

DC/DC Ultra Wide Input Converter ECU 05 Series



- * I/O isolation of 1500Vdc (suffix -H) or 3000Vdc (suffix -V)
- * Pi-filter at input
- * Continuous short circuit proof
- * Efficiency up to 83%
- * No derating up to 71°C
- * Low output ripple and noise
- * Metal case with non conductive base plate,
or non conductive plastic case
- * SMD mounting available
- * Safety Meets IEC/EN/UL 62368-1

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.	power	Efficiency typ.	Max. capacity
Single									
ECU24-0305S(x)	24Vdc	9...36Vdc	176mA	5mA	3.3Vdc	1000mA	3.3W	78%	1'000uF
ECU24-0505S(x)	24Vdc	9...36Vdc	254mA	5mA	5.0Vdc	1000mA	5W	82%	1'000uF
ECU24-1206S(x)	24Vdc	9...36Vdc	283mA	5mA	12Vdc	470mA	6W	83%	470uF
ECU24-1506S(x)	24Vdc	9...36Vdc	301mA	5mA	15Vdc	400mA	6W	83%	400uF
ECU48-0305S(x)	48Vdc	18...72Vdc	93mA	5mA	3.3Vdc	1000mA	3.3W	74%	1'000uF
ECU48-0505S(x)	48Vdc	18...72Vdc	132mA	5mA	5.0Vdc	1000mA	5W	79%	1'000uF
ECU48-1206S(x)	48Vdc	18...72Vdc	143mA	5mA	12Vdc	470mA	6W	82%	470uF
ECU48-1506S(x)	48Vdc	18...72Vdc	154mA	5mA	15Vdc	400mA	6W	81%	400uF
Dual									
ECU24-0505D(x)	24Vdc	9...36Vdc	251mA	5mA	+5.0Vdc -5.0Vdc	+500mA -500mA	2.5W 2.5W	83%	500uF 500uF
ECU24-1206D(x)	24Vdc	9...36Vdc	280mA	7.5mA	+12Vdc -12Vdc	+230mA -230mA	2.76W 2.76W	82%	230uF 230uF

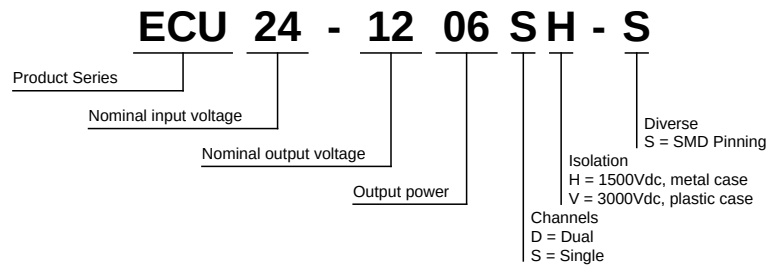
ECU24-1506D(x)	24Vdc	9...36Vdc	293mA	7.5mA	+15Vdc -15Vdc	+190mA -190mA	2.85W 2.85W	81%	190uF 190uF
ECU48-0505D(x)	48Vdc	18...72Vdc	130mA	5mA	+5.0Vdc -5.0Vdc	+500mA -500mA	2.5W 2.5W	80%	500uF 500uF
ECU48-1206D(x)	48Vdc	18...72Vdc	143mA	7.5mA	+12Vdc -12Vdc	+230mA -230mA	2.76W 2.76W	80%	230uF 230uF
ECU48-1506D(x)	48Vdc	18...72Vdc	148mA	7.5mA	+15Vdc -15Vdc	+190mA -190mA	2.85W 2.85W	80%	190uF 190uF

Notes:

(x) can be H or V

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^2s
	Input surge voltage					Vdc

Output Specifications

Characteristic		Conditions	min	typ	max	unit
U _{ACC}	Output voltage accuracy			±2		%
	Output voltage adjust					%
	Line regulation	Single / Dual			±0.5/±0.5	%
	Load regulation	Single / Dual			±0.5/±1.0	%
	Cross regulation					%
	Load transient recovery time					us
	Load transient error band					%
	Temperature coefficient			±0.05		%/K
	Ramp up time					ms
	Start up time			30		ms
	Ripple and noise	BW = 20MHz	100			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	1500 or 3000			Vdc
R_{ISO}	Isolation resistance		> 1G			Ohm
C_{ISO}	Isolation capacity					pF
F_{SW}	Switching frequency		typ. 200			kHz
	Approvals					
	Safety Approvals					
	MTBF					h
	Case material		Black Coated Copper or Plastic			
	Compound material		UL94V-0			
	PCB material		UL94V-0			
	Weight		12.5			gr
	Dimensions		31.8 x 20.3 x 10.2			mm
	Soldering infos		275°C for 10			s

EMC Specifications

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

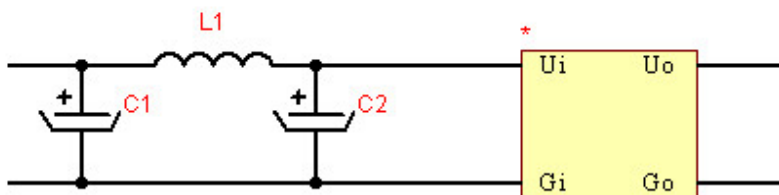
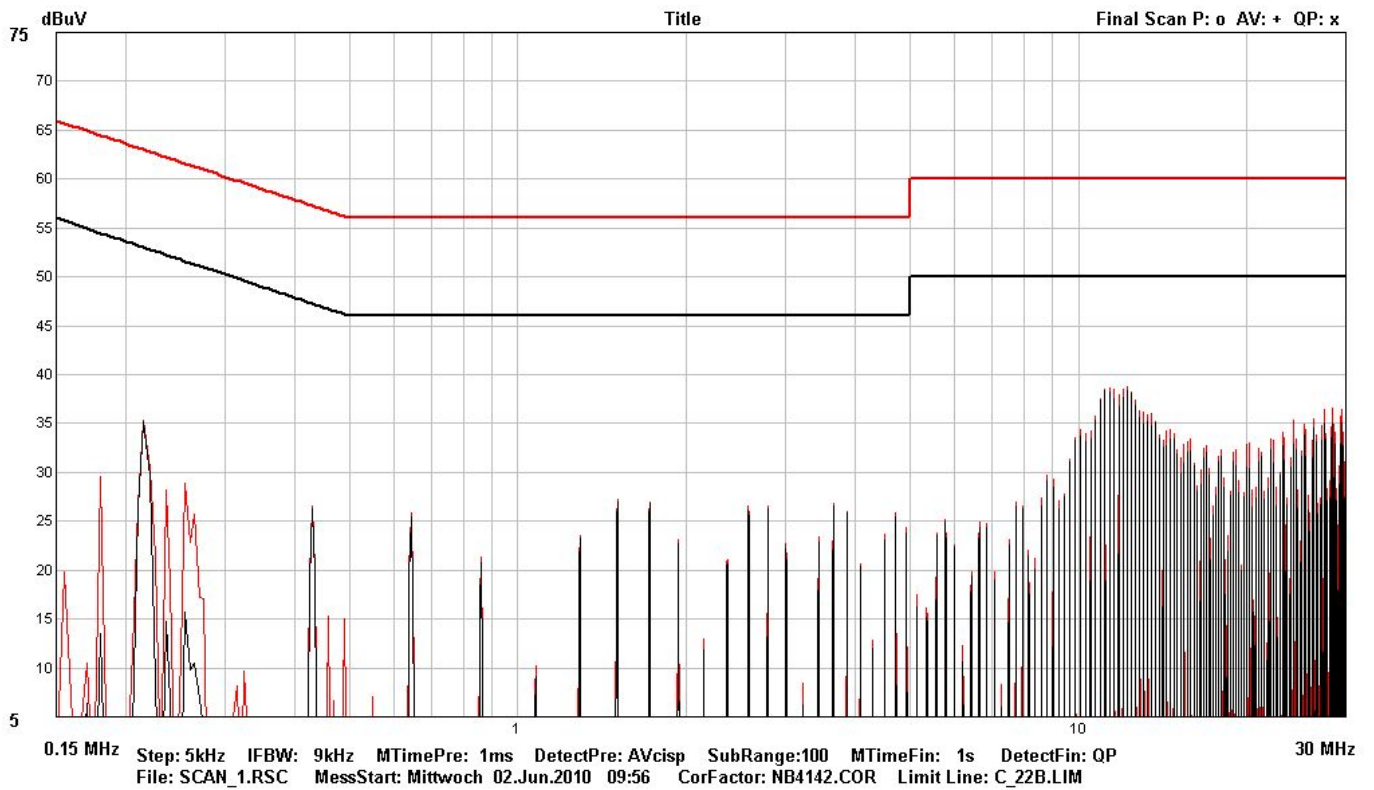
Environmental Specifications

Characteristic		Conditions	min	typ	max	unit
T_{AMB}	Operation temperature	Derating above 71°C	-40...+85			°C
T_{AMB}	Storage temperature		-40...+100			°C
T_{SD}	Thermal shutdown range					°C

Own notes

EMC information

EMC emissions conducted, EN55022/11 Class B, Example: ECU24-1206

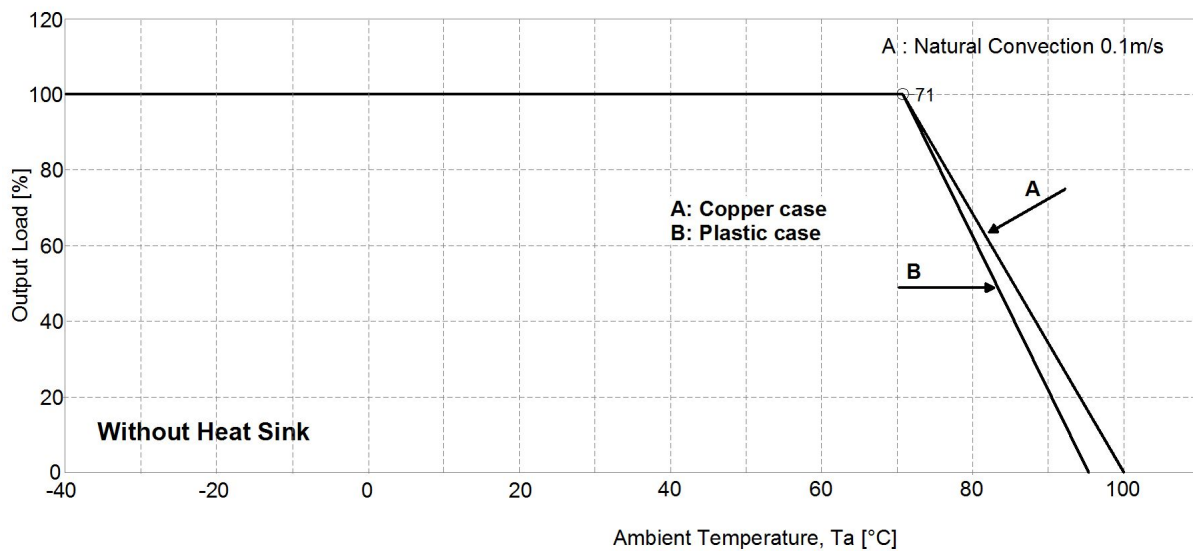


This was achieved with the following filter:
C1 10uF/50V Epcos B45197-A7106
C2 10uF/50V Epcos B45197-A7106
L1 10uH / 1.2A Coilcraft DS1608C-103

Own notes

Derating

The operating case temperature range of ECU 05 series is -40...+85°C. When operating the ECU 05 series, proper derating or cooling is needed. The following curves are the derating curves of ECU 05. 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

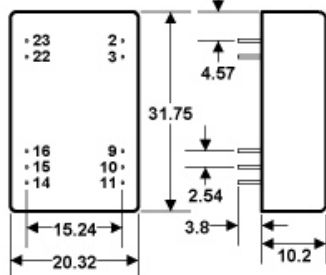
Case

Normal tolerance 1/10 ± 0.5 mm, 1/100 ± 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

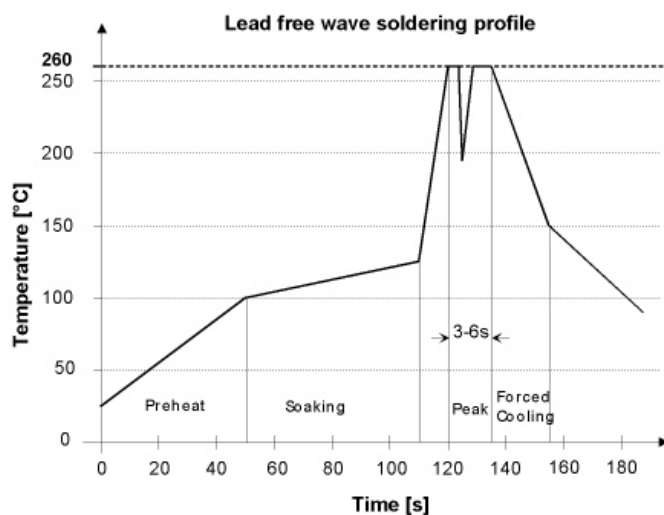
1500V or 3000V THD

BOTTOM VIEW SIDE VIEW



Pin	Single	Dual	Pin
2	Gi	Gi	2
3	Gi	Gi	3
9	NC	Go	9
10	NC	NC	10
11	NC	-Vo	11
14	+Vo	+Vo	14
15	NC	NC	15
16	Go	Go	16
22	+Vi	+Vi	22
23	+Vi	+Vi	23

Soldering



1. Soldering Materials: Sn/Cu/Ni
2. Preheat: 1.4 °C/s (From 30°C to 100°C)
3. Soaking: 0.5 °C/s (From 100°C to 130°C), 60 $\pm$ 20s
4. Peak temperature: 260°C, above 250°C 3~6s
5. Forced cooling: -10.0 °C/s (From 260°C to 150°C)

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.