

**RT9-RD30D1**

**SMD - DIP 16 Package**

- 2:1 Wide input voltage range
- Operating temperature: -40°C ~ +85°C
- 1500VDC isolation
- No heatsink required
- Internal SMD construction
- MTBF>1,000,000 hours
- Short circuit protection (automatic recovery)
- Industry standard pinout
- RoHS Compliance



RoHS

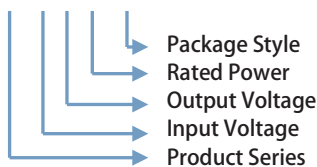
**APPLICATIONS**

The RT9-RD30D1 & RT9-R30D1 series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board. These products apply to:

- 1) Where the voltage of the input power supply is wide range (voltage range d 2:1);
- 2) Where isolation is necessary between input and output (isolation voltage d1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

**MODEL SELECTION**

**RT9-0505RD30D1**



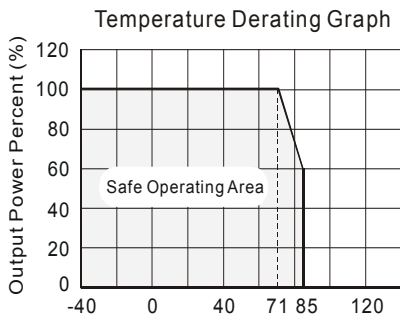
PRODUCT PROGRAM							
Part Number	Input			Output			Efficiency (% , Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max**		Max.	Min.	
RT9-0505RD30D1	5	4.5-9	11	±5	±300	±30	72
RT9-0515RD30D1				±15	±100	±10	75
RT9-1205RD30D1	12	9-18	22	±5	±300	±30	76
RT9-1212RD30D1				±12	±125	±13	79
RT9-1215RD30D1				±15	±100	±10	79
RT9-2405RD30D1	24	18-36	40	±5	±300	±30	76
RT9-2412RD30D1				±12	±125	±13	79
RT9-2415RD30D1				±15	±100	±10	79
RT9-4812RD30D1	48	36-72	80	±12	±125	±13	79

Note: \*\*Input voltage can't exceed this value, or will cause the permanent damage

COMMON SPECIFICATIONS					
Item	Test conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	° C
Storage temperature		-55		125	
Temp. rise at full load			15		
Lead temperature	1.5mm from case for 10 seconds			300	
Short circuit protection		Continuous, automatic recovery			
Cooling		Free air convection			
Package material		Epoxy Resin (UL94-V0)			
MTBF		1000			k hours
Weight			5.2		g
Reflow Soldering Temperature					

**RT9-RD30D1**

**TYPICAL TEMPERATUR CURVE**



ISOLATION SPECIFICATIONS					
Item	Test conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1mA	1500			VDC
Isolation	Test at 500VDC	1000			M $\odot$
Isolation	Input/output, 100KHz/1V		000		pF

OUTPUT SPECIFICATIONS					
Item	Test conditions	Min.	Typ.	Max.	Units
Output power	See above products program	0.3		3	W
Positive voltage	Refer to recommended		$\pm 1$	$\pm 3$	%
Negative	Refer to recommended		$\pm 3$	$\pm 5$	
Load regulation	From 10% to 100% load		$\pm 0.5$	$\pm 1^*$	
Line regulation	Input voltage from low to		$\pm 0.2$	$\pm 0.5$	
Temperature	Refer to recommended			$\pm 0.03$	%/ $^{\circ}$ C
Output ripple	20MHz Bandwidth		35	100	mVp-p
Switching	100% load, nominal input		300		kHz

\*Dual output models unbalanced load:  $\pm 5\%$ . \*\*Test ripple and noise by parallel cable method.

**APPLICATION NOTE**

**Requirement On Output Load**

In order to ensure the product operate efficiently and reliably, in addition to a max load (namely full load), a minimum load is specified for this kind of DC/DC converter. Make sure the specified range of input voltage is not exceeded, the minimum output load **no less than 10% load**. If the actual load is less than the specified minimum load, the output ripple may increase sharply while its efficiency and reliability will reduce greatly. If the actual output power is very small, please add an appropriate resistor as extra loading, or contact our company for other lower output power products.

**Recommended Circuit**

All the RT9-RD30D1 series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load (See Figure 1).

If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

General: Cin: 5V&12V 100 $\mu$ F  
24V&48V 10 $\mu$ F~47 $\mu$ F  
Cout: 10 $\mu$ F/100mA

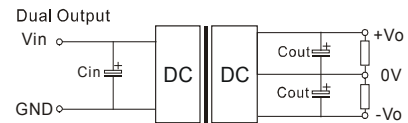
**Input Current**

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the flash startup average current of this kind of DC/DC module (Figure 2).

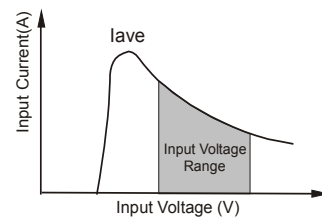
General: Vin:05V Iave =1334mA  
Vin:12V Iave =648mA  
Vin:24V Iave =316mA  
Vin:48V Iave =158mA

No parallel connection or plug and play

**RECOMMENDED CIRCUIT**



(Figure 1)

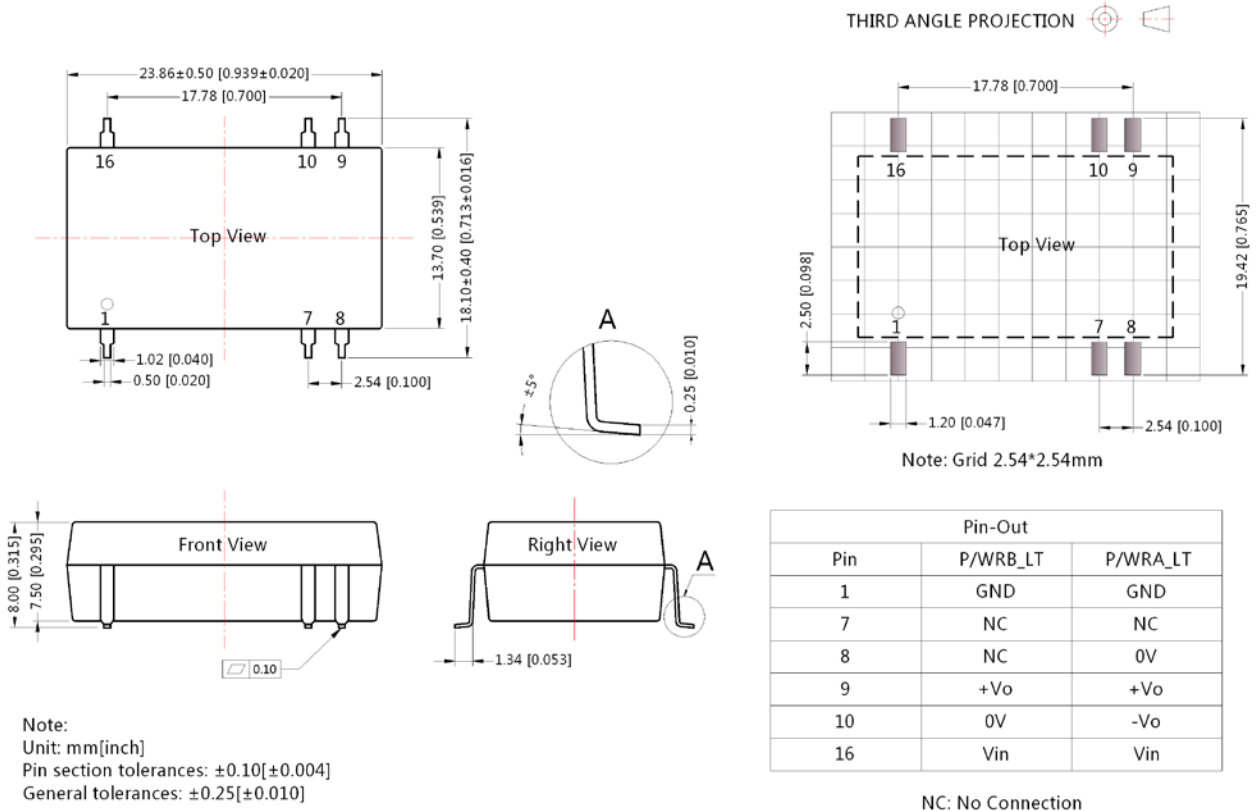


(Figure 2)

**Output External Capacitor Table (Table 1)**

Single Vout	Cout ( $\mu$ F)	Dual Vout (VDC)	Cout ( $\mu$ F)
5	1000	$\pm 5$	680
12	470	$\pm 12$	330
15	330	$\pm 15$	220

**RT9-RD30D1**



2HLT2W0001-A1

Recommend to use module with more than 10% load, if not, the ripple of the product may exceeds the specification, but does not affect the reliability of the product;  
Operation under 10% load will not damage the converter; However, they may not meet all specification listed.  
Capacitor MAX load tested at input voltage range and full load.  
All specifications measured at  $T_a=25^\circ\text{C}$ , humidity<75%, nominal input voltage and rated output load unless otherwise specified.  
Only typical models listed, other models may be different, please contact our technical person for more details.  
In this datasheet, all the test methods of indications are based on corporate standards.

*The models listed here are just standard type. If you need a product with special specification or you have questions regarding packing standards (Tube oder Tape/Reel) as well as application support, please contact our specialists: sales@rsg-electronic.de or +49 69-984047-41/-28*