COSEL DC-DC Converters PCB Mount Type

MHFW3

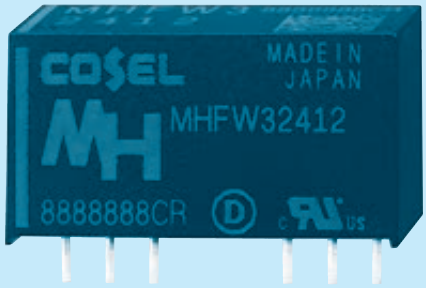
Ordering information

MHF	W	3	24	12
①	②	③	④	⑤

①Series name
②Dual output
③Output wattage
④Input voltage
⑤Output voltage

RoHS

2M00P



MODEL			MHFW31212	MHFW31215	MHFW32412	MHFW32415	MHFW34812	MHFW34815
MAX OUTPUT WATTAGE[W]			3.12	3.00	3.12	3.00	3.12	3.00
DC OUTPUT	VOLTAGE[V]	*1	±12 or +24	±15 or +30	±12 or +24	±15 or +30	±12 or +24	±15 or +30
	CURRENT[A]		0.13	0.1	0.13	0.1	0.13	0.1

SPECIFICATIONS

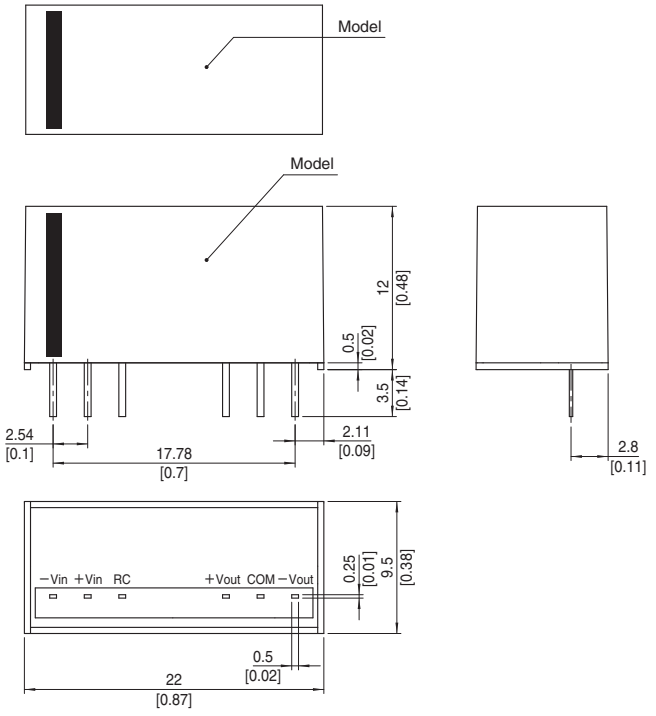
	MODEL		MHFW31212	MHFW31215	MHFW32412	MHFW32415	MHFW34812	MHFW34815
INPUT	VOLTAGE[V]		DC4.5 - 18 (Surge voltage 25V, 100ms max)		DC9 - 36 (Surge voltage 50V, 100ms max)		DC18 - 76 (Surge voltage 100V, 100ms max)	
	CURRENT[A]	*2	0.32typ	0.31typ	0.16typ	0.16typ	0.081typ	0.079typ
	EFFICIENCY[%]	*2	80.5typ	80typ	80typ	79typ	81typ	80typ
OUTPUT	VOLTAGE[V]		±12 (+24)	±15 (+30)	±12 (+24)	±15 (+30)	±12 (+24)	±15 (+30)
	CURRENT[A]		0.13	0.1	0.13	0.1	0.13	0.1
	LINE REGULATION[mV]		60max	75max	60max	75max	60max	75max
	LOAD REGULATION[mV]	*3	480max	600max	480max	600max	480max	600max
		*4	600max	750max	600max	750max	600max	750max
	RIPPLE[mVp-p]	*5	180max	180max	180max	180max	180max	180max
	RIPPLE NOISE[mVp-p]	*5	210max	210max	210max	210max	210max	210max
	TEMPERATURE REGULATION[mV]	-20 to +65℃	180max	220max	180max	220max	180max	220max
		-40 to +65℃	290max	340max	290max	340max	290max	340max
	DRIFT[mV]	*6	48max	60max	48max	60max	48max	60max
	START-UP TIME[ms]		30max (Minimum input, Io=100%)					
	OUTPUT VOLTAGE SETTING[V]		11.64 - 12.36	14.55 - 15.45	11.64 - 12.36	14.55 - 15.45	11.64 - 12.36	14.55 - 15.45
PROTECTION CIRCUIT AND OTHERS	OVERCURRENT PROTECTION		Works over 105% of rating and recovers automatically					
	REMOTE ON/OFF		Provided (Negative logic L:ON, H:OFF)					

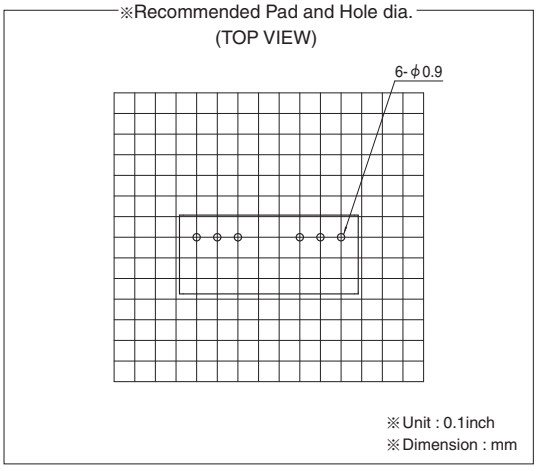
GENERAL SPECIFICATIONS

ISOLATION	INPUT-OUTPUT	AC3,000V 1minute Cutoff current=1mA, DC4,200 1minute Cutoff current=1mA, DC500V 1,000MΩ (20±15℃) 2MOOP (AC250V, 4,000m max)
ISOLATION CAPACITANCE	INPUT-OUTPUT	20pFmax
ENVIRONMENT	OPERATING TEMP.,HUMID.AND ALTITUDE	-40 to +85℃, 20 to 95%RH (Non condensing) (Required derating)
	STORAGE TEMP.,HUMID.AND ALTITUDE	-40 to +100℃, 20 to 95%RH (Non condensing)
	VIBRATION	10 - 55Hz 98.0m/s² (10G), 3minute period, 60minutes each along X, Y and Z axis
	IMPACT	490.3m/s² (50G) 11ms, once each along X, Y and Z axis
SAFETY	AGENCY APPROVALS	UL62368-1, EN62368-1, c-UL (equivalent to CAN/CSA-C22.2 No.62368-1), ANSI/AAMI ES60601-1, EN60601-1 3rd, c-UL (equivalent to CAN/CSA-C22.2 No.60601-1)
OTHERS	CASE SIZE/WEIGHT	22.0×12.0×9.5mm [0.87×0.48×0.38 inches] (W×H×D) / 7g max
	COOLING METHOD	Convection/Forced air

✻1 Single output +24V, +30V with no use of COM.
✻2 Rated input 12V or 24V or 48V DC Io=100%
✻3 Symmetrical loading from 20% to 100%.
✻4 Symmetrical loading from 0% to 100%.
✻5 Ripple and Ripple Noise is measured by using test board with ceramic capacitor 0.1μF at 50mm from output pins.
✻6 Drift is the DC output accuracy for eight hours period after a half-hour warm-up at 25℃.
✻ Parallel operation with other model is not possible.

External view





※ Tolerance ±0.5 [±0.02]
※ Dimensions in mm, [ ]= inches
※ Pin terminal material : Copper
※ Planting treatment of terminal : Lead free plating
※ Case material : PBT
※ Weight 7g max

Pin Connection

●MH3 Single Output, Dual Output

<Bottom View>

Pin No.	Pin Name	Function
①	-Vin	-DC Input
②	+Vin	+DC Input
③	RC	Remote ON/OFF
⑥	+Vout	+DC Output
⑦	-Vout	-DC Output (for Single Output)
	COM	GND of Output Voltage (for Dual Output)
⑧	TRM	Output Voltage Adjustment (for Single Output)
	-Vout	-DC Output (for Dual Output)

Assembling and Installation Method

Installation

■When two or more power supplies are used side by side, position them with proper intervals to allow enough air ventilation. Ambient temperature around each power supply should not exceed the temperature range shown in “Derating”.

■Avoid placing the DC input line pattern layout underneath the unit.It will increase the line conducted noise. Make sure to leave an ample distance between the line pattern layout and the unit. Also avoid placing the DC output line pattern underneath the unit because it may increase the output noise. Lay out the pattern away from the unit.

■Avoid placing the signal line pattern layout underneath the unit because the power supply might become unstable. Lay out the pattern away from the unit.

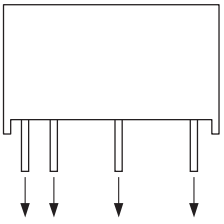
Soldering Conditions

(1) Flow Soldering : 260℃ 15 seconds or less
(2) Soldering Iron : maximum 360℃ 5 seconds or less

Stress to Pin

■Applying excessive stress to the input or output pins of the power module may damage internal connections. Avoid applying stress in excess of that shown in right figure.

■Input/output pin are soldered to the PCB internally. Do not pull or bend a lead powerfully.



■If it is expected that stress is applied to the input/output pin due to vibration or impact, reduce the stress to the pin by taking such measures as fixing the unit to the PCB by silicone rubber, etc.

■Due to prevent failure, PS should not be pulled after soldering with PCB.

Derating

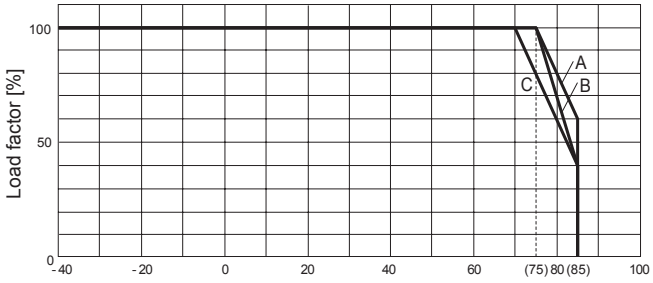
Ambient temperature derating curve

■It is necessary to note thermal fatigue life by power cycle. Please reduce the temperature fluctuation range as much as possible when the up and down of temperature are frequently generated.

■In case of forced air, ventilation must keep the temperature of point below the temperatures shown in Instruction Manual 7.

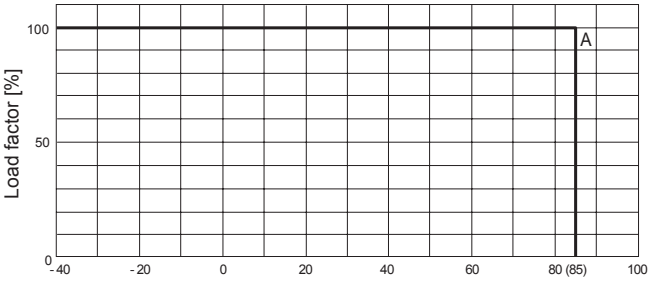
●MHFS3/MHFW3 (Rated Input Voltage)

(1) In the case of Convection Cooling (Reference)



Output Voltage / Input Voltage	3.3	5	9	12	15	±12	±15
5 - 12	B	B	A	A	A	C	C
12 - 24	A	B	B	B	B	C	C
24 - 48	A	B	A	A	B	C	C

(2) In the case of Forced Air Cooling (1.0m/s) (Reference)



Output Voltage / Input Voltage	3.3	5	9	12	15	±12	±15
5 - 12	A	A	A	A	A	A	A
12 - 24	A	A	A	A	A	A	A
24 - 48	A	A	A	A	A	A	A

Instruction Manual

◆ It is neccessary to read the “Instruction Manual” and “Before using our product” before you use our product.

Instruction Manual https://en.cosel.co.jp/product/powersupply/MH/

Before using our product https://en.cosel.co.jp/technical/caution/index.html

MHF NOTICE

Basic Characteristics Data

Model	Circuit method	Switching frequency [kHz] (reference)	Input current [A]	Inrush current protection	PCB/Pattern			Series/Redundancy operation availability	
					Material	Single sided	Double sided	Series operation	Redundancy operation
MHF3	Flyback converter	200-1500 ＊3	＊1	-	glass fabric base,epoxy resin		Yes	Yes	＊2

＊1 Refer to Specification.
＊2 Refer to Instruction Manual.
＊3 The value changes depending on input and load.