

DC/DC Ultra Wide Input Converter ECU 10 Series



- * 4:1 input voltage range
- * I/O isolation of 500Vdc
- * Pi-filter at input
- * Continuous short circuit proof
- * Efficiency up to 82%
- * No derating up to 71°C
- * Low output ripple and spikes
- * Low silhouette
- * Metal case with a non conductive base plate, six-sides shielded

Product Range

Model	Input nominal	Input range	I _{in} @ U _{in} nom. full load	I _{in} @ U _{in} nom. no load	U _{out}	Output I _{out} max.	Output power	Efficiency typ.	Max. capacity
Single									
ECU24-3V310	24Vdc	9...36Vdc	362 mA	15 mA	3.3 Vdc	2000 mA	6.6 W	76%	
ECU24-0510	24Vdc	9...36Vdc	534 mA	15 mA	5.0 Vdc	2000 mA	10 W	78%	
ECU24-1210	24Vdc	9...36Vdc	520 mA	15 mA	12.0 Vdc	830 mA	10 W	80%	
ECU24-1510	24Vdc	9...36Vdc	520 mA	15 mA	15.0 Vdc	666 mA	10 W	80%	
ECU48-3V310	48Vdc	18...72Vdc	181 mA	10 mA	3.3 Vdc	2000 mA	6.6 W	76%	
ECU48-0510	48Vdc	18...72Vdc	260 mA	10 mA	5.0 Vdc	2000 mA	10 W	80%	
ECU48-1210	48Vdc	18...72Vdc	257 mA	10 mA	12.0 Vdc	830 mA	10 W	81%	
ECU48-1510	48Vdc	18...72Vdc	257 mA	10 mA	15.0 Vdc	666 mA	10 W	81%	

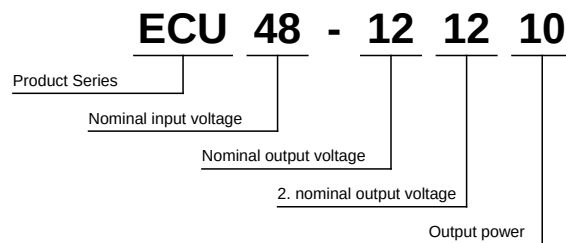
Dual

ECU24-050510	24Vdc	9...36Vdc	520 mA	20 mA	+5.0 Vdc - 5.0 Vdc	+1000 mA -1000 mA	5 W 5 W	80%
ECU24-121210	24Vdc	9...36Vdc	520 mA	20 mA	+12.0 Vdc -12.0 Vdc	+415 mA -415 mA	5 W 5 W	80%
ECU24-151510	24Vdc	9...36Vdc	520 mA	20 mA	+15.0 Vdc -15.0 Vdc	+333 mA -333 mA	5 W 5 W	80%
ECU48-050510	48Vdc	18...72Vdc	253 mA	15 mA	+5.0 Vdc -5.0 Vdc	+1000 mA -1000 mA	5 W 5 W	82%
ECU48-121210	48Vdc	18...72Vdc	257 mA	15 mA	+12.0 Vdc -12.0 Vdc	+415 mA -415 mA	5 W 5 W	81%
ECU48-151510	48Vdc	18...72Vdc	253 mA	15 mA	+15.0 Vdc -15.0 Vdc	+333 mA -333 mA	5 W 5 W	82%

Notes:

Efficiency measured at nominal input voltage

Nomenclature



Specifications

All values refer to an ambient temperature of 25°C and nominal rated values where nothing else is specified.

Input Specifications

Characteristic	Conditions	min	typ	max	unit
U_{IN} Input voltage		9 / 18	24 / 48	36 / 72	Vdc
U_{UVLO} Under voltage lockout					Vdc
Max. input current at full load		See	product	range	A
No load input current		See	product	range	mA
Inrush current					A ² s
Input surge voltage	Max. 100ms			50 / 100	Vdc

Output Specifications

Characteristic	Conditions	min	typ	max	unit
U_{ACC} Output voltage accuracy	Single / Dual		±1.0		%
Output voltage adjust					%
Line regulation	Single / Dual			±0.2	%
Load regulation	Single / Dual			±1.0	%
Cross regulation					%
Load transient recovery time	25% / 100% step load change		< 500		us
Load transient error band			±1.0		%
Temperature coefficient			±0.02		%/K
Ramp up time					ms
Start up time		24Vin / 48Vin			ms

	Ripple and noise	BW = 20MHz	75	mVpp
	Current limit			% Inom
	Over voltage protection			% Unom
	Short circuit protection			% Inom
	Short circuit characteristic		continuous	

General Specifications

Characteristic		Conditions	min	typ	max	unit
U _{ISO}	Isolation voltage	in/out, in/case, out/case	500			Vdc
R _{ISO}	Isolation resistance		> 1G			Ohm
C _{ISO}	Isolation capacity		typ. 500			pF
F _{SW}	Switching frequency		typ. 300			kHz
	Approvals					
	Safety Approvals					
	MTBF	MIL-STD-217-F, GB, 25°C	750'000			h
	Case material		Copper, black coated			
	Compound material					
	PCB material					
	Weight		32			gr
	Dimensions		50.8 x 25.4 x 10.2			mm
	Soldering infos		275°C for 10			s

EMC Specifications

Characteristic		Conditions	
	EMC conducted	See EMC information	EN55022/11 Class B

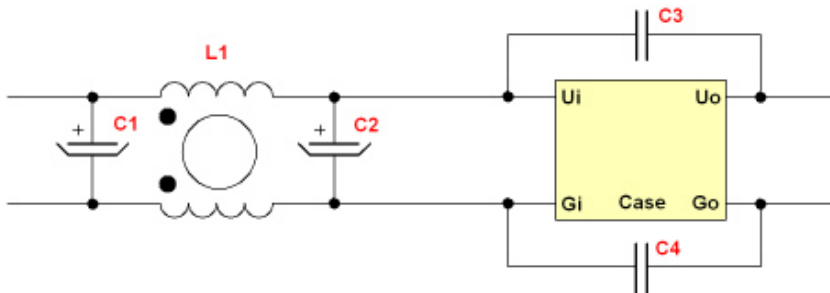
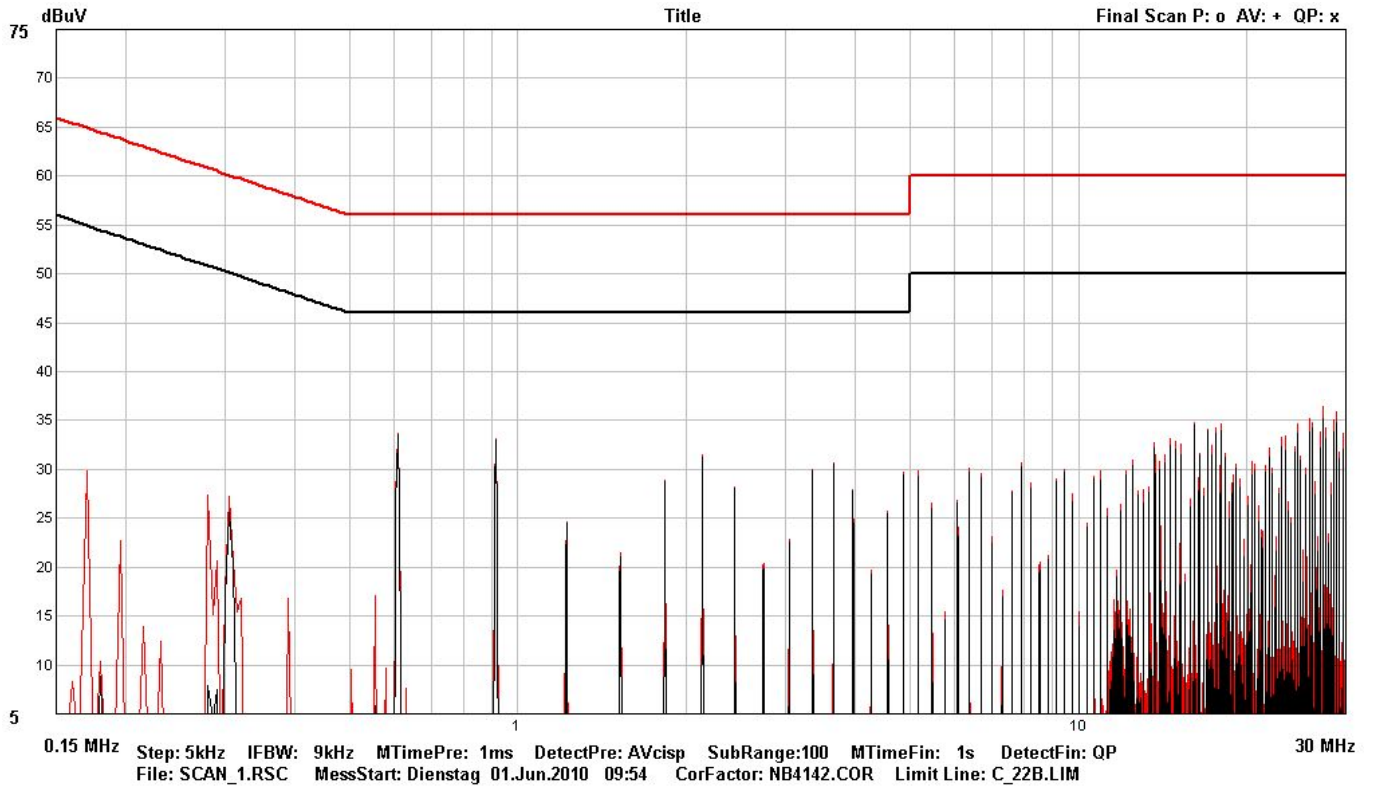
Environmental Specifications

Characteristic		Conditions	min	typ	max	unit
T _{AMB}	Operation temperature		-25...+71			°C
T _{AMB}	Storage temperature		-40...+100			°C
T _{SD}	Thermal shutdown range		Tcase = 100			°C

Own notes

EMC information

EMC emissions conducted, EN55022/11 Class B, Example: ECU24-0510



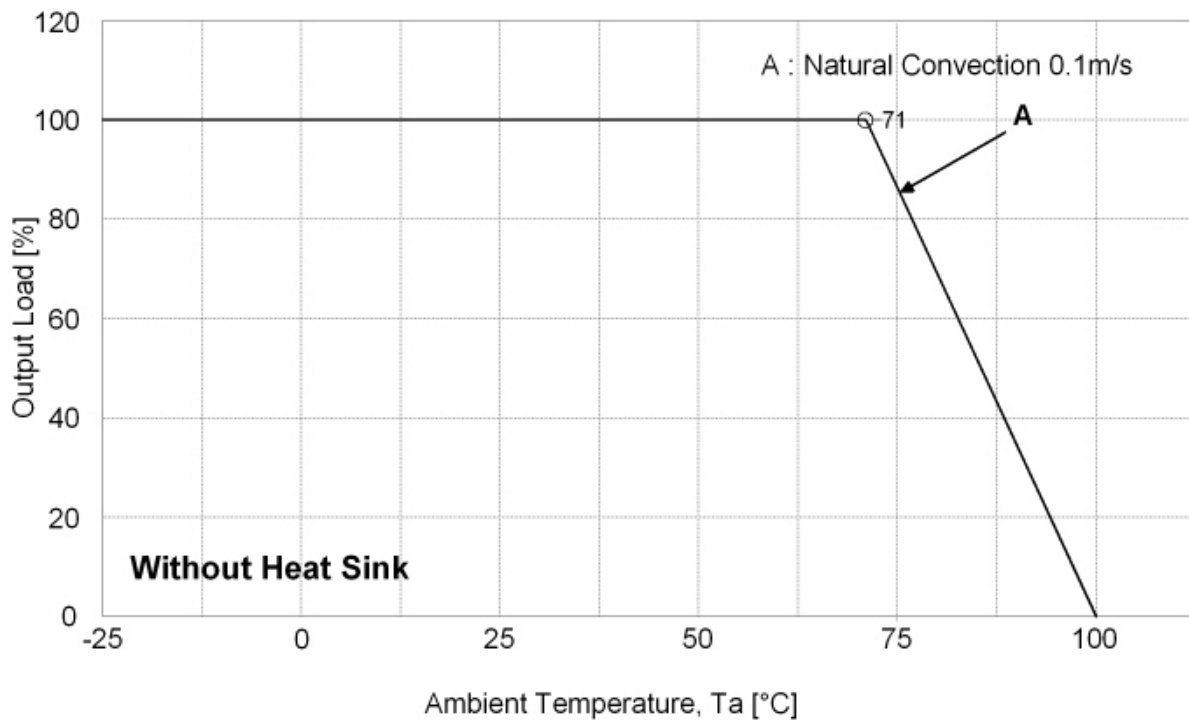
This was achieved with the following filter:

C1 220uF / 50V Rubycon ZL Series
C1 220uF / 50V Rubycon ZL Series
C3 680pF / 2kV Vishay 228271214616
C3 680pF / 2kV Vishay 228271214616
L1 13A Epcos B82559A0302A013

Own notes

Derating

The operating case temperature range of ECU 10 series is -25...+71°C. When operating the ECU 10 series, proper derating or cooling is needed. The following curves are the derating curves of ECU 10. Please note that these are relative values in a test environment. Ambient temperature can not be exactly defined in an application, only the case temperature. Please ask the factory for a suitable heat sink.

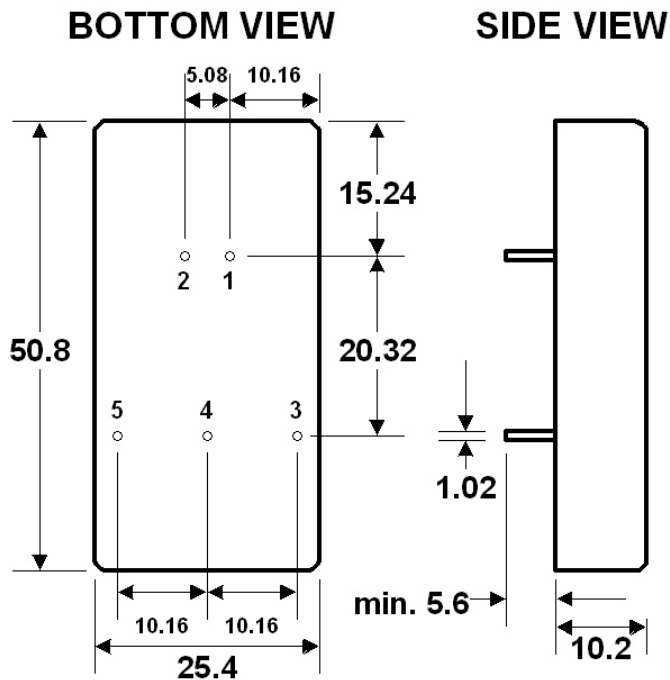


Own notes

Case

Normal tolerance $1/10 \pm 0.5$ mm, $1/100 \pm 0.25$ mm; Pin tolerance ± 0.05 mm diameter

NP = No pin, NC = Not connected, NA = Not available for electrical contact, do not connect, (opt) = optional



Pin	Single	Dual	Pin
1	+Vi	+Vi	1
2	-Vi	-Vi	2
3	+Vo	+Vo	3
4	NP	Com	4
5	-Vo	-Vo	5

Cleaning

The modules are cleanable with the today's known and in the electronics industry usually used products. Due to the different cleaning processes and new available products, we highly recommend to do a compatibility test when using the converters the first time.

Notice: All statements, technical information, and recommendations related to FABRIMEX's products are based on information believed to be reliable, but the accuracy or completeness thereof is not guaranteed. Before utilizing the product, the user should determine the suitability of the product for its intended use.

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The logo for EXISTA, featuring the word "EXISTA" in a bold, sans-serif font. The "E" is dark blue, and the "XISTA" part is a lighter blue.