

7.5 to 10 Watt

24 Pin DIL Package V



2:1 Input Range

- o Wide Input Range
- o Pi Input Filter
- o Regulated Outputs
- o Continuous Short Circuit Protection
- o Standard 1500 VDC I/O-Isolation
- o Very High Efficiency up to 89%
- o No Tantalum Capacitor Inside



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		%EFF	CAPACITOR LOAD
				NO LOAD	FULL LOAD		
10VRS12W2.5LC	9-18 VDC	2.5 VDC	3000 mA	40 mA	735 mA	85	3000 µF
10VRS12W3.3LC		3.3 VDC	3000 mA	50 mA	971 mA	85	
10VRS12W5LC		5 VDC	2000 mA	60 mA	947 mA	88	2000 µF
10VRS12W12LC		12 VDC	835 mA	40 mA	949 mA	88	835 µF
10VRS12W15LC		15 VDC	666 mA		946 mA	88	666 µF
10VRD12W12LC		±12 VDC	±416 mA	30 mA	956 mA	87	416 µF
10VRD12W15LC		±15 VDC	±333 mA		968 mA	86	333 µF
10VRS24W2.5LC		18-36 VDC	2.5 VDC	3000 mA	30 mA	368 mA	85
10VRS24W3.3LC	3.3 VDC		3000 mA	480 mA		86	
10VRS24W5LC	5 VDC		2000 mA	473 mA		88	2000 µF
10VRS24W12LC	12 VDC		835 mA	469 mA		89	835 µF
10VRS24W15LC	15 VDC		666 mA	473 mA		88	666 µF
10VRD24W12LC	±12 VDC		±416 mA	20 mA	467 mA	89	416 µF
10VRD24W15LC	±15 VDC		±333 mA		478 mA	87	333 µF
10VRS48W2.5LC	36-75 VDC		2.5 VDC	3000 mA	15 mA	184 mA	85
10VRS48W3.3LC		3.3 VDC	3000 mA	243 mA		85	
10VRS48W5LC		5 VDC	2000 mA	237 mA		88	2000 µF
10VRS48W12LC		12 VDC	835 mA	235 mA		89	835 µF
10VRS48W15LC		15 VDC	666 mA	237 mA		88	666 µF
10VRD48W12LC		±12 VDC	±416 mA	10 mA	236 mA	88	416 µF
10VRD48W15LC		±15 VDC	±333 mA		242 mA	86	333 µF

SPECIFICATIONS

All Specifications Typical At Nominal Line, Full Load, and 25°C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		2:1
Input Surge Voltage (100 ms max.)	12 V	25 VDC max.
	24 V	50 VDC max.
	48 V	100 VDC max.
Under Voltage lockout	12 Vin Power up	8.8 V
	12 Vin Power down	8 V
	24 Vin Power up	17 V
	24 Vin Power down	16 V
	48 Vin Power up	34 V
	48 Vin Power down	32 V
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy		±1.5% max.
Voltage Balance (Dual)		±2.0% max.
Transient Response:	75%-100% Step Load Change	
	Error Band	+5% Vout nominal
	Recovery Time	<300 µs
Temperature Coefficient		±0.05%/°C
Ripple & Noise 20MHz BW	Single	75 mV p-p max.
	Dual	100 mV p-p max.
Short Circuit Protection		Continuous
Line Regulation ¹⁾	Single	±0.2% max.
	Dual	±0.5% max.
Load Regulation ²⁾	Single	±0.5% max.
	Dual	±1.0% max.
Output Short Circuit Protection		Continuous
Over Voltage Protection (Zener Diode Clamp, Single Output Only)	2.5, 3.3 V	3.9 V
	5 V	6.2 V
	12 V	15 V
	15 V	18 V
Start Up Time	10VRS24W2.5LC	120 ms
	(10VRS48W3.3LC)	
	10VRS24W5LC	60 ms
	(10VRS48W12LC)	
	Others	8 ms

NOTE:

- Line Regulation measured from High Line to Low Line
- Load Regulation Output measured from Full Load to 10% Load

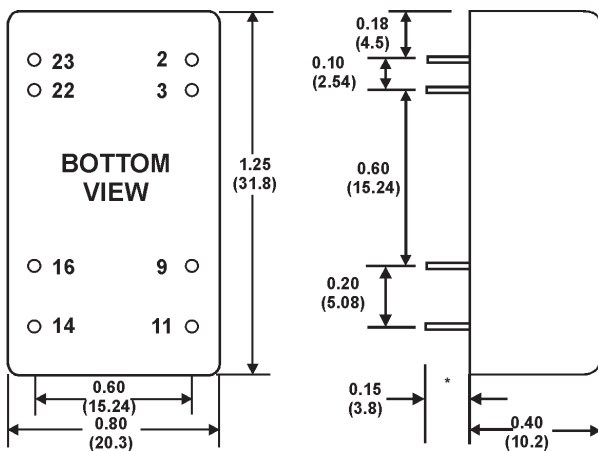
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GENERAL SPECIFICATION

Efficiency	see table	
Isolation Voltage	Input/Output	1500 VDC min.
Isolation Resistance	10 ⁹ Mohm min.	
Isolation Capacitance	1000 pF	
Switching Frequency	380 kHz	
Operating Temperature Range	-40°C to +85°C	
Storage Temperature Range	-40°C to +125°C	
Case Temperature	+100°C max.	
Derating Above +71°C	Linearly to Zero power at 100°C	
Recommended Reflow Soldering Pb-free*	see diagram	
Cooling	Natural Convection	
Humidity	95% RH max. Non condensing	
MTBF (MIL-STD-217F, GB, 25°C, Full Load)	1150 khrs	
Dimensions	1.25x0.8x0.4 Inches (31.8x20.3x10.2 mm)	
Case Material	Black Coated Copper with Non-Conductive Base	
Weight	18.4 g	

*) We do not recommend vapor phase soldering!

MECHANICAL SPECIFICATIONS**CASE "V"**

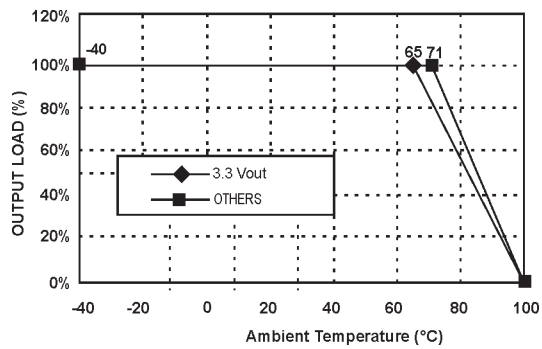
Pin Size is 0.020 Inch (0.5 mm) DIA
 All Dimensions in Inches (mm).
 Tolerance x.xx=±0.02, x.xxx=±0.010 Inches
 x.x=±0.5, x.xx=±0.25 mm

PIN CONNECTIONS

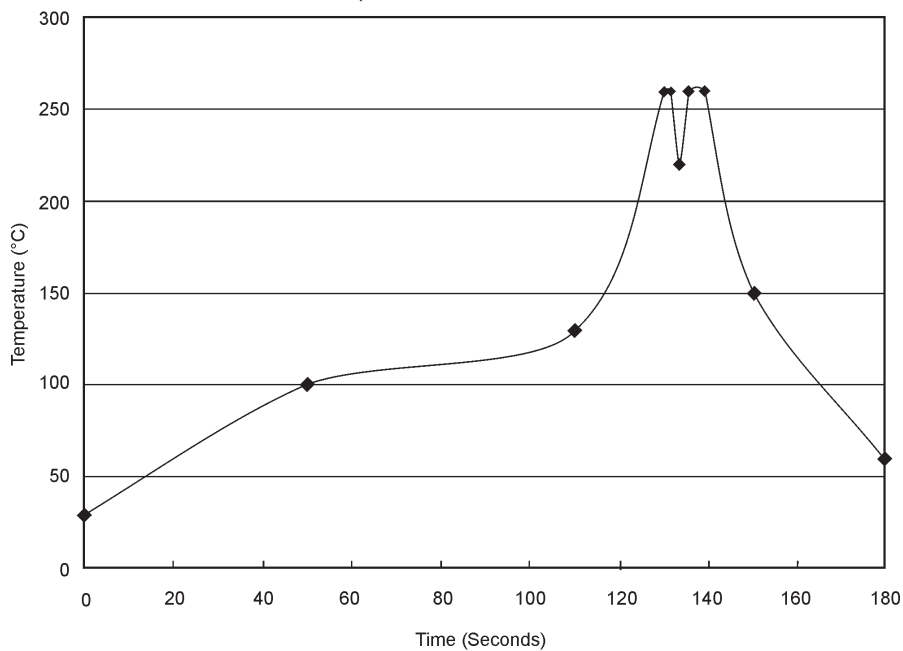
PIN	SINGLE	Dual
2 & 3	-INPUT	-INPUT
9	NO PIN	COMMON
10	NO PIN	NO PIN
11	NOT CONNECTED	-OUTPUT
14	+OUTPUT	+OUTPUT
16	-OUTPUT	COMMON
22 & 23	+INPUT	+INPUT

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APPLICATION NOTES & DIAGRAMS**Derating Diagram****Lead Free Wave Soldering Profile**

(Soldering Material: Sn/Cu/Ni)



1. Ramp up rate during preheat: 1.5°C/Sec (From 50°C to 100°C)
2. Soaking temperature: 0.5°C/Sec (From 100°C to 130°C), 60±20 seconds
3. Peak temperature: 260°C, above 250°C 3-6 Seconds
4. Ramp up rate during cooling: -10.0°C/Sec (From 260°C to 150°C)

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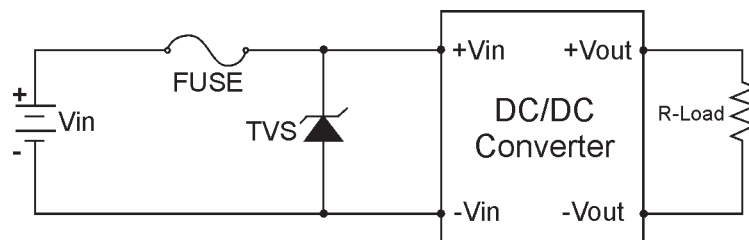
SAFETY & EMC

Output Capacitance

The 10VRS/D_W_LC series converters provide unconditional stability with or without external capacitors. For good transient response low ESR output capacitors should be located close to the point of load. These series converters are designed to work with load capacitance to see technical specifications.

Input Fusing and Safety Considerations

The 10VRS/D_W_LC series converters have not an internal fuse. However, to achieve maximum safety and system protection, always use an input line fuse. We recommended a time delay fuse 3 A for 12 Vin, 2 A for 24 Vin models and 1 A for 48 Vin models. Circuit is recommended by a Transient Voltage Suppressor diode across the input terminal to protect the unit against surge or spike voltage and input reverse voltage.

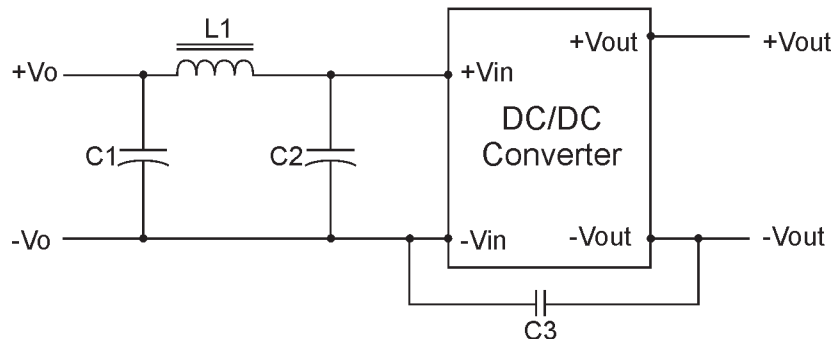


EMC Considerations

EMI Test standard: EN55022 Class B Conducted Emission

Test Condition: Input Voltage: Nominal, Output Load: Full Load

Connection circuit for conducted EMI testing



	EN55022 Class A				EN55022 Class B			
	C1	C2	C3	L1	C1	C2	C3	L1
10VRS12WxxLC	NC	NC	NC	Short	22 μ F / 50 V KY ESR <0.7 Ohm	NC	NC	3.5 μ H
10VRD12WxxLC	NC	NC	NC	Short	47 μ F / 25 V KY	NC	NC	8 μ H
10VRS24WxxLC	22 μ F / 50 V KY ESR <0.7 Ohm	NC	NC	0.7 μ H	22 μ F / 50 V KY ESR <0.7 Ohm	NC	NC	3.5 μ H
10VRD24WxxLC	NC	NC	NC	Short	22 μ F / 50 V KY	NC	NC	8 μ H
10VRS48WxxLC	22 μ F / 100 V KMF ESR <0.66 Ohm	NC	NC	0.7 μ H	22 μ F / 100 V KMF ESR <0.66 Ohm	NC	NC	3.5 μ H
10VRD48W12LC	NC	NC	NC	Short	10 μ F / 100 V KMF	NC	680 pF / 3 kV	8 μ H
10VRD48W15LC	NC	NC	NC	Short	10 μ F / 100 V KMF	NC	NC	8 μ H

NOTICE:

The information in this document has been carefully checked. However, no responsibility is assumed for inaccuracies! Specifications can be changed without notice. The latest and most complete information can be found on our website.