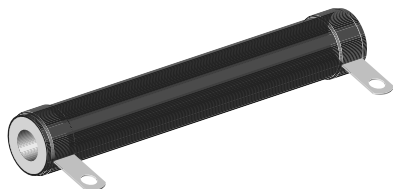


Wirewound Resistor, Industrial Power, Vitreous Coated, Fixed Tubular



FEATURES

- High temperature vitreous coating
- Complete welded construction
- Available in non-inductive style (special "NI") with Ayrton-Perry winding
- Tight tolerance of 5 % for values above 1 Ω
- Excellent stability in operation (< 3 % change resistance)
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912



STANDARD ELECTRICAL SPECIFICATIONS

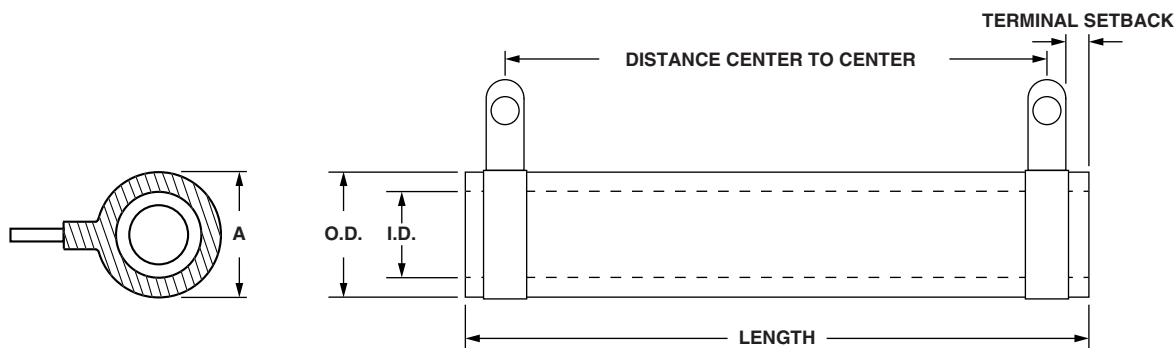
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING $P_{25^{\circ}\text{C}}$ W	RESISTANCE RANGE Ω $\pm 5 \%$	RESISTANCE RANGE Ω $\pm 10 \%$	WEIGHT (typical) g
FVT005	FVT-5	5	1.0 to 20.5K	0.1 to 20.5K	4.60
FVT005...NI	FVT-5-...-NI	5	1.0 to 750	1.0 to 750	4.60
FVT010	FVT-10	12	1.0 to 58K	0.1 to 58K	6.7
FVT010...NI	FVT-10-...-NI	12	1.0 to 3.9K	1.0 to 3.9K	6.7
FVT020	FVT-20	20	1.0 to 95K	0.1 to 95K	12.57
FVT020...NI	FVT-20-...-NI	20	1.0 to 6.8K	1.0 to 6.8K	12.57
FVT20A	-	15	1.0 to 60K	0.10 to 60K	8.64
FVT025	FVT-25	25	1.0 to 115K	0.1 to 115K	20.7
FVT025...NI	FVT-25-...-NI	25	1.0 to 8.8K	1.0 to 8.8K	20.7
FVT25A	FVT-25A	30	1.0 to 56K	0.1 to 56K	20.7
FVT25A...NI	FVT-25A-...-NI	30	1.0 to 7.25K	1.0 to 7.25K	20.7
FVT25B	FVT-25B	30	1.0 to 49K	0.1 to 49K	14.5
FVT25B...NI	FVT-25B-...-NI	30	1.0 to 6.8K	1.0 to 6.8K	14.5
FVT050	FVT-50	50	1.0 to 112K	0.1 to 112K	42.1
FVT050...NI	FVT-50-...-NI	50	1.0 to 21.5K	1.0 to 21.5K	42.1
FVT50A	FVT-50A	60	1.0 to 145K	0.1 to 145K	65.6
FVT50A...NI	FVT-50A-...-NI	60	1.0 to 27.2K	1.0 to 27.2K	65.6
FVT50B	FVT-50B	70	1.0 to 170K	0.1 to 170K	60.0
FVT50B...NI	FVT-50B-...-NI	70	1.0 to 31.4K	1.0 to 31.4K	60.0
FVT075	FVT-75	75	1.0 to 276K	0.1 to 276K	98.5
FVT075...NI	FVT-75-...-NI	75	1.0 to 35K	1.0 to 35K	98.5
FVT75A	FVT-75A	90	1.0 to 238K	0.1 to 238K	64.8
FVT75A...NI	FVT-75A-...-NI	90	1.0 to 31K	1.0 to 31K	64.8
FVT080	-	80	1.0 to 190K	0.10 to 190K	121.58
FVT100	FVT-100	100	1.0 to 260K	0.1 to 260K	91.4
FVT100...NI	FVT-100-...-NI	100	1.0 to 48.5K	1.0 to 48.5K	91.4
FVT130	FVT-130	130	1.0 to 380K	0.1 to 380K	192.4
FVT130...NI	FVT-130-...-NI	130	1.0 to 70.2K	1.0 to 70.2K	192.4
FVT160	FVT-160	175	1.0 to 470K	0.1 to 470K	250.8
FVT160...NI	FVT-160-...-NI	175	1.0 to 105K	1.0 to 105K	250.8
FVT175	-	175	1.0 to 500K	0.10 to 500K	250.8
FVT200	FVT-200	225	1.0 to 645K	0.1 to 645K	310.0
FVT200...NI	FVT-200-...-NI	225	1.0 to 121K	1.0 to 121K	310.0
FVT225	FVT-225	225	1.0 to 645K	0.1 to 645K	310.0
FVT225...NI	FVT-225-...-NI	225	1.0 to 121K	1.0 to 121K	310.0

**GLOBAL PART NUMBER INFORMATION**Global Part Numbering Example: **FVT02506E25R00JE** (visit www.vishay.net SAP parts manual for all options)

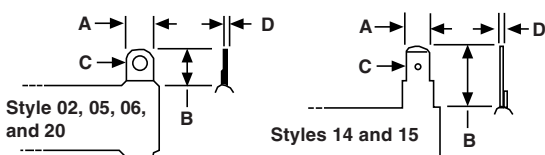
F	V	T	0	2	5	0	6	E	2	5	R	0	0	J	E		
GLOBAL MODEL (6 digits)	TERMINAL DESIGNATION (2 digits)		TERMINAL FINISH (1 digit)	VALUE (5 digits)			TOLERANCE (1 digit)	PACKAGING CODE (1 digit)		SPECIAL (up to 2 digits)							
(see Standard Electrical Specifications Global Model column for options)	02, 05, 06, 14, 15, 20 FC = ferrule cap		E = lead (Pb)-free	R = decimal K = thousand 1R500 = 1.5 Ω 1K500 = 1.5 k Ω			J = $\pm 5\%$ K = $\pm 10\%$	E = lead (Pb)-free bulk pack		(dash number) from 1 to 99 as applicable 91 = 100 style horizontal high bracket 92 = 200 style push-in bracket 93 = 300 style thru-bolt bracket NI = non-inductive NP = non-inductive + 92 style push-in bracket NH = non-inductive + 91 style horizontal bracket NV = non-inductive + style vertical bracket							

Historical Part Number Example: **FVT-25-25-5 %**

FVT-25	25 Ω	5 %	
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE	SPECIAL

DIMENSIONS in inches (millimeters)


MODEL	A MAX.	CORE DIMENSIONS			TERMINAL SETBACK ± 0.031 (0.79)	DISTANCE CENTER TO CENTER (REF.)	TERMINAL DESIGNATION	
		LENGTH	O.D. ± 0.031 (0.79)	I.D. ± 0.031 (0.79)			STANDARD	OPTIONAL (QUICK CONNECT)
FVT005	0.406 (10.31)	1.000 (25.40)	0.313 (7.95)	0.188 (4.78)	0.094 (2.39)	0.625 (15.88)	05	14
FVT010	0.406 (10.31)	1.750 (44.45)	0.313 (7.95)	0.188 (4.78)	0.094 (2.39)	1.375 (34.93)	05	14
FVT020	0.563 (14.30)	2.000 (50.8)	0.438 (11.13)	0.260 (6.60)	0.094 (2.39)	1.625 (41.28)	02	14
FVT20A	0.563 (14.30)	2.000 (50.8)	0.438 (11.11)	0.313 (7.94)	0.094 (2.38)	1.625 (41.28)	02	14
FVT025	0.688 (17.48)	2.000 (50.8)	0.563 (14.30)	0.313 (7.95)	0.094 (2.39)	1.562 (39.67)	06	15
FVT25A	0.906 (23.01)	2.000 (50.8)	0.750 (19.05)	0.500 (12.70)	0.094 (2.39)	1.562 (39.67)	06	15
FVT25B	0.770 (19.56)	2.000 (50.8)	0.625 (15.88)	0.453 (11.51)	0.094 (2.39)	1.562 (39.67)	06	15
FVT050	0.688 (17.48)	4.000 (101.6)	0.563 (14.30)	0.313 (7.95)	0.094 (2.39)	3.562 (90.47)	06	15
FVT50A	0.906 (23.01)	4.000 (101.6)	0.750 (19.05)	0.500 (12.70)	0.062 (1.57)	3.626 (92.10)	06	15
FVT50B	0.906 (23.01)	4.500 (114.3)	0.750 (19.05)	0.547 (13.89)	0.125 (3.18)	4.000 (101.60)	06	15
FVT075	0.688 (17.48)	6.000 (152.4)	0.563 (14.30)	0.313 (7.95)	0.094 (2.39)	5.562 (141.27)	06	15
FVT75A	0.906 (23.01)	6.000 (152.4)	0.750 (19.05)	0.500 (12.70)	0.094 (2.39)	5.562 (141.27)	06	15
FVT080	1.313 (33.34)	4.000 (101.6)	1.125 (28.58)	0.750 (19.05)	0.219 (5.56)	2.812 (71.42)	20	15
FVT100	0.906 (23.01)	6.500 (165.1)	0.750 (19.05)	0.500 (12.70)	0.125 (3.18)	6.000 (152.40)	06	15
FVT130	1.313 (33.35)	6.500 (165.1)	1.125 (28.58)	0.750 (19.05)	0.282 (7.16)	5.374 (136.50)	20	15
FVT160	1.313 (33.35)	8.500 (215.9)	1.125 (28.58)	0.750 (19.05)	0.267 (6.78)	7.404 (188.06)	20	15
FVT175	1.313 (33.34)	8.500 (215.9)	1.125 (28.58)	0.750 (19.05)	0.219 (5.56)	7.312 (185.72)	20	15
FVT200 FVT225	1.313 (33.35)	10.500 (266.7)	1.125 (28.58)	0.750 (19.05)	0.266 (6.76)	9.406 (238.91)	20	15

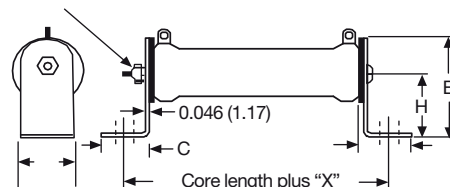
TERMINAL DIMENSIONS in inches (millimeters)


DIMENSIONS	TERMINAL STYLE					
	20	02	05	06	14	15
WIDTH A	0.375 (9.53)	0.188 (4.76)	0.188 (4.76)	0.250 (6.35)	0.188 (4.76)	0.250 (6.35)
HEIGHT B	0.562 (14.07)	0.393 (9.98)	0.393 (9.98)	0.500 (12.70)	0.563 (14.29)	0.594 (15.08)
DIAMETER C	0.204 (5.18)	0.133 (3.38)	0.133 (3.38)	0.172 (4.36)	0.050 (1.27)	0.065 (1.65)
THICKNESS D	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.020 (0.51)	0.031 (0.79)

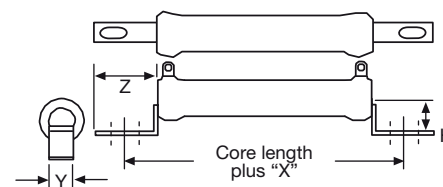
MOUNTING HARDWARE

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
FVT005	n/a	202	n/a
FVT010	101	202	301
FVT020	101	203	301
FVT20A	101	203	301
FVT025	102	204	301
FVT25A	102	206	302
FVT25B	102	205	301
FVT050	102	204	302
FVT50A	102	206	302
FVT50B	102	208	302
FVT075	102	204	301
FVT75A	102	206	302
FVT100	102	206	302
FVT130	103	207	302
FVT175	103	207	303
FVT200	103	207	303
FVT225	103	207	303

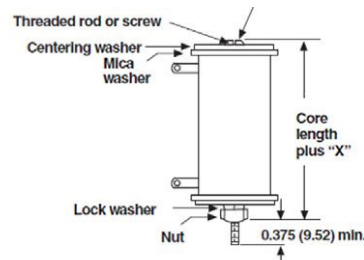
DIMENSIONS in inches (millimeters)

91 = 100 Style Horizontal 1 High Bracket


BRACKET TYPE	X	Y	Z	H	MOUNTING SLOT	C	B
101	1.063 (26.99)	0.500 (12.70)	0.950 (24.13)	1.000 (25.40)	0.219 x 0.438 (5.56 x 11.11)	0.750 (19.05)	1.375 (34.93)
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 (44.45)
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)

92 = 200 Style Push-In Bracket


BRACKET TYPE	X	H	Y	Z	HOLE (DIA.)
202	0.478 (12.14)	0.250 (6.35)	0.125 (3.175)	0.375 (9.53)	0.170 (4.32)
203	0.583 (14.80)	0.580 (14.73)	0.188 (4.78)	0.460 (11.68)	0.115 (2.92)
204	0.700 (17.78)	0.578 (14.68)	0.250 (6.35)	0.500 (12.70)	0.156 (3.96)
205	0.846 (21.49)	0.800 (20.32)	0.375 (9.53)	0.600 (15.24)	0.343 x 0.213 (8.71 x 5.46)
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)
208	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)

93 = 300 Style Thru-Bolt Bracket


BRACKET TYPE	X (APPROXIMATE)	THREAD
301	0.373 (9.47)	8 to 32
302	0.271 (6.88)	8 to 32
303	0.463 (11.76)	1/4 to 20

**TECHNICAL SPECIFICATIONS**

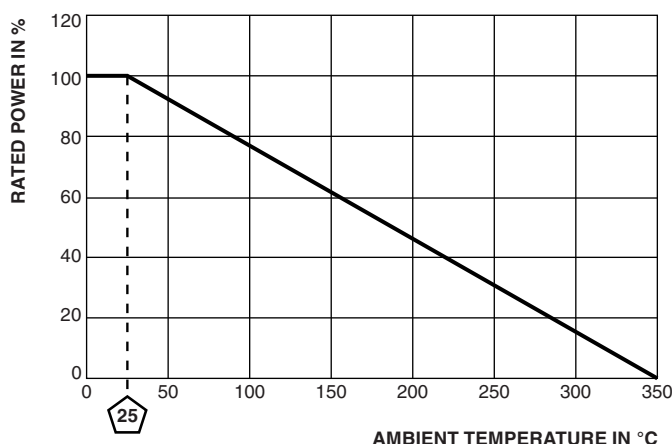
PARAMETER	UNIT	RESISTOR CHARACTERISTICS
Power Rating	W	5 to 225
Resistance Range	Ω	0.1 to 645K
Resistance Tolerance	%	5
Temperature Coefficient	ppm/°C	± 260 for 20 Ω and above, ± 400 for 1 Ω to 19.99 Ω
Operating Temperature	°C	-55 °C to 350°C
Temperature Rise	°C	325 °C above an ambient of 25 °C
Maximum Altitude	f.a.s.l.	10 000
Short-Term Overload	-	10 x rated power for 5 s
Surge Windings		Available
Maximum Working Voltage	-	$(P \times R)^{0.5}$
Insulation 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	μ H	Varies by wattage and resistance
Non-Inductive Winding		Available
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 vitreous enamel
Standard Terminals	Tinned alloy 42
Optional Terminals	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, see Standard Electrical Specifications table.

DERATING



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.