# Wirewound Resistors, Industrial Power, Silicone Coated, Fixed Edgewound Tubular

## FEATURES

- High temperature silicone coating
- Complete welded construction
- Excellent stability in operation (< 3 % change in resistance)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

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 |
|---|---|---|---|---|---|
| FSE0050 | FSE-50 | 50 | 1.0 to 3.8 | 1.0 to 3.8 | 18 |
| FSE0090 | FSE-90 | 90 | 0.10 to 5.7 | 0.10 to 5.7 | 36 |
| FSE0100 | FSE-100 | 100 | 1.0 to 6.1 | 0.15 to 6.1 | 41 |
| FSE0110 | FSE-110 | 110 | 1.0 to 7.4 | 0.20 to 7.4 | 49 |
| FSE0120 | FSE-120 | 120 | 1.0 to 8.6 | 0.1 to 8.6 | 54 |
| FSE0155 | FSE-155 | 155 | 1.0 to 12.5 | 0.1 to 12.5 | 129 |
| FSE0240 | FSE-240 | 240 | 1.0 to 18 | 0.1 to 18 | 186 |
| FSE0300 | FSE-300 | 300 | 1.0 to 25 | 0.15 to 25 | 236 |
| FSE0375 | FSE-375 | 375 | 1.0 to 32 | 0.20 to 32 | 286 |
| FSE0420 | FSE-420 | 420 | 1.0 to 35.8 | 0.25 to 35.8 | 320 |
| FSE0500 | FSE-500 | 500 | 1.0 to 46.2 | 0.30 to 46.2 | 381 |
| FSE0750 | FSE-750 | 750 | 1.0 to 81.3 | 0.35 to 81.3 | 654 |
| FSE1000 | FSE-1000 | 1000 | 1.0 to 101.6 | 0.40 to 101.6 | 817 |
| FSE1500 | FSE-1500 | 1500 | 1.0 to 135.5 | 0.15 to 135.5 | 1090 |

## GLOBAL PART NUMBER INFORMATION

**Global Part Numbering example: FSE050021E15R0JE** (visit www.vishay.net Vishay Dale parts numbering manual for all options)

| F | S | E | 0 | 5 | 0 | 0 | 2 | 1 | E | 1 | 5 | R | 0 | J | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL (7 digits) | TERMINAL DESIGNATION (2 digits) | TERMINAL FINISH (1 digit) | VALUE (4 digits) | TOLERANCE (1 digit) | PACKAGING CODE (1 digit) | SPECIAL (up to 2 digits) |
|---|---|---|---|---|---|---|
| (See Standard Electrical Specifications Global Model column for options) | **06**<br>**15**<br>**20**<br>**21**<br>**22** | **E** = Lead (Pb)-free | **R** = Decimal<br>**1R50** = 1.5 Ω | **J** = ± 5 %<br>**K** = ± 10 % | **E** = Lead (Pb)-free cell and bulk pack | (Dash number)<br>From **1** to **99** as applicable<br>**91** = 100 style BKT<br>**92** = 200 style BKT<br>**93** = 300 style BKT |

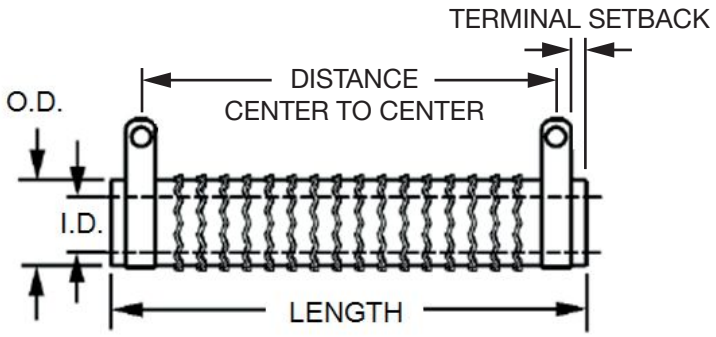
**Historical Part Number example: FSE-500-15-5 %**

| FSE-500 | 15 Ω | 5 % | |
|---|---|---|---|
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE | SPECIAL |



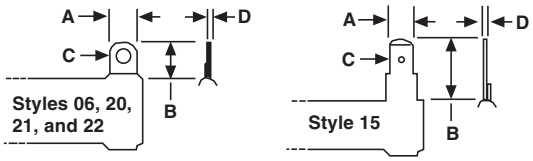
For technical questions, contact: ww2dresistors@vishay.com

## DIMENSIONS in inches [millimeters]




| MODEL | CORE DIMENSIONS | | | TERMINAL SETBACK | DISTANCE CENTER TO CENTER (REF.) | TERMINAL DESIGNATION | |
|---|---|---|---|---|---|---|---|
| | LENGTH ± 0.062 [± 1.57] | O.D. ± 0.031 [± 0.79] | I.D. ± 0.031 [± 0.79] | | | STANDARD | OPTIONAL (QUICK CONNECT) |
| FSE0050 | 2.000 [50.8] | 0.750 [19.05] | 0.500 [12.70] | 0.094 [2.39 | 1.562 [39.67] | 06 | 15 |
| FSE0090 | 4.000 [101.6] | 0.563 [14.30] | 0.313 [7.95] | 0.094 [2.39] | 3.562 [90.47] | 06 | 15 |
| FSE0100 | 3.500 [88.90] | 0.750 [19.05] | 0.500 [12.70] | 0.079 [2.01] | 3.092 [78.54] | 06 | 15 |
| FSE0110 | 4.000 [101.6] | 0.750 [19.05] | 0.500 [12.70] | 0.125 [3.18] | 3.500 [88.90] | 06 | 15 |
| FSE0120 | 4.500 [114.3] | 0.750 [19.05] | 0.547 [13.89] | 0.125 [3.18] | 4.000 [101.60] | 06 | 15 |
| FSE0155 | 4.500 [114.3] | 1.125 [28.58] | 0.750 [19.05] | 0.282 [7.16] | 3.311 [84.10] | 20 | 15 |
| FSE0240 | 6.500 [165.1] | 1.125 [28.58] | 0.750 [19.05] | 0.250 [6.35] | 5.561 [141.25] | 20 | 15 |
| FSE0300 | 8.500 [215.9] | 1.125 [28.58] | 0.750 [19.05] | 0.267 [6.78] | 7.591 [192.81] | 20 | 15 |
| FSE0375 | 10.500 [266.7] | 1.125 [28.58] | 0.750 [19.05] | 0.266 [6.76] | 9.591 [243.61] | 20 | 15 |
| FSE0420 | 11.750 [288.9] | 1.125 [28.58] | 0.750 [19.05] | 0.266 [6.76] | 10.843 [275.41] | 20 | 15 |
| FSE0500 | 10.500 [266.7] | 1.625 [41.275] | 1.125 [28.58] | 0.266 [6.76] | 9.468 [240.49] | 21 | - |
| FSE0750 | 12.000 [304.8] | 2.500 [63.50] | 1.750 [44.45] | 0.508 [12.90] | 10.484 [266.29] | 22 | - |
| FSE1000 | 15.000 [381.0] | 2.500 [63.50] | 1.750 [44.45] | 0.508 [12.90] | 13.484 [342.49] | 22 | - |
| FSE1500 | 20.000 [508.0] | 2.500 [63.50] | 1.750 [44.45] | 0.508 [12.90] | 18.484 [469.49] | 22 | - |

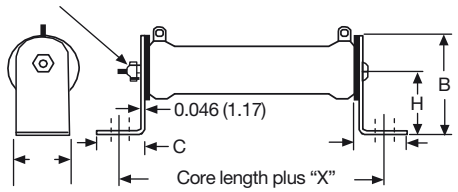
## TERMINAL DIMENSIONS in inches [millimeters]




| DIMENSIONS | TERMINAL STYLE | | | | |
|---|---|---|---|---|---|
| | 06 | 15 | 20 | 21 | 22 |
| A | 0.250 [6.35] | 0.250 [6.35] | 0.375 [9.53] | 0.500 [12.70] | 0.500 [12.70] |
| B | 0.500 [12.70] | 0.594 [15.08] | 0.5625 [14.28] | 0.625 [15.87] | 0.925 [23.49] |
| C (HOLE DIAMETER) | 0.173 [4.39] | 0.065 [1.65] | 0.204 [5.18] | 0.264 [6.70] | 0.264 [6.70] |
| D | 0.020 [0.51] | 0.031 [0.79] | 0.032 [0.812] | 0.025 [0.64] | 0.025 [0.64] |

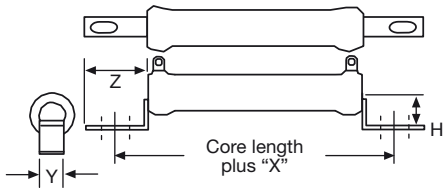
## MOUNTING HARDWARE FOR AVT PRODUCTS - Dimensions in inches [millimeters]

### 91 = 100 Style Horizontal 1 High Bracket



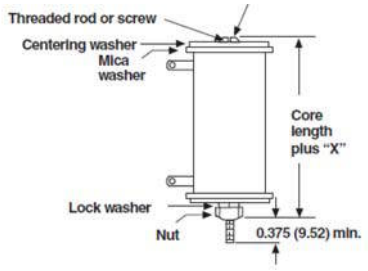

| BRACKET TYPE | X | Y | Z | H | MOUNTING SLOT | C | B |
|---|---|---|---|---|---|---|---|
| 102 | 1.063 [26.99] | 0.750 [19.05] | 0.859 [21.83] | 1.250 [31.75] | 0.219 x 0.438 [5.56 x 11.11] | 0.750 [19.05] | 1.750 [44.75] |
| 103 | 1.063 [26.99] | 1.250 [31.75] | 1.000 [25.40] | 1.500 [38.10] | 0.281 x 0.563 [7.14 x 14.29] | 0.927 [23.55] | 2.125 [53.98] |
| 104 | 1.952 [49.58] | 2.500 [63.50] | 1.478 [37.54] | 3.000 [76.20] | open slot x 0.406 [10.31] | 1.375 [34.93] | 4.25 [107.25] |

### 92 = 200 Style Push-In Bracket




| BRACKET TYPE | X | H | Y | Z | HOLE (DIA.) |
|---|---|---|---|---|---|
| 204 | 0.700 [17.78] | 0.578 [14.68] | 0.250 [6.35] | 0.500 [12.70] | 0.156 [3.96] |
| 206 | 0.846 [21.49] | 0.800 [20.62] | 0.375 [9.53] | 0.600 [15.24] | 0.343 x 0.213 [8.71 x 5.46] |
| 207 | 0.700 [17.78] | 1.125 [28.58] | 0.500 [12.70] | 0.687 [17.45] | 0.250 x 0.188 [6.35 x 4.78] |

### 93 = 300 Style Thru-Bolt Bracket




| BRACKET TYPE | X (APPROXIMATE) | THREAD |
|---|---|---|
| 302 | 0.271 [6.88] | 10-32 |
| 303 | 0.463 [11.76] | 1/4-20 |

| MOUNTING HARDWARE | | | |
|---|---|---|---|
| GLOBAL MODEL | AVAILABLE BRACKET TYPES BY MODEL | | |
| | 91 = 100 STYLE HORIZONTAL 1 HIGH BRACKET | 92 = 200 STYLE PUSH-IN BRACKET | 93 = 300 STYLE THRU-BOLT BRACKET |
| FSE0050 | 102 | 206 | 302 |
| FSE0090 | 102 | 204 | 302 |
| FSE0100 | 102 | 206 | 302 |
| FSE0110 | 102 | 206 | 302 |
| FSE0120 | 102 | 206 | 302 |
| FSE0155 | 103 | 207 | 302 |
| FSE0240 | 103 | 207 | 302 |
| FSE0300 | 103 | 207 | 303 |
| FSE0375 | 103 | 207 | 303 |
| FSE0420 | 103 | 207 | 303 |
| FSE0500 | 103 | - | 302 |
| FSE0750 | 104 | - | 302 |
| FSE1000 | 104 | - | 302 |
| FSE1500 | 104 | - | 303 |

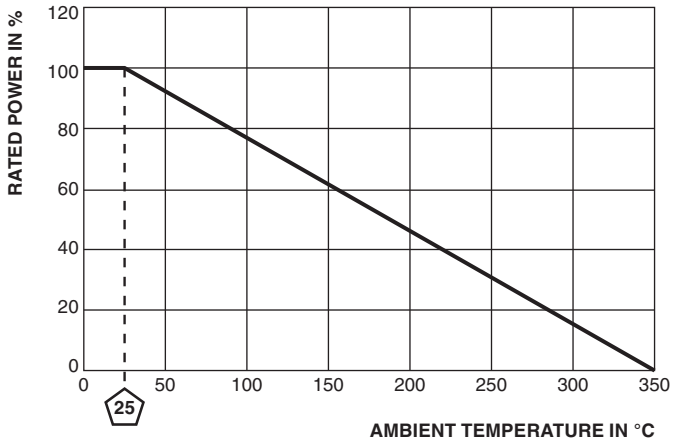
## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | RESISTOR CHARACTERISTICS |
|---|---|---|
| Power Rating | W | 50 to 1500 |
| Resistance Range | Ω | 0.10 to 135.5 |
| Resistance Tolerance | % | 10 |
| Temperature Coefficient | ppm/°C | ± 260 for 20 Ω and above, ± 400 for 1 Ω to 19.99 Ω |
| Operating Temperature | °C | -55 °C to 350 °C |
| Temperature Rise | °C | 325 °C above an ambient of 25 °C |
| Maximum Altitude | f.a.s.l. | 10 000 |
| Short-Term Overload | - | 10x rated power for 5 s |
| Surge Windings | - | Available |
| Maximum Working Voltage | - | $(P \times R)^{0.5}$ |
| Insultation Resistance | Ω | 1M |
| Dielectric Voltage | $V_{RMS}$ | 1000 $V_{AC}$ |
| Creepage | - | Varies by wattage, see “Terminal Setback” in Dimensions table |
| Terminal Sleeves | - | n/a |
| Inductance | µH | Varies by wattage and resistance |
| Non-Inductive Winding | - | n/a |
| Terminal Strength | lb | 10 lbs |
| Electrical or Mechanical Customization | - | Contact factory: ww2dresistors@vishay.com |

## MATERIAL SPECIFICATIONS

| | |
|---|---|
| Element | Copper-nickel alloy or nickel-chrome alloy, depending on resistance value |
| Core | Cordierite, steatite |
| Coating | Special high temperature silicone |
| Standard Terminals | Tinned alloy 42 |
| Optional Terminals | Alloy 42 |
| Terminal Bands | Alloy 42 |
| Part Marking | HEI, model, wattage, value, tolerance, date code |

## DERATING



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**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits,General Dynamics и др.);

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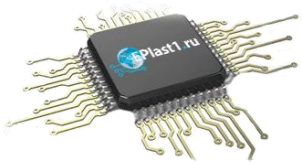
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.




**Как с нами связаться**

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**Электронная почта:** org@eplast1.ru
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