



EMC CE



■ Features

- Compliance with EN50155 railway standard
- DIP 24 package with standard pinout
- 4:1 wide input range
- Wide operating temperature range -40 ~ +85°C
- No minimum load required
- Full encapsulated
- Protections: Short circuit (Continuous) / Overload / Over voltage / Input under voltage
- 3KVDC I/O isolation
- Remote ON/OFF control
- 3 years warranty

■ Applications

- Bus, tram, metro or railway system
- Telecom/datacom system
- Wireless network
- Industrial control facility
- Instrument
- Analyzer
- Highly vibrating, heavily dusty, extremely low or high temperature harsh environment

■ Description

RSDW10 and RDDW10 series are 10W module type DC-DC reliable railway converter with DIP24 package. It features international standard pins, a high efficiency up to 88%, wide working temperature range -40~+85°C, 3KVDC I/P-O/P isolation voltage, compliance with EN50155 railway standard, continuous-mode short circuit protection, etc. The models account for 43~160V 4:1 wide input range, and various output voltage, 3.3V/5V/12V/15V for single output and $\pm 5V/\pm 12V/\pm 15V$ for dual outputs, which are suitable for railway, trams, buses and also can be used in the harsh environment with high vibration, high dust, extremely low or high temperature, etc.

■ Model Encoding

R S DW10 H - 12

Output voltage (3.3/5/12/15Vdc , $\pm 5/\pm 12/\pm 15Vdc$)

Input voltage (H: 43~160Vdc)

Rated wattage

Series name { S:Single output
D: Dual output

File Name:RSDW10,RDDW10-SPEC 2018-03-15

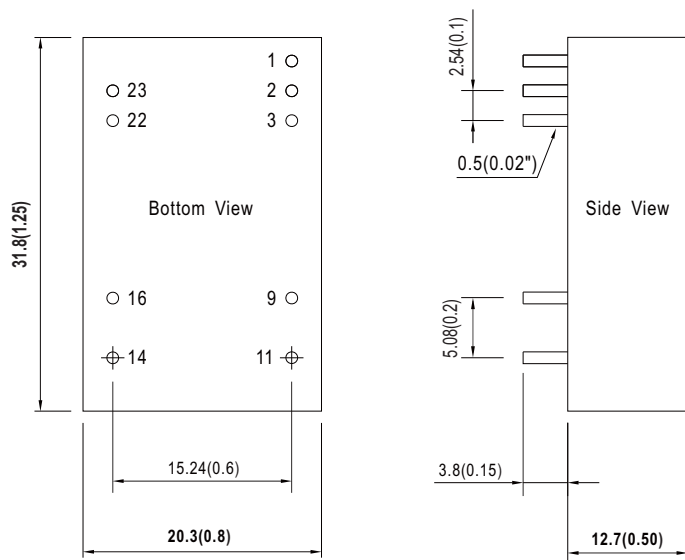
MODEL SELECTION TABLE							
ORDER NO.	INPUT			OUTPUT		EFFICIENCY (Typ.)	CAPACITOR LOAD (MAX.)
	INPUT VOLTAGE (RANGE)	INPUT CURRENT		OUTPUT VOLTAGE	OUTPUT CURRENT		
		NO LOAD	FULL LOAD				
RSDW10H-03	Normal 110V (43 ~ 160V)	6mA	89mA	3.3V	2500mA	85%	2500 μ F
RSDW10H-05		6mA	105mA	5V	2000mA	87%	2000 μ F
RSDW10H-12		6mA	104mA	12V	835mA	87%	835 μ F
RSDW10H-15		6mA	103mA	15V	666mA	88%	666 μ F
RDDW10H-05		6mA	107mA	± 5 V	$\pm 0 \sim 1000$ mA	85%	1000 μ F
RDDW10H-12		6mA	105mA	± 12 V	$\pm 0 \sim 416$ mA	87%	416 μ F
RDDW10H-15		6mA	104mA	± 15 V	$\pm 0 \sim 333$ mA	88%	333 μ F

* For each output

SPECIFICATION				
INPUT	VOLTAGE RANGE	43~160Vdc		
	SURGE VOLTAGE (100ms max.)	200Vdc		
	FILTER	Pi type		
	PROTECTION (Typ.)	Fuse recommended. 0.5A Fast acting type		
	INTERNAL POWER DISSIPATION	500mW 0.5A fast acting type		
OUTPUT	VOLTAGE ACCURACY	±1%		
	RATED POWER	10W		
	RIPPLE & NOISE Note.2	50mVp-p		
	LINE REGULATION Note.3	±0.2%		
	LOAD REGULATION Note.4	Single output models: ±0.5%, Dual output models: ±1%		
	SWITCHING FREQUENCY (Typ.)	240KHz		
PROTECTION	SHORT CIRCUIT	Protection type : Continuous, automatic recovery		
	OVERLOAD	120 ~ 180% rated output power Protection type : Recovers automatically after fault condition is removed		
	OVER VOLTAGE	Protection type : Clamp by diode		
	UNDER VOLTAGE LOCKOUT	Start-up voltage	40Vdc	
	Shutdown voltage	38Vdc		
FUNCTION	REMOTE CONTROL	Power ON: R.C. ~ -Vin >3.5~160Vdc or open circuit ; Power OFF: R.C. ~ -Vin <1.2Vdc or short		
ENVIRONMENT	COOLING	Free-air convection		
	WORKING TEMP.	-40 ~ +85°C (Refer to "Derating Curve")		
	CASE TEMPERATURE	+100°C max.		
	WORKING HUMIDITY	20% ~ 90% RH non-condensing		
	STORAGE TEMP., HUMIDITY	-55 ~ +125°C, 10 ~ 95% RH non-condensing		
	TEMP. COEFFICIENT	0.03% / °C (0 ~ 71°C)		
	SOLDERING TEMPERATURE	1.5mm from case of 1 ~ 3sec./260°C max.		
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes; Mounting: compliance to EN61373(Category 1- Class B)		
SAFETY & EMC (Note.5)	SAFETY STANDARDS	EAC TP TC 004 approved		
	WITHSTAND VOLTAGE	I/P-O/P:3KVDC		
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25°C / 70% RH		
	ISOLATION CAPACITANCE (Typ.)	1000pF		
	EMC EMISSION	Parameter	Standard	Test Level / Note
		Conducted	EN55032	Class A with external components
	EMC IMMUNITY	Radiated	EN55032	N/A
		Parameter	Standard	Test Level / Note
		ESD	EN61000-4-2	Level 2, ±8KV air, ±4KV contact
		Radiated Susceptibility	EN61000-4-3	Level 2, 3V/m
		EFT/Burest	EN61000-4-4	Level 1, 0.5KV
Surge		EN61000-4-5	Level 1, 0.5KV Line-Line	
Conducted	EN61000-4-6	Level 2, 3V(e.m.f.)		
RAILWAY STANDARD	EN50155 including EN61373 for shock & vibration, EN50121-3-2 for EMC			
OTHERS	MTBF	1200Khrs MIL-HDBK-217F(25°C)		
	DIMENSION (L*W*H)	31.8*20.3*12.7mm (1.25*0.8*0.5 inch)		
	CASE MATERIAL	Non-Conductive black plastic		
	PACKING	16g		
NOTE	<p>1.All parameters are specified at normal input(110Vdc), rated load, 25°C 70% RH ambient. 2.Ripple & noise are measured at 20MHz by using a 12" twisted pair terminated with a 0.1µf & 47µf capacitor. 3.Line regulation is measured from low line to high line at rated load. 4.Load regulation is measured from 10% to 100% rated load. 5.The final equipment must be re-confirm that it still meet EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."</p>			

Mechanical Specification

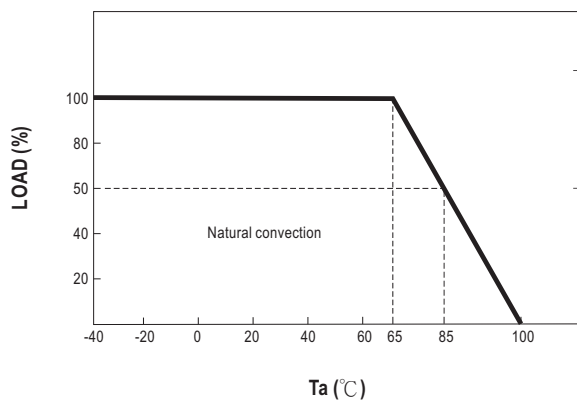
- All dimensions in mm(inch)
- Tolerance: $x.x \pm 0.5\text{mm}$ ($x.xx \pm 0.02''$)
 $x.xx \pm 0.25\text{mm}$ ($x.xxx \pm 0.010''$)
- Pin size is: $0.5 \pm 0.05\text{mm}$ ($0.02'' \pm 0.002''$)



Plug Assignment

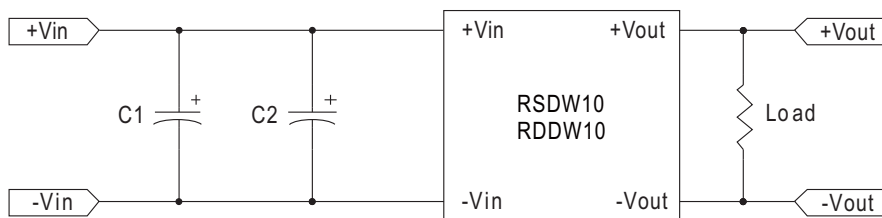
Pin-Out		
Pin No.	RSDW10 (Single output)	RDDW10 (Dual output)
1	Remote ON/OFF	Remote ON/OFF
2,3	-Vin	-Vin
9	N.P.	Common
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22,23	+Vin	+Vin

Derating Curve



■ **EMC Suggestion Circuit**

※Required external components to meet EN55032 class A emission are as below:



EN55032 Class A		
Model No.	C1	C2
RSDW10H-12	10 μ F/50V	10 μ F/50V
RSDW10H-15	10 μ F/50V	10 μ F/50V
RDDW10H-05	10 μ F/50V	10 μ F/50V
RDDW10H-12	10 μ F/50V	10 μ F/50V
RDDW10H-15	10 μ F/50V	10 μ F/50V

Note: All of capacitors are ceramic capacitors and 1812 size.