ω ± 5 % | RESISTANCE RANGE Ω ± 10 % | WEIGHT (typical) g |
|---|---|---|---|---|---|
| FSTL05 | FSTL-5 | 5 | 1.0 to 20.5K | 0.1 to 20.5K | 4.60 |
| FSTS05 | FSTS-5 | 5 | 1.0 to 20.5K | 0.1 to 20.5K | 4.60 |
| FSWL5A | HLW-05 | 5.25 | 1.0 to 15K | 0.10 to 15K | 2.12 |
| FSTL5A | HLW-05 | 5.25 | 1.0 to 15K | 0.10 to 15K | 2.12 |
| FSWL05 | FSWL-5 | 8 | 1.0 to 20.5K | 0.1 to 20.5K | 4.60 |
| FSWL08 | HLW-06 | 8 | 1.0 to 20.5K | 0.10 to 20.5K | 4.60 |
| FSTL08 | HLW-06 | 8 | 1.0 to 20.5K | 0.10 to 20.5K | 4.60 |
| FSWL1A | HLW-10 | 10 | 1.0 to 29K | 0.10 to 29K | 6.24 |
| FSTL10 | FSTL-10 | 12 | 1.0 to 58K | 0.10 to 58K | 6.69 |
| FSTS10 | FSTS-10 | 12 | 1.0 to 58K | 0.10 to 58K | 6.69 |
| FSWL10 | FSWL-10 | 12 | 1.0 to 58K | 0.10 to 58K | 6.69 |
| FSWL12 | HLW-12 | 12 | 1.0 to 58K | 0.10 to 58K | 6.69 |
| FSTL12 | HLW-12 | 12 | 1.0 to 58K | 0.10 to 58K | 6.69 |
| FSWL15 | HLW-15 | 15 | 1.0 to 60K | 0.10 to 60K | 8.82 |
| FSTL15 | HLW-15 | 15 | 1.0 to 60K | 0.10 to 60K | 8.82 |
| FSWL2A | HLW-20 | 20 | 1.0 to 95K | 0.10 to 95K | 11.36 |
| FSTL2A | HLW-20 | 20 | 1.0 to 95K | 0.10 to 95K | 11.36 |
| FSTL20 | FSTL-20 | 20 | 1.0 to 95K | 0.10 to 95K | 12.57 |
| FSTS20 | FSTS-20 | 20 | 1.0 to 95K | 0.10 to 95K | 12.57 |
| FSWL20 | FSWL-20 | 20 | 1.0 to 95K | 0.10 to 95K | 12.57 |

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | FST RESISTOR CHARACTERISTICS |
|---|---|---|
| Temperature Coefficient | ppm/°C | ± 260 for 20 Ω and above, ± 400 for 1 Ω to 20 Ω, special TC’s available please contact factory |
| Short Time Overload | - | 10 x rated power for 5 s |
| Dielectric Withstanding Voltage | $V_{AC}$ | 1000, from terminal to mounting hardware |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Operating Temperature Range | °C | -55 to +350 |

## GLOBAL PART NUMBER INFORMATION

**Global Part Numbering example: FSTL05R2E25R00JE** (visit www.vishay.net SAP parts manual for all options)

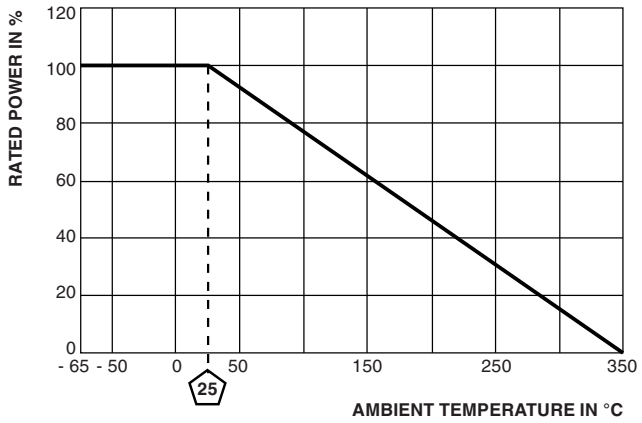
| F | S | T | L | 0 | 5 | R | 2 | E | 2 | 5 | R | 0 | 0 | J | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL (6 digits) | TERMINAL DESIGNATION (2 digits) | TERMINAL FINISH (1 digit) | VALUE (5 digits) | TOLERANCE (1 digit) | PACKAGING CODE (1 digit) | SPECIAL (up to 2 digits) |
|---|---|---|---|---|---|---|
| (see Standard Electrical Specifications Global Model column for options) | **A1**<br>**A2**<br>**R1**<br>**R2** | **E** = lead (Pb)-free | **R** = decimal<br>**K** = thousand<br>**1R500** = 1.5 Ω<br>**1K500** = 1.5 kΩ | **J** = ± 5 %<br>**K** = ± 10 % | **E** = lead (Pb)-free bulk pack FSTL/FSWL products to be lead (PB)-free foam packed. | (dash number) from **1** to **99** as applicable<br>**CT** = center tap<br>**NI** = non-inductive<br>**92** = 203 or 209 style push-in bracket as applicable |

**Historical Part Number example: FSTL-5-25-5 %**

| FSTL-5 | 25 Ω | 5 % | |
|---|---|---|---|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE | SPECIAL |

## DERATING




## MATERIAL SPECIFICATIONS

**Element:** copper-nickel alloy or nickel-chrome alloy, depending on resistance value

**Core:** ceramic, steatite

**Coating:** special high temperature silicone

**Standard Terminals:** tinned alloy 42

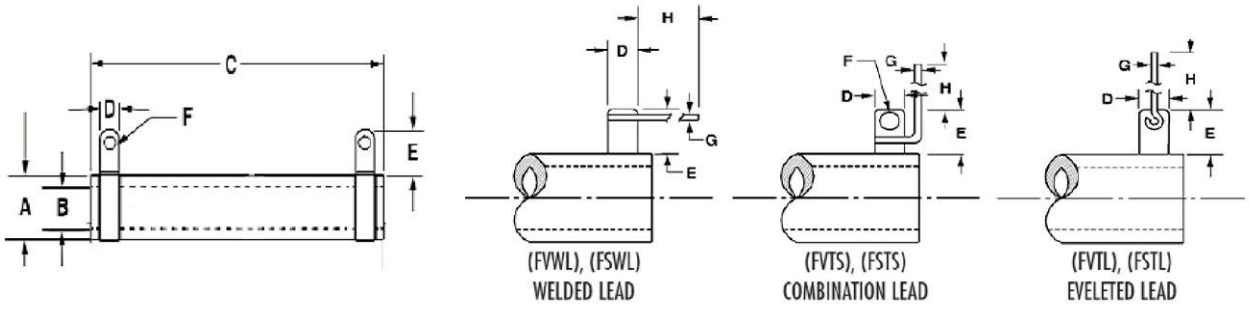
**Terminal Bands:** alloy 42

**Part Marking:** HEI, model, wattage, value, tolerance, date code

## NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Ayrton-Perry) winding. They are identified by adding the letters “NI” to the end of the part number in the special section. For non-inductive models the maximum resistance values are lower.

## DIMENSIONS in inches [millimeters]




| MODEL | CORE DIMENSIONS (REF.) | | | TERMINAL | | | | LEADS | | BRACKET TYPE |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D ± 0.005 [± 0.12] | E ± 0.015 [± 0.38] | F ± 0.005 [± 0.12] | DESIGNATION | G ± 0.002 [± 0.05] | H ± 0.125 [± 3.18] | |
| FSTL05 | 0.313 [7.94] | 0.188 [4.76] | 1.000 [25.40] | 0.188 [4.78] | 0.406 [10.31] | 0.132 [3.35] | R2 | 0.032 [0.813] | 2.90 [73.66] | 209 |
| FSTS05 | 0.313 [7.94] | 0.188 [4.76] | 1.000 [25.40] | 0.188 [4.78] | 0.406 [10.31] | 0.132 [3.35] | R2 | 0.032 [0.813] | 1.50 [38.10] | 209 |
| FSWL5A | 0.250 [6.35] | 0.125 [3.18] | 0.625 [15.88] | 0.063 [1.59] | 0.188 [4.76] typ. | n/a | A2 | 0.032 [0.813] | 1.50 [38.10] | |
| FSTL5A | 0.250 [6.35] | 0.125 [3.18] | 0.625 [15.88] | 0.063 [1.59] | 0.188 [4.76] typ. | n/a | R2 | 0.032 [0.813] | 1.50 [38.10] | |
| FSWL05 | 0.313 [7.94] | 0.188 [4.76] | 1.000 [25.40] | 0.125 [3.175] | 0.188 [4.78] | n/a | A2 | 0.032 [0.813] | 1.50 [38.10] | 209 |
| FSWL08 | 0.313 [7.94] | 0.188 [4.76] | 1.000 [25.40] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL08 | 0.313 [7.94] | 0.188 [4.76] | 1.000 [25.40] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | R1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSWL1A | 0.438 [11.11] | 0.313 [7.94] | 1.000 [25.40] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL10 | 0.313 [7.94] | 0.188 [4.76] | 1.750 [44.45] | 0.188 [4.78] | 0.406 [10.31] | 0.132 [3.35] | R1 | 0.040 [1.02] | 2.90 [73.66] | 209 |
| FSTS10 | 0.313 [7.94] | 0.188 [4.76] | 1.750 [44.45] | 0.188 [4.78] | 0.406 [10.31] | 0.132 [3.35] | R1 | 0.040 [1.02] | 1.50 [38.10] | 209 |
| FSWL10 | 0.313 [7.94] | 0.188 [4.76] | 1.750 [44.45] | 0.125 [3.175] | 0.188 [4.78] | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | 209 |
| FSWL12 | 0.313 [7.94] | 0.188 [4.76] | 1.750 [44.45] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL12 | 0.313 [7.94] | 0.188 [4.76] | 1.750 [44.45] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | R1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSWL15 | 0.438 [11.11] | 0.313 [7.94] | 1.500 [38.10] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL15 | 0.438 [11.11] | 0.313 [7.94] | 1.500 [38.10] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | R1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSWL2A | 0.438 [11.11] | 0.313 [7.94] | 2.000 [50.80] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL2A | 0.438 [11.11] | 0.313 [7.94] | 2.000 [50.80] | 0.125 [3.18] | 0.188 [4.76] typ. | n/a | R1 | 0.040 [1.02] | 1.50 [38.10] | |
| FSTL20 | 0.438 [11.11] | 0.260 [6.604] | 2.000 [50.8] | 0.188 [4.78] | 0.406 [10.32] | 0.133 [3.37] | R1 | 0.040 [1.02] | 1.65 [41.91] | 203 |
| FSTS20 | 0.438 [11.11] | 0.260 [6.604] | 2.000 [50.8] | 0.188 [4.78] | 0.406 [10.32] | 0.133 [3.37] | R1 | 0.040 [1.02] | 1.50 [38.10] | 203 |
| FSWL20 | 0.438 [11.11] | 0.260 [6.604] | 2.000 [50.8] | 0.125 [3.175] | 0.188 [4.78] | n/a | A1 | 0.040 [1.02] | 1.50 [38.10] | 203 |

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