

# 10-20 Watts



- Compact Size
- Ultra Wide 4:1 Input
- -40 °C to +70 °C Operation - No Derating
- Single & Dual Outputs
- Overvoltage & Overcurrent Protection
- UL Safety Approvals
- Remote On/Off

## Specification

### Input

Input Voltage Range	<ul style="list-style-type: none"> <li>• 9-36 VDC</li> <li>• 18-75 VDC</li> </ul>
Input Current	<ul style="list-style-type: none"> <li>• VTC7019 - VTC7036 : 1.45 A max at 9 VDC input</li> <li>• VTC479862 - VTC7058 : 2.20 A max at 9 VDC input</li> <li>• VTC7068 - VTC7083 : 2.90 A max at 9 VDC input</li> </ul>

### Output

Output Voltage	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Output Voltage Trim	<ul style="list-style-type: none"> <li>• <math>\pm 10\%</math> minimum for 15 and 20 W models only</li> </ul>
Voltage Balance	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> max. dual models, 100% load</li> </ul>
Minimum Load	<ul style="list-style-type: none"> <li>• No minimum load required for single output models, 10% required for dual output models</li> </ul>
Line Regulation	<ul style="list-style-type: none"> <li>• <math>\pm 1\%</math> maximum</li> </ul>
Load Regulation	<ul style="list-style-type: none"> <li>• Single output models: <math>\pm 1\%</math> maximum</li> <li>• Dual output models: <math>\pm 2\%</math> maximum for a 10-100% load change</li> </ul>
Setpoint Accuracy	<ul style="list-style-type: none"> <li>• <math>\pm 2\%</math></li> </ul>
Ripple & Noise	<ul style="list-style-type: none"> <li>• Single output models: 50 mV pk-pk</li> <li>• Dual output models: 75 mV pk-pk at 20MHz BW</li> </ul>
Transient Response	<ul style="list-style-type: none"> <li>• 4% max. deviation, recovery to within 1% in <math>&lt; 500 \mu\text{s}</math> after a 25% load change</li> </ul>
Temperature Coefficient	<ul style="list-style-type: none"> <li>• 0.02% /°C</li> </ul>
Overvoltage Protection	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Overcurrent Protection	<ul style="list-style-type: none"> <li>• Continuous with auto recovery</li> </ul>
Remote On/Off	<ul style="list-style-type: none"> <li>• On = Logic High or Open</li> <li>• Off = Logic Low or <math>&lt; 1.8 \text{ V}</math> (15-20 W models only)</li> </ul>

### General

Efficiency	<ul style="list-style-type: none"> <li>• See table</li> </ul>
Isolation	<ul style="list-style-type: none"> <li>• 1500 VDC Input to Output</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>• 1,000 kHrs min per MIL-HDBK-217F</li> </ul>

### Environmental

Operating Temperature	<ul style="list-style-type: none"> <li>• -40 °C to +100 °C, derate from 100% load at +70 °C to 0% load at +100 °C</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Convection-cooled</li> </ul>
Operating Humidity	<ul style="list-style-type: none"> <li>• 5-95% RH, non-condensing</li> </ul>
Storage Temperature	<ul style="list-style-type: none"> <li>• -55 °C to +105 °C</li> </ul>

### EMC & Safety

Emissions	<ul style="list-style-type: none"> <li>• EN55022, level B conducted</li> <li>• EN55022, level A radiated</li> </ul>
ESD Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-2, level 2</li> <li>• Perf Criteria A</li> </ul>
Radiated Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-3 3 V/rms, Perf Criteria A</li> </ul>
Conducted Immunity	<ul style="list-style-type: none"> <li>• EN61000-4-6 3 V/m, Perf Criteria A</li> </ul>
Safety Approvals	<ul style="list-style-type: none"> <li>• UL60950</li> </ul>

## Models and Ratings

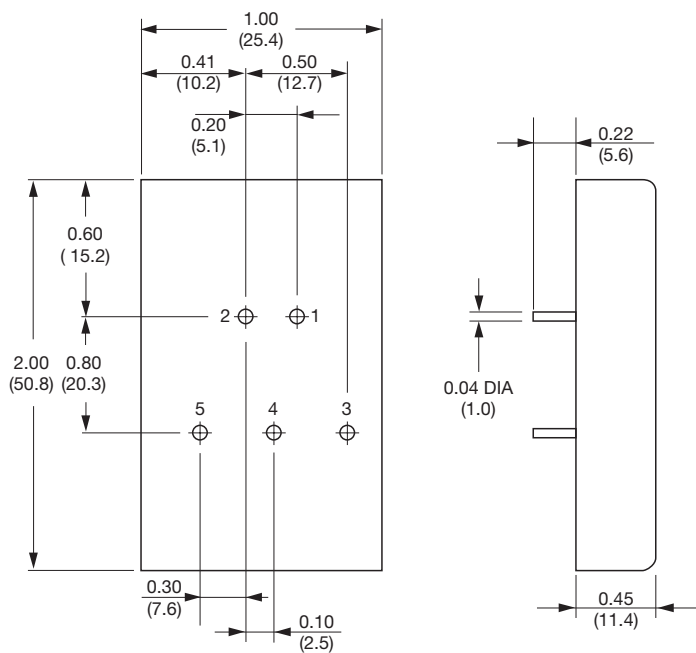
Input Voltage	Maximum Power	Overvoltage Protection	Output 1		Output 2		Efficiency	Model Number
			V1 nom	I <sub>max</sub>	V2nom	I <sub>max</sub>		
24 V (9-36)	6.6 W	3.9 V	3.3 V	2.00 A			77%	VTC7019
	10.0 W	6.8 V	5.0 V	2.00 A			79%	VTC7022
	10.0 W	15.0 V	12.0 V	0.83 A			81%	VTC7025
	10.0 W	18.0 V	15.0 V	0.67 A			81%	VTC7026
	10.0 W	6.8 V	5.0 V	1.00 A	-5.0 V	1.00 A	80%	VTC7027
	10.0 W	15.0 V	12.0 V	0.42 A	-12.0 V	0.42 A	80%	VTC7028
	10.0 W	18.0 V	15.0 V	0.33 A	-15.0 V	0.33 A	80%	VTC7029
48 V (18-75)	6.6 W	3.9 V	3.3 V	2.00 A			78%	VTC7020
	10.0 W	6.8 V	5.0 V	2.00 A			80%	VTC7031
	10.0 W	15.0 V	12.0 V	0.83 A			82%	VTC7032
	10.0 W	18.0 V	15.0 V	0.67 A			82%	VTC7033
	10.0 W	6.8 V	5.0 V	1.00 A	-5.0 V	1.00 A	81%	VTC7034
	10.0 W	15.0 V	12.0 V	0.42 A	-12.0 V	0.42 A	83%	VTC7035
	10.0 W	18.0 V	15.0 V	0.33 A	-15.0 V	0.33 A	83%	VTC7036

## Mechanical Details

All dimensions are in inches (mm)

Weight: 0.06 lb (28 g) approx.

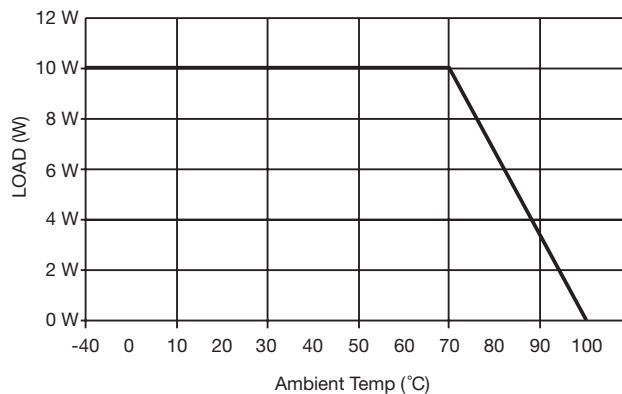
Packaging Style: Copper case with non-conducting base



PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	+Input	+Input
2	-Input	-Input
3	+Output	+Output
4	No pin	Common
5	-Output	-Output

## Application Notes

### Derating Curve



## Models and Ratings

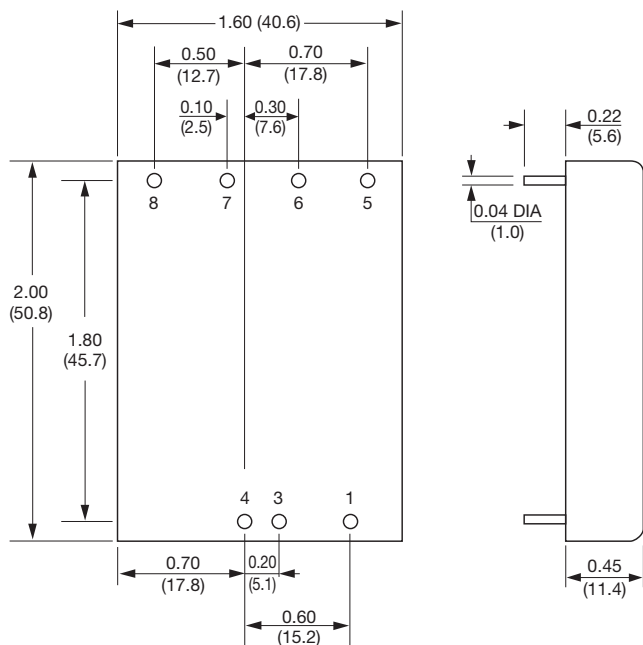
Input Voltage	Maximum Power	Overvoltage Protection	Output 1		Output 2		Efficiency	Model Number
			V1 nom	I <sub>max</sub>	V2 nom	I <sub>max</sub>		
24 V (9-36)	10.0 W	3.9 V	3.3 V	3.000 A			76%	VTC479862
	15.0 W	6.8 V	5.0 V	3.000 A			80%	VTC7039
	15.0 W	15.0 V	12.0 V	1.250 A			82%	VTC7044
	15.0 W	18.0 V	15.0 V	1.000 A			82%	VTC7045
	15.0 W	6.8 V	5.0 V	1.500 A	-5.0 V	1.500 A	80%	VTC7047
	15.0 W	15.0 V	12.0 V	0.625 A	-12.0 V	0.625 A	82%	VTC7048
	15.0 W	18.0 V	15.0 V	0.500 A	-15.0 V	0.500 A	82%	VTC7049
48 V (18-75)	10.0 W	3.9 V	3.3 V	3.000 A			76%	VTC479863
	15.0 W	6.8 V	5.0 V	3.000 A			80%	VTC7054
	15.0 W	15.0 V	12.0 V	1.250 A			82%	VTC7055
	15.0 W	18.0 V	15.0 V	1.000 A			82%	VTC7052
	15.0 W	6.8 V	5.0 V	1.500 A	-5.0 V	1.500 A	80%	VTC7056
	15.0 W	15.0 V	12.0 V	0.625 A	-12.0 V	0.625 A	82%	VTC7057
	15.0 W	18.0 V	15.0 V	0.500 A	-15.0 V	0.500 A	82%	VTC7058

## Mechanical Details

All dimensions are in inches (mm)

Weight: 0.11 lb (50 g) approx.

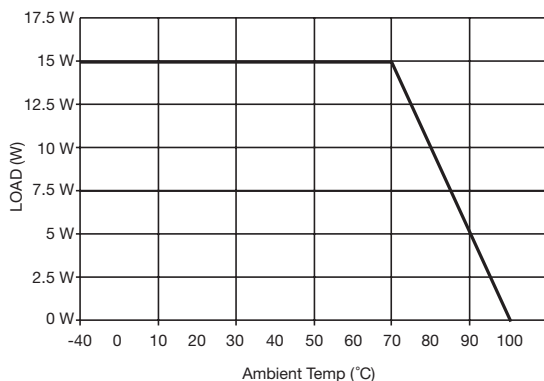
Packaging Style: Copper case with non-conducting base



PIN CONNECTIONS		
Pin	Single Output	Dual Output
1	On/Off control	On/Off control
3	-Vin	-Vin
4	+Vin	+Vin
5	Trim	Trim
6	-Vout	-Vout
7	+Vout	Common
8	No pin	+Vout

## Application Notes

### Derating Curve



### Output Trim

OUTPUT TRIM		
Model Number	R Trim Down (kΩ)	R Trim Up (kΩ)
3.3 V	$(6.18 - (12.1 \times \Delta V_o)) / \Delta V_o$	$(3.484 - (7.511 \times \Delta V_o)) / \Delta V_o$
5 V	$(5.788 - (10.57 \times \Delta V_o)) / \Delta V_o$	$(5.788 - (8.25 \times \Delta V_o)) / \Delta V_o$
12 V	$(86.496 - (60.1 \times \Delta V_o)) / \Delta V_o$	$(19.763 - (14.366 \times \Delta V_o)) / \Delta V_o$
15 V	$(150 - (87 \times \Delta V_o)) / \Delta V_o$	$(25.585 - (14.516 \times \Delta V_o)) / \Delta V_o$
±5 V	$(430 - (120 \times \Delta V_o)) / \Delta V_o$	$(42.141 - (13.793 \times \Delta V_o)) / \Delta V_o$
±12 V	$(743 - (177 \times \Delta V_o)) / \Delta V_o$	$(56.644 - (17.647 \times \Delta V_o)) / \Delta V_o$
±15 V	$(68.296 - (48.1 \times \Delta V_o)) / \Delta V_o$	$(20.657 - (19.5 \times \Delta V_o)) / \Delta V_o$

#### Note:

1.  $\Delta V_o$  is the change in the trimmed output voltage from the nominal output voltage.

Example: VTC7039 trimmed to 5.3 V

$$\Delta V_o = 5.0 - 5.3 = 0.3 \text{ VDC}$$

$$\text{The equation is } (5.788 - (8.25 \times \Delta V_o)) / \Delta V_o$$

$$\text{The value of resistor} = (5.788 - (8.25 \times 0.3)) / 0.3 = 11.04 \text{ K}\Omega$$

Connect the resistor between TRIM pin and -V<sub>o</sub> pin.

## Models and Ratings

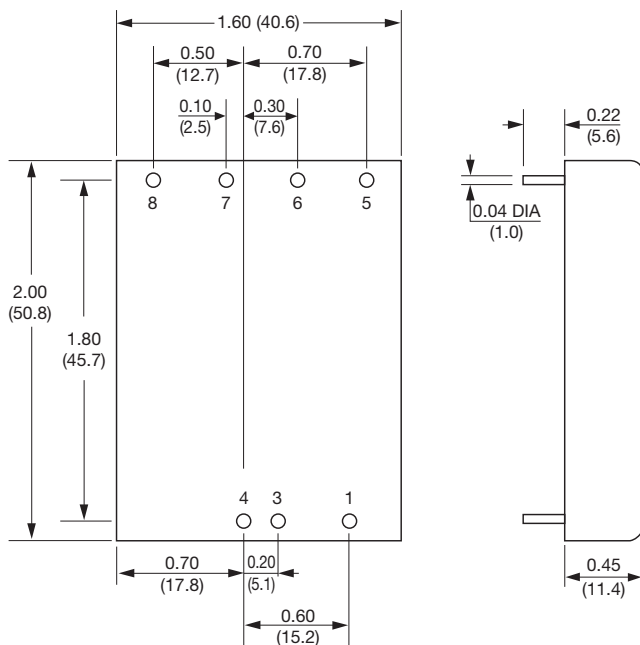
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			V1 nom	I <sub>max</sub>	V2 nom	I <sub>max</sub>		
24 V (9-36)	13.2 W	3.9 V	3.3 V	4.00 A			78%	VTC7068
	20.0 W	6.8 V	5.0 V	4.00 A			81%	VTC7069
	20.0 W	15.0 V	12.0 V	1.67 A			83%	VTC7071
	20.0 W	18.0 V	15.0 V	1.33 A			83%	VTC7072
	20.0 W	6.8 V	5.0 V	2.00 A	-5.0 V	2.00 A	83%	VTC7073
	20.0 W	15.0 V	12.0 V	0.83 A	-12.0 V	0.83 A	83%	VTC7074
48 V (18-75)	20.0 W	18.0 V	15.0 V	0.67 A	-15.0 V	0.67 A	83%	VTC7075
	13.2 W	3.9 V	3.3 V	4.00 A			78%	VTC7076
	20.0 W	6.8 V	5.0 V	4.00 A			82%	VTC7077
	20.0 W	15.0 V	12.0 V	1.67 A			84%	VTC7078
	20.0 W	18.0 V	15.0 V	1.33 A			84%	VTC7079
	20.0 W	6.8 V	5.0 V	2.00 A	-5.0 V	2.00 A	84%	VTC7081
	20.0 W	15.0 V	12.0 V	0.83 A	-12.0 V	0.83 A	84%	VTC7082
20.0 W	18.0 V	15.0 V	0.67 A	-15.0 V	0.67 A	84%	VTC7083	

## Mechanical Details

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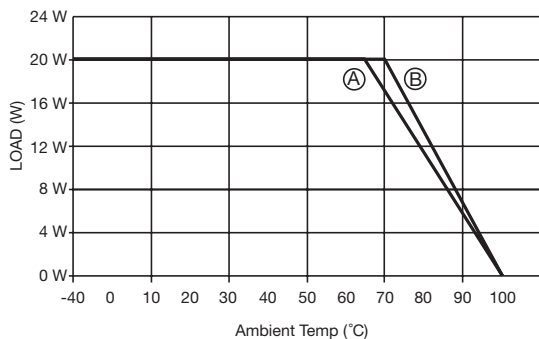
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3	-Vin	-Vin
4	+Vin	+Vin
5	Trim	Trim
6	-Vout	-Vout
7	+Vout	Common
8	No pin	+Vout

## Application Notes

### Derating Curve



**Curve A:** Convection cooling  
100% load at +65 °C to 0% load at +100 °C  
**Curve B:** 150 LFM airflow  
100% load at +70 °C to 0% load at +100 °C

### Output Trim

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	R Trim Down (kΩ)	R Trim Up (kΩ)
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±12 V	$(743 - (177 \times \Delta V_o)) / \Delta V_o$	$(56.644 - (17.647 \times \Delta V_o)) / \Delta V_o$
±15 V	$(68.296 - (48.1 \times \Delta V_o)) / \Delta V_o$	$(20.657 - (19.5 \times \Delta V_o)) / \Delta V_o$

#### Note:

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Connect the resistor between TRIM pin and -Vo pin.