

# 1R SERIES

1W~1.5W REGULATED

# DANUBE

## FEATURES

- SINGLE IN LINE PACKAGE
- UP TO 1W REGULATED OUTPUT POWER
- 100% BURNED IN
- HIGH EFFICIENCY
- INTERNAL FILTERING
- LOW NOISE
- NO EXTERNAL COMPONENTS REQUIRED
- UL 94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



OUTPUT SPECIFICATIONS		INPUT SPECIFICATIONS	
Voltage Setpoint Accuracy	+/-3% max	Input Voltage Range	+/-10% max
Temperature Coefficient	+/-0.05%/°C	Input Filter	Capacitor Typ
Ripple & Noise(20MHz BW) <sup>1</sup>	100mVp-p max	Protection	Fuse Recommended
Line Regulation <sup>2</sup>	+/-1% max	<b>GENERAL SPECIFICATIONS</b>	
Load Regulation <sup>3</sup>	+/-1% max	Efficiency	58% min
Minimum Load	10% of Full Load	Isolation Voltage <sup>4</sup>	1500VDC min
Short Circuit Protection	Current Limit Protection	Isolation Resistance	10 <sup>9</sup> ohms min
Short Circuit Restart	Automatic	Isolation Capacitance	80pF max
Transient Response <sup>5</sup>	200uS max	Switching Frequency	50KHz min
<b>ENVIRONMENTAL SPECIFICATIONS</b>		MTBF <sup>6</sup>	>800,000 Hours
Operating Temperature	-25 °C to +71°C	Weight	7.0g Typ
Storage Temperature	-55 °C to +125°C	Case Material	Non-Conductive Plastic
Humidity	95% max	Case Size	31.8mm*8.6mm*14.5mm
Cooling	Free-Air Convection	Conducted Emissions	EN55022 Class A
		Radiated Emissions	EN55022 Class A

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD, AND 25 °C UNLESS OTHERWISE NOTED.

<sup>1</sup> Measured with 1uF ceramic capacitor connect to the output pins.

<sup>2</sup> High Line to Low Line.

<sup>3</sup> Load Regulation is for output load current change from 10% to 100%.

<sup>4</sup> For 10 seconds.

<sup>5</sup> 25% Step Load Change.

<sup>6</sup> MIL-HDBK-217F @25 °C, Ground Benign.

● **SELECTION GUIDE(1)**  
**1W~1.5W OUTPUT**

MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT <sup>7</sup> CURRENT(mA)		EFF (%) <sup>8</sup>	ISOLATION (VDC)
				FULL LOAD	NO LOAD		
				1RS-0505	4.5-5.5		
1RS-0509	4.5-5.5	9	111	333	22	60	1500
1RS-0512	4.5-5.5	12	84	343	50	59	1500
1RS-0512-1.5W	4.5-5.5	12	125	490	60	61	1500
1RS-0515	4.5-5.5	15	67	322	21	62	1500
1RD-0505	4.5-5.5	+/-5	+/-100	322	23	62	1500
1RD-0512	4.5-5.5	+/-12	+/-42	322	45	62	1500
1RD-0512-1.5W	4.5-5.5	+/-12	+/-63	486	50	62	1500
1RD-0515	4.5-5.5	+/-15	+/-34	322	21	62	1500
1RS-1205	10.8-13.2	5	200	124	15	67	1500
1RS-1209	10.8-13.2	9	111	134	15	62	1500
1RS-1212	10.8-13.2	12	84	130	15	64	1500
1RS-1215	10.8-13.2	15	67	132	15	63	1500
1RD-1205	10.8-13.2	+/-5	+/-100	124	15	67	1500
1RD-1212	10.8-13.2	+/-12	+/-42	130	15	64	1500
1RD-1215	10.8-13.2	+/-15	+/-34	132	15	63	1500
1RS-2405	21.6-26.4	5	200	62	7	67	1500
1RS-2409	21.6-26.4	9	111	64	6	65	1500
1RS-2412	21.6-26.4	12	84	60	6	70	1500
1RS-2415	21.6-26.4	15	67	60	6	70	1500
1RD-2405	21.6-26.4	+/-5	+/-100	61	7	68	1500
1RD-2412	21.6-26.4	+/-12	+/-42	66	6	64	1500
1RD-2415	21.6-26.4	+/-15	+/-34	60	6	70	1500

*Note: Other input to output voltages may be available. Please contact factory.*

<sup>7</sup> NOMINAL INPUT VOLTAGE.

<sup>8</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

● **SELECTION GUIDE(2)**  
**0.5W~1W OUTPUT**

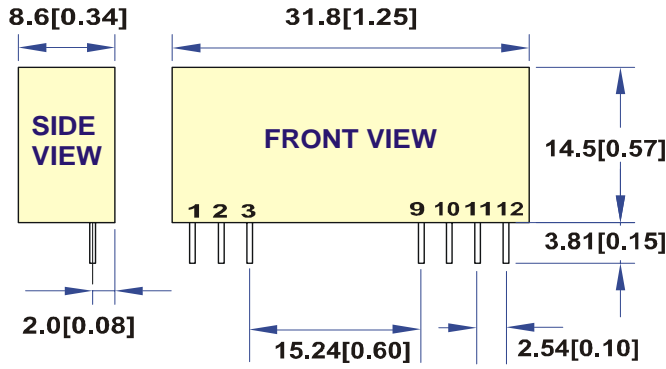
MODEL NUMBER	INPUT VOLTAGE (VDC)	OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT (mA)	INPUT <sup>9</sup>		EFF (%) <sup>10</sup>	ISOLATION (VDC)	PACKAGE
				CURRENT(mA)				
				FULL LOAD	NO LOAD			
1RS-0505Y-0.5W	4.5-5.5	5	100	156	22	64	1500	Y
1RS-0505Y	4.5-5.5	5	200	322	23	62	1500	Y
1RS-0509Y	4.5-5.5	9	111	333	22	60	1500	Y
1RS-0512Y	4.5-5.5	12	84	322	45	62	1500	Y
1RS-0515Y	4.5-5.5	15	67	322	21	62	1500	Y
1RS-1205Y	10.8-13.2	5	200	124	15	67	1500	Y
1RS-1209Y	10.8-13.2	9	111	134	15	62	1500	Y
1RS-1212Y	10.8-13.2	12	84	130	15	64	1500	Y
1RS-1215Y	10.8-13.2	15	67	132	15	63	1500	Y
1RS-2405Y	21.6-26.4	5	200	62	7	67	1500	Y
1RS-2409Y	21.6-26.4	9	111	64	6	65	1500	Y
1RS-2412Y	21.6-26.4	12	84	60	6	70	1500	Y
1RS-2415Y	21.6-26.4	15	67	60	6	70	1500	Y

*Note: Other input to output voltages may be available. Please contact factory.*

<sup>9</sup> NOMINAL INPUT VOLTAGE.

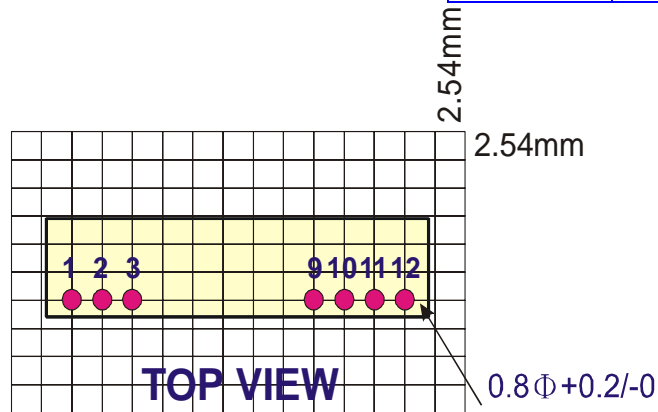
<sup>10</sup> NOMINAL INPUT VOLTAGE, FULL LOAD.

● **MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS**

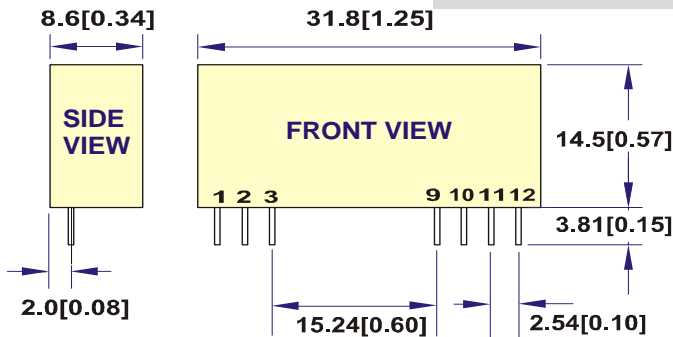


PIN	SINGLE	DUAL
1	+Vin	+Vin
2	NC	-Vout
3	NC	Common
9	NC	NC
10	-Vout	Common
11	+Vout	+Vout
12	-Vin	-Vin

All dimensions are in millimeters[inches]

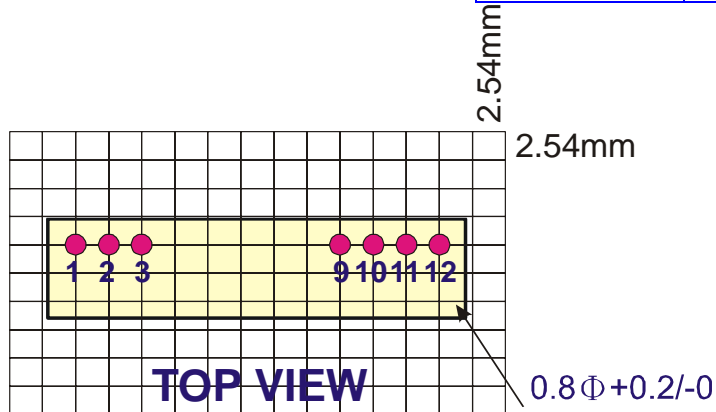


**PACKAGE "Y"**

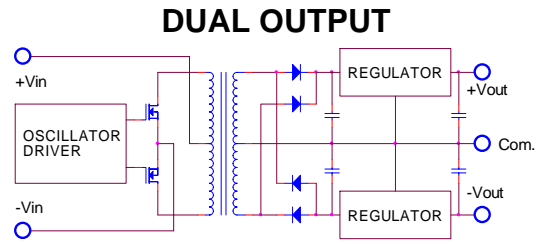
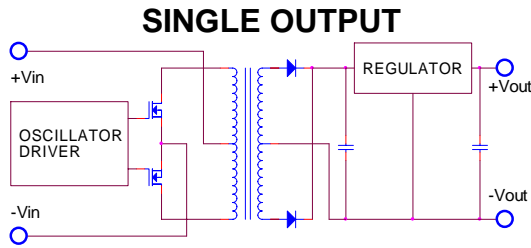


PIN	SINGLE
1	+Vin
2	NC
3	NC
9	NC
10	-Vout
11	+Vout
12	-Vin

All dimensions are in millimeters[inches]

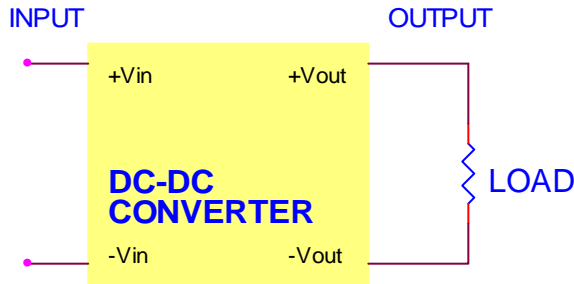


## ● SIMPLIFIED SCHEMATIC

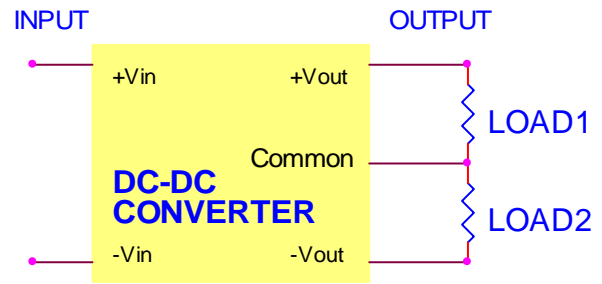


## ● TYPICAL APPLICATIONS

### SINGLE OUTPUT



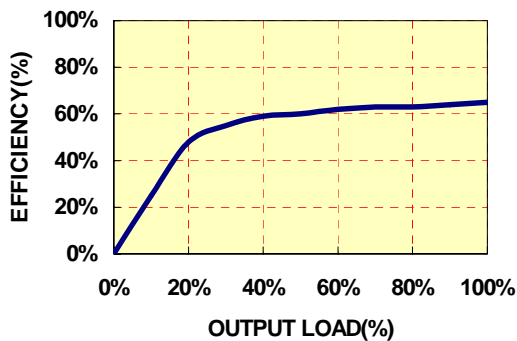
### DUAL OUTPUT



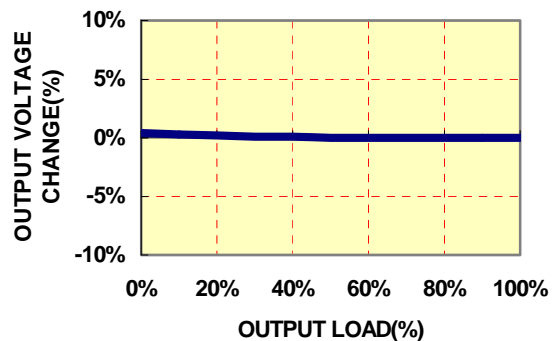
## ● TYPICAL PERFORMANCE CURVES

Specifications typical at  $T_a=25^\circ\text{C}$ , nominal input voltage, rated output current unless otherwise specified.

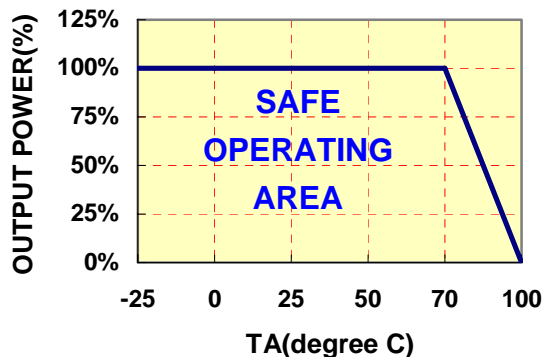
### OUTPUT LOAD VS EFFICIENCY



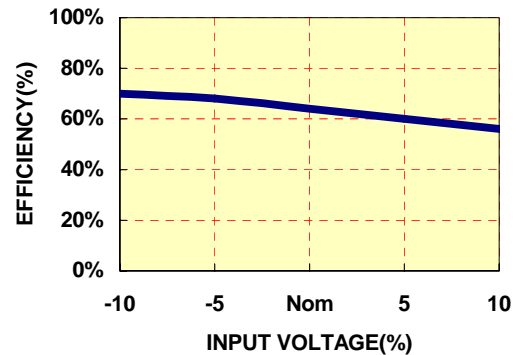
### OUTPUT LOAD VS OUTPUT VOLTAGE




### TEMPERATURE DERATING



### INPUT VOLTAGE VS EFFICIENCY



## ● INPUT FUSE SELECTION GUIDE

4.5-5.5V INPUT VOLTAGE(VDC)	10.8-13.2V INPUT VOLTAGE(VDC)	21.6-26.4V INPUT VOLTAGE(VDC)
1000mA Slow-Blow Type	250mA Slow-Blow Type	100mA Slow-Blow Type
		

**Note:** Certain applications may require the installation of external fuse in front of the input.

### 1R SERIES APPLICATION NOTES:

#### EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the 1R series.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 100KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

Additional output capacitance may be added for increased filtering, but should not exceed 220uF.

We Can Offer EMC-Filter According To EN55011/22 Class B.

#### Negative Outputs:

A negative output voltage may be obtained by connecting the +OUT to circuit ground and connecting -OUT as the negative output.

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### FOR MORE INFORMATION CALL:

**Danube Enterprise Co., Ltd.**

Tel: 886-7-3755165

Fax: 886-7-3755330

E-mail: danube@ms10.hinet.net

Home Page

<http://www.danube.com.tw>

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