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DVC453

DC/DC converter

DC/DC converter for vehicles and other applications

Abbildung ähnlich / device similar to figure

DVC453 - derivate table

Type	Input voltage	Output voltage	Max. output current	Cat. No.
	Nom. (Tol.)			
DVC453-24/36-24	24 - 36 VDC (17 - 47 VDC)	24,3 VDC	18,5 A	105176/0/000
DVC453-48/80-24	48 - 80 VDC (34 - 104 VDC)	24,3 VDC	18,5 A	105177/0/000

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1 Input

Input voltage range		see DVC453 - derivate table (valid for continuous operation)
Input capacity	< 20µF < 50µF	DVC453-24/36-24 DVC453-48/80-24 Attention: No inrush current limitation in the device. Provide a precharging section in the application, otherwise there is a risk of a overvoltage damage to the input of the DC/DC converter.
Turn on voltage	typ. 15,5 VDC typ. 23 VDC	DVC453-24/36-24 (Above typ. U_{IN} > 17 VDC U_{OUT} within tolerances) DVC453-48/80-24 (Above typ. U_{IN} > 34 VDC U_{OUT} within tolerances)
Turn off voltage	typ. 4 VDC typ. 22.5 VDC	DVC453-24/36-24 (Below U_{IN} < 17 VDC U_{OUT} may sink) DVC453-48/80-24 (Below U_{IN} < 34VDC U_{OUT} may sink.)
Start up delay	typ. 1,0 s	Time from applying the input voltage until the output voltage is statically within the permissible tolerances.
No-load power	typ. 2,0 W (24 VDC) typ. 2,3 W (36 VDC) typ. 2,1 W (48 VDC) typ. 2,3 W (80 VDC)	-
No-load current consumption	typ. 90 mA (24 VDC) typ. 90 mA (36 VDC) typ. 70 mA (48 VDC) typ. 53 mA (80 VDC)	-
Input current at full load	typ. 19,5 A (24VDC) typ. 13,6 A (36VDC) typ. 9,9 A (48VDC) typ. 6,1 A (80VDC)	see fig. 9.1

2 Output

Output voltage U_{nom}	24,3 VDC	@ I_{out} = 0 A
Initial tolerance $N_{initial}$	U_{nom} ± 0,5%	-
Ripple & Noise N_{RP}	U_{nom} ± 1%	< 453 mVpp, measuring bandwidth 20 MHz
load regulation tolerance N_{load}	U_{nom} + 0% / - 1,1%	-
Overall tolerance $N_{overall}$ (0 Hz - 20 Hz)	U_{nom} + 0,5% / - 1,6%	$N_{overall} = N_{initial} + N_{load}$
Overall tolerance $N_{overall}$ (0 Hz - 20 MHz)	U_{nom} + 1,5% / - 2,6%	$N_{overall} = N_{initial} + N_{load} + N_{RP}$
Max. continuous output current I_{nom}	18,5A	-
Max. Output power	≤ 450W	DVC453-24/36-24: < 450 W @ U_{IN} < 25VDC siehe Abb. 9.5
Current limiting	1,1 x I_{nom}	above 1,0 x I_{nom} U_{out} may decrease

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recovery time	< 2 ms	Duration from leaving the overall tolerance until the permanently return to the tolerance band after a load step. (at $\frac{dI}{dt}$ < 1 A/µs)

3 Enviroment

Working temperature (envrioment)	-25°C ... +50°C	-
Max. permissible temperature of the mounting surface	< +50°C	-
Operation temperature	< 85°C	measured at temperature reference point, see fig. 8.1
Overtemperature protection	> 85°C	Protective shutdown with self-reset. Measured at the temperature reference point.
Storage temperature	-40°C ... +85°C	-
Humidtiy	95%	-
Dewing	allowed	-
Shock test (acc. to EN 60068-2-27)		half sinusoidal (Excitation) 250m/s^2 (Peak acceleration) 6ms (Duration) 1.000 shocks to each axis (Quantity) ±X, ±Y, ±Z (Axis)
Vibration test (acc. to EN 60068-2-6)		sinusoidal (Excitation) 30m/s^2 (Peak acceleration) 10 - 500Hz (frequency, floating) 2h per axis (Duration) X, Y, Z (Axis)
Degree of protection acc. to EN60529	IP65	-

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4 General data

Insulation strenght	1,2 kV_{RMS} 1,2 kV_{RMS}	Input / output and enclosure Output / enclosure
Max. efficiency	typ. 93,4% (24 VDC) typ. 92,5% (36 VDC) typ. 94,5% (48 VDC) typ. 92,9% (80 VDC)	see fig. 9.3
Average efficiency	typ. 92,6% (24 VDC) typ. 91,6% (36 VDC) typ. 93,7% (48 VDC) typ. 91,6% (80 VDC)	Averaging of the efficiency values at 25%, 50%, 75% und 100% of the nominal output power. see fig. 9.4
Dimensions (LxWxH)	approx. (180 x 85 x 46,5)mm approx. (180 x 85 x 23,5)mm	with connectors see fig. 8.1 without connectors see fig. 8.1
Enclosure	Aluminium	-
Weight	approx. 700g	-

5 Standards

EMC (Electromagnetic Compatibility)

Title	Norm	Values
Emitted interference	EN12895 EN61204-3	- according to 6.4.2, Table H.3,for industrial environment (Class A, cable length < 3 m)
Immunity	EN12895 EN61204-3	- according to 7.2.3: Immunity level for industrial environment (cable length < 3 m)

Electrical safety

Title	Standard	Data
Low-voltage switch mode power supplies - Safety requirements	DIN EN 61204-7	-
Safety of industrial trucks - Electrical requirements	designed according to DIN EN 1175*	-

* The system integrator is responsible for compliance of all product-specific requirements in the end application.

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6 Installation and safety instructions

In addition to the general installation and safety instructions for DC/DC converters, the following values and supplements apply:

Mounting points	-	4x Mounting holes (Ø9 mm) see fig. 8.1
Installation orientation	-	any
Connection input / output	-	see fig. 7.1
Input fuse	-	No integrated input fuse. A fuse must be provided externally by the customer application.
Reverse polarity protection	-	No reverse polarity protection integrated at the input or output of the device. Reverse polarity protection is ensured exclusively by the plug connector. If the polarity is reversed at the input, then the input fuse to be connected in series will trip.

The general installation and safety instructions for DC/DC converters can be found at: www.deutronic.com

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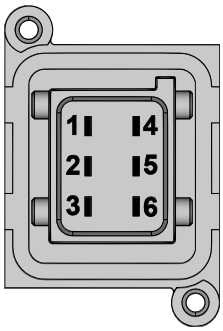
7 Connectors

Input / Output



TE Connectivity 1-929180-1, 6-pole:

PIN "1": $V_{OUT, +}$
PIN "2": $V_{OUT, -}$
PIN "3": $V_{IN, +}$
PIN "4": N.C.
PIN "5": N.C.
PIN "6": $V_{IN, -}$

- Matching mating connector TE Connectivity 1-963212-1
- Connection cross-section at mating connector min. 2,5 mm²
- max. number of mating cycles: 10
- Individual connection technology on customer request for input and output possible

Figure 7.1: Pin - assignment

8 Dimensions

All dimensions are given in millimeters and have a general tolerance according to DIN ISO 2768 - m.

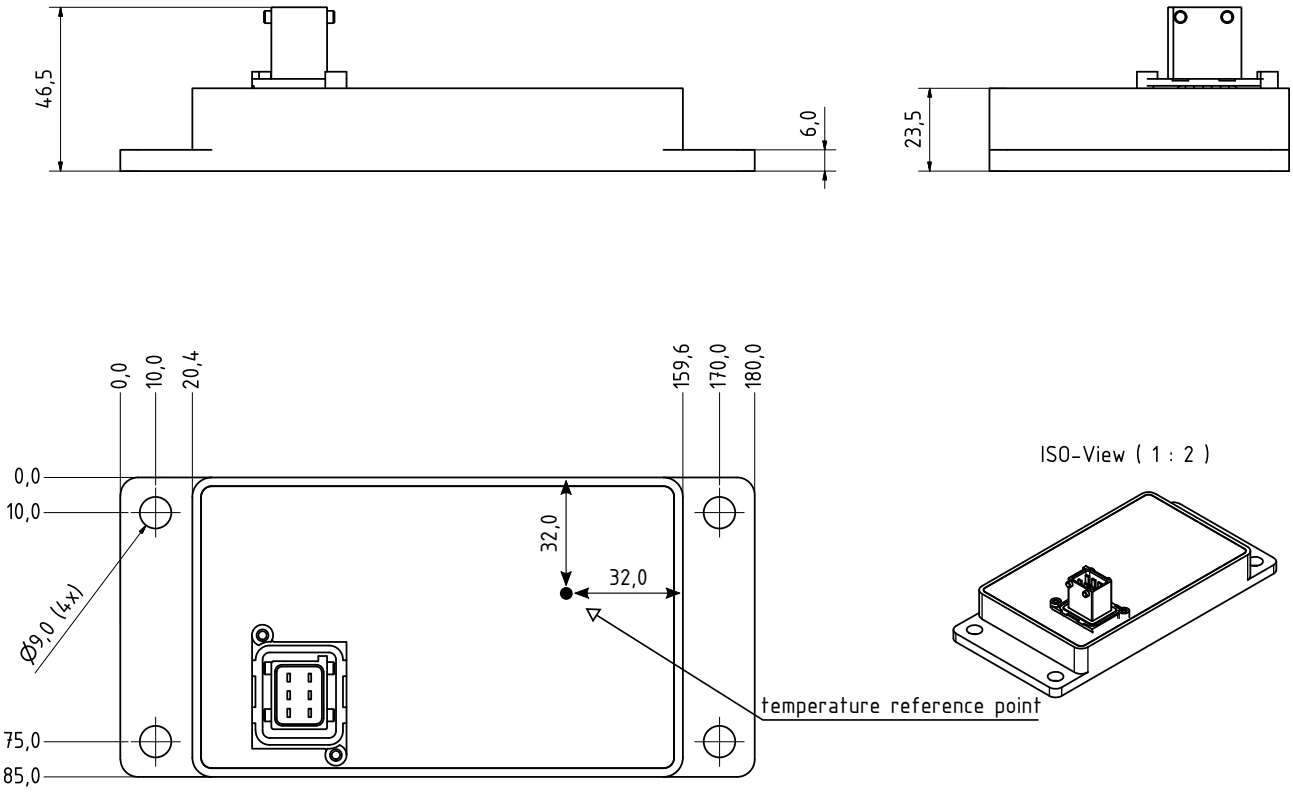


Figure 8.1: dimensions

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9 Characteristics

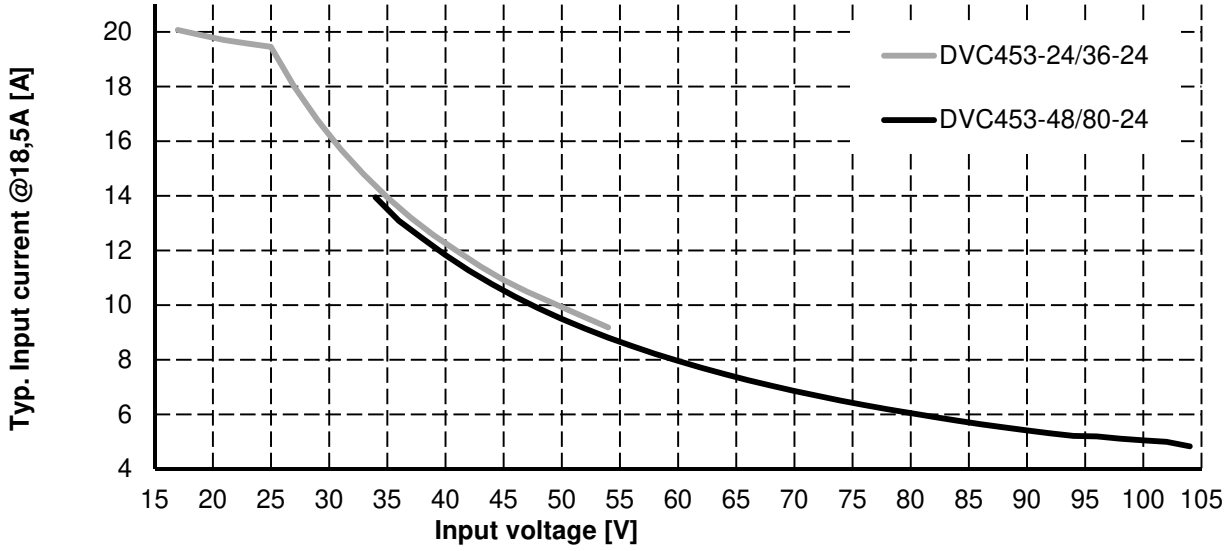

Figure 9.1: Current consumption at full load depending on the input voltage

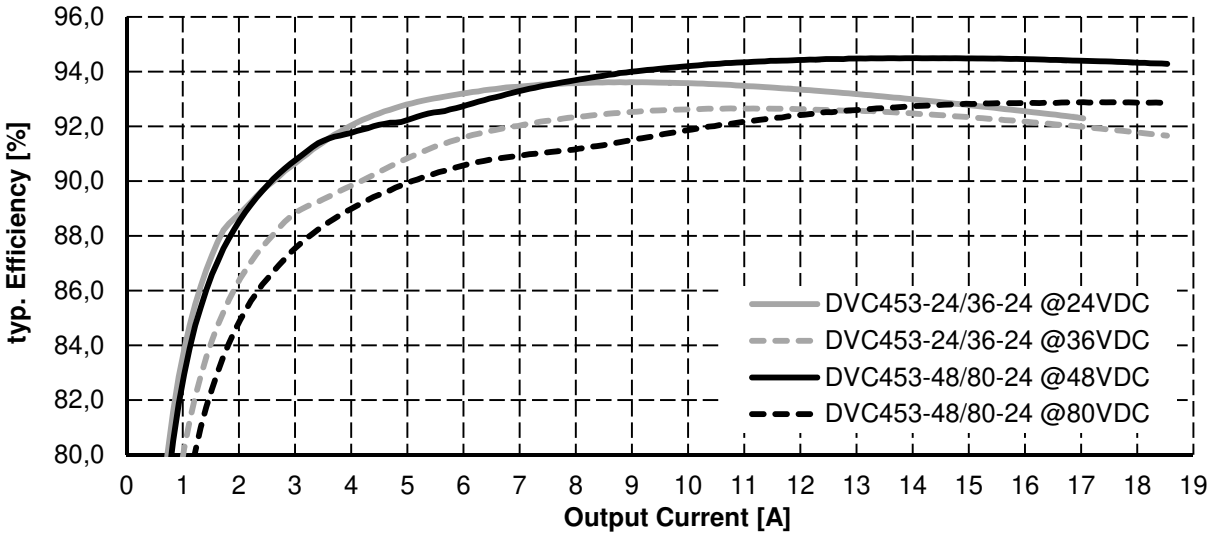

Figure 9.2: Efficiency as a function of the output current

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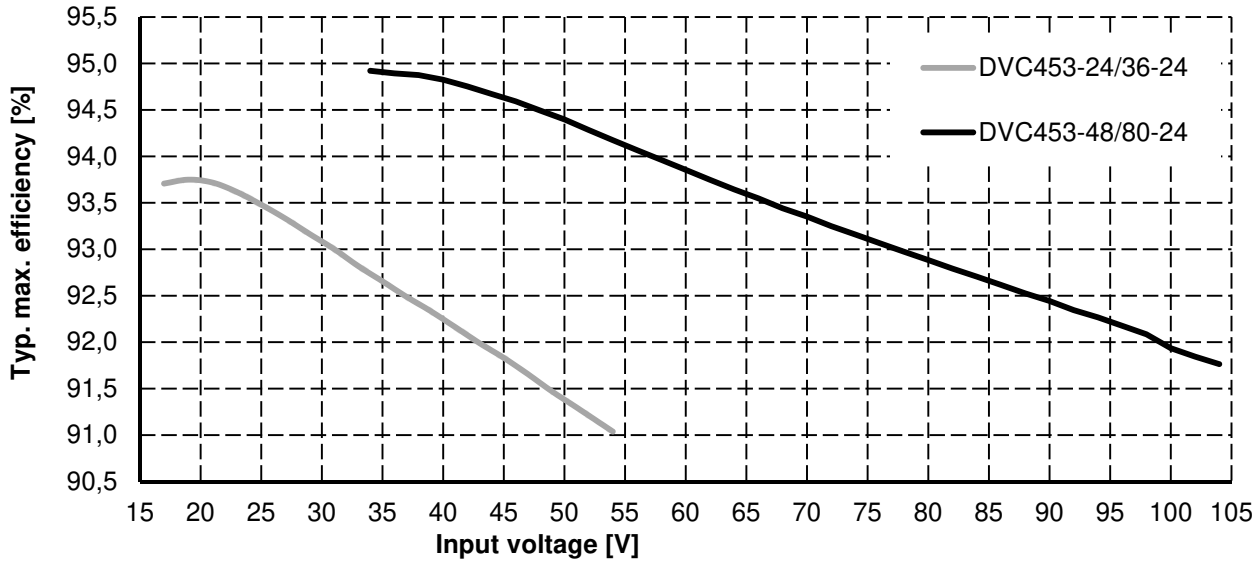

Figure 9.3: Max. efficiency depending on the input voltage

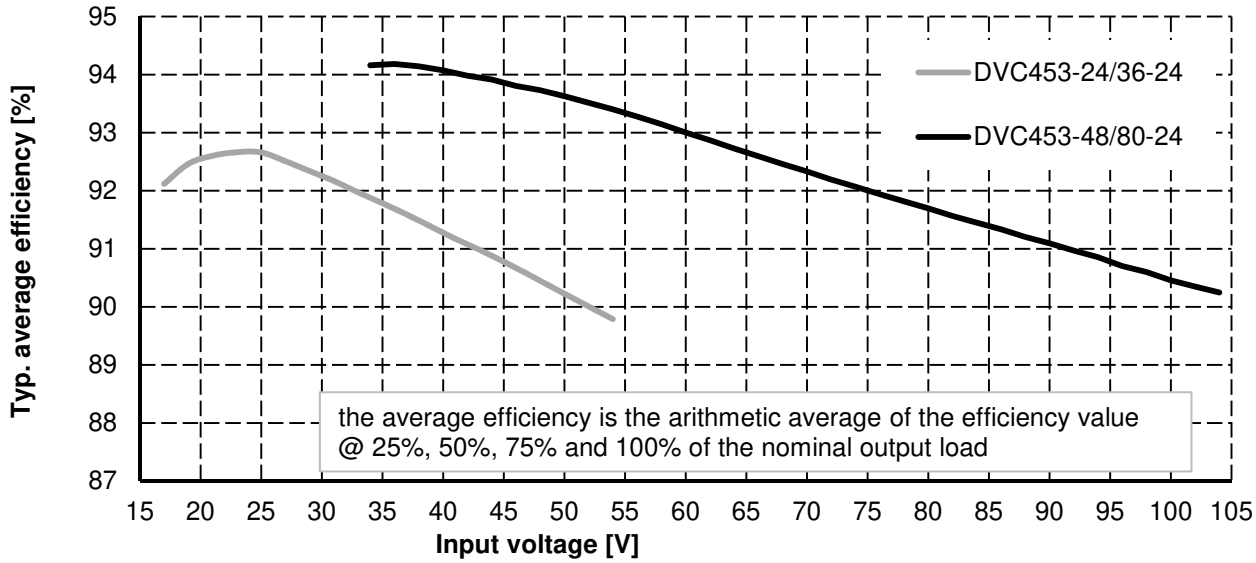

Figure 9.4: Average efficiency depending on the input voltage

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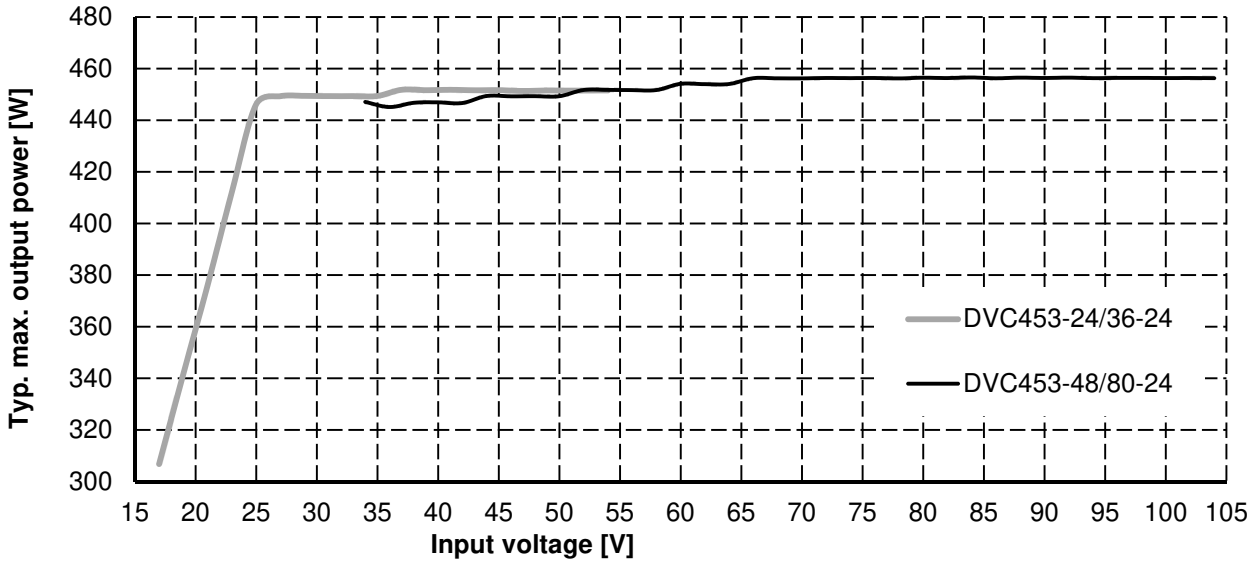

Figure 9.5: Typ. maximum output power depending on the input voltage