



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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### 8 Watts

- Wide Input Range for Railway Applications
- Single and Dual Outputs
- DIP24 Package
- -40 °C to +85 °C Operation
- Full Load at 70 °C Ambient
- 3000 VDC Isolation
- MTBF >800 kHrs
- 3 Year Warranty
- EN50155 Approval for Railway Applications
- EN50121-3-2 EMC for Railway Applications



#### Dimensions:

##### RDD:

1.25 x 0.80 x 0.40" (31.8 x 20.3 x 10.2 mm)

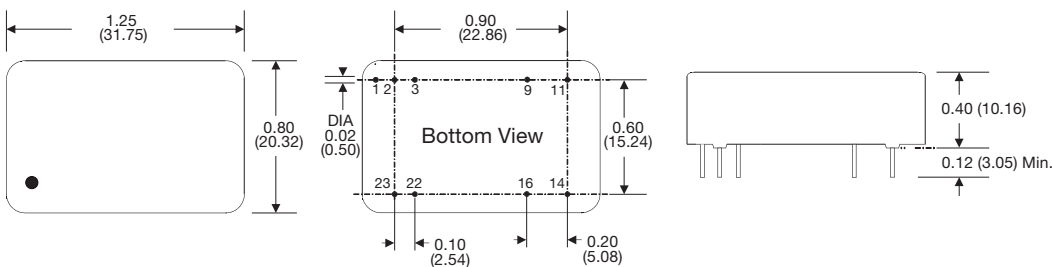
### Models & Ratings

Input Voltage	Output Voltage	Output Current	Overvoltage level	Input current <sup>(1)</sup>		Maximum capacitive load	Efficiency <sup>(2)</sup>	Model Number
				No Load	Full Load			
13-70 V	3V3	2400 mA	3.9 V	30 mA	398 mA	1330 µF	83%	RDD0824S3V3
	5 V	1600 mA	6.2 V	20 mA	388 mA	1330 µF	86%	RDD0824S05
	12 V	665 mA	15 V	10 mA	392 mA	330 µF	85%	RDD0824S12
	15 V	535 mA	18 V	10 mA	389 mA	220 µF	86%	RDD0824S15
	±5 V	±800 mA	±6.2 V	10 mA	402 mA	±900 µF	83%	RDD0824D05
	±12 V	±335 mA	±15 V	10 mA	395 mA	±220 µF	85%	RDD0824D12
	±15 V	±265 mA	±18 V	10 mA	386 mA	±100 µF	86%	RDD0824D15
42-176 V	3V3	2400 mA	3.9 V	10 mA	89 mA	1330 µF	81%	RDD08110S3V3
	5 V	1600 mA	6.2 V	10 mA	87 mA	1330 µF	84%	RDD08110S05
	12 V	665 mA	15 V	5 mA	87 mA	330 µF	84%	RDD08110S12
	15 V	535 mA	18 V	5 mA	88 mA	220 µF	83%	RDD08110S15
	±5 V	±800 mA	±6.2 V	5 mA	91 mA	±900 µF	80%	RDD08110D05
	±12 V	±335 mA	±15 V	5 mA	90 mA	±220 µF	82%	RDD08110D12
	±15 V	±265 mA	±18 V	5 mA	88 mA	±100 µF	83%	RDD08110D15

### Notes

1. Input currents measured at nominal input voltage.
2. Typical value at full load and nominal input

### Mechanical Details



### Pin Connections

Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

### Notes

1. All dimensions are in inches (mm)
2. Weight: 0.039 lbs (18 g) approx.
3. Pin diameter: 0.02±0.002 (0.5±0.05)
4. Pin pitch tolerance: ±0.014 (±0.35)
5. Case tolerance: ±0.02 (±0.5)

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	13		70	VDC	24 V nominal
	42		176	VDC	110 V nominal
Input Filter	Pi type				
Input Reflected Ripple Current		20		mA pk-pk	Through 12 $\mu$ H inductor and 33 $\mu$ F capacitor
Input Surge			100	VDC for 1000 ms	24 V models
			185	VDC for 1000 ms	110 V models

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		15	VDC	See Models and Ratings table
Initial Set Accuracy			$\pm 1$	%	At 70% load
Minimum Load	0			%	Minimum load required to meet specification. Operation at no load will not cause damage.
Line Regulation			$\pm 0.5$	%	
Load Regulation			$\pm 0.5$	%	From 0% to full load
Cross Regulation			$\pm 5$	%	On dual output models, when one output is at 25% load and other is varied from no load to full load
Ripple & Noise			75	mV pk-pk	20 MHz bandwidth. Measured using 0.1 $\mu$ F ceramic capacitor
Short Circuit Protection					Continuous hiccup mode, with auto recovery
Maximum Capacitive Load					See Models and Ratings table
Temperature Coefficient			0.02	%/ $^{\circ}$ C	
Overload Protection		160		%	Of nominal output current
Overvoltage Protection					See Models and Ratings table
Remote On/Off	Output turns off if remote on/off (pin 1) is shorted to $-V_{in}$ (pin 2,3) Output is on if remote on/off (pin 1) is open or $>3$ V				

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	80		86	%	See Models and Ratings table
Isolation: Input to Output	3000			VDC	
Switching Frequency		330/220		kHz	24 V / 110 V models
Isolation Resistance	$10^9$			$\Omega$	
Isolation Capacitance		1000		pF	
Power Density			14	Win <sup>3</sup>	
Mean Time Between Failure	800			kHrs	MIL-HDBK-217F, +25 $^{\circ}$ C GB
Weight		0.039 (18)		lb (g)	

### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-40		+85	$^{\circ}$ C	Derate from 100% load at +70 $^{\circ}$ C to 50% at +85 $^{\circ}$ C
Storage Temperature	-55		+125	$^{\circ}$ C	
Case Temperature			+105	$^{\circ}$ C	
Humidity			95	%RH	Non-condensing
Cooling					Natural convection

### Safety Approvals

Safety Agency	Safety Standard	
EN	EN50551	Railway Applications



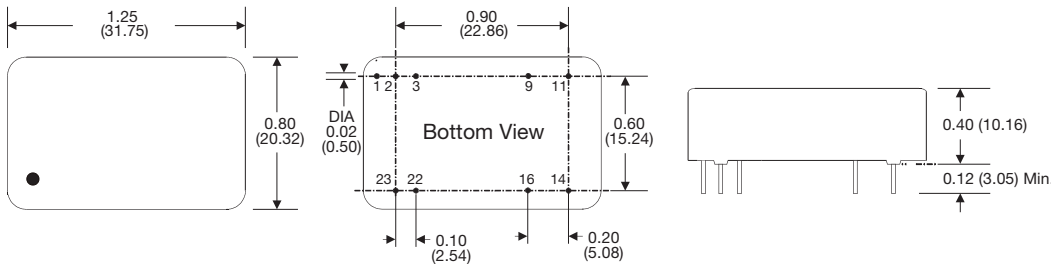
### EMC: Emissions

Phenomenon	Standard	Test Level	Notes & Conditions
Conducted	EN550121-3-2	0.15-0.50 MHz, 99 dB $\mu$ V 0.50-30.0 MHz, 93 dB $\mu$ V	RDD0824 models also meet EN55022 Class A. See application note to meet EN55022 Class A for RDD08110 models.
Radiated		30.0-230.0 MHz, 40 dB $\mu$ V 230.0-1000.0 MHz, 47 dB $\mu$ V	

### EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD Immunity	EN550121-3-2	Air $\pm$ 8 kV, Contact $\pm$ 6 kV	A	
Radiated Immunity	EN550121-3-2	20 Vrms/m	A	
EFT/Burst	EN550121-3-2	2 kV	A	External input capacitor required, see application note
Surges	EN550121-3-2	2 kV	A	External input capacitor required, see application note
Conducted Immunity	EN550121-3-2	10 V	A	
Magnetic Fields	EN61000-4-8	10 A/m	A	

### Mechanical Details



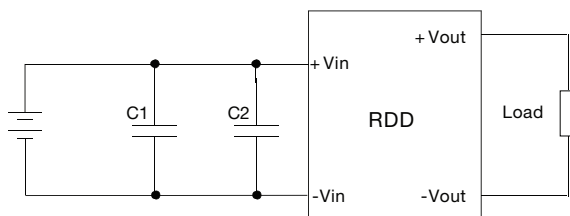
Pin Connections		
Pin	Single	Dual
1	Remote On/Off	Remote On/Off
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3	-Vin	-Vin
9	No Pin	Common
11	N.C.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

#### Notes

- All dimensions are in inches (mm)
- Weight: 0.039 lbs (18 g) approx.
- Pin diameter:  $0.02 \pm 0.002$  ( $0.5 \pm 0.05$ )
- Pin pitch tolerance:  $\pm 0.014$  ( $\pm 0.35$ )
- Case tolerance:  $\pm 0.02$  ( $\pm 0.5$ )

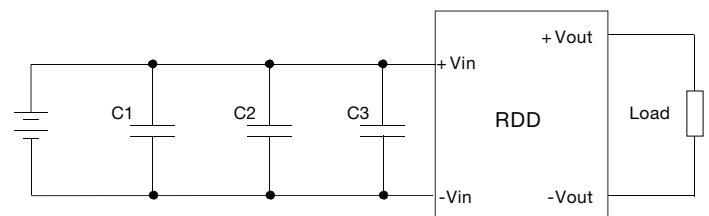
### Application Note

#### External Filter for Surge and EFT



For RDD0824 models, C1 = 330  $\mu$ F, 100 V and C2 not fitted  
For RDD08110 models, C1 and C2 = 100  $\mu$ F, 250 V

#### EMI Filter for RDD08110 models



C1, C2, & C3 are 1  $\mu$ F, 250 V multilayer ceramic Chip Capacitor, placed as close as possible to the input pins