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Vishay Huntington

# Wirewound Resistors, Industrial Power, Flat



## LINKS TO ADDITIONAL RESOURCES



### **FEATURES**

- High temperature silicon coating
- · Mounting accommodations ideally suited to high density packaging
- · Self-stacking hardware for horizontal or vertical placement
- Withstands high vibrations without loosening
- · Mounting hardware functions as a heat sink allowing greater heat dissipation and less derating of stacked units



e3

RoHS COMPLIANT

· Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

STANDARD ELECTRICAL SPECIFICATIONS								
GLOBAL MODEL	HISTORICAL MODEL	POWER RATING P <sub>25 °C</sub> W	$\begin{array}{c} \textbf{RESISTANCE} \\ \textbf{RANGE} \ \Omega \end{array}$	$\begin{array}{c} \textbf{RESISTANCE} \\ \textbf{RANGE} \ \Omega \end{array}$	WEIGHT (typical)			
			± 5 %	± 10 %	g			
FSOT10	FSOT-10	10	1.0 to 15K	0.10 to 15K	0.41			
FSOT10-NI	FSOT-10-NI	10	1.0 to 1.8K	1.0 to 1.8K				
FSOT15	FSOT-15	15	1.0 to 26K	0.10 to 26K	0.47			
FSOT15-NI	FSOT-15-NI	15	1.0 to 3.6K	1.0 to 3.6K				
FSOT20	FSOT-20	20	1.0 to 71K	0.10 to 71K	0.74			
FSOT20-NI	FSOT-20-NI	20	1.0 to 9.8K	1.0 to 9.8K				
FSOT3014 / FSOT3016	HL-24-09 / HL-24-16	30	1.0 to 11K	0.10 to 11K	20.14			
FSOT3015 / FSOT3017	NHL-24-09 / NHL-24-16	30	1.0 to 1.2K	1.0 to 1.2K				
FSOT4014 / FSOT4016	HL-40-09 / HL-40-16	40	1.0 to 26K	0.10 to 26K	30.07			
FSOT4015 / FSOT4017	NHL-40-09 / NHL-40-16	40	1.0 to 3K	1.0 to 3K				
FSOT5514 / FSOT5516	HL-55-09 / HL-55-16	55	1.0 to 54K	0.10 to 54K	51.25			
FSOT5515 / FSOT5517	NHL-55-09 / NHL-55-16	55	1.0 to 6.8K	1.0 to 6.8K				
FSOT7014 / FSOT7016	HL-70-09 / HL-70-16	70	1.0 to 77K	0.10 to 77K	60.48			
FSOT7015 / FSOT7017	NHL-70-09 / NHL-70-16	70	1.0 to 9.4K	1.0 to 9.4K				
FSOT9514 / FSOT9516	HL-95-09 / HL-95-16	95	1.0 to 99.9K	0.10 to 99.9K	76.51			
FSOT9515 / FSOT9517	NHL-95-09 / NHL-95-16	95	1.0 to12.4K	1.0 to 12.4K	70.01			

TECHNICAL SPECIFICATIONS				
PARAMETER	UNIT	FSOT, FSOTXX FLAT RESISTOR CHARACTERISTICS		
Temperature coefficient	ppm/°C	$\pm$ 90 for 0.1 $\Omega$ to 0.99 $\Omega;$ $\pm$ 50 for 1 $\Omega$ to 9.9 $\Omega;$ $\pm$ 30 for 10 $\Omega$ and above		
Dielectric withstanding voltage	V <sub>AC</sub>	1000, from terminal to mounting hardware		
Short time overload	-	10 x rated power for 5 s		
Maximum working voltage	V	(P x R) <sup>1/2</sup>		
Insulation resistance	Ω	1000 M $\Omega$ minimum dry, 100 M $\Omega$ minimum after moisture test		
Operating temperature range	°C	-55 to +350		

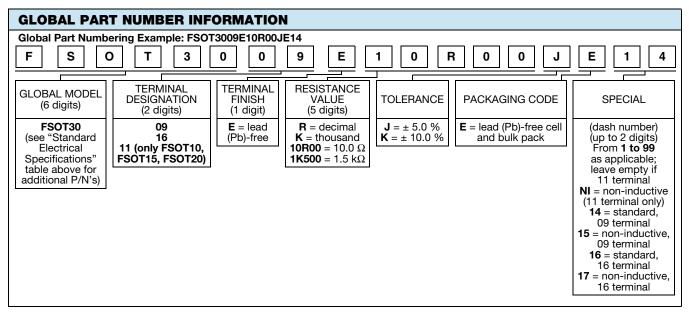
Revision: 15-Nov-2022

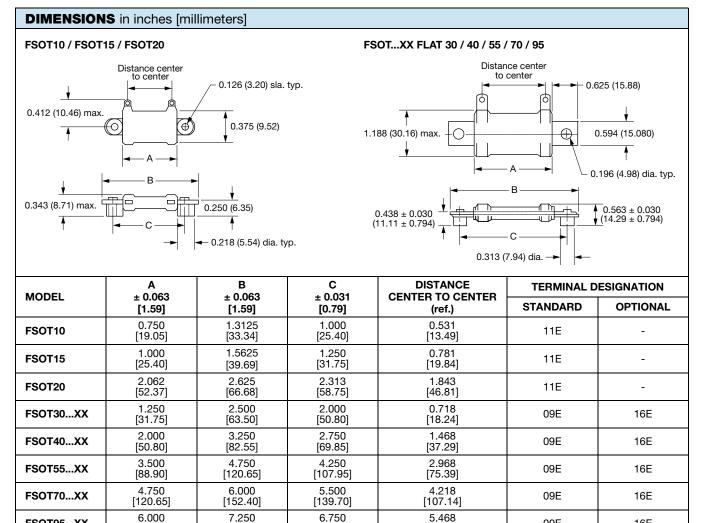
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# FSOT, FSOT...XX Flat



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FSOT95...XX

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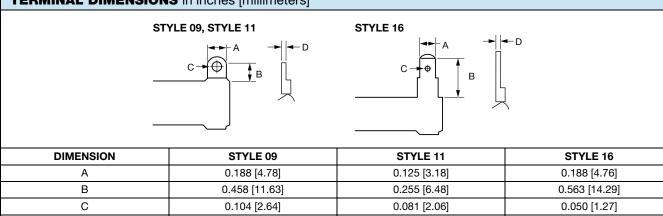
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#### **TERMINAL DIMENSIONS** in inches [millimeters]



0.020 [0.51]

### **POWER RATING**

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Vishay FSOT flat resistor wattage ratings are based on mounting horizontally to  $10^{\circ} \times 10^{\circ} \times 0.04^{\circ}$  [254.0 mm x 254.0 mm x 1.02 mm] steel plate in 25 °C ambient with no air flow.

#### **EXCLUSIVE BRACKET DESIGN**

Mounting strap fits snugly through resistor core and is bound against unit by two eccentric spacers. The bracket eliminates expensive cements and improves heat transfer and power handling capabilities.

#### **MATERIAL SPECIFICATIONS**

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

Core: ceramic, steatite

Coating: special high temperature silicone

Standard Terminals: model "E" terminals are tinned steel

#### Terminal Bands: steel

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

#### **TERMINAL FINISH**

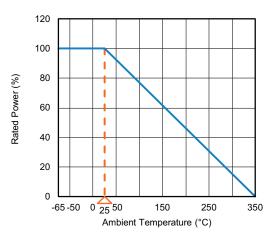
"E" finish - 100 % Sn coated steel.

### **NON-INDUCTIVE**

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Models of equivalent physical and electrical specifications are available with non-inductive (Aryton-Perry) winding. For non-inductive models, maximum resistance values are lower, see Standard Electrical Specifications table.

#### DERATING



Derating is required for ambient temperatures above 25 °C per the above graph.

PERFORMANCE						
TEST	CONDITIONS OF TEST	TEST LIMITS				
Thermal shock	Rated power applied until thermally stable, then a minimum of 15 min at -55 $^\circ\mathrm{C}$	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$				
Short time overload	10 x rated power for 5 s	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$				
Dielectric withstanding voltage	1000 V <sub>RMS</sub> , 1 min	$\pm$ (0.1 % + 0.05 $\Omega)$ $\Delta R$				
Low temperature storage	-55 °C for 24 h	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$				
High temperature exposure	250 h at +350 °C	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$				
Moisture resistance	MIL-STD-202 method 106, 7b not applicable	$\pm$ (2.0 % + 0.05 $\Omega) \Delta R$				
Shock, specified pulse	MIL-STD-202 method 213, 100 g's for 6 ms, 10 shocks	$\pm$ (0.2 % + 0.05 $\Omega)$ $\Delta R$				
Vibration, high frequency	Frequency varied 10 Hz to 2000 Hz, 20 g peak, 2 directions 6 h each	$\pm$ (0.2 % + 0.05 $\Omega)$ $\Delta R$				
Load life	1000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"	$\pm$ (3.0 % + 0.05 $\Omega) \Delta R$				

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