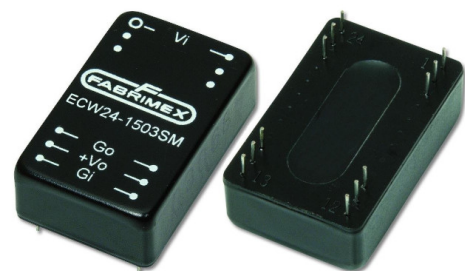


DC/DC Wide Input Converter ECW 03 Series



- * I/O isolation of 500 Vdc (Suffix M)
1500 Vdc (Suffix H) or 3000 Vdc (Suffix V)
- * Pi-filter at input
- * Continuous short circuit proof
- * Efficiency up to 82%
- * No derating up to 71°C
- * Low output ripple and noise
- * Metal case with non conductive base plate,
six sides shielded or non conductive plastic case
- * SMD mounting available
- * Inhibit as option
- * UL60950-1 recognized
- * Safety meets IEC/EN/UL 62368-1



Product Range

Model	Input nominal	Input range	lin @ Uin nom. full load	no load	Uout	Output Iout max.	power	Efficiency typ.	Max. capacity
Single									
ECW05-0303S	5Vdc	4.5...6Vdc	650mA	15mA	3.3Vdc	600mA	2W	68%	2'000uF
ECW05-0503S	5Vdc	4.5...6Vdc	850mA	15mA	5.0Vdc	600mA	3W	75%	2'000uF
ECW05-1203S	5Vdc	4.5...6Vdc	800mA	15mA	12Vdc	250mA	3W	79%	2'000uF
ECW05-1503S	5Vdc	4.5...6Vdc	800mA	15mA	15Vdc	200mA	3W	77%	2'000uF
ECW12-0303S	12Vdc	9...18Vdc	254mA	7.5mA	3.3Vdc	600mA	2W	72%	2'000uF
ECW12-0503S	12Vdc	9...18Vdc	340mA	7.5mA	5.0Vdc	600mA	3W	77%	2'000uF
ECW12-1203S	12Vdc	9...18Vdc	320mA	7.5mA	12Vdc	250mA	3W	80%	2'000uF
ECW12-1503S	12Vdc	9...18Vdc	320mA	7.5mA	15Vdc	200mA	3W	79%	2'000uF
ECW24-0303S	24Vdc	18...36Vdc	125mA	5mA	3.3Vdc	600mA	2W	74%	2'000uF

ECW24-0503S	24Vdc	18...36Vdc	168mA	5mA	5.0Vdc	600mA	3W	79%	2'000uF
ECW24-1203S	24Vdc	18...36Vdc	156mA	5mA	12Vdc	250mA	3W	80%	2'000uF
ECW24-1503S	24Vdc	18...36Vdc	156mA	5mA	15Vdc	200mA	3W	82%	2'000uF
ECW48-0303S	48Vdc	36...72Vdc	61mA	2mA	3.3Vdc	600mA	2W	72%	2'000uF
ECW48-0503S	48Vdc	36...72Vdc	82mA	2mA	5.0Vdc	600mA	3W	79%	2'000uF
ECW48-1203S	48Vdc	36...72Vdc	78mA	2mA	12Vdc	250mA	3W	80%	2'000uF
ECW48-1503S	48Vdc	36...72Vdc	78mA	2mA	15Vdc	200mA	3W	80%	2'000uF

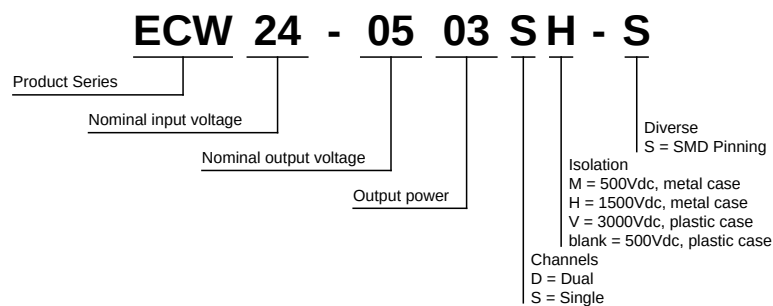
Dual

ECW05-0503D	5Vdc	4.5...6Vdc	850mA	25mA	+5.0Vdc -5.0Vdc	+300mA -300mA	1.5W 1.5W	77%	1'000uF 1'000uF
ECW05-1203D	5Vdc	4.5...6Vdc	800mA	25mA	+12Vdc -12Vdc	+125mA -125mA	1.5W 1.5W	76%	1'000uF 1'000uF
ECW05-1503D	5Vdc	4.5...6Vdc	800mA	25mA	+15Vdc -15Vdc	+100mA -100mA	1.5W 1.5W	75%	1'000uF 1'000uF
ECW12-0503D	12Vdc	9...18Vdc	340mA	12mA	+5.0Vdc -5.0Vdc	+300mA -300mA	1.5W 1.5W	77%	1'000uF 1'000uF
ECW12-1203D	12Vdc	9...18Vdc	320mA	12mA	+12Vdc -12Vdc	+125mA -125mA	1.5W 1.5W	77%	1'000uF 1'000uF
ECW12-1503D	12Vdc	9...18Vdc	320mA	12mA	+15Vdc -15Vdc	+100mA -100mA	1.5W 1.5W	79%	1'000uF 1'000uF
ECW24-0503D	24Vdc	18...36Vdc	168mA	7.5mA	+5.0Vdc -5.0Vdc	+300mA -300mA	1.5W 1.5W	77%	1'000uF 1'000uF
ECW24-1203D	24Vdc	18...36Vdc	156mA	7.5mA	+12Vdc -12Vdc	+125mA -125mA	1.5W 1.5W	79%	1'000uF 1'000uF
ECW24-1503D	24Vdc	18...36Vdc	156mA	7.5mA	+15Vdc -15Vdc	+100mA -100mA	1.5W 1.5W	81%	1'000uF 1'000uF
ECW48-0503D	48Vdc	36...72Vdc	82mA	3mA	+5.0Vdc -5.0Vdc	+300mA -300mA	1.5W 1.5W	78%	1'000uF 1'000uF
ECW48-1203D	48Vdc	36...72Vdc	80mA	3mA	+12Vdc -12Vdc	+125mA -125mA	1.5W 1.5W	78%	1'000uF 1'000uF
ECW48-1503D	48Vdc	36...72Vdc	80mA	3mA	+15Vdc -15Vdc	+100mA -100mA	1.5W 1.5W	78%	1'000uF 1'000uF

Notes:

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		See	product	range	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					Vdc

Output Specifications

Characteristic		Conditions	min	typ	max	unit
U_{ACC}	Output voltage accuracy			±2		%
	Output voltage adjust					%
	Line regulation	Measured from high to low		±0.5		%
	Load regulation	25% / 100% step load change	s: ±0.5, d: ±1			%
	Cross regulation					%
	Load transient recovery time	25% / 100% step load change				µs
	Load transient error band					%
	Temperature coefficient			±0.05		%/K
	Ramp up time					ms
	Start up time					ms
	Ripple and noise	BW = 20MHz	3.3V/5V: 100, 12V/15V: 1%			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		500, 1500 or 3000			Vdc
R_{ISO}	Isolation resistance		> 1G			Ohm
C_{ISO}	Isolation capacity					pF
F_{SW}	Switching frequency		100			kHz
	Approvals					
	Safety Approvals					
	MTBF		2'000'000			h
	Case material		Copper, black coated or Plastic			
	Compound material		UL 94V-0			
	PCB material		UL 94V-0			
	Weight		12.5			gr

	Dimensions		31.8 x 20.3 x 10.2 (SMD: 11.4)	mm
	Soldering infos		275°C for 10	s

EMC Specifications

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

Environmental Specifications

Characteristic		Conditions	min	typ	max	unit
T _{AMB}	Operation temperature	See derating diagram	-25...+71			°C
T _{AMB}	Storage temperature		-40...+100			°C
T _{SD}	Thermal shutdown range		None			°C

Own notes

EMC information

EMC emissions conducted, EN55022/11 Class A or B, Example:

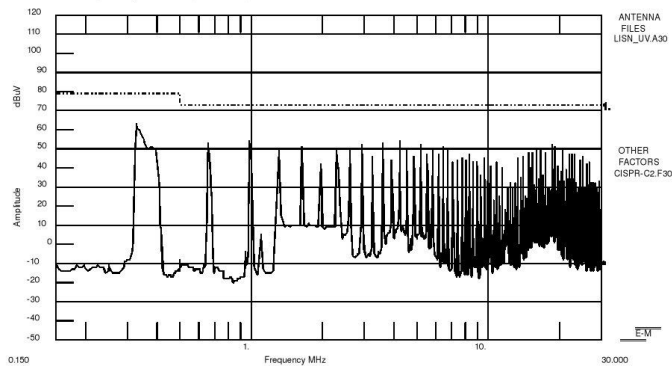
Electro-Metrics

EMV Messung
Date : 09/08/99
Technician : U. Luessli
Test Method : CONDUCTED EMISSION
Equipment : ECW24-0503SM
Mode of Op. : Normal operation
Serial No. : 9934
Comment : 24VDC input voltage with 10uF capacitor near input

Time : 09/09/06:34
Test Equip. : EMC-30 MKIV
Test Number : 1
Sensor Loc. : NA
Sensor Pol. : positiv
Ext. Atten. : 0 dB

EMC-30 SETTINGS
Detector : QuasiPeak
Bandwidth : CISPR
Dwell : N/A
RF Atten. : 0 dB
IF Atten. : 0 dB

SPECS
1) EN 55022 Class A QuasiPeak



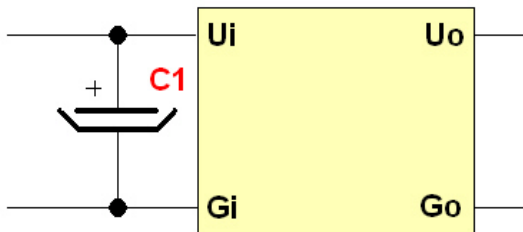
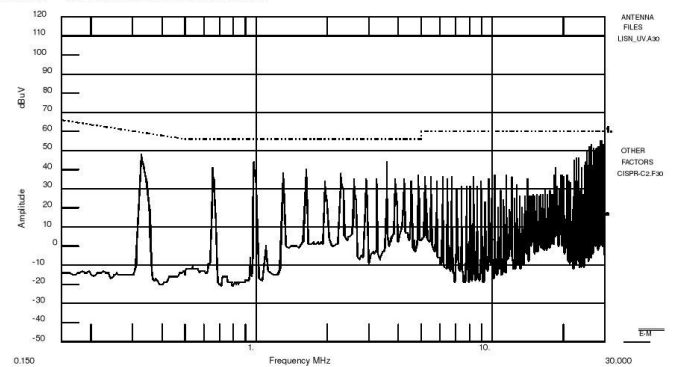
Electro-Metrics

EMV Messung
Date : 09/08/99
Technician : U. Luessli
Test Method : CONDUCTED EMISSION
Equipment : ECW24-0503SVB
Mode of Op. : Nominal operation
Serial No. : 9918
Comment : 24VDC input voltage with 10uF capacitor near input

Time : 08/42:26:14
Test Equip. : EMC-30 MKIV
Test Number : 1
Sensor Loc. : NA
Sensor Pol. : positiv
Ext. Atten. : 0 dB

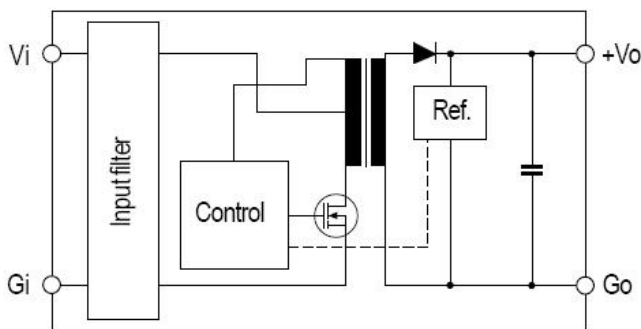
EMC-30 SETTINGS
Detector : QuasiPeak
Bandwidth : CISPR
Dwell : N/A
RF Atten. : 0 dB
IF Atten. : 0 dB

SPECS
1) EN 55022 CLASS B / QuasiPeak

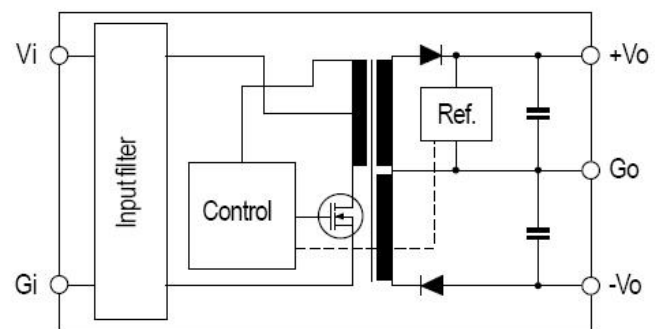


This was achieved with the following filter:
 $V_{in} = 24V$
 $C1 = 100\mu F$

Block diagram



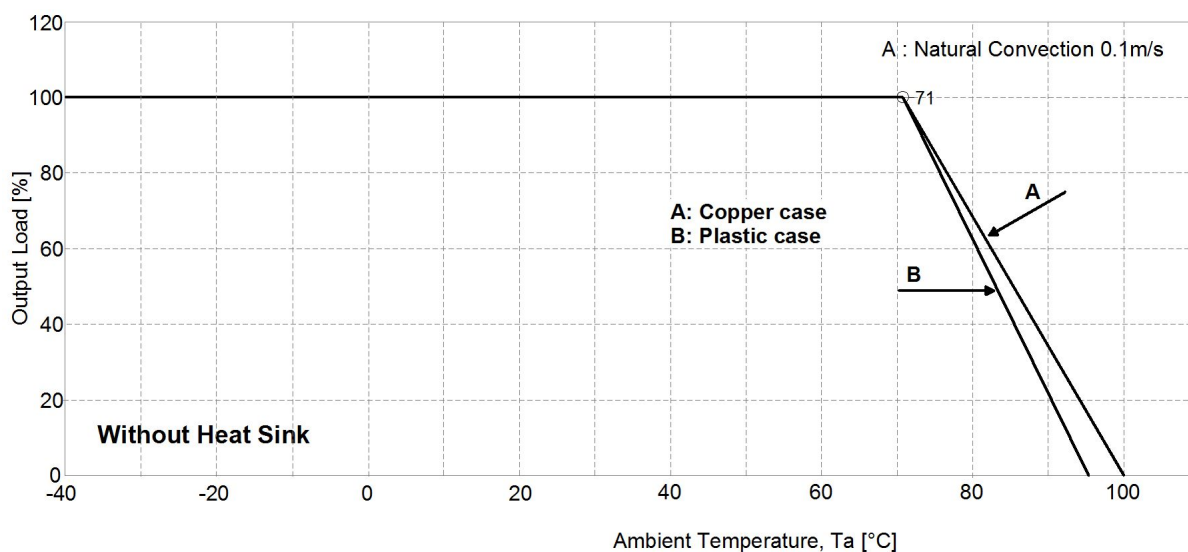
Single output converter block diagram



Dual output converter block diagram

Derating

The operating case temperature range of ECW 03 series is -25...+71°C. When operating the ECW 03 series, proper derating or cooling is needed. The following curves are the derating curves of ECW 03. 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

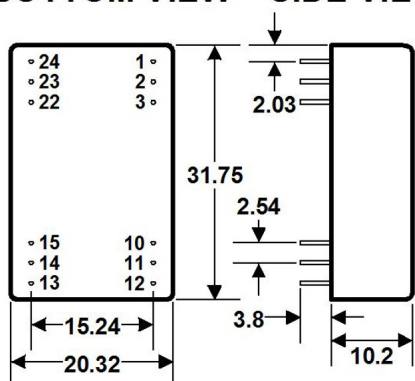
Case

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

500V: A1/A2 10.2mm

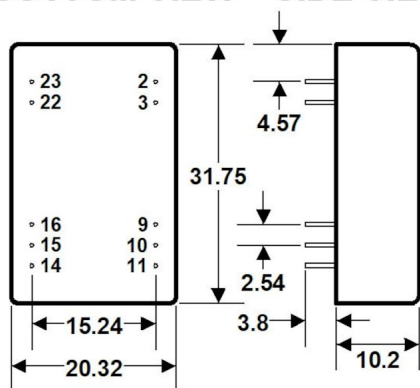
BOTTOM VIEW SIDE VIEW



Pin	Single	Dual	Pin
1	+Vi	+Vi	1
2	NC	-Vo	2
3	NC	Go	3
10	Go	Go	10
11	+Vo	+Vo	11
12	Gi	Gi	12
13	Gi	Gi	13
14	+Vo	+Vo	14
15	Go	Go	15
22	NC	Go	22
23	NC	-Vo	23
24	+Vi	+Vi	24

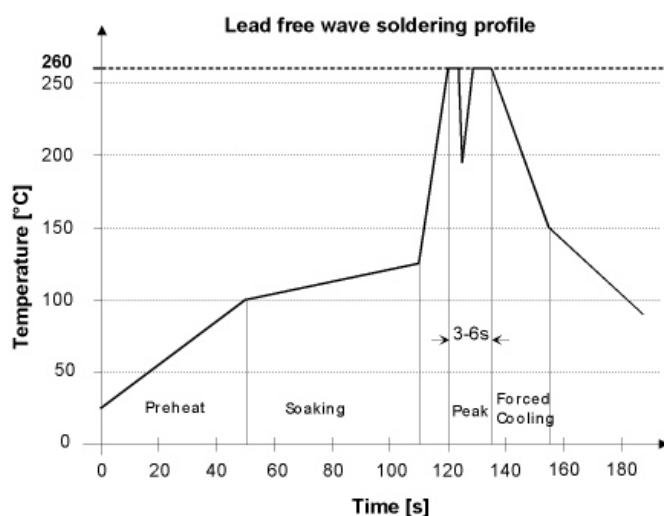
1k5, 3kV: A4 / A5 10.2mm

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.

Own notes

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, with the word "EXISTA" in a bold, blue, sans-serif font. The letter "E" is stylized with a horizontal bar that extends to the left.