RBW Series

MOTIEN TECHNOLOGY

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°C ~ 85°C Operation Temperature Range
- Remote on/off Control

CE

The RBW series is a family of cost effective and high performanced 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 ±1% maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1%,max.
Maximun Output Current	See table,max.
Line Regulation	±0.2%,max.
Load Regulation	Single (From 0% to 100% Load) ±1.0%,max.
	Dual (From 10% to 100% Load) ±1.0%,max.
Cross Regulation (Dual Output) (1)	±5%
Ripple & Noise (20 Mhz bandwidth)(2)	30mVpk-pk,max.
Short Circuit Protection	Indefinite (Automatic Recovery)
Temperature Coefficient	±0.02%/°C
Capacitive Load(3)	See table, max.
Transient Recovery Time (4)	250μs, typ.
Transient Response Deviation(4)	±3%, max.

INPUT SPECIFICATIONS

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

GENERAL SPECIFICATIONS

Efficiency	See table,typ.
I/O Isolation Voltage (60sec)	1600Vdc
I/O Isolation Capacity	200 pF,max.
I/O Isolation Resistance	1000M Ohm,min.
Switching Frequency	100kHz,min.
Humidity	95%relH
Reliability Calculated MTBF (MIL-HDBK-217 F)	>1.7Mhrs@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	4.5g,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)

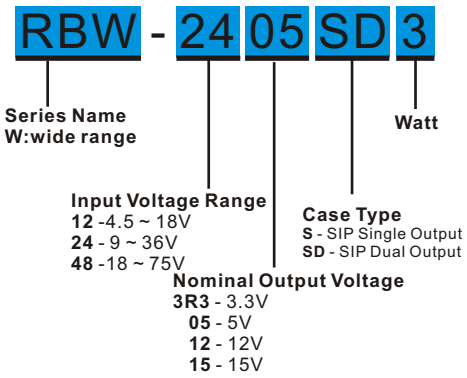
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

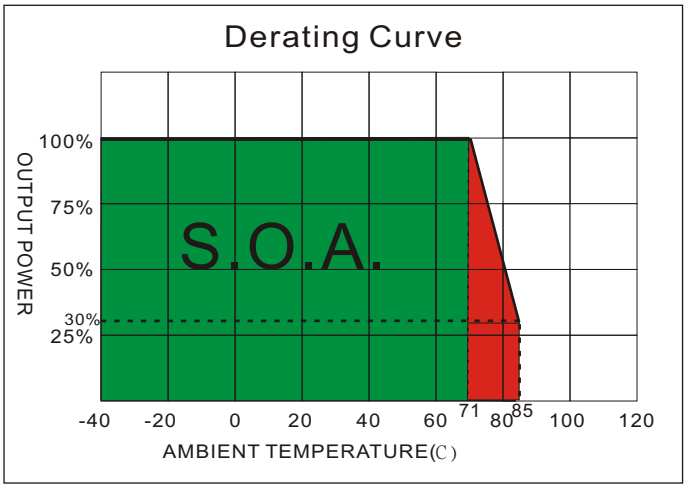
Input Surge Voltage(100ms max.)	
12 Models	25Vdc,max.
24 Models	50Vdc,max.
48 Models	100Vdc,max.
Soldering Temperature (1.5mm from case 10sec max.)	260°C max.

EMC SPECIFICATIONS

Radiated Emissions	EN55032	CLASS A
Conducted Emissions (7)	EN55032	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

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
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

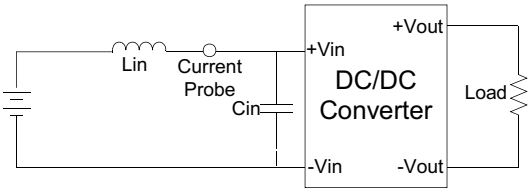
1. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
2. Measured with a 1μF ceramic capacitor.
3. Test by minimal Vin and constant resistive load.
4. Test by normal Vin and 100%-25% load,25% load step change.
5. Measured Input reflected ripple current with a simulated source inductance of 12μH and a source capacitor Cin(47μF, ESR<1.0Ω at 100KHz).
6. Exceeding the absolute ratings of the unit could cause damage. It's not allowed for continuous operating ratings.
7. Input filter components are be required to help meet conducted emission class A, which application refer to the EMI Filter of design & feature configuration.
8. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5. The filter capacitor Motien suggest: Nippon - chemi - con KY series, 220μF/100V.

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

TEST CONFIGURATIONS

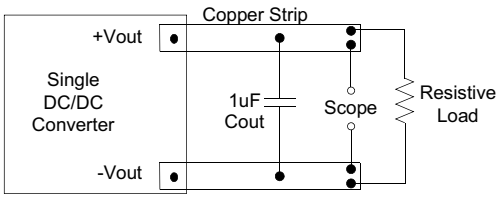
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor Lin(12μH) and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



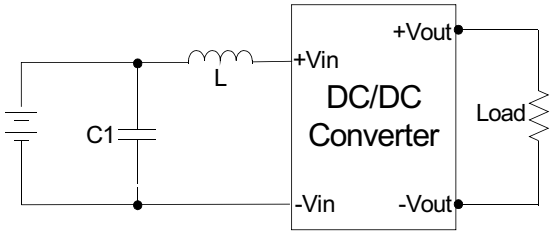
Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0μF) measurement.
The Scope measurement bandwidth is 0-20MHz.

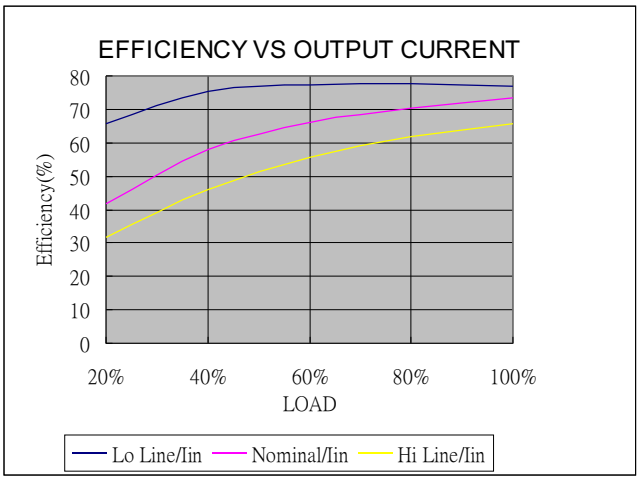


EMI Filter

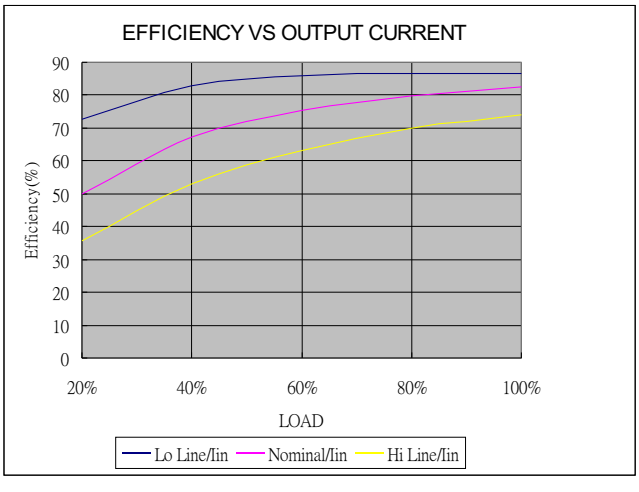
Input filter components (C1, L) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



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



RBW-123R3S3



RBW-4815S3

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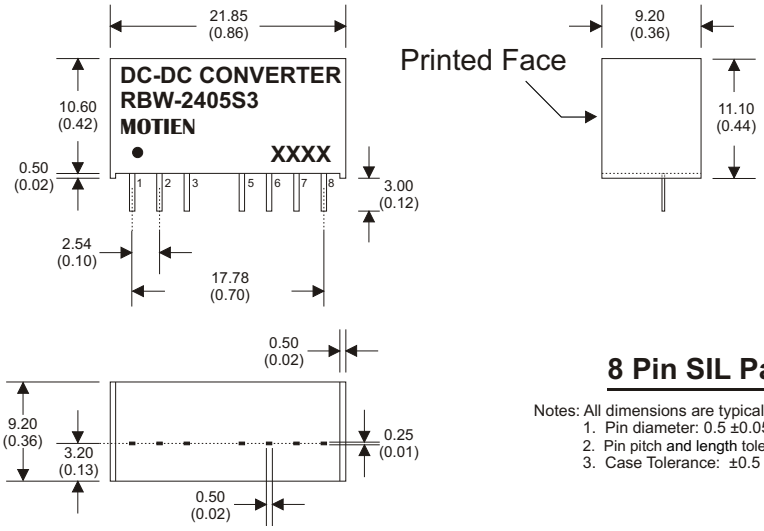
MECHANICAL SPECIFICATIONS



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 and length 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	Remo te On/ Off
5	N.C.	N.C.
6	+V Output	+V Output
7	-V Output	Common
8	N.C	-V Output

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DRAWING: APPROVED:

Last Update : 22.FEB.2017