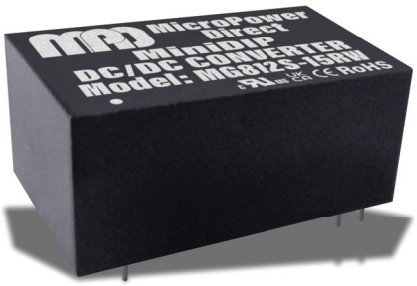
MG800RW

Compact 8W MiniDIP Single & Dual Output DC/DC Converters





Key Features:

- 8W Output Power
- Compact MiniDIP Case
- EN 62368 Approved
- Wide 2:1 Input Range
- High Efficiency
- 1,500 VDC Isolation
- Single and Dual Outputs
- >1.062 MHour MTBF
- -40°C to +80°C Operation
- ***LOW COST***

Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	12 VDC Input	9.0	12.0	18.0	VDC
	24 VDC Input	18.0	24.0	36.0	
	48 VDC Input	36.0	48.0	75.0	
Input Start-up Threshold	12 VDC Input			9.0	VDC
	24 VDC Input			18.0	
	48 VDC Input			36.0	
Under Voltage Shutdown	12 VDC Input		8.0		VDC
	24 VDC Input		16.0		
	48 VDC Input		34.0		
Input Filter	π (Pi) Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±2.0	%
Output Voltage Balance	Dual Output, Balanced Loads		±1.0	±2.0	%
Line Regulation	V_{IN} = Min To Max		±0.2	±0.8	%
Load Regulation	I_{OUT} = 0% To 100%		±0.5	±1.0	%
Ripple & Noise (20 MHz)	See Note 2			55	mV P - P
Transient Recovery Time	See Note 3			500	µSec
Transient Response Deviation			±3.0	±5.0	%
Overload Protection	See Note 4	150			%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	See Note 5	Continuous (Autorecovery)			

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
	1 Second	1,800			
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		500		pF
Switching Frequency			370		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+80	°C
Max Case Temperature				+105	°C
Storage Temperature Range		-50		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size & Weight	See Mechanical Diagram (Page 7)
Case Material	Aluminum Alloy, Black Anodized Coating (UL-94V0)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.062			MHours
Safety Standards	UL/cUL 62368-1 recognition (UL certificate)				

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	12 VDC Input			25.0	VDC
	24 VDC Input			50.0	
	48 VDC Input			100.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

MicroPower Direct

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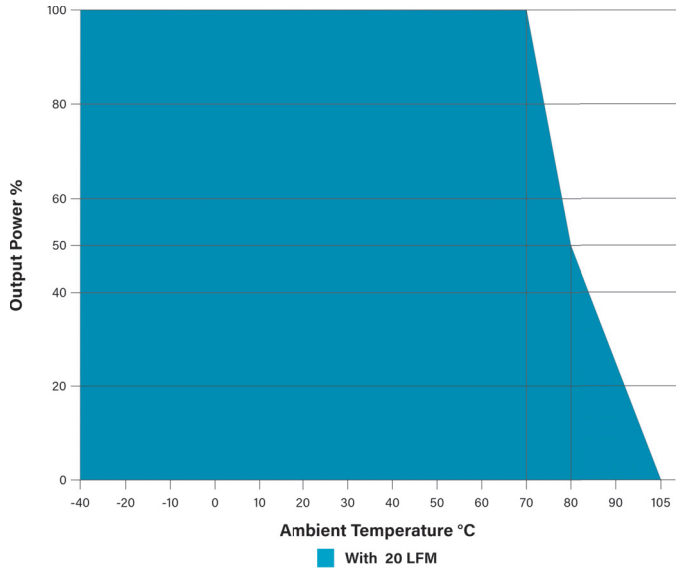
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Power mit System

Model Selection Guide

Model Number	Input				Output			Output Capacitive Load (µF Max)	Efficiency (%, Typ)	Fuse Rating Slow-Blow (A)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
MG812S-03RW	12	9.0 - 18.0	564	10	3.3	1,600	0.0	680	78	2.00
MG812S-05RW	12	9.0 - 18.0	823	10	5.0	1,600	0.0	680	81	2.00
MG812S-12RW	12	9.0 - 18.0	792	10	12.0	665	0.0	330	84	2.00
MG812S-15RW	12	9.0 - 18.0	796	10	15.0	535	0.0	330	84	2.00
MG812S-24RW	12	9.0 - 18.0	788	10	24.0	335	0.0	150	85	2.00
MG812D-12RW	12	9.0 - 18.0	788	10	±12.0	±335	±0.0	150	85	2.00
MG812D-15RW	12	9.0 - 18.0	789	10	±15.0	±265	±0.0	150	84	2.00
MG824S-03RW	24	18.0 - 36.0	282	10	3.3	1,600	0.0	680	78	1.00
MG824S-05RW	24	18.0 - 36.0	407	10	5.0	1,600	0.0	680	82	1.00
MG824S-12RW	24	18.0 - 36.0	391	10	12.0	665	0.0	330	85	1.00
MG824S-15RW	24	18.0 - 36.0	393	10	15.0	535	0.0	330	85	1.00
MG824S-24RW	24	18.0 - 36.0	390	10	24.0	335	0.0	150	86	1.00
MG824D-12RW	24	18.0 - 36.0	394	10	±12.0	±335	±0.0	150	85	1.00
MG824D-15RW	24	18.0 - 36.0	385	10	±15.0	±265	±0.0	150	86	1.00
MG848S-03RW	48	36.0 - 75.0	141	8	3.3	1,600	0.0	680	78	0.50
MG848S-05RW	48	36.0 - 75.0	206	8	5.0	1,600	0.0	680	81	0.50
MG848S-12RW	48	36.0 - 75.0	196	8	12.0	665	0.0	330	85	0.50
MG848S-15RW	48	36.0 - 75.0	197	8	15.0	535	0.0	330	85	0.50
MG848S-24RW	48	36.0 - 75.0	195	8	24.0	335	0.0	150	86	0.50
MG848D-12RW	48	36.0 - 75.0	195	8	±12.0	±335	±0.0	150	86	0.50
MG848D-15RW	48	36.0 - 75.0	193	8	±15.0	±265	±0.0	150	86	0.50

Notes:

1. The specified maximum capacitive load is for each output.
2. When measuring output ripple, it is recommended that an external 0.47 µF ceramic capacitor be placed in parallel from the +VOUT pin to the -VOUT pin for single output models, or from each output to common for dual output models.
3. Transient recovery is measured to within a 1% error band for a load step change of 25%.
4. Output overload protection is provided by a Hiccup circuit with auto-recovery.
5. Output short circuit protection is provided by a Hiccup circuit with auto-recovery.
6. Operation at no load will not damage these units, however, they may not meet all specifications.
7. It is recommended that a fuse be used on the input of a power supply for protection. See the Model Selection table above for the correct rating.

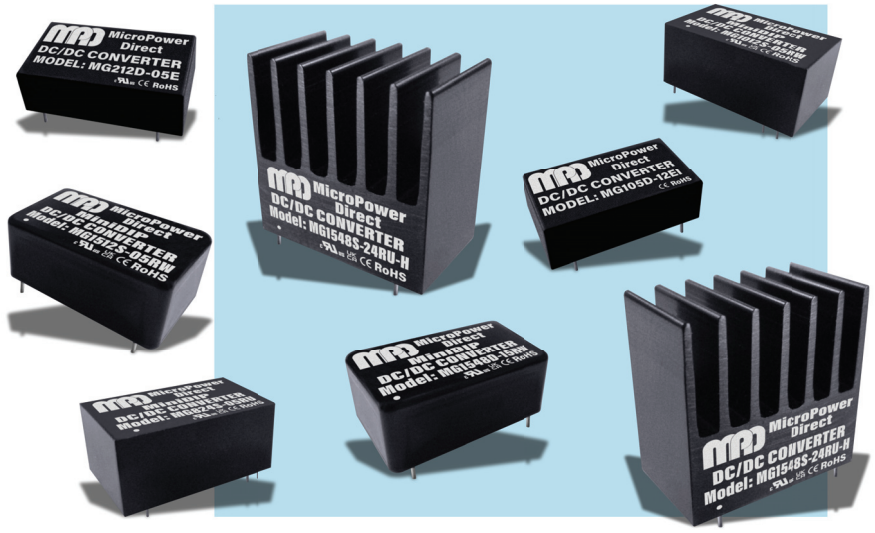


MPD offers a very wide range of DC/DC converters in the compact MiniDIP package. Ranging from 1W to 15W, these units offer

- Compact "MiniDip Packaging
- 1W to 15W Output Power
- Wide 2:1 or 4:1 Inputs
- UL 62368 Recognition (Most Models)
- Single & Dual Outputs
- Wide Temperature Operation
- Tight Regulation
- Low Cost

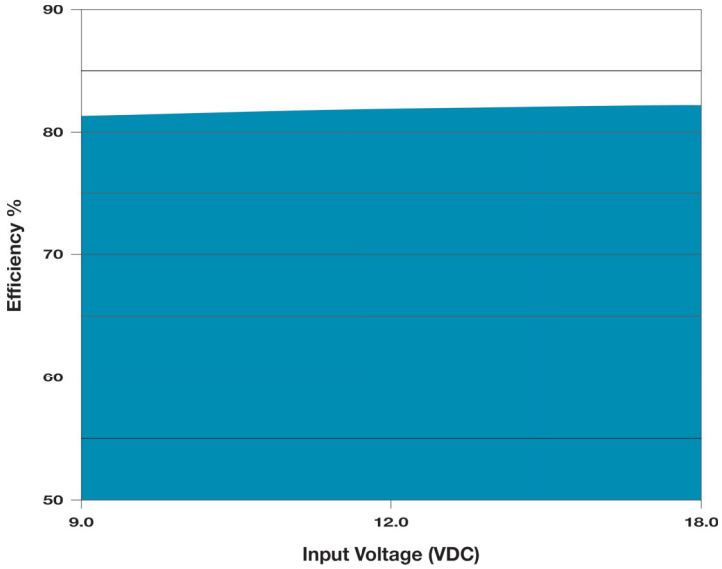
Call today, or go to our website to find the right, miniature DC/DC power module for your application.

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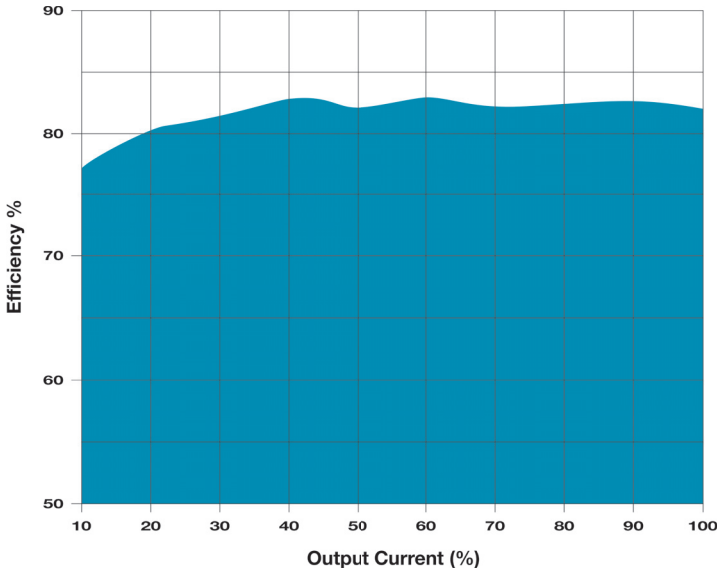


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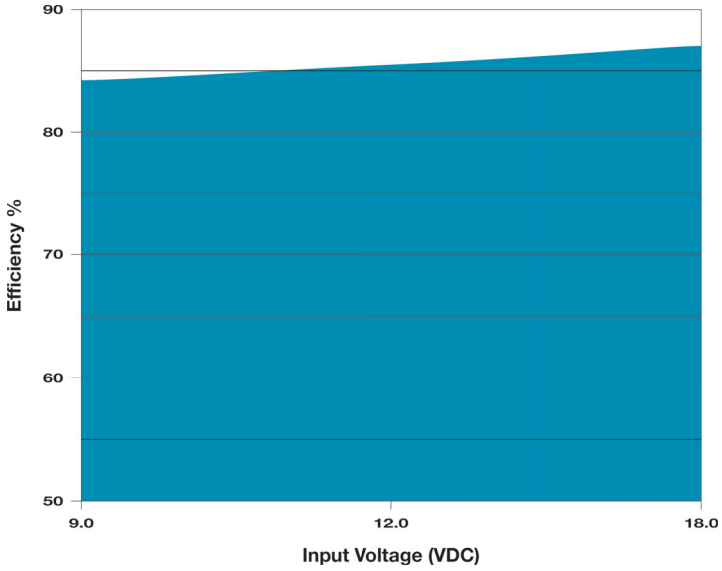
Efficiency vs Input: MG812S-05RW



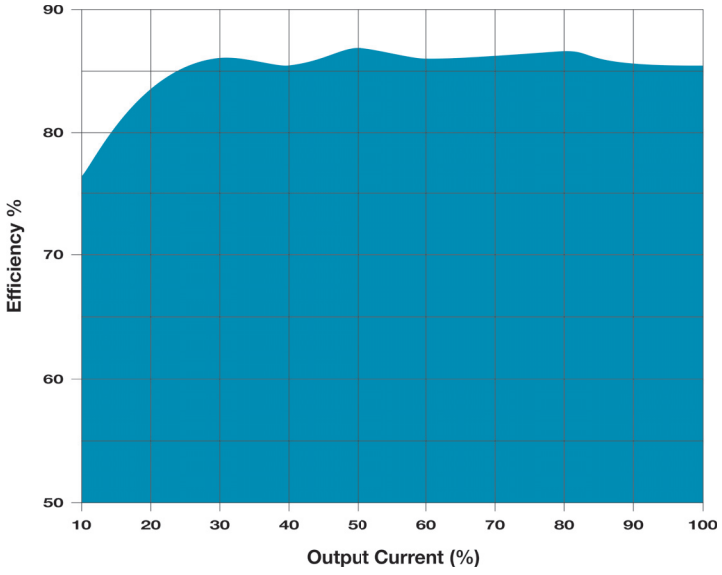
Efficiency vs Output Load: MG812S-05RW



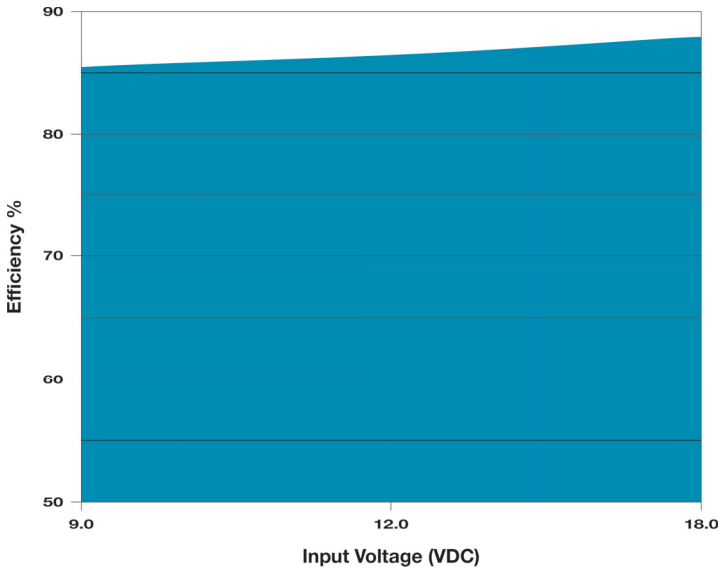
Efficiency vs Input: MG812S-12RW



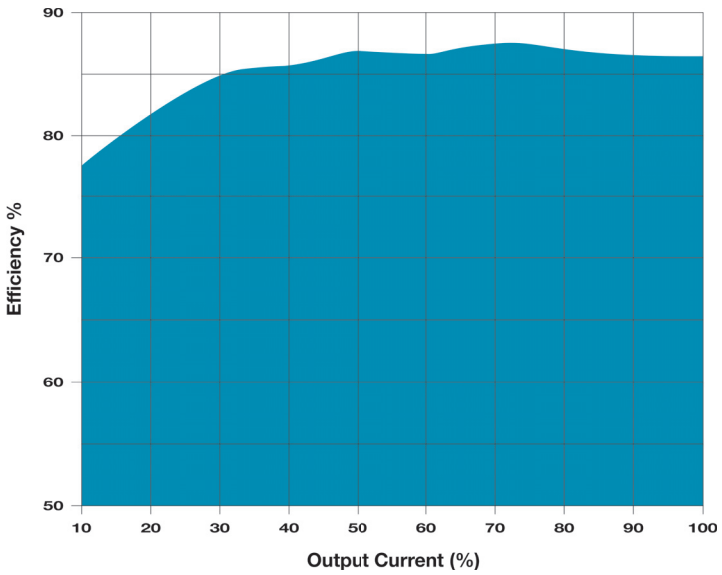
Efficiency vs Output Load: MG812S-12RW



Efficiency vs Input: MG812S-24RW

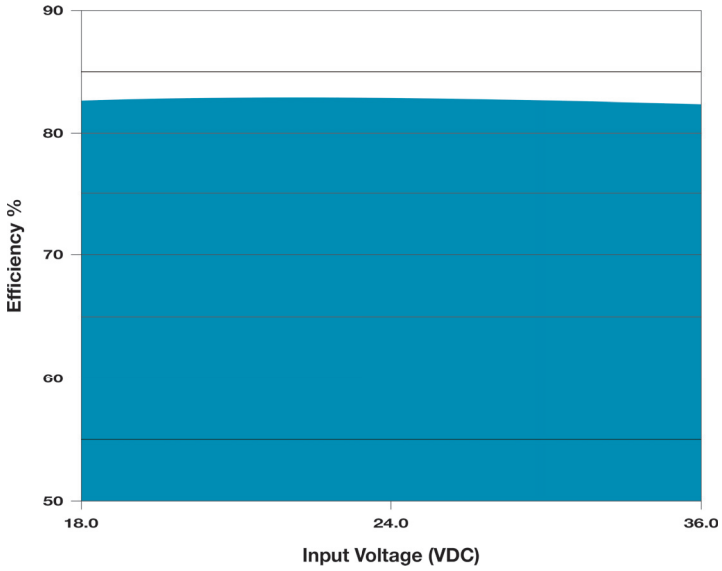


Efficiency vs Output Load: MG812S-24RW

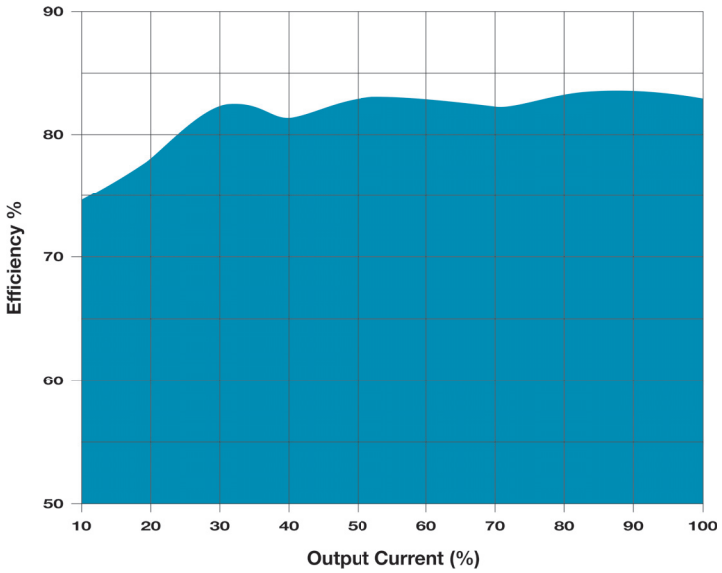


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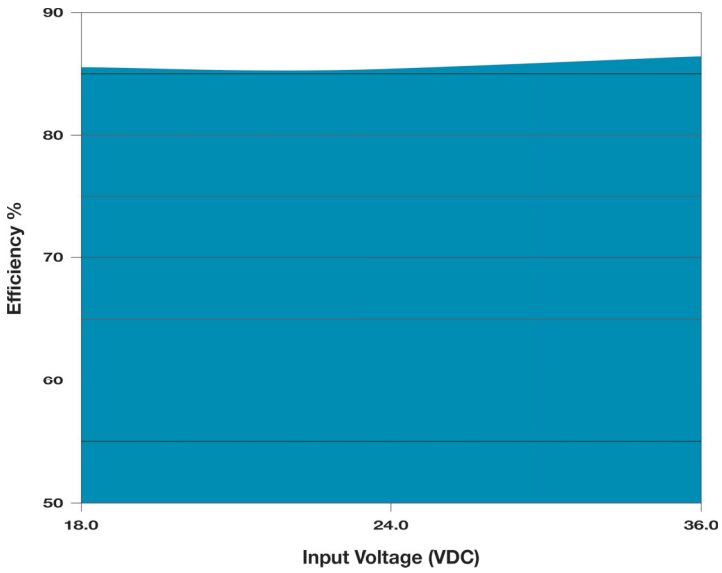
Efficiency vs Input: MG824S-05RW



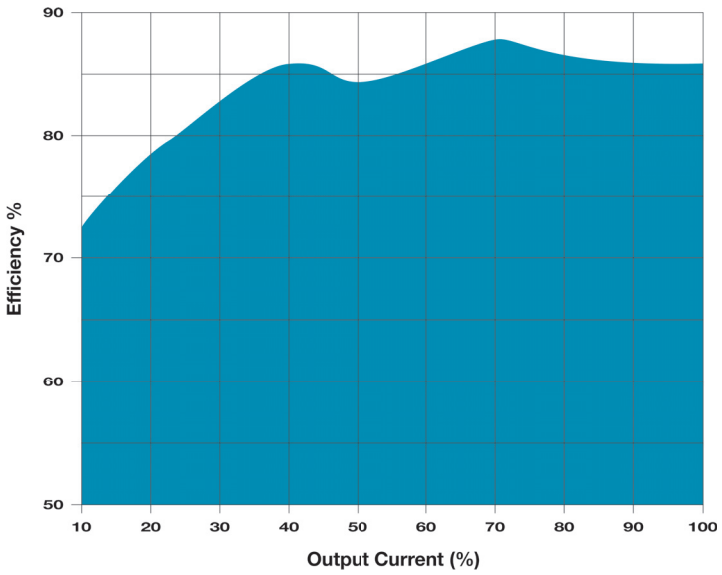
Efficiency vs Output Load: MG824S-05RW



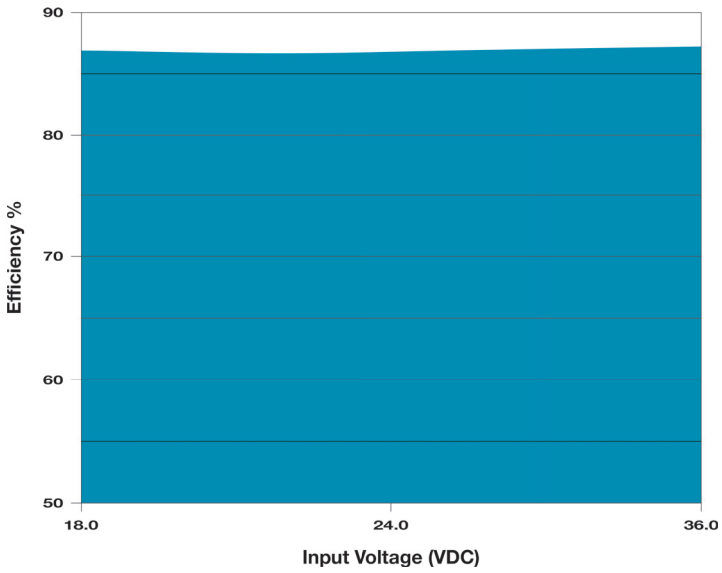
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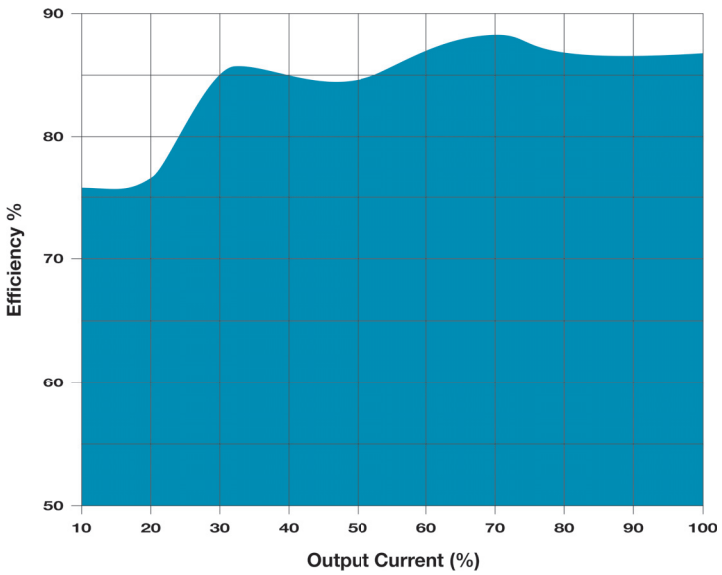
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Efficiency vs Input: MG824S-24RW

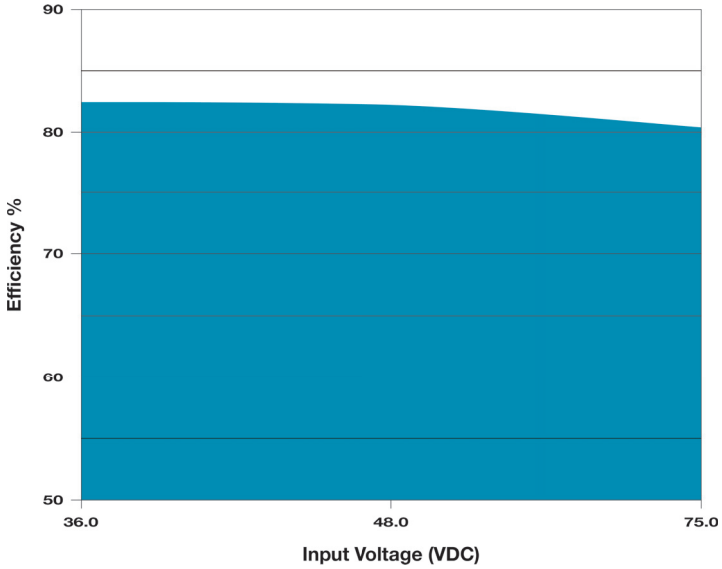


Efficiency vs Output Load: MG824S-24RW

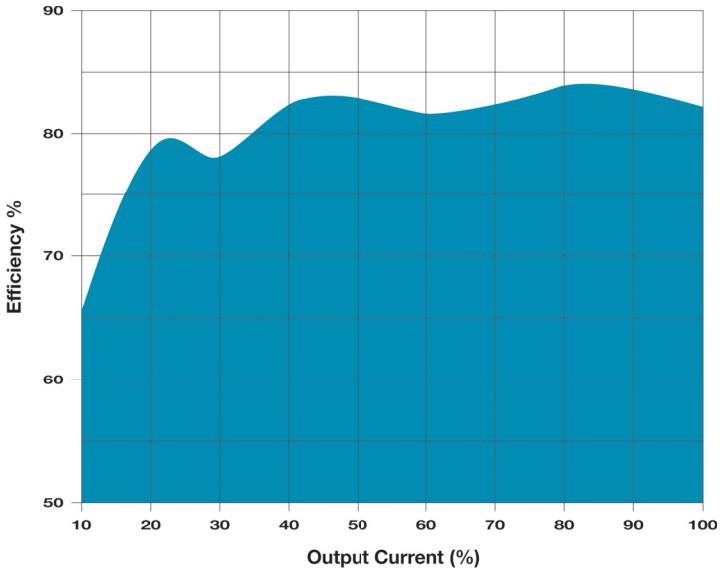


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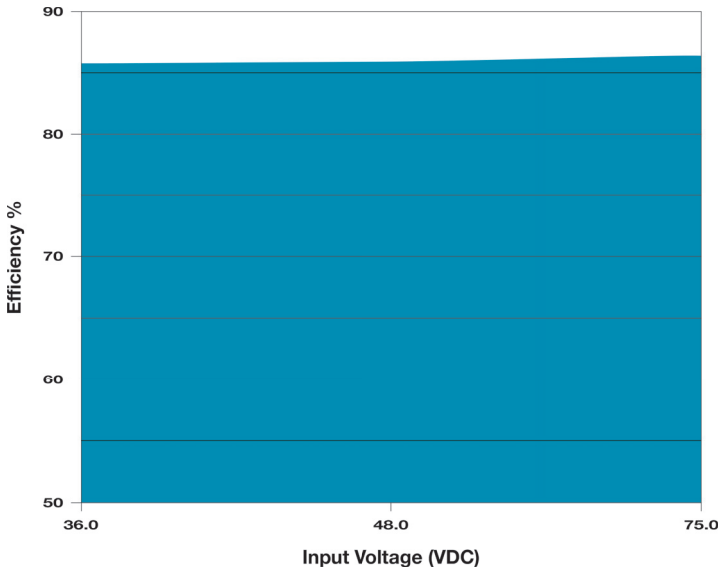
Efficiency vs Input: MG848S-05RW



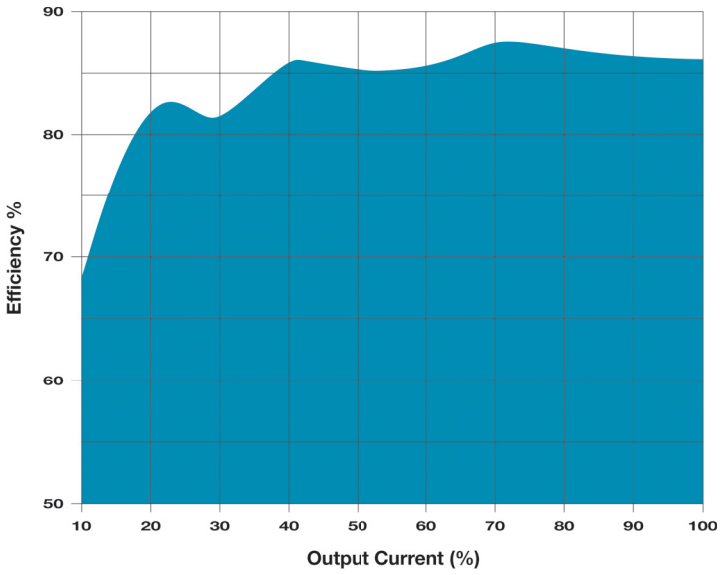
Efficiency vs Output Load: MG848S-05RW



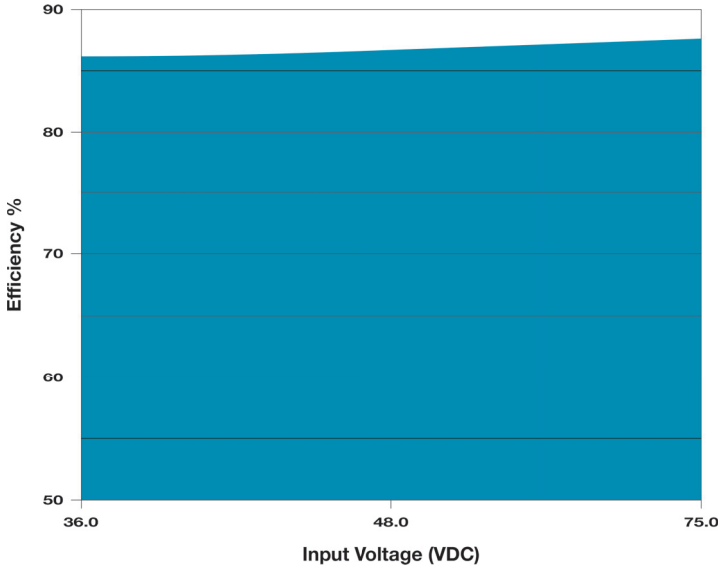
Efficiency vs Input: MG848S-12RW



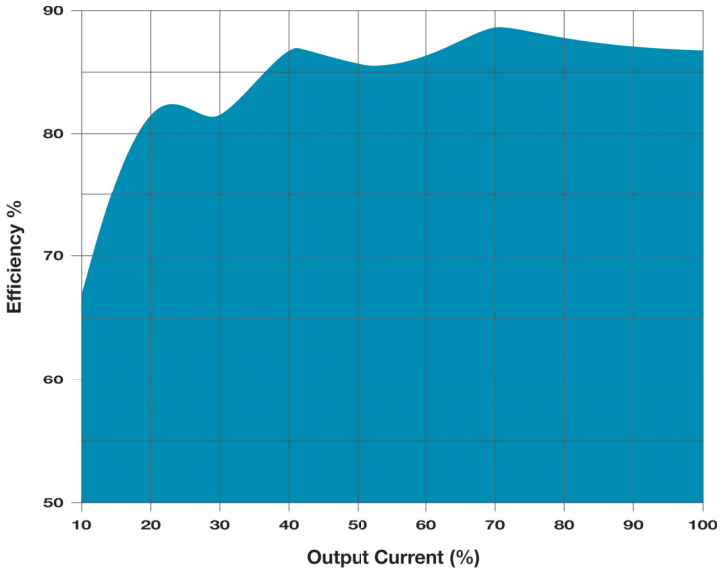
Efficiency vs Output Load: MG848S-12RW



Efficiency vs Input: MG848S-24RW



Efficiency vs Output Load: MG848S-24RW



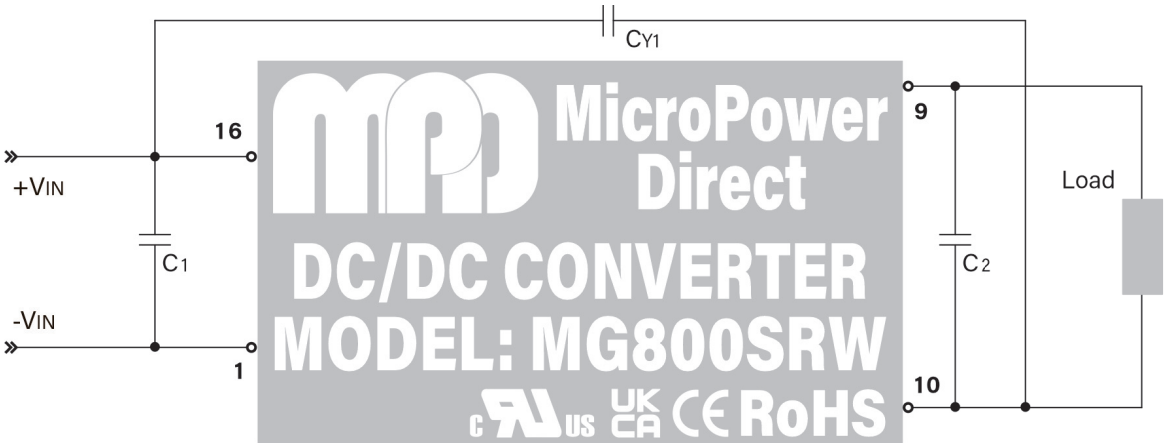
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EMI/EMC Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions	EN 55032		Class A
Conducted Emissions	EN 55032		Class A
ESD	EN 61000-4-2	A	±6 kV Contact
			±8kV Air
RS	EN 61000-4-3	A	10V/m
EFT, See note at left	EN 61000-4-4	A	±2 kV
Surge, See note at left	EN 61000-4-5	A	±1 kV
CS	EN 61000-4-6	A	10 Vrms
PFMF	EN 61000-4-8	A	1,000 A/m (1s)

These converters meet the requirements of EN 55032 class A conducted emissions without external components. To meet the requirements of class A radiated emissions, see the Typical EMI Connections diagram below.

Typical EMI Connection: Class A, Single Output

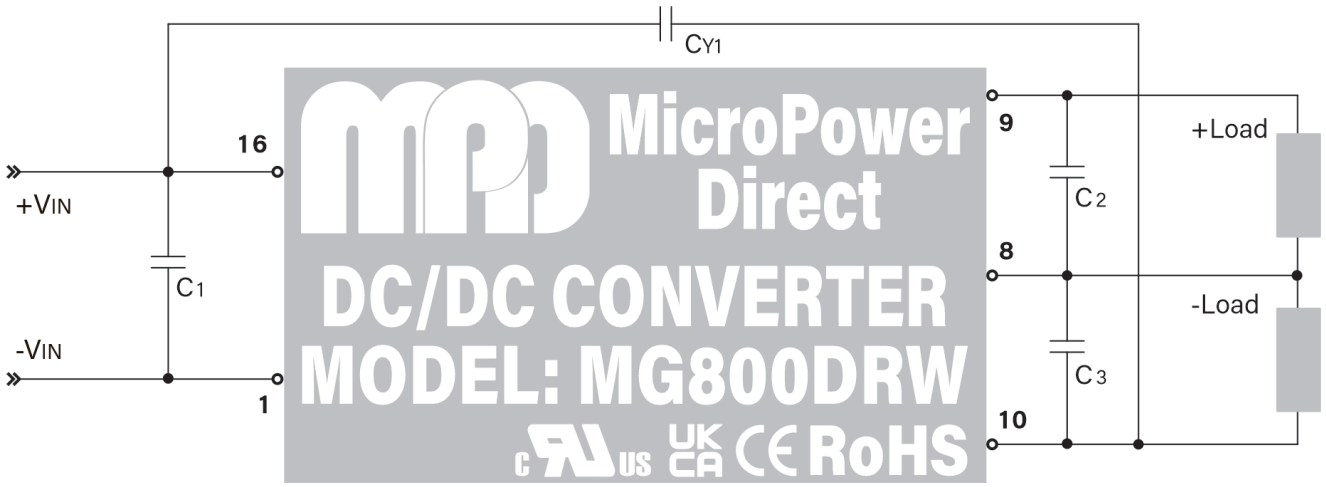


In some applications the addition of input/output capacitors, as shown in the typical connection diagram above, will enhance stability and reduce output ripple. This simple connection includes low ESR (<1Ω at 100 kHz) capacitors (C1 & C2) connected close to the module.

For single output units, to meet the requirements of EN 55032 radiated emissions, the addition of capacitor CY1 is required. Recommended component values are given in the table at right.

Model	C1	CY1	C2
MG812SRW	3.3 µF/50V	220 pF/2 kV 1808 X7R	3.3 µF/50V
MG824SRW	2.2 µF/50V	220 pF/2 kV 1808 X7R	3.3 µF/50V
MG848SRW	2.2 µF/100V	220 pF/2 kV 1808 X7R	3.3 µF/50V

Typical EMI Connection: Class A, Dual Output

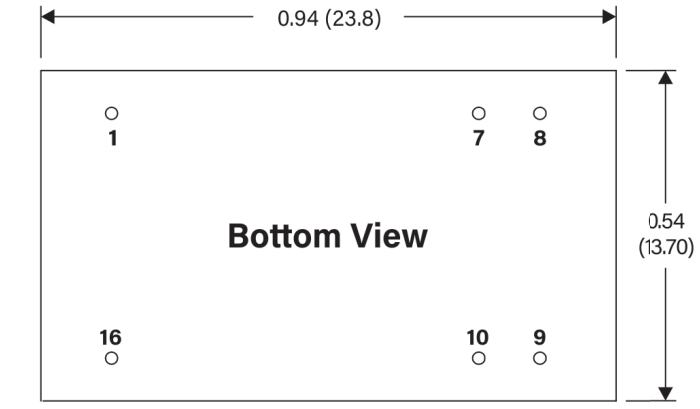


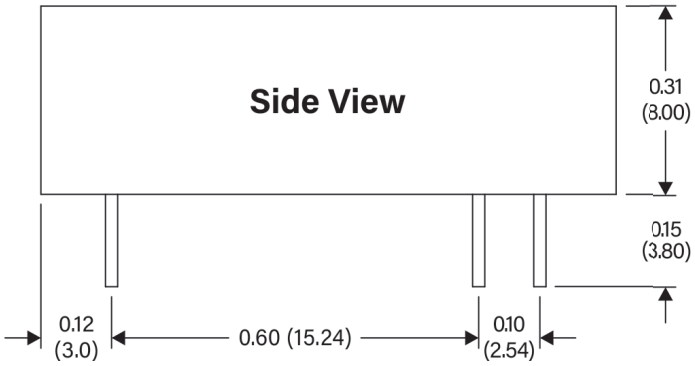
The typical connection diagram shown above again shows the addition of input/output capacitors, as shown to enhance stability and reduce output ripple. This simple connection includes low ESR (<1Ω at 100 kHz) capacitors (C1, C2 & C3 connected close to the module.

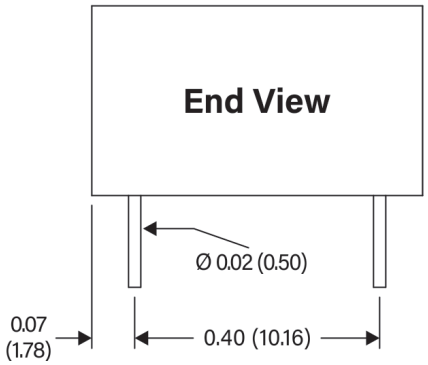
For dual output units, to meet the requirements of EN 55032 radiated emissions, CY1 is required. Recommended component values are given in the table at right.

Model	C1	CY1	C2	C3
MG812DRW	3.3 µF/50V	220 pF/2 kV 1808 X7R	3.3 µF/50V	3.3 µF/50V
MG824DRW	2.2 µF/50V	220 pF/2 kV 1808 X7R	3.3 µF/50V	3.3 µF/50V
MG848DRW	2.2 µF/100V	220 pF/2 kV 1808 X7R	3.3 µF/50V	3.3 µF/50V

Mechanical Dimensions







Pin Connections

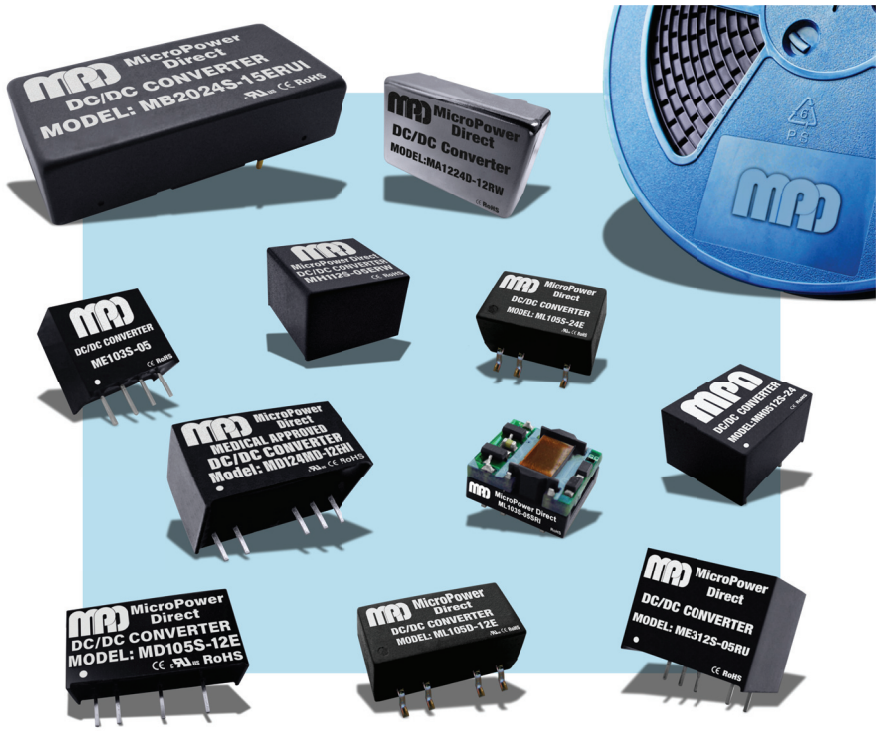
Pin	Single	Dual
1	-VIN	-VIN
7	NC	NC
8	NC	Common
9	+VOUT	+VOUT
10	-VOUT	-VOUT
16	+VIN	+VIN

NC = No Connection

Notes:

- All dimensions are typical in inches (mm)
- Pin 1 is marked by a "dot" or indentation on the unit
- General Tolerance = ±0.01 (±0.25)
- Pin Tolerance = ±0.02 (±0.05)
- Recommended pin hole size (on the application PC Board) is Ø 0.03 (Ø 0.80)
- Weight (Typ) = 0.215 Oz (6.1g)

MPD offers a very wide variety of DC/DC converters. Our standard product line includes SMT, SIP, and DIP potted modules, industry standard 1 x 1" & 1 x 2" modules, as well as new models in an ultra miniature DFN package. Our units are used in applications ranging from high speed gate drive circuits to instrumentation to industrial equipment and medical equipment/instrumentation. Units are available over a power range of 0.25 to 60W. Most models meet international EMC/EMI standards and many are fully approved to EN 62368. Call today, or go to our website to find the right DC/DC power module for your application.



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