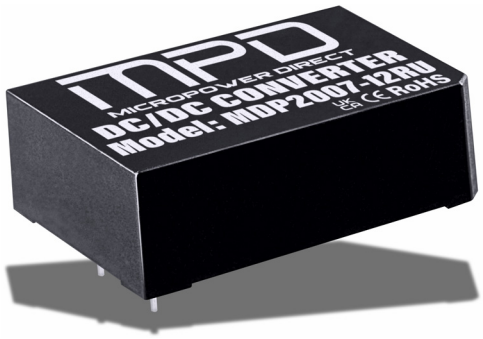
MDP2007RU

20W, Ultrawide, Tightly Regulated, High Isolation DC/DC Converters



Key Features:

- 20W Output Power
- Ultrawide Input
- Tight Regulation
- Efficiency to 86%
- 4000 VDC Isolation
- -40°C to +85°C Temp
- >300 kHour MTBF
- Short Circuit Protected
- Meets EN62368-1
- Industry Standard Pin-Out

CE
UKCA
RoHS

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	Rated Input (Certified Voltage)	100		600	VDC
	12VDC Output	60		750	
	24VDC Output	80		745	
Input Current	See Model Selection Guide				
Inrush Current	200VDC Input		30		A
	600VDC Input		65		
Leakage Current	600VDC / 50Hz			0.5	mA RMS
Recommended External Input Fuse		3A/1100VDC, slow-blow, required			
Input Reverse Polarity Protection		Available			

Output

Parameter	Conditions		Min.	Typ.	Max.	Units
Output Voltage Accuracy				±2		%
Line Regulation	Full Load			±0.5		%
Load Regulation	0% - 100% Load			±1		%
Ripple & Noise	20MHz Bandwidth				150	mVp-p
Temperature Coefficient				±0.02		%/°C
Standby Power Consumption	300VDC				0.7	W
Short Circuit Protection			Hiccup, continuous, self-recovery			
Over-Current Protection			110% - 400%Io, self-recovery			
Over-Voltage Protection	12V Output		≤ 20V (output voltage clamp or hiccup)			
	24V Output		≤ 35V (output voltage clamp or hiccup)			
Hold Up Time	200VDC			3		ms
	600VDC			50		
Temperature Derating	12V Output	55 to 85°C, 60-675V	3			%/°C
		55 to 80°C, 675-750V	3			
		80 to 85°C, 675-750V	3.6			
		-40 to -10°C	1			
	24V Output	55 to 85°C, 80-675V	3			
		55 to 80°C, 675-745V	3			
		80 to 85°C, 675-745V	3.6			
		-40 to -10°C	1			
Input Voltage Derating	12V Output	60 - 80VDC	0.75			%/VDC
		80 - 155VDC	0.47			
		675 - 745VDC	0.29			
	24V Output	80 - 155VDC	0.47			
		675 - 745VDC	0.29			

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 seconds, leakage <5mA	4000			VDC
Switching Frequency	Full load, nominal input voltage		65		kHz

Environmental

Parameter	Conditions	Min.	Typ	Max.	Units
Operating Temperature Range		-40		+85	°C
Storage Temperature Range		-40		+85	°C
Cooling	Free Air Convection				
Storage Humidity	Non-Condensing			95	%RH

Physical

Case Size	2.76 x 1.89 x 1.18 in (See mechanical drawing on page 4)
Case Material	Black plastic; flame retardant and heat resistant (UL94V-0)
Weight	4.94 oz (140g) (See mechanical drawing on page 4)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL-HDBK-217F@25°C	300			kHours
Safety Class		Class II			
Soldering Temperature	Wave Soldering	260±5°, 5 - 10s			
	Manual Soldering	360±10°C, 3 - 5s			

MicroPower Direct
46 Eastman Street
Unit 1
Easton, MA 02375
USA

T: (781) 344-8226
F: (781) 344-8481
E: sales@micropowerdirect.com
W: www.micropowerdirect.com

MPD
MICROPOWER DIRECT

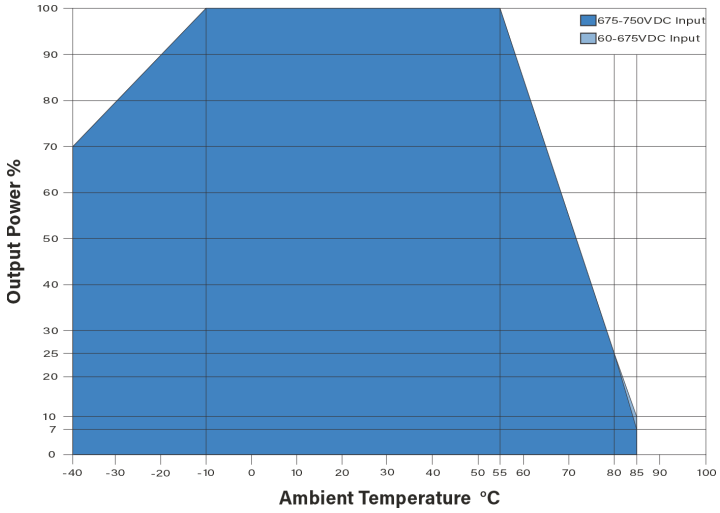
Model Selection Guide

Model Number	Input			Output			Efficiency @ 300VDC (%, Typ)	Capacitive Load (uF Max)
	Voltage (VDC)	Current (mA)		Voltage (VDC)	Current (mA)	Power (W)		
	Range	200VDC	600VDC					
MDP2007-12RU	60 - 750	250	80	12	1670	20	84	3000
MDP2007-24RU	80 - 745	250	80	24	833	20	86	800

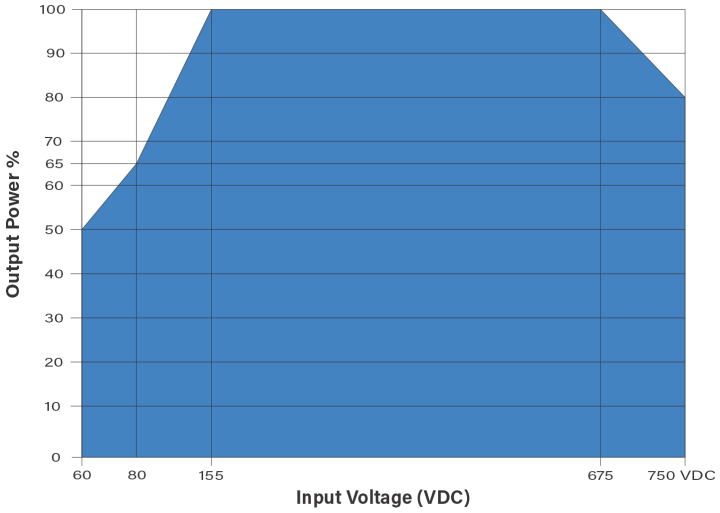
Notes:

1. The "tip and barrel" method is used for ripple and noise test, output parallel 47uF electrlytic capacitor and 1uF ceramic capacitor.
2. For DC input between 60 - 155VDC / 675 - 750VDC (12V) or 80 - 155VDC / 675 - 745VDC (24V), the output power must be derated as per the temperature derating curves.
3. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in this datasheet.
4. Unless otherwise specified, all parameters in this datasheet were measured under the conditions of 25°C ambient temperature, <75% humidity, with nominal input voltage and rated output load.

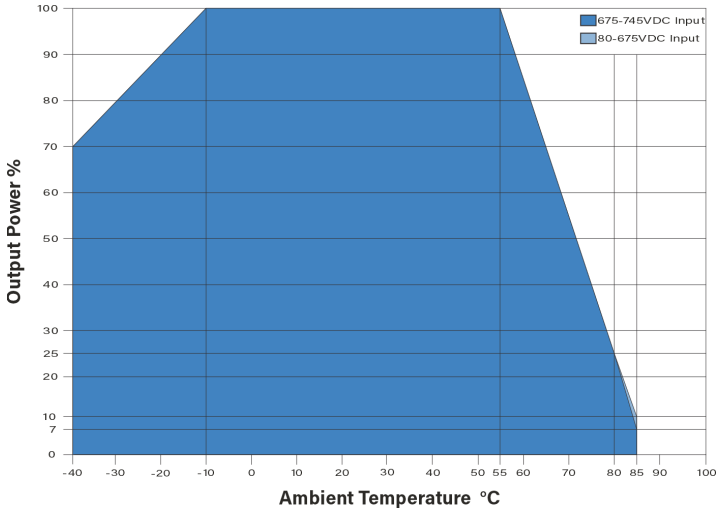
Temperature Derating: 12V Output



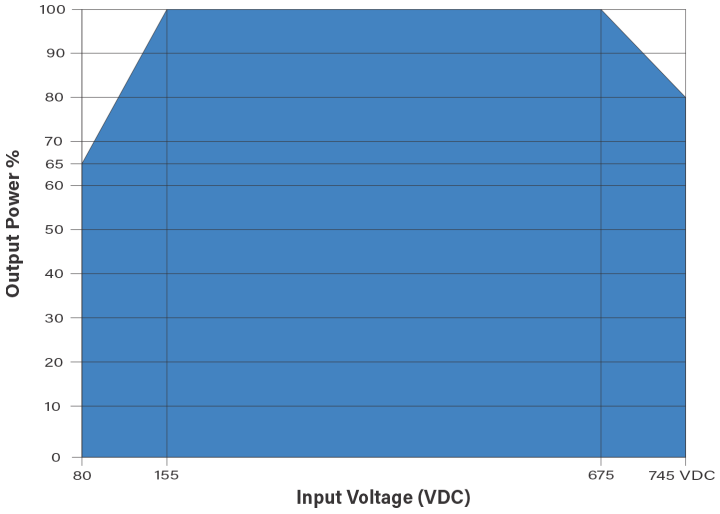
Input Voltage Derating: 12V Output



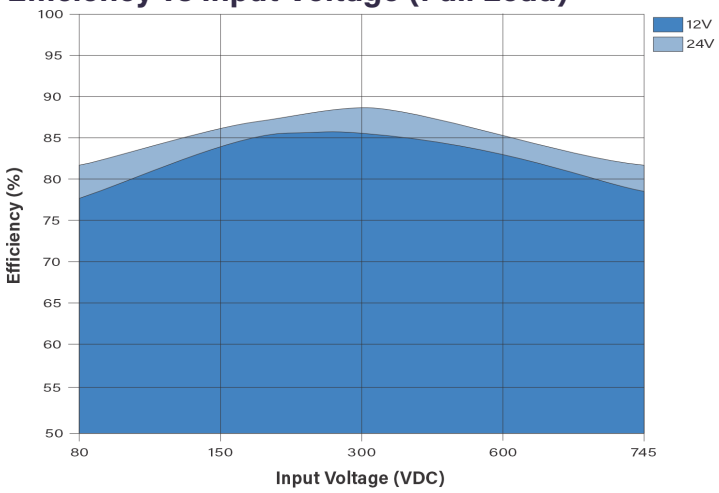
Temperature Derating: 24V Output



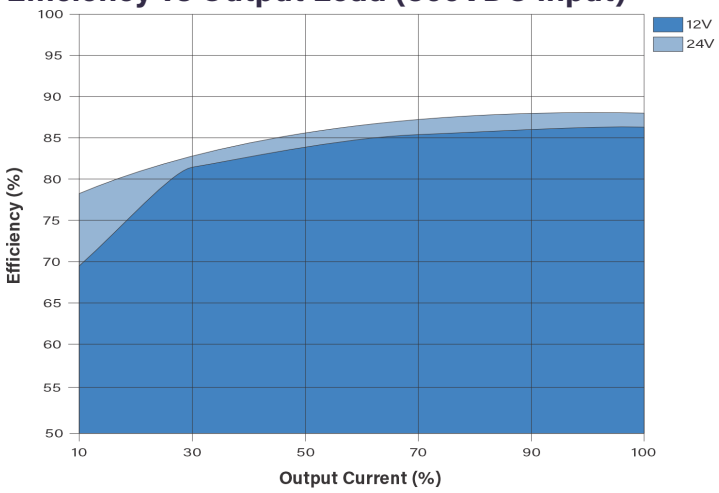
Input Voltage Derating: 24V Output



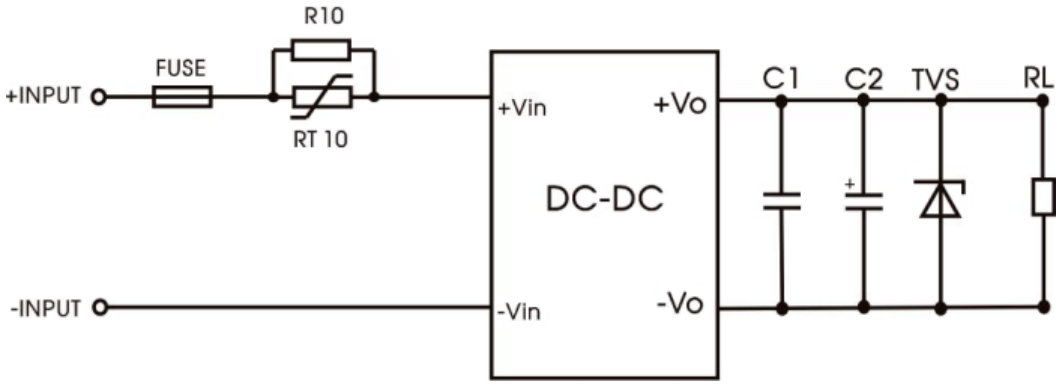
Efficiency vs Input Voltage (Full Load)



Efficiency vs Output Load (300VDC Input)



Typical Application Circuit



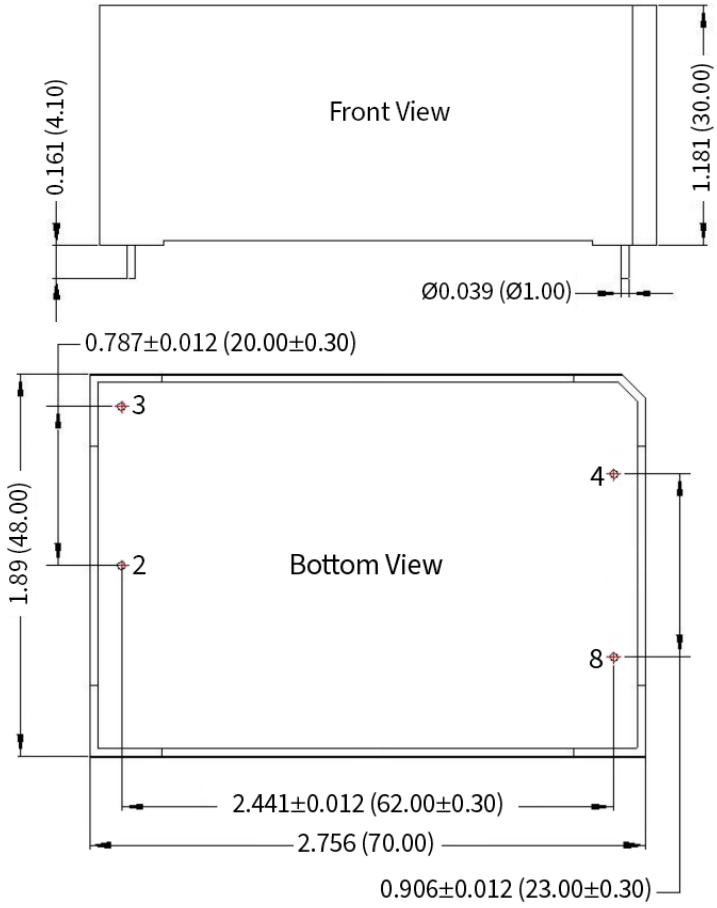
Model	FUSE	RT10	R10	C1 (uF)	C2 (uF)	TVS
MDP2007-12RU	3A/1100VDC, slow-blow, required	15D-10	2W/12Ω (Wire-wound resistor)	1	22	SMBJ20A
MDP2007-24RU						SMBJ30A

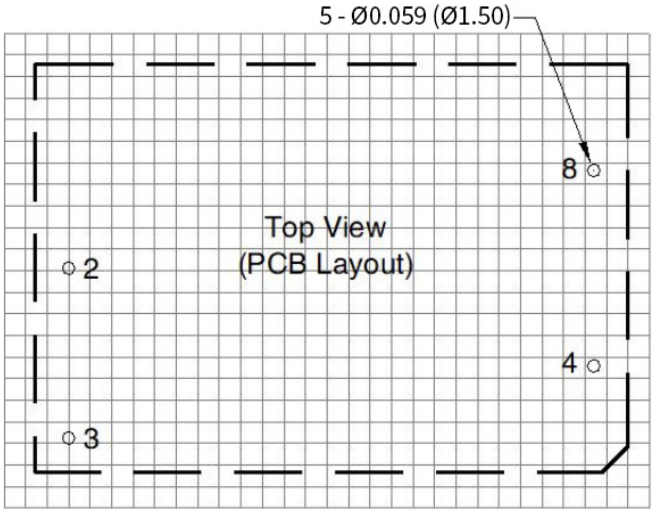
We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2. Choose a capacitor voltage rating with at least 20% margin, or not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise. TVS is a recommended suppressor diode to protect the application in case of a converter failure.

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions (RE)	CISPR32/EN55032		B
Conducted Emissions (CE)	CISPR32/EN55032		B
ESD	IEC/EN61000-4-2	B	Contact ±6kV/Air ±8KV
RS	IEC/EN61000-4-3	A	10V/m
EFT	IEC/EN61000-4-4	B	±2KV
Surge	IEC/EN61000-4-5	B	line to line ±2KV
CS	IEC/EN61000-4-6	A	10 Vr.m.s

Mechanical Dimensions





Note: Grid distance is 2.54 * 2.54 mm

Pin	Function
2	DC+
3	DC-
4	+Vo
8	-Vo

Note:

- All units are typical in inches (mm)
- Pin section tolerances: ±0.004 (±0.10)
- General tolerances: ±0.020 (±0.50)

MPD has a very wide range of high performance AC/DC power supplies ranging from 600W UChannel units to 1W units in miniature Single-In-Line (SIP) packages. All are designed and certified to international safety and EMC/EMI standards.
We have AC/DC supplies approved for use in medical equipment, DIN rail supplies, "Green" energy supplies and constant power supplies.
We also offer a wide variety of DC/DC converters, POL regulators and IGBT drivers. All products are available with short lead times. Call today for complete information or product samples. Or go to our website:

WWW.MICROPOWERDIRECT.COM