

FCW SERIES

15W WIDE INPUT RANGE

DANUBE

FEATURES

- 15W DIL PACKAGE
- INDUSTRY STANDARD PACKAGE
- 9-18V,18-36V,36-72V,9-36V,18-72V WIDE INPUT RANGE
- NO EXTERNAL COMPONENTS REQUIRED
- REGULATED OUTPUT
- 100% BURN IN
- HIGH EFFICIENCY
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



OUTPUT SPECIFICATIONS

Voltage Setpoint Accuracy	+/-2% max
Temperature Coefficient	+/-0.05%/°C
Ripple & Noise(20MHz BW) ¹	100mVp-p max
Line Regulation ²	+/-0.5% max
Load Regulation ³	+/-0.5% max
Minimum Load	10% of Full Load
Short Circuit Protection	Continuous
Short Circuit Restart	Automatic
Over Load Protection	180% Typ
Transient Response ⁵	200uS max

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-25 °C to +71 °C
Case Temperature	+90 °C max
Storage Temperature	-55 °C to +125 °C
Humidity	95% max
Cooling	Free-Air Convection

INPUT SPECIFICATIONS

Input Voltage Range	2:1 or 4:1 Input Range
Input Filter	Pi Network
Protection	Fuse Recommended

GENERAL SPECIFICATIONS

Efficiency	76% min
Isolation Voltage ⁴	1500 VDC min Standard Models 3000 VDC min Suffix "3K" Models
Isolation Resistance	10 ⁹ ohms min
Isolation Capacitance	550pF max
Switching Frequency	150 KHz min
MTBF ⁶	>700,000 Hours
Weight	31.2g Typ
Case Material	Six-Side Shielded Case
Case Size	50.8mm*25.4mm*11.2mm
Potting Material	Epoxy(UL94-V0)
Conducted Emissions	EN55022 Class A
Radiated Emissions	EN55022 Class A

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD, AND 25 °C UNLESS OTHERWISE NOTED.

¹ Measured with 1uF ceramic capacitor connect to the output pins.

² High Line to Low Line.

³ Load Regulation is for output load current change from 10% to 100%.

⁴ 1500VDC for 10 seconds,3000VDC for 1 seconds.

⁵ 25% Step Load Change.

⁶ MIL-HDBK-217F @25 °C, Ground Benign.

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● **SELECTION GUIDE(1)**
2:1 10W-15W OUTPUT

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁷ CURRENT(mA)		EFF (%) ⁸	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
				FCWS-1203.3(A) (-3K)	9-18		
FCWS-1205(A) (-3K)	9-18	5	3000	1580	30	79	2700uF
FCWS-1212(A) (-3K)	9-18	12	1250	1525	30	82	1800uF
FCWS-1215(A) (-3K)	9-18	15	1000	1525	30	82	1500uF
FCWS-1224(A) (-3K)	9-18	24	625	1560	30	80	1000uF
FCWD-1205(A) (-3K)	9-18	+/-5	+/-1500	1570	30	80	+/-1200uF
FCWD-1212(A) (-3K)	9-18	+/-12	+/-625	1560	30	80	+/-820uF
FCWD-1215(A) (-3K)	9-18	+/-15	+/-500	1530	30	82	+/-680uF
FCWD-1224(A) (-3K)	9-18	+/-24	+/-313	1565	80	80	+/-560uF
FCWS-2403.3(A) (-3K)	18-36	3.3	3000	543	20	76	2700uF
FCWS-2405(A) (-3K)	18-36	5	3000	790	20	79	2700uF
FCWS-2409(A) (-3K)	18-36	9	1667	780	20	80	2200uF
FCWS-2412(A) (-3K)	18-36	12	1250	760	20	82	1800uF
FCWS-2415(A) (-3K)	18-36	15	1000	760	20	82	1500uF
FCWD-2405(A) (-3K)	18-36	+/-5	+/-1500	780	20	80	+/-1200uF
FCWD-2412(A) (-3K)	18-36	+/-12	+/-625	760	20	82	+/-820uF
FCWD-2415(A) (-3K)	18-36	+/-15	+/-500	760	20	82	+/-680uF
FCWS-4803.3(A) (-3K)	36-72	3.3	3000	272	20	76	1000uF
FCWS-4805(A) (-3K)	36-72	5	3000	390	20	80	1000uF
FCWS-4809(A) (-3K)	36-72	9	1667	390	20	80	820uF
FCWS-4812(A) (-3K)	36-72	12	1250	380	20	82	680uF
FCWS-4815(A) (-3K)	36-72	15	1000	380	20	82	560uF
FCWS-4824(A) (-3K)	36-72	24	625	380	20	82	470uF
FCWD-4805(A) (-3K)	36-72	+/-5	+/-1500	380	20	82	+/-330uF
FCWD-4812(A) (-3K)	36-72	+/-12	+/-625	380	20	82	+/-220uF
FCWD-4815(A) (-3K)	36-72	+/-15	+/-500	380	20	82	+/-100uF

Note: Other input to output voltages may be available. Please contact factory.

⁷ NOMINAL INPUT VOLTAGE.

⁸ NOMINAL INPUT VOLTAGE, FULL LOAD.

● **SELECTION GUIDE(2)**
4:1 10W-15W OUTPUT

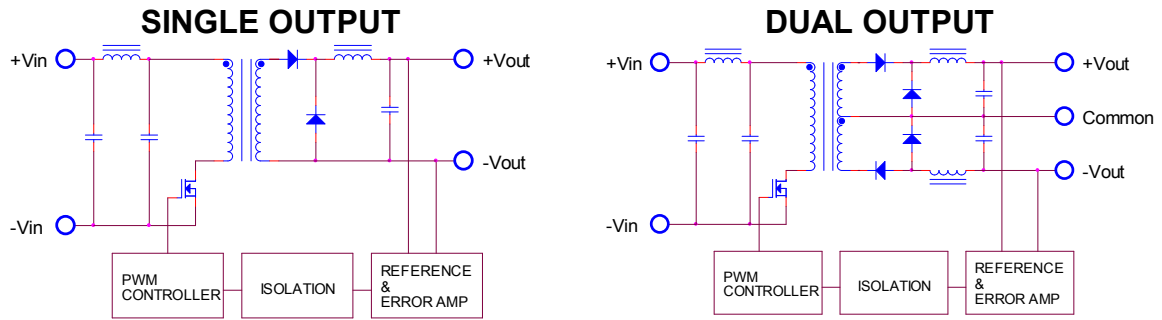
MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT ⁹ CURRENT(mA)		EFF (%) ¹⁰	CAPACITOR LOAD MAX.
				FULL LOAD	NO LOAD		
				FCWS-1203.3T(A)	9-36		
FCWS-1205T(A)	9-36	5	3000	1580	30	79	1800uF
FCWS-1209T(A)	9-36	9	1670	1580	30	79	1500uF
FCWS-1212T(A)	9-36	12	1250	1525	30	82	1200uF
FCWS-1215T(A)	9-36	15	1000	1525	30	82	1000uF
FCWD-1205T(A)	9-36	+/-5	+/-1500	1570	30	80	+/-660uF
FCWD-1209T(A)	9-36	+/-9	+/-834	1530	30	82	+/-660uF
FCWD-1212T(A)	9-36	+/-12	+/-625	1530	30	82	+/-660uF
FCWD-1215T(A)	9-36	+/-15	+/-500	1530	30	82	+/-660uF
FCWS-2403.3T(A)	18-72	3.3	3000	543	20	76	1000uF
FCWS-2405T(A)	18-72	5	3000	790	20	79	1000uF
FCWS-2412T(A)	18-72	12	1250	760	20	82	820uF
FCWS-2415T(A)	18-72	15	1000	760	20	82	680uF
FCWD-2405T(A)	18-72	+/-5	+/-1500	780	20	80	+/-470uF
FCWD-2409T(A)	18-72	+/-9	+/-834	760	20	82	+/-470uF
FCWD-2412T(A)	18-72	+/-12	+/-625	760	20	82	+/-470uF
FCWD-2415T(A)	18-72	+/-15	+/-500	760	20	82	+/-470uF

Note: Other input to output voltages may be available. Please contact factory.

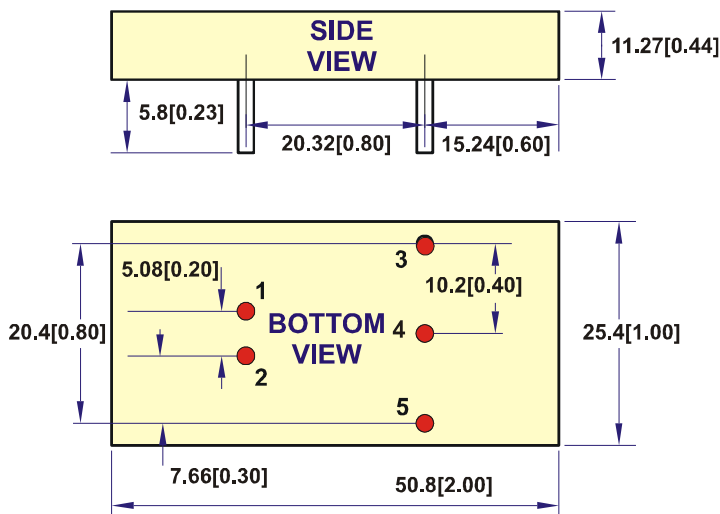
⁹ NOMINAL INPUT VOLTAGE.

¹⁰ NOMINAL INPUT VOLTAGE, FULL LOAD.

● SIMPLIFIED SCHEMATIC



● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS



PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	NO PIN	Common
5	-Vout	-Vout

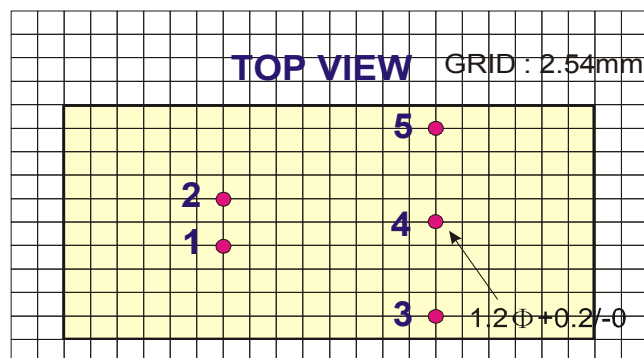
NOTE:

Pin Size is Tolerance 1.0Φ ±0.10mm

All Dimensions In mm(Inches)

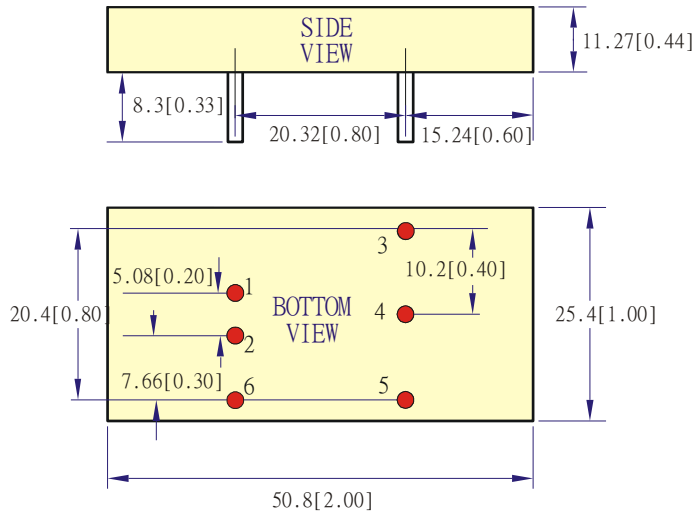
Tolerance .X or .XX= ±0.80mm

All dimensions are in millimeters[inches]



MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

REMOTE CONTROL(Specially Models) PACKAGE "A"



PIN	SINGLE
1	+Vin
2	-Vin
3	+Vout
4	NO PIN
5	-Vout
6	Remote ON/OFF

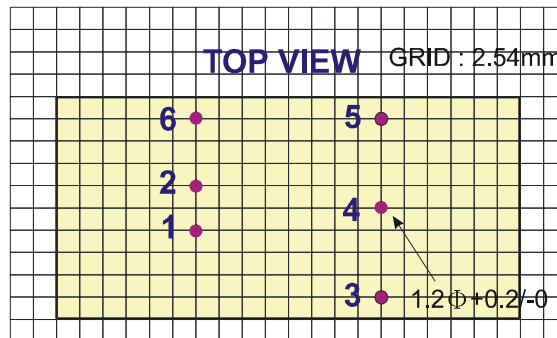
NOTE:

Pin Size is Tolerance 1.00Φ ±0.10mm

All Dimensions In mm(Inches)

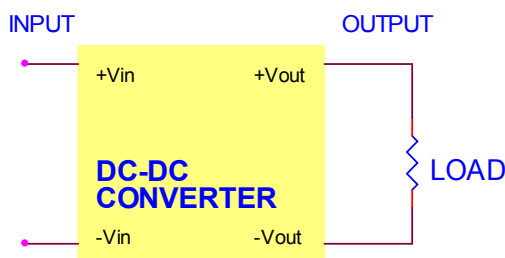
Tolerance .X or .XX= ±0.80mm

All dimensions are in millimeters[inches]

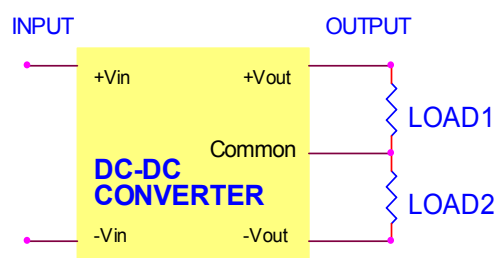


TYPICAL APPLICATIONS

SINGLE OUTPUT



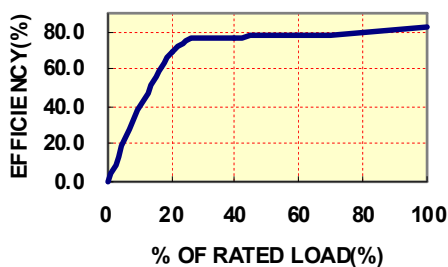
DUAL OUTPUT



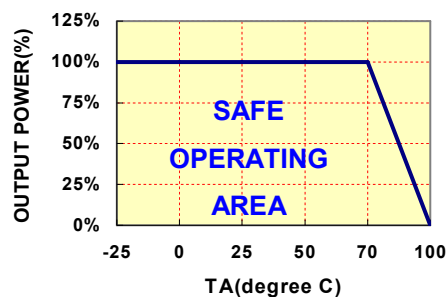
● TYPICAL PERFORMANCE CURVES

Specifications typical at Ta=25 °C, nominal input voltage , rated output current unless otherwise specified.

OUTPUT LOAD VS EFFICIENCY



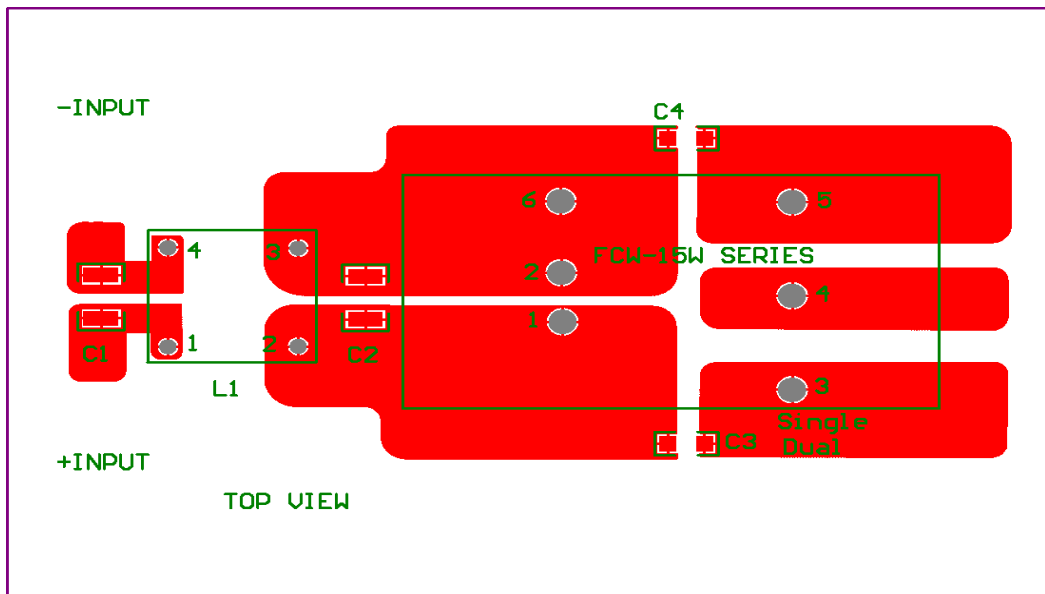
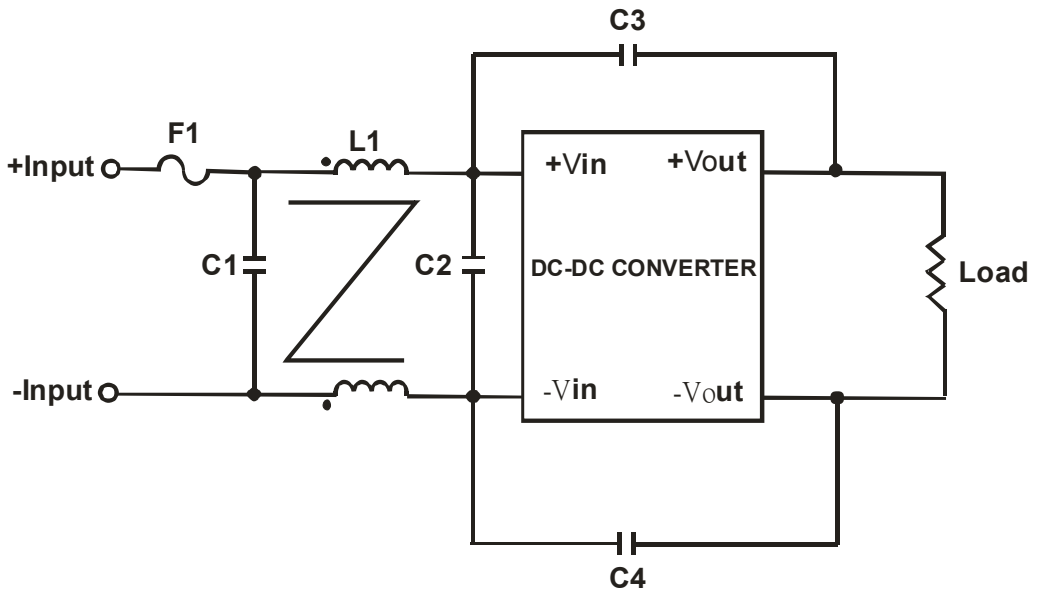
TEMPERATURE DERATING



● Recommended Filter for EN55022 Class B Compliance

The components used in the above figure, together with the manufacturer's part numbers for these components, are as follows:

	C1	C2	C3	C4	L1
FCW*-12**(A)(-3K)	3.3uF/50V 1812 MLCC	N/A	1000pF/2KV or 1000pF/3KV MLCC	1000pF/2KV or 1000pF/3KV MLCC	325uH Common Choke
FCW*-24**(A)(-3K) FCW*-12**T(A)	3.3uF/50V 1812 MLCC	N/A	1000pF/2KV or 1000pF/3KV MLCC	1000pF/2KV or 1000pF/3KV MLCC	325uH Common Choke
FCW*-48**(A)(-3K) FCW*-24**T(A)	1.5uF/100V 1812 MLCC	1.5uF/100V 1812 MLCC	1000pF/2KV or 1000pF/3KV MLCC	1000pF/2KV or 1000pF/3KV MLCC	325uH Common Choke



Recommended EN5022 Class B Filter Circuit Layout

● INPUT FUSE SELECTION GUIDE

9-18V & 9-36V INPUT VOLTAGE(VDC)	18-36V & 18-72V INPUT VOLTAGE(VDC)	36-72V INPUT VOLTAGE(VDC)
3000mA Slow-Blow Type	1400mA Slow-Blow Type	700mA Slow-Blow Type

Note: Certain applications may require the installation of external fuse in front of the input.

FCW SERIES APPLICATION NOTES:

EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the FCW series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 220KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

Additional output capacitance may be added for increased filtering, but should not exceed 1000uF.

We Can Offer EMC-Filter According To EN55011/22 Class B.

Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

FOR MORE INFORMATION CALL:

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Home Page

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