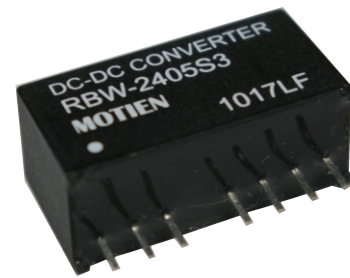


RBW Series

3W 4:1 Regulated Single & Dual output

Features

- 8 Pin SIL
- Wide 4:1 Input Range
- Full SMD Technology
- 1600 VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 82%
- -40 ~ 71°C Operation Temperature Range
- Remote on/off Control



The RBW series is a family of cost effective and high performed 3W single & dual output DC-DC converters. These converters are built in non-conductive black plastic package in a 8-pin SIL miniature compact case with high performance features wide range devices operate over 4:1 input voltage range providing stable output voltage which is much smaller than package of DIL 24- Same power rating but only 43% of the traditional volume. Devices are encapsulated using flame retardant resin. Input voltages of 12, 24, 48 with output voltage of 3.3, 5, 12, 15, ± 5 , ± 12 , ± 15 Vdc. High performance features include high efficiency operation up to 82% and output voltage accuracy of $\pm 1\%$ maximum.

All specifications typical at $T_a=25^\circ\text{C}$, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Voltage Accuracy	$\pm 1\%$
Maximun Output Current	See table
Line Regulation	$\pm 0.2\%$, max
Load Regulation	Single (From 0% to 100% Load) $\pm 1.0\%$, max Dual (From 10% to 100% Load) $\pm 1.0\%$, max
Cross Regulation (Dual Output) (1)	$\pm 5\%$
Ripple & Noise (20 Mhz bandwidth)(2)	30mVpp, max
Short Circuit Protection	Indefinite (Automatic Recovery)
Temperature Coefficient	$\pm 0.02\%/^\circ\text{C}$
Capacitive Load(3)	See table
Transient Recovery Time (4)	250us, typ
Transient Response Deviation(4)	$\pm 3\%$, max

INPUT SPECIFICATIONS	
Voltage Range	See table
Start up Time(Nominal V_{in} and constant resistive load)	30mS, typ
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitor
Input Reflected Ripple Current(5)	20mA pk-pk
Remote on/off	
ON:	open or high impedance
OFF:	2-4mA input current (via 1K)
Off stand by input current(Nominal V_{in})	2.5mA, max

GENERAL SPECIFICATIONS	
Efficiency	See table, typ
I/O Isolation Voltage (tested for 3 sec)	1600Vdc
I/O Isolation Capacity	200 pF, max
I/O Isolation Resistance	1000M Ohm, min
Switching Frequency	100kHz, min
Humidity	95%reIH
Reliability Calculated MTBF (MIL-HDBK-217 F)	>1.7 Mhrs@ 25°C
Safety Standard(designed to meet)	IEC60950-1

PHYSICAL SPECIFICATIONS	
Case Material	Non conductive black plastic
Potting Material	Silicon (UL94V-0 rated)
Pin Material	C5191R-H Solder-coated
Weight	4.8g, typ
Dimensions	0.86"x0.36"x0.44"

ENVIRONMENT SPECIFICATIONS	
Operating Temperature	-40°C~71°C
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(6)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100ms max)	
12 Modes	-0.7 ~ 25Vdc
24 Modes	-0.7 ~ 50Vdc
48 Modes	-0.7~100Vdc
Soldering Temperature (1.5mm from case 10 second)	260°C

EMC SPECIFICATIONS		
Radiated Emissions	EN55022	CLASS A
Conducted Emissions (7)	EN55022	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT (8)	IEC 61000-4-4	Perf. Criteria A
Surge (8)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

RBW - 3W 4:1 Regulated Single & Dual output

PART NUMBER STRUCTURE

RBW - 24 05 SD 3

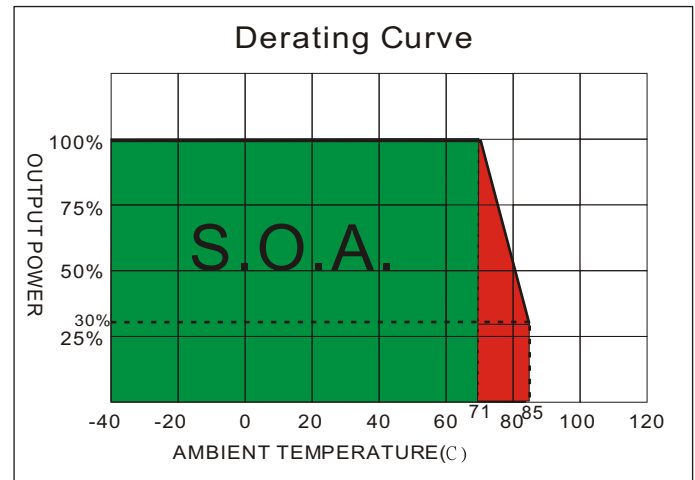
Series Name
W: wide range

Input Voltage Range
12 - 4.5 ~ 18V
24 - 9 ~ 36V
48 - 18 ~ 75V

Case Type
S - SIP Single Output
SD - SIP Dual Output

Nominal Output Voltage
3R3 - 3.3V
05 - 5V
12 - 12V
15 - 15V

Watt



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (%)	Capacitor Load (uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
RBW-123R3S3	4.5-18	40	268	3.3	0	700	72	1760uF
RBW-1205S3	4.5-18	40	325	5	0	600	77	1000uF
RBW-1212S3	4.5-18	40	309	12	0	250	81	170uF
RBW-1215S3	4.5-18	40	309	15	0	200	81	110uF
RBW-1205SD3	4.5-18	40	325	±5	0	±300	77	±470uF
RBW-1212SD3	4.5-18	40	313	±12	0	±125	80	±100uF
RBW-1215SD3	4.5-18	40	313	±15	0	±100	80	±47uF
RBW-243R3S3	9-36	25	129	3.3	0	700	75	1760uF
RBW-2405S3	9-36	25	159	5	0	600	79	1000uF
RBW-2412S3	9-36	30	153	12	0	250	82	170uF
RBW-2415S3	9-36	30	153	15	0	200	82	110uF
RBW-2405SD3	9-36	30	159	±5	0	±300	79	±470uF
RBW-2412SD3	9-36	35	159	±12	0	±125	79	±100uF
RBW-2415SD3	9-36	35	157	±15	0	±100	80	±47uF
RBW-483R3S3	18-75	15	66	3.3	0	700	74	1760uF
RBW-4805S3	18-75	15	81	5	0	600	78	1000uF
RBW-4812S3	18-75	15	79	12	0	250	80	170uF
RBW-4815S3	18-75	15	78	15	0	200	81	110uF
RBW-4805SD3	18-75	15	80	±5	0	±300	79	±470uF
RBW-4812SD3	18-75	15	80	±12	0	±125	79	±100uF
RBW-4815SD3	18-75	15	80	±15	0	±100	79	±47uF

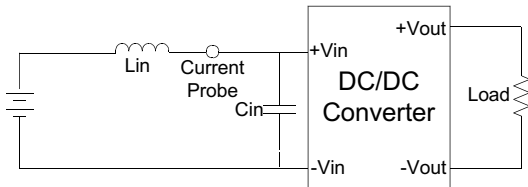
NOTE

- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with a 1uF ceramic capacitor.
- Test by minimal Vin and constant resistive load.
- Test by normal Vin and 100%-25% load, 25% load step change.
- Measured Input reflected ripple current with a simulated source inductance of 12uH and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz).
- Exceeding the absolute ratings of the unit could cause damage. It's not allowed for continuous operating ratings.
- Input filter components are required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
- An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5.
The filter capacitor Motien suggest: Nippon - chemi - con KY series, 220uF/100V.

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12uH) and a source capacitor C_{in} (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.

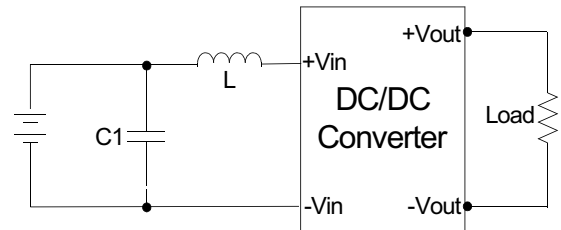
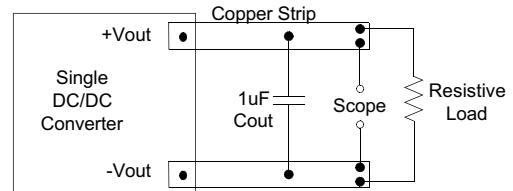


EMI Filter

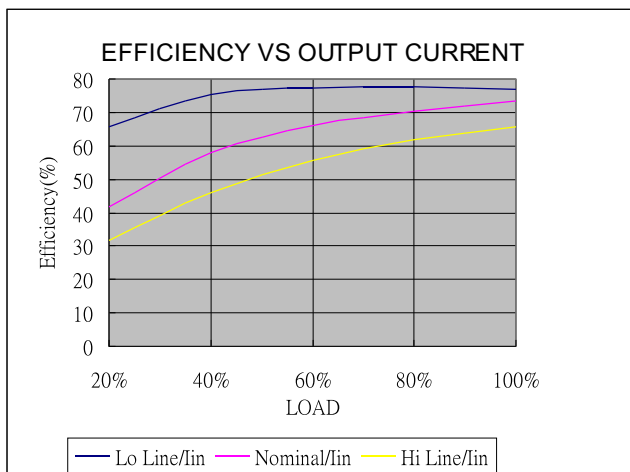
Input filter components (C_1 , L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Output Ripple & Noise Measurement Test

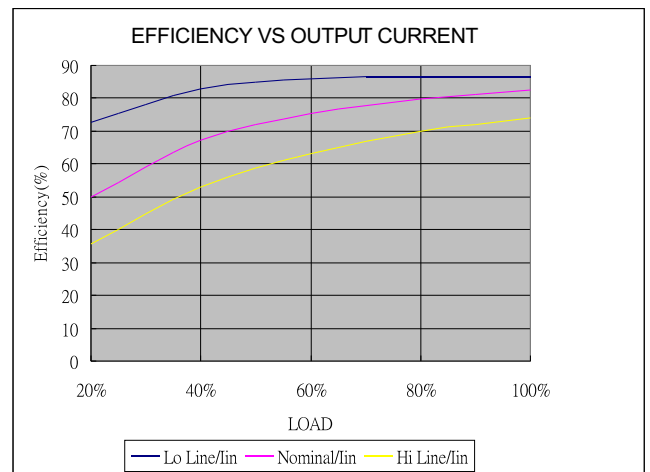
Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



	C1	L
RBW-12XXXXXX	1210 10uF/35V	2.5uH
RBW-24XXXXXX	1210 2.2uF/100V	10uH
RBW-48XXXXXX	1210 2.2uF/100V	18uH

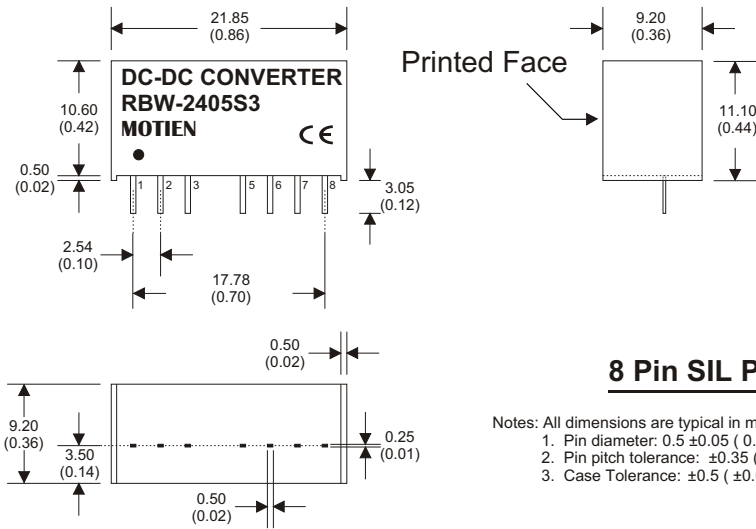


RBW-123R3S3



RBW-4815S3

MECHANICAL SPECIFICATIONS



8 Pin SIL Package

Notes: All dimensions are typical in millimeters (inches).
 1. Pin diameter: 0.5 ± 0.05 (0.02 ± 0.002)
 2. Pin pitch tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)

PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	-V Input	-V Input
2	+V Input	+V Input
3	Remote On/Off	Remote On/Off
5	N.C.	N.C.
6	+V Output	+V Output
7	-V Output	Common
8	N.C.	-V Output