Features

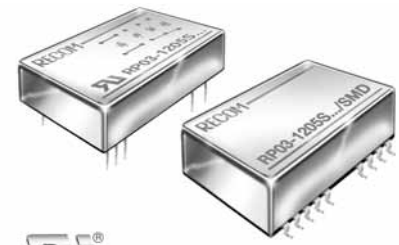
Regulated Converters

- 2:1 Wide Input Voltage Range
- Safety standards and approvals: EN 60950 certified, rated for 250VAC (LVD test report)
- 3 Watts Regulated Output Power
- 500VDC Isolation
- Over Current Protection
- Also Available with Isolated Outputs, Output 1/Output 2 (DS) Isolation
- Five-Sided Shield
- Standard DIP24 and SMD-Pinning
- UL 1950 Component Recognized
- High Efficiency to 80%

POWERLINE
DC/DC-Converter

RP03-S_DB (DB/DS) Series

3 Watt DIP24 & SMD, Single, Dual & Dual Isolated Output



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

Part Number for DB/DS(V1 & V2)	Input Range	Output Voltage V1 & V2	Output Current V1 & V2	Input [4] Current	Efficiency[5]	Capacitive[6] Load max. V1 & V2
DIP24 (SMD)	VDC	VDC	mA	mA	%	µF
RP03-123.3SB**	9-18	3.3	500	196	74	2200
RP03-1205SB**	9-18	5	500	286	77	1000
RP03-1212SB**	9-18	12	250	333	79	220
RP03-1215SB**	9-18	15	200	329	80	150
RP03-243.3SB**	18-36	3.3	500	101	72	2200
RP03-2405SB**	18-36	5	500	149	74	1000
RP03-2412SB**	18-36	12	250	169	78	220
RP03-2415SB**	18-36	15	200	169	78	150
RP03-483.3SB**	36-75	3.3	500	50	73	2200
RP03-4805SB**	36-75	5	500	75	74	1000
RP03-4812SB**	36-75	12	250	84	79	220
RP03-4815SB**	36-75	15	200	84	79	150
RP03-1205DB**	9-18	±5	±250	293	75	±470
RP03-1212DB**	9-18	±12	±125	329	80	±100
RP03-1215DB**	9-18	±15	±100	329	80	±68
RP03-2405DB**	18-36	±5	±250	147	75	±470
RP03-2412DB**	18-36	±12	±125	169	78	±100
RP03-2415DB**	18-36	±15	±100	169	78	±68
RP03-4805DB**	36-75	±5	±250	75	74	±470
RP03-4812DB**	36-75	±12	±125	86	77	±100
RP03-4815DB**	36-75	±15	±100	169	77	±68
RP03-1205DB/DS**	9-18	5 / 5	250 / 250	293	75	470 / 470
RP03-1212DB/DS**	9-18	12 / 12	125 / 125	329	80	100 / 100
RP03-1215DB/DS**	9-18	15 / 15	100 / 100	329	80	68 / 68
RP03-2405DB/DS**	18-36	5 / 5	250 / 250	147	75	470 / 470
RP03-2412DB/DS**	18-36	12 / 12	125 / 125	169	78	100 / 100
RP03-2415DB/DS**	18-36	15 / 15	100 / 100	169	78	68 / 68
RP03-4805DB/DS**	36-75	5 / 5	250 / 250	75	74	470 / 470
RP03-4812DB/DS**	36-75	12 / 12	125 / 125	86	77	100 / 100
RP03-4815DB/DS**	36-75	15 / 15	100 / 100	86	77	68 / 68

** add Suffix SMD for SMD package

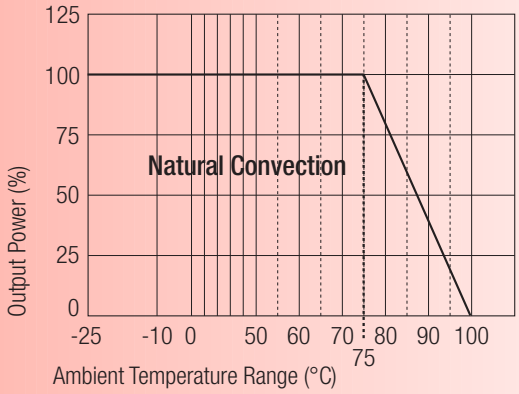
Description

The B-Series of DC/DC Converters are fully certified to EN 60950: 2000. This makes them ideal for all Telecom and safety applications where approved isolation is required.
They also meet UL 1950 and CSA 950 standards [8].

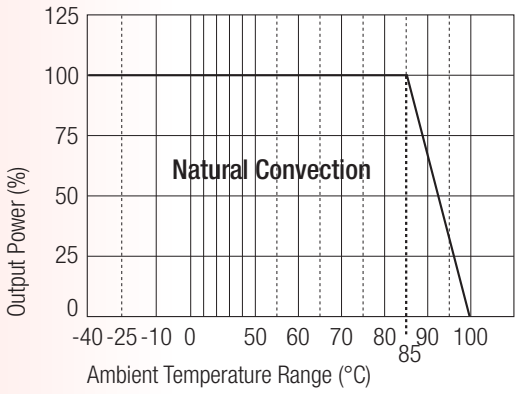
RP03-S_DB (DB/DS) Series

Derating-Graph (Ambient Temperature)

RP03-4805SB



RP03-4805SB/M1



Derating graphes 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

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		Pi Type
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)		350ms typ.
Output Power		3W max.
Output Voltage Accuracy (full Load and nominal Vin)		±2%
Minimum Load (see Note 1)		10% of FL
Line Regulation (LL-HL at full load)		±0.2%
Load Regulation (25% to 100% FL)	Single	±0.2%
	Dual at DS	±1%
Cross Regulation (asymmetrical load 25%/100% FL)		±5%
Ripple and Noise (20MHz bandwith)		50mVp-p
Temperature Coefficient		±0.02%/°C, max.
Transient Response (25% load step change)		200µS
Over Load Protection (% of full load at nominal Vin)		180% typ
Short Circuit Protection		Continuous, automatic recovery
Efficiency		see „Selection Guide“ table

continued on next page

RP03-S_DB (DB/DS) Series

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

Isolation Voltage	In to out		500VDC min.
	I/O to case	DIP at SMD type	500VDC min.
	Output to Output	/DS type	500VDC min.
Isolation Resistance			10^9 Ω min.
Isolation Capacitance			300pF max.
Operating Frequency			300kHz typ.
Approved to Safety Standards			UL 1950, EN60950
Operating Temperature Range	Standard		-25°C to +85°C (with derating)
	M1 (see note 3)		-40°C to +85°C (non-derating)
Maximum Case Temperature			+100°C
Storage Temperature Range			-55°C to +105°C
Thermal Impedance	Natural convection		20°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		Level A
Radiated Emissions	EN55022		Level 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	DIP		16g
	SMD		18g
Dimensions	DIP		31.8 x 20.3 x 10.2mm
	SMD		32.0 x 20.3 x 10.9mm
MTBF (see note 2)			3.069 x 10^6 Hours

Notes :

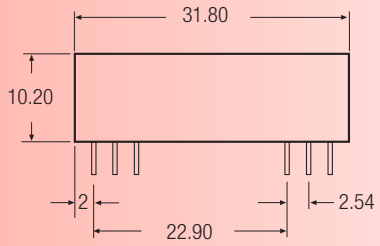
1. The RP03 series requires a minimum of 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C (Ground fixed and controlled environment).
3. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard version.
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. Should an O/O isolation be required, please order the converter with the following part number: RP03-XXXXDB/DS.
8. The "M1" version (RP03-xxxxSB-M1 / RP03-xxxxDB-M1) and the dual-isolated-output-version (RP03-xxxxDS) do not carry the UL certification.
9. See application notes for EMI-filtering.

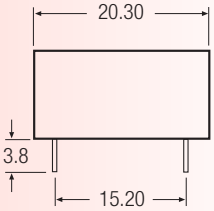
RP03-S_DB (DB/DS) Series

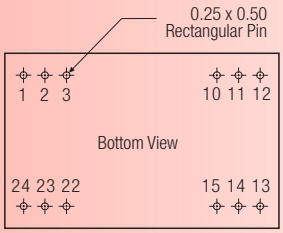
Package Style and Pinning (mm)

DIP24 Package Style

3rd angle projection







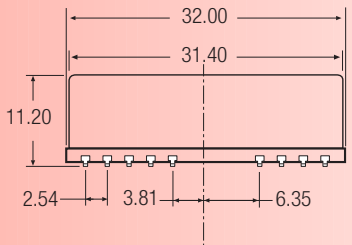
SMD Pin Connections out in

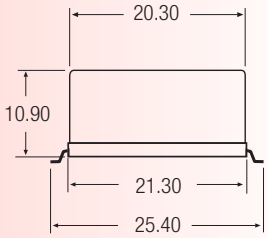
Pin #	Single	Dual	Dual Separated Outputs
1	+Vin	+Vin	+Vin
2	NC	–Vout	–V1 out
3	NC	Com	+V1 out
10	–Vout	Com	–V2 out
11	+Vout	+Vout	+V2 out
12	–Vin	–Vin	–Vin
13	–Vin	–Vin	–Vin
14	+Vout	+Vout	+V2 out
15	–Vout	Com	–V2 out
22	NC	Com	+V1 out
23	NC	–Vout	–V1 out
24	+Vin	+Vin	+Vin

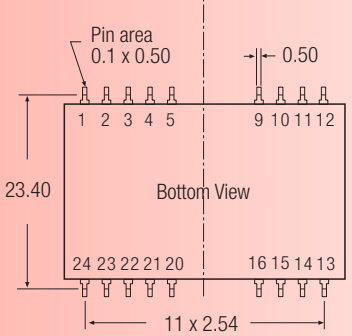
NC = No Connection

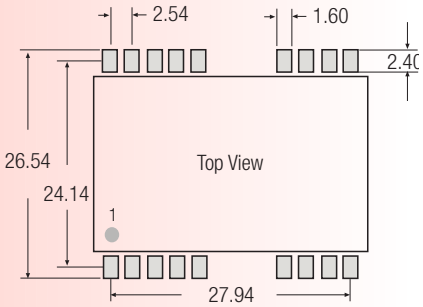
Pin Pitch Tolerance ±0.35 mm

SMD Package Style









SMD Package Style

Same spec. as the original DIP spec. and pin definition, excl. of the SMD type pin.

SMD Pin Connections out in

Pin #	Single	Dual	Dual Separated Outputs
1	+Vin	+Vin	+Vin
2	NC	–Vout	–V1 out
3	NC	Com	+V1 out
10	–Vout	Com	–V2 out
11	+Vout	+Vout	+V2 out
12	–Vin	–Vin	–Vin
13	–Vin	–Vin	–Vin
14	+Vout	+Vout	+V2 out
15	–Vout	Com	–V2 out
22	NC	Com	+V1 out
23	NC	–Vout	–V1 out
24	+Vin	+Vin	+Vin
Others	NC	NC	NC

NC = No Connection

Pin Pitch Tolerance ±0.35 mm