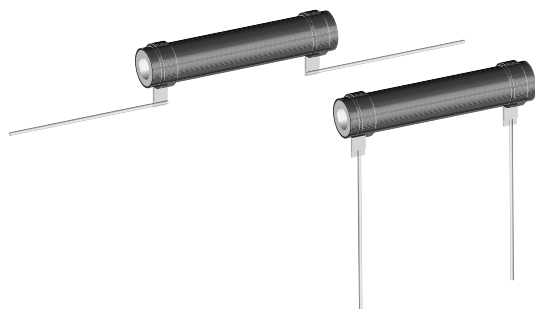


## Wirewound Resistor, Industrial Power, Silicone Coated, Tubular



### 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?999912](http://www.vishay.com/doc?999912)



### STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING<br>$P_{25^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$<br>$\pm 5\%$ | RESISTANCE RANGE<br>$\Omega$<br>$\pm 10\%$ | WEIGHT (typical)<br>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

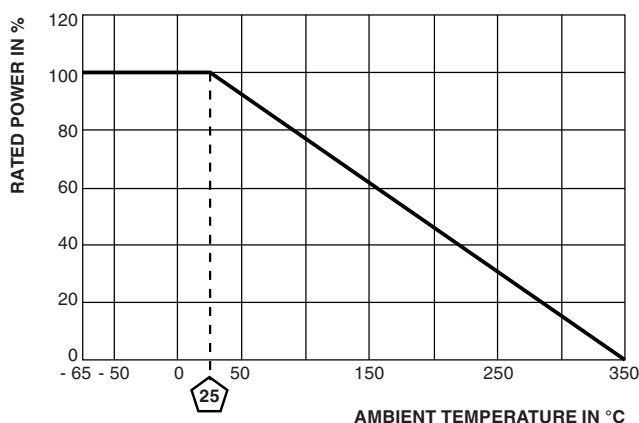
| PARAMETER                       | UNIT                    | FST RESISTOR CHARACTERISTICS                                                                                                 |
|---------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Temperature Coefficient         | ppm/ $^{\circ}\text{C}$ | $\pm 260$ for 20 $\Omega$ and above, $\pm 400$ for 1 $\Omega$ to 20 $\Omega$ , 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     | $^{\circ}\text{C}$      | -55 to +350                                                                                                                  |

**GLOBAL PART NUMBER INFORMATION**Global Part Numbering example: **FSTL05R2E25R00JE** (visit [www.vishay.net](http://www.vishay.net) SAP parts manual for all options)

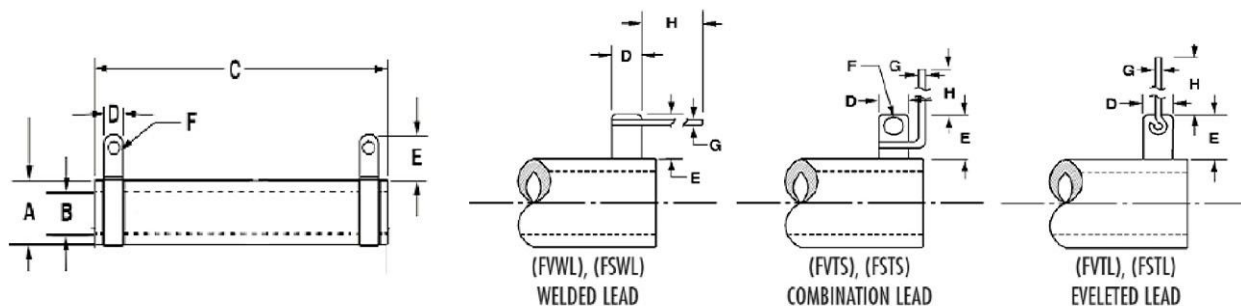
|                                                                          |          |          |          |                                                  |          |                              |          |                                                                                                           |          |                                               |          |                                                                                             |          |                                                                                                                                                                             |          |  |  |
|--------------------------------------------------------------------------|----------|----------|----------|--------------------------------------------------|----------|------------------------------|----------|-----------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------|----------|---------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--|--|
| <b>F</b>                                                                 | <b>S</b> | <b>T</b> | <b>L</b> | <b>0</b>                                         | <b>5</b> | <b>R</b>                     | <b>2</b> | <b>E</b>                                                                                                  | <b>2</b> | <b>5</b>                                      | <b>R</b> | <b>0</b>                                                                                    | <b>0</b> | <b>J</b>                                                                                                                                                                    | <b>E</b> |  |  |
| GLOBAL MODEL<br>(6 digits)                                               |          |          |          | TERMINAL DESIGNATION<br>(2 digits)               |          | TERMINAL FINISH<br>(1 digit) |          | VALUE<br>(5 digits)                                                                                       |          | TOLERANCE<br>(1 digit)                        |          | PACKAGING CODE<br>(1 digit)                                                                 |          | SPECIAL<br>(up to 2 digits)                                                                                                                                                 |          |  |  |
| (see Standard Electrical Specifications Global Model column for options) |          |          |          | <b>A1</b><br><b>A2</b><br><b>R1</b><br><b>R2</b> |          | <b>E</b> = lead (Pb)-free    |          | <b>R</b> = decimal<br><b>K</b> = thousand<br><b>1R500</b> = 1.5 $\Omega$<br><b>1K500</b> = 1.5 k $\Omega$ |          | <b>J</b> = $\pm 5\%$<br><b>K</b> = $\pm 10\%$ |          | <b>E</b> = lead (Pb)-free bulk pack<br>FSTL/FSWL products to be lead (Pb)-free foam packed. |          | (dash number) from <b>1</b> to <b>99</b> as applicable<br><b>CT</b> = center tap<br><b>NI</b> = non-inductive<br><b>92</b> = 203 or 209 style push-in bracket as applicable |          |  |  |

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

|                  |                               |            |         |
|------------------|-------------------------------|------------|---------|
| <b>FSTL-5</b>    | <b>25 <math>\Omega</math></b> | <b>5 %</b> |         |
| 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                 |                          |                          | DESIGNATION | LEADS                    |                          | BRACKET TYPE |
|--------|------------------------|------------------|------------------|--------------------------|--------------------------|--------------------------|-------------|--------------------------|--------------------------|--------------|
|        | A                      | B                | C                | D<br>± 0.005<br>[± 0.12] | E<br>± 0.015<br>[± 0.38] | F<br>± 0.005<br>[± 0.12] |             | G<br>± 0.002<br>[± 0.05] | H<br>± 0.125<br>[± 3.18] |              |
| FSTL05 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.000<br>[25.40] | 0.188<br>[4.78]          | 0.406<br>[10.31]         | 0.132<br>[3.35]          | R2          | 0.032<br>[0.813]         | 2.90<br>[73.66]          | 209          |
| FSTS05 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.000<br>[25.40] | 0.188<br>[4.78]          | 0.406<br>[10.31]         | 0.132<br>[3.35]          | R2          | 0.032<br>[0.813]         | 1.50<br>[38.10]          | 209          |
| FSWL5A | 0.250<br>[6.35]        | 0.125<br>[3.18]  | 0.625<br>[15.88] | 0.063<br>[1.59]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A2          | 0.032<br>[0.813]         | 1.50<br>[38.10]          |              |
| FSTL5A | 0.250<br>[6.35]        | 0.125<br>[3.18]  | 0.625<br>[15.88] | 0.063<br>[1.59]          | 0.188<br>[4.76]<br>typ.  | n/a                      | R2          | 0.032<br>[0.813]         | 1.50<br>[38.10]          |              |
| FSWL05 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.000<br>[25.40] | 0.125<br>[3.175]         | 0.188<br>[4.78]          | n/a                      | A2          | 0.032<br>[0.813]         | 1.50<br>[38.10]          | 209          |
| FSWL08 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.000<br>[25.40] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL08 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.000<br>[25.40] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSWL1A | 0.438<br>[11.11]       | 0.313<br>[7.94]  | 1.000<br>[25.40] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL10 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.750<br>[44.45] | 0.188<br>[4.78]          | 0.406<br>[10.31]         | 0.132<br>[3.35]          | R1          | 0.040<br>[1.02]          | 2.90<br>[73.66]          | 209          |
| FSTS10 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.750<br>[44.45] | 0.188<br>[4.78]          | 0.406<br>[10.31]         | 0.132<br>[3.35]          | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          | 209          |
| FSWL10 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.750<br>[44.45] | 0.125<br>[3.175]         | 0.188<br>[4.78]          | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          | 209          |
| FSWL12 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.750<br>[44.45] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL12 | 0.313<br>[7.94]        | 0.188<br>[4.76]  | 1.750<br>[44.45] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSWL15 | 0.438<br>[11.11]       | 0.313<br>[7.94]  | 1.500<br>[38.10] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL15 | 0.438<br>[11.11]       | 0.313<br>[7.94]  | 1.500<br>[38.10] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSWL2A | 0.438<br>[11.11]       | 0.313<br>[7.94]  | 2.000<br>[50.80] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL2A | 0.438<br>[11.11]       | 0.313<br>[7.94]  | 2.000<br>[50.80] | 0.125<br>[3.18]          | 0.188<br>[4.76]<br>typ.  | n/a                      | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          |              |
| FSTL20 | 0.438<br>[11.11]       | 0.260<br>[6.604] | 2.000<br>[50.8]  | 0.188<br>[4.78]          | 0.406<br>[10.32]         | 0.133<br>[3.37]          | R1          | 0.040<br>[1.02]          | 1.65<br>[41.91]          | 203          |
| FSTS20 | 0.438<br>[11.11]       | 0.260<br>[6.604] | 2.000<br>[50.8]  | 0.188<br>[4.78]          | 0.406<br>[10.32]         | 0.133<br>[3.37]          | R1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          | 203          |
| FSWL20 | 0.438<br>[11.11]       | 0.260<br>[6.604] | 2.000<br>[50.8]  | 0.125<br>[3.175]         | 0.188<br>[4.78]          | n/a                      | A1          | 0.040<br>[1.02]          | 1.50<br>[38.10]          | 203          |



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