

#### RDR Series Converter



#### Features

- RDR: 1 in.×1 in.Standard Size  
(25.4mm\*25.4mm)
- Wide input voltage
- 3000Vdc Isolation Voltage**
- Operating Case Temp:-40 to 105
- Meets requirements of Standard EN50155
- Applications: Railway equipment and distributed power.

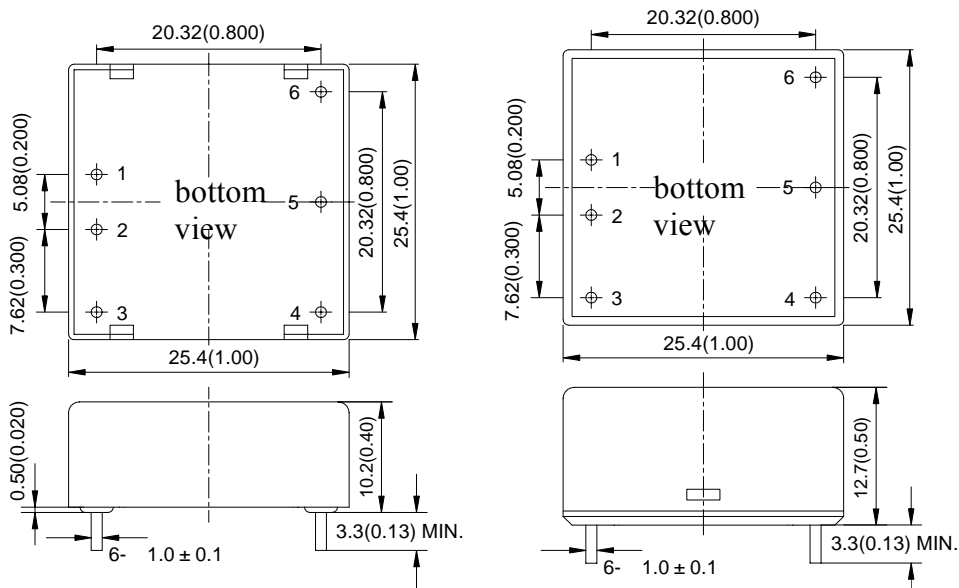
#### Contact Information

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#### Outline Diagram



Pin	Sign	Function
1	+Vin	Positive Input Voltage
2	-Vin	Negative Input Voltage
3	CNT	Remote Control Pin
4	-Vo	Negative Output Voltage
5	TRIM	Output voltage adjust
6	+Vo	Positive Output Voltage

Case material: Aluminum shell plastic cover;black;

Pin: copper with gold plating

Notes: all dimensions in mm(inches)

Tolerance:X.X±0.5(X.XX±0.02)

X.XX±0.25(X.XX±0.010)

**Performance Specifications And Ordering Guide**

Unless otherwise specified, all values are given at: 25 °C, one standard atmosphere pressure, pure resistive load and basic connection.

Model	Output				Input	Efficiency
	Voltage(V)	Current(A)	Ripple and Noise(mV)	Capacitive load(uF)	Range-DC (Volts)	
RDR Series						
RDR20-110BS5	5	4.00	75	4700	34~160	89%
RDR20-110BS12	12	1.67	100	3300	34~160	87%
RDR20-110BS15	15	1.33	100	2200	34~160	88%
RDR20-110BS24	24	0.82	200	1000	34~160	88%

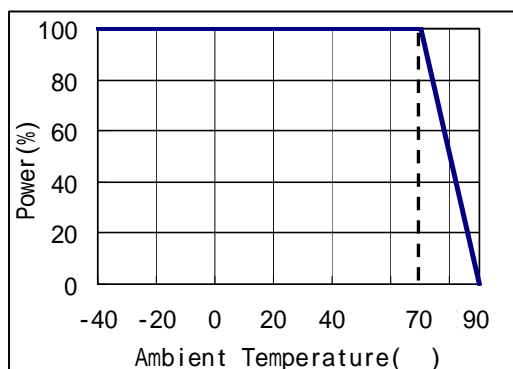
- 1 ) with suffix "T", height 10.2mm;
- 2 ) Other Models please contact us.

**Performance/Functional Specifications**

Input		General	
<b>Input Voltage:</b>	See Ordering Guide	<b>Isolation Voltage:</b>	3000Vdc/1min/1mA (Input-Output)
<b>Output</b>		<b>Switching Frequency:</b>	300kHz(typ.)
<b>Voltage Accuracy:</b>	±1% Vo1	<b>MTBF :</b>	2×10 <sup>6</sup> h(Bellcore tr332)
<b>Line Regulation:</b>	±0.2%max.	<b>Temperature Coefficient:</b>	±0.02% per °C (Max)
<b>Load Regulation:</b>	±0.5% max.	<b>Case Temperature:</b>	-40 ~ +105 (Industry)
<b>Ripple and Noise:</b>	See Ordering Guide	<b>Storage Temperature:</b>	-55 ~ +125
<b>Efficiency:</b>	See Ordering Guide	<b>Relative Humidity:</b>	10%~90%
<b>Transient Response Recovery Time(μs):</b>	see respective data sheet	<b>Short-circuit Protection:</b>	Hiccup mode, automatic recovery
<b>Transient Response Voltage Deviation (%) :</b>	see respective data sheet	<b>Isolation Resistance:</b>	50MΩmin(500Vdc,90%RH)
<b>Start-up Delay Time:</b>	see respective data sheet	<b>Manual Soldering:</b>	425 max (5s Max)
<b>Rise Time:</b>	see respective data sheet	<b>Wave Soldering:</b>	255 max (10s Max)

**Characteristic Curves**

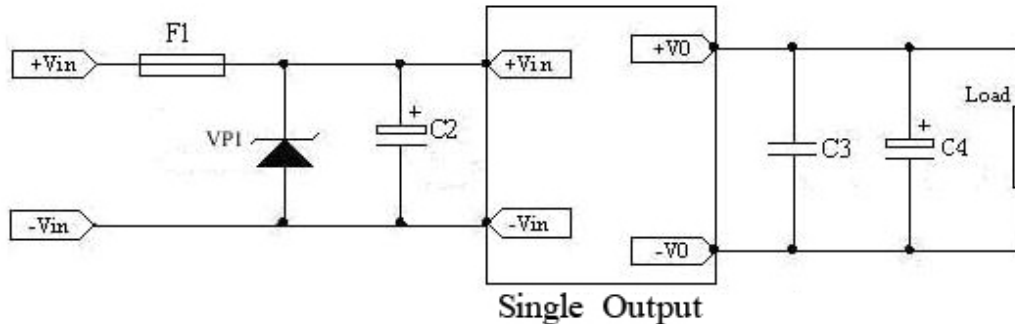
**Derating**



**RDR20 Series with heatsink**

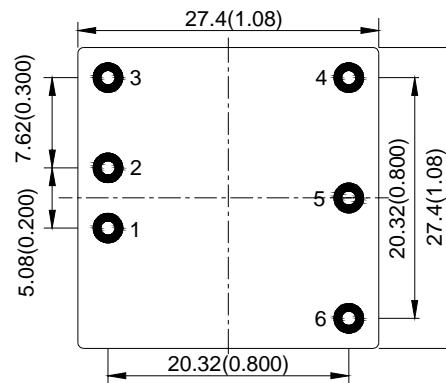
**Design Considerations**

**Basic Connection**



Notes: Please see the application information followed for the further information.

**Recommended Layout**



RDR Series	
NO.	Recommendation & Notes
Pad Design	Pad holes :1.2mm , pad diameter including hol:2.5mm
Mounting Direction	heatsink face up, for natural convection
Safety	Isolated Converters, care to the spacing between input and output
Electrical	The Vin(-) and Vo(-) planes should be placed under of the converter separately. Avoid routing sensitive signal or high disturbance AC signal under the converter

**Thermal Consideration**

The converters operate in a variety of thermal environments; however, sufficient cooling should be provided to ensure reliable operation of the unit. Heat is removed by conduction, convection and radiation to the surrounding environment.

When ambient temperature is higher than the permitted operating, the derating curves should be referred or external heat dissipation measures. Forced air cooling or heatsink, should be used. The air tunnel should be considered for forced air cooling, to avoid heated air be hindered or forming swirl; when heatsink used, it should be attached the converter closely, through double-side thermal conductivity

insulation adhesive or thermal conductivity silicone for heat exchange.

**Safety Consideration**

The module, as one component for the end user, should be installed into the equipment. It is required to meet safety requirements in the system design.

To avoiding fire and be protected when short circuit occurred, it is recommended that a fast blow fuse with rating 1.5 to 2.5 times of converter's continuous input peak current is used in series at the input terminal.(Inrush current suppression circuit is

required for greater filter capacitance at input terminal, or it will result in the misoperation of the fuse ).

### **Series and Parallel Operation**

The converters should not be paralleled directly to increase power, but they can be paralleled each other through o-ring switches or diodes. Make sure that every converter's maximum load current should not exceed the rated current at anytime if they are paralleled without using external current sharing circuits. The converters can operate in series. To prevent against start-up failure due to start up time difference,

SBD with low voltage difference can be paralleled at the output pins(SBD negative terminal connect to the positive pin of the output) for each converter.

### **Cleaning Notice**

The converter case is not a hermetically-sealed construction, a sufficient drying process is required after the converter cleaning, make sure the liquid congregated is removed, or it will damage the converter or degradation of performance

After surface treatment, the appearance of the converter may be affected by the organic solvent, protection measures should be taken before cleaning when appearance is concerned.

### **Quality Statement**

The converters are manufactured in accordance with ISO 9001 system requirements, in compliant with YD/T1376-2005, and are monitored 100% by auto-testing system, 100% burn in.

The warranty for the converters is 5-year.