

Reg. Nr. 12666

DC/DC Wide Input Converter ECW 05-B 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 (only together with suffix H or V)
- * Meets EN55022 Class B

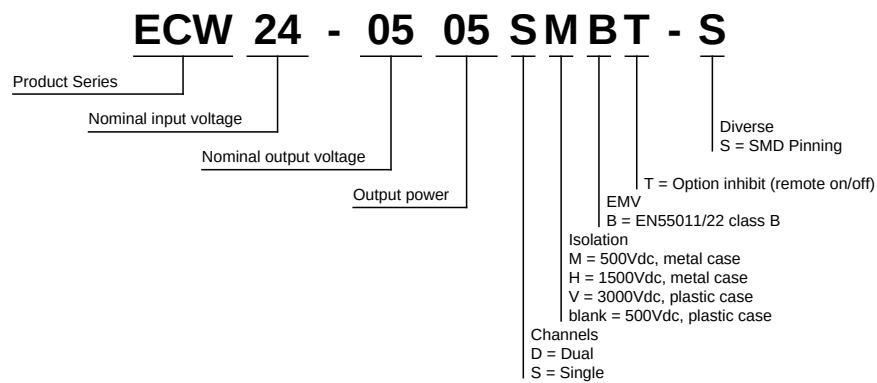
Product Range

Model	Input nominal	Input range	lin @ Uin nom. full load	lin @ Uin nom. no load	Uout	Output Iout max.	power	Efficiency typ.	Max. capacity
Single									
ECW12-0305S(x)B(y)	12Vdc	9...18Vdc	382mA	7.5mA	3.3Vdc	1000mA	3.3W	72%	
ECW12-0505S(x)B(y)	12Vdc	9...18Vdc	548mA	7.5mA	5.0Vdc	1000mA	5W	76%	
ECW12-1206S(x)B(y)	12Vdc	9...18Vdc	588mA	7.5mA	12Vdc	470mA	5.5W	80%	
ECW12-1506S(x)B(y)	12Vdc	9...18Vdc	617mA	7.5mA	15Vdc	400mA	6W	78%	
ECW24-0305S(x)B(y)	24Vdc	18...36Vdc	188mA	5mA	3.3Vdc	1000mA	3.3W	73%	
ECW24-0505S(x)B(y)	24Vdc	18...36Vdc	264mA	5mA	5.0Vdc	1000mA	5W	79%	
ECW24-1206S(x)B(y)	24Vdc	18...36Vdc	283mA	5mA	12Vdc	470mA	5.5W	83%	
ECW24-1506S(x)B(y)	24Vdc	18...36Vdc	298mA	5mA	15Vdc	400mA	6W	84%	
ECW48-0303S(x)B(y)	48Vdc	36...72Vdc	94mA	3mA	3.3Vdc	1000mA	3.3W	73%	
ECW48-0505S(x)B(y)	48Vdc	36...72Vdc	132mA	2mA	5.0Vdc	1000mA	5W	79%	
ECW48-1206S(x)B(y)	48Vdc	36...72Vdc	143mA	2mA	12Vdc	470mA	5.5W	82%	
ECW48-1506S(x)B(y)	48Vdc	36...72Vdc	154mA	2mA	15Vdc	400mA	6W	81%	

Dual

ECW12-0505D(x)B(y)	12Vdc	9...18Vdc	548mA	12mA	+5.0Vdc -5.0Vdc	+500mA -300mA	2.5W 2.5W	76%
ECW12-1206D(x)B(y)	12Vdc	9...18Vdc	568mA	12mA	+12Vdc -12Vdc	+230mA -125mA	2.75W 2.75W	81%
ECW12-1506D(x)B(y)	12Vdc	9...18Vdc	586mA	12mA	+15Vdc -15Vdc	+190mA -100mA	2.85W 2.85W	81%
ECW24-0505D(x)B(y)	24Vdc	18...36Vdc	264mA	7.5mA	+5.0Vdc -5.0Vdc	+500mA -500mA	2.5W 2.5W	79%
ECW24-1206D(x)B(y)	24Vdc	18...36Vdc	284mA	7.5mA	+12Vdc -12Vdc	+230mA -230mA	2.75W 2.75W	81%
ECW24-1506D(x)B(y)	24Vdc	18...36Vdc	290mA	7.5mA	+15Vdc -15Vdc	+190mA -190mA	2.85W 2.85W	82%
ECW48-0505D(x)B(y)	48Vdc	36...72Vdc	132mA	3mA	+5.0Vdc -5.0Vdc	+500mA -500mA	2.5W 2.5W	79%
ECW48-1206D(x)B(y)	48Vdc	36...72Vdc	142mA	3mA	+12Vdc -12Vdc	+230mA -230mA	2.75W 2.75W	81%
ECW48-1506D(x)B(y)	48Vdc	36...72Vdc	148mA	3mA	+15Vdc -15Vdc	+190mA -190mA	2.85W 2.85W	80%

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	ETS300 132-2			0.01	A ² s

Output Specifications

Characteristic		Conditions	min	typ	max	unit
U _{ACC}	Output voltage accuracy			±2		%
	Output voltage adjust					%
	Line regulation			±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				us
	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					% I _{nom}
	Over voltage protection					% U _{nom}
	Short circuit protection					% I _{nom}
	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		>1'000'000			h
	Case material		Copper, black coated or Plastic			
	Compound material					
	PCB material					
	Weight		15			gr
	Dimensions		31.8 x 20.3 x 12.7 (SMD: 14)			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	See derating diagram	-25...+70			°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 B, Example: ECW24-0505SHB

Electro-Metrics

EMV Messung

Date : 09/08/99
Technician : U. Luesel
Test Method : CONDUCTED EMISSION
Equipment : ECW24-0505SHB
Mode of Op. : Nominal operation
Serial No. : 9926

Time : 13:22:16.42
Test Equip. : EMC-30 MKIV
Test Number : 1
Sensor Loc. : NA
Sensor Pol. : positiv
Ext. Atten. : 0 dB

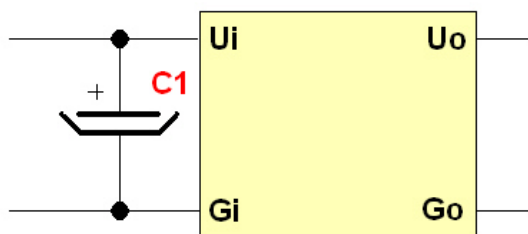
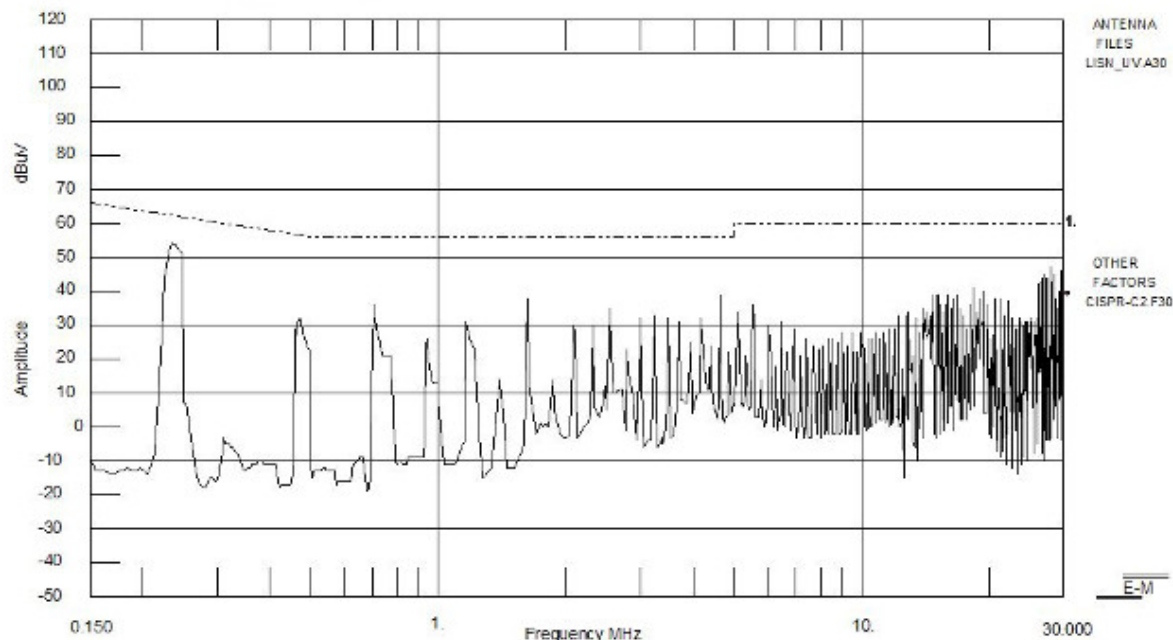
EMC-30 SETTINGS

Detector : QuasiPeak
Bandwidth : CISPR
Dwell : N/A
RF Atten. : 0 dB
IF Atten. : 0 dB

SPECS

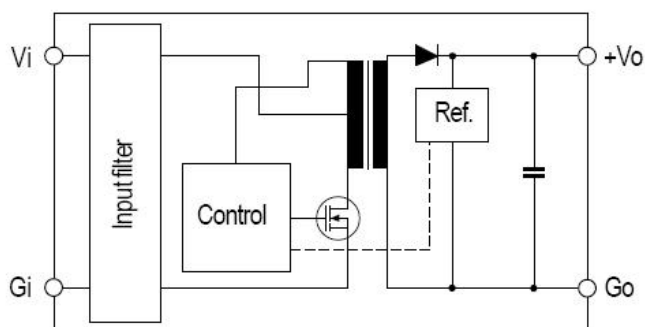
1) EN 55022 CLASS B / QuasiPeak

Comment : 24VDC Input voltage with 100uF capacitor near input

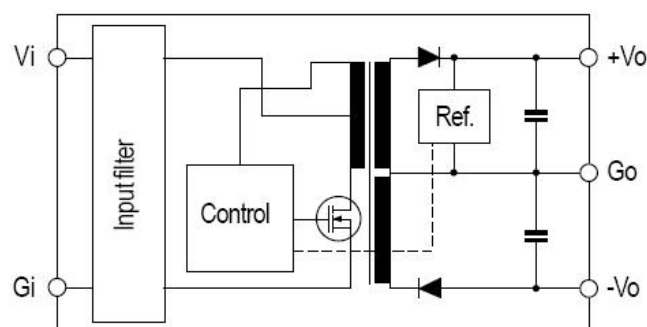


This was achieved with the following filter:
 $V_{in} = 24V$
 $C_1 = 100\mu F$

Block diagram



Single output converter block diagram



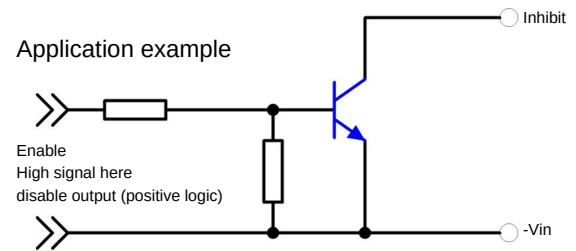
Dual output converter block diagram

Inhibit

The ECW 05-B Series allows the user to switch the module on and off electronically by inhibit on/off feature.

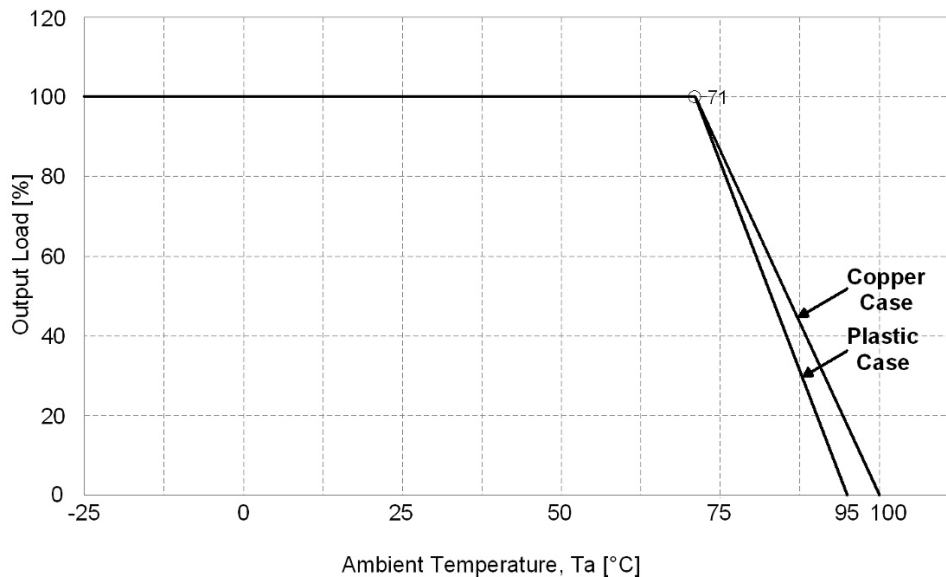
Logic table (inhibit pin)

Logic state	Positive logic
Logic low	Module off
Logic high	Module on



Derating

The operating case temperature range of ECW 05-B series is -25...+70°C. When operating the ECW 05-B series, proper derating or cooling is needed. The following curves are the derating curves of ECW 05-B. 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

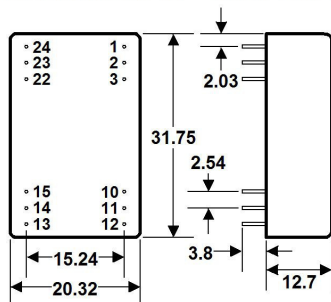
Case

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

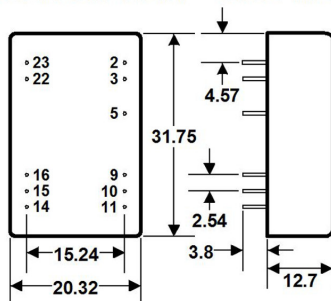
500V: A1/A2 12.7mm

BOTTOM VIEW SIDE VIEW



1500V / 3000V / 4000V: With inhibit 12.7mm

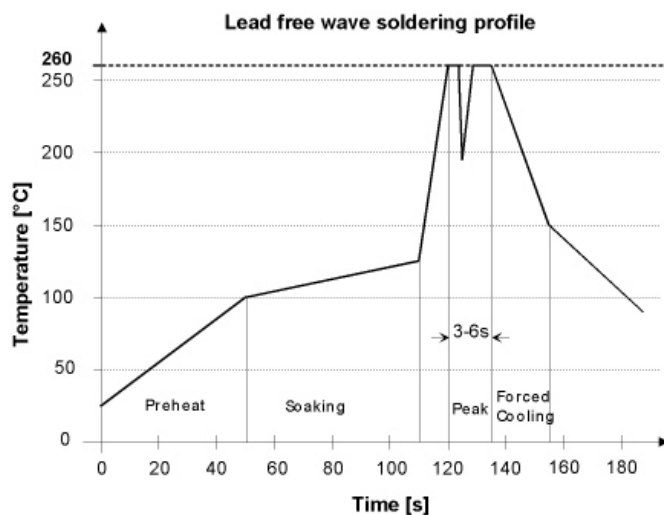
BOTTOM VIEW SIDE VIEW



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

Pin	Single	Dual	Pin
2	Gi	Gi	2
3	Gi	Gi	3
5	on/off or NP	on/off or NP	5
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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