Features

- 2:1 Wide Input Voltage Range
- 20 Watts Output Power
- 1.6kVDC Isolation
- Fixed Operating Frequency
- Six-Sided Continuous Shield
- International Safety Standard Approvals
- Standard 50.8 x25.4x10.2mm Package
- Efficiency to 89%

POWERLINE
DC/DC-Converter

RP20-S_DF Series

20 Watt 2" x 1" Package Single & Dual Output

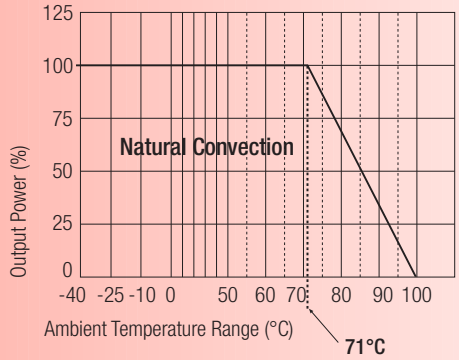
RECOM

Selection Guide 12V, 24V and 48V Input Types

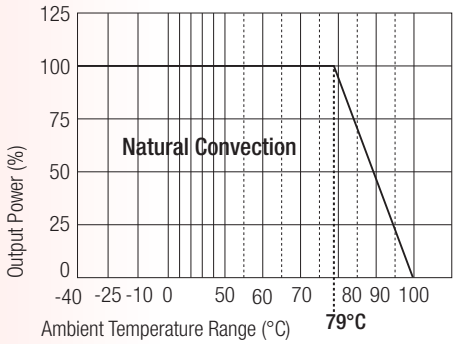
Part Number	Input Range	Output Voltage	Output Current	Input [4] Current	Efficiency[5]	Capacitive[6] Load max.
	VDC	VDC	mA	mA	%	µF
RP20-121.5SF	9-18	1.5	6000	1014	78	65000
RP20-121.8SF	9-18	1.8	6000	1200	79	65000
RP20-122.5SF	9-18	2.5	6000	1603	82	33000
RP20-123.3SF	9-18	3.3	5000	1719	84	13000
RP20-1205SF	9-18	5	4000	2008	87	6800
RP20-1212SF	9-18	12	1670	2062	85	2200
RP20-1215SF	9-18	15	1330	2052	85	755
RP20-241.5SF	18-36	1.5	6000	493	80	65000
RP20-241.8SF	18-36	1.8	6000	584	81	65000
RP20-242.5SF	18-36	2.5	6000	781	84	33000
RP20-243.3SF	18-36	3.3	5000	838	86	13000
RP20-2405SF	18-36	5	4000	980	89	6800
RP20-2412SF	18-36	12	1670	1006	87	2200
RP20-2415SF	18-36	15	1330	1002	87	755
RP20-481.5SF	36-75	1.5	6000	247	80	65000
RP20-481.8SF	36-75	1.8	6000	288	82	65000
RP20-482.5SF	36-75	2.5	6000	391	84	33000
RP20-483.3SF	36-75	3.3	5000	414	87	13000
RP20-4805SF	36-75	5	4000	490	89	6800
RP20-4812SF	36-75	12	1670	497	88	2200
RP20-4815SF	36-75	15	1330	500	87	755
RP20-1212DF	9-18	±12	±833	2032	86	±680
RP20-1215DF	9-18	±15	±667	2034	86	±450
RP20-2412DF	18-36	±12	±833	1004	87	±680
RP20-2415DF	18-36	±15	±667	1005	87	±450
RP20-4812DF	36-75	±12	±833	496	88	±680
RP20-4815DF	36-75	±15	±667	502	87	±450

Derating-Graph (Ambient Temperature)

RP20-481.5SF



RP20-481.5SF With Heat Sink

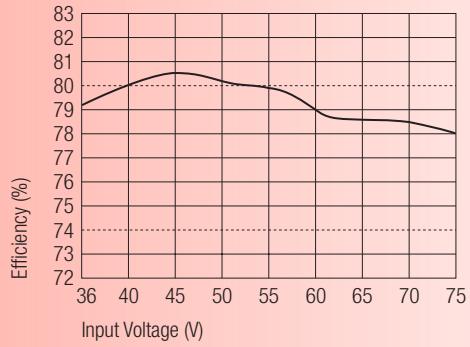


Derating graphs are valid only for the shown part numbers. If you need detailed derating-information about a part-number not shown here please contact our technical customer service at info@recom-development.at

Typical Characteristics

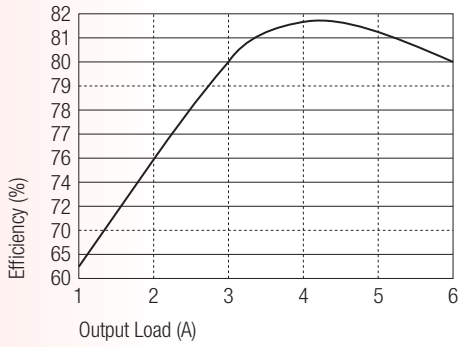
RP20-481.5SF

Efficiency VS Input Voltage



RP20-481.5SF

Efficiency VS Output Load



Specifications (typical at nominal input and 25°C unless otherwise noted)

Input Voltage Range	12V nominal input	9-18VDC
	24V nominal input	18-36VDC
	48V nominal input	36-75VDC
Input Filter (see note 9)		L-C Type
Input Voltage Variation dv/dt	(Complies with ETS300 132 part 4.4)	5V/ms max
Input Surge Voltage (100 ms max.)	12V Input	36VDC
	24V Input	50VDC
	48V Input	100VDC
Input Reflected Ripple (nominal Vin and full load)		20mAp-p
Start Up Time (nominal Vin and constant resistor load)		10ms typ.
Remote ON/OFF (see note 7)	DC-DC ON	Open or 3.5V < Vr < 12V
	DC-DC OFF	Short or 0V < Vr < 1.2V
Remote OFF input current	Nominal input	2.5mA
Output Power		20W max.
Output Voltage Accuracy (full Load and nominal Vin)		±1%
Voltage Adjustability		±10%

continued on next page

RP20-S_DF Series

Specifications (typical at nominal input and 25°C unless otherwise noted)

Minimum Load (see Note 1)	Single Dual	0% 10% of FL
Line Regulation (LL-HL at full load)		±0.2%
Load Regulation (25% to 100% FL)		±0.5%
Cross Regulation (asymmetrical load 25%/100% FL)	Dual	±5%
Ripple and Noise (20MHz bandwith) (Measured with a 1004pF/50V MLCC)	Single 1.5, 1.8, 2.5, 3.3V Single 5, 12, 15V Dual 5, 12, 15V	60mVp-p 75mVp-p 100mVp-p
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		500µS
Over Voltage Protection Zener diode clamp (only single)	1.5, 1.8, 2.5, 3.3V 5V 12V 15V	3.9V 6.2V 15V 18V
Over Load Protection (% of full load at nominal Vin)		150% typ
Short Circuit Protection		Hiccup, automatic recovery
Efficiency		see „Selection Guide“ table
Isolation Voltage	Input to Output Input (Output) to case	1.600VDC min. 1.600VDC min.
Isolation Resistance		10^9 Ω min.
Isolation Capacitance		1000pF max.
Operating Frequency		500kHz typ.
Operating Temperature Range		-40°C to +85°C(with derating)
Maximum Case Temperature		+100°C
Storage Temperature Range		-55°C to +105°C
Thermal Impedance	Natural convection Natural convection with Heat Sink	12°C/Watt 10°C/Watt
Thermal Shock		MIL-STD-810D
Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z
Relative Humidity		5% to 95% RH
Case Material		Nickel-Coated copper
Base Material		Non-conductive black plastic
Potting Material		Epoxy (UL94-V0)
Conducted Emissions	EN55022	Class A
Radiated Emissions	EN55022	Class A
ESD	EN61000-4-2	Perf. Criteria 2
Radiated Immunity	EN61000-4-3	Perf. Criteria 2
Fast Transient	EN61000-4-4	Perf. Criteria 2
Surge	EN61000-4-5	Perf. Criteria 2
Conducted Immunity	EN61000-4-6	Perf. Criteria 2
Weight		27g
Dimensions		50.8 x 25.4 x 10.2mm
MTBF (see note 2)		1.791 x 10^6 Hours

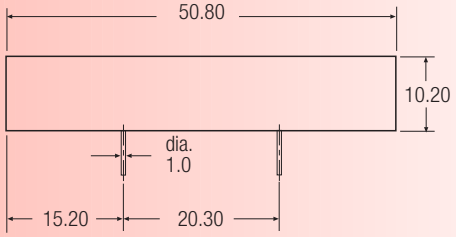
RP20-S_DF Series

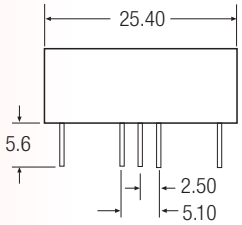
Notes :

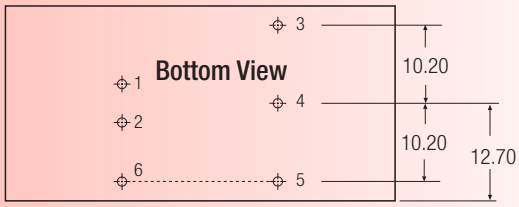
1. The RP20 series requires a minimum of 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. Simulated source impedance of 12uH. 12uH inductor in series with +Vin.
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistor load.
7. The ON/OFF control function can be positive or negative logic. The pin voltage is referenced to negative input.
   Positive logic ON/OFF is standard, no suffix (Ex. RP20-2405SF)
   Negative logic ON/OFF is marked with suffix-N (Ex. RP20-2405SF/N).
8. Heat sink is optional and P/N: 7G-0020A.
9. An external filter capacitor is required for normal operation. The capacitor should be capable of handing 1A ripple current for 48V/24V models. RECOM suggest: Nippon chemi-con KMF series, 220µF/100V, ESR 90m Ω.
10. See application notes for EMI-filtering.

Package Style and Pinning (mm)

3rd angle projection







Pin Connections

Pin #	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	+Vout	+Vout
4	Trim	Com
5	-Vout	-Vout
6	CTRL	CTRL

Pin Pitch Tolerance ±0.35 mm

External Output Trimming

Output can be externally trimmed by using the method shown below.