

V7L - 15W Series



15W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500 VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 87%
- -40 ~ 85°C Operation Temperature Range



The V7L series is a family of cost effective 15W single & dual output DC-DC converters. These converters are made with nickel-coated brass case in a 2"x2" with high performance features such as 1500 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight line / load regulation. Devices are encapsulated by using flame retardant resin. Input voltages of 12, 24 and 48 with output voltage of 3.3, 5, 7.2, 9, 12, 15, 18, 24, ±3.3, ±5, ±7.2, ±9, ±12, ±15, ±18, ±24 Vdc. High performance features include high efficiency operation up to 87% and output voltage accuracy of ±1% maximum.

All specifications typical at Ta=25°C, nominal input voltage and full load unless otherwise specified

OUTPUT SPECIFICATIONS	
Voltage accuracy	±1%
Line regulation	±0.5%
Load regulation	Single (0% to 100% Load) ±0.5% Dual (10% to 100% Load) ±0.5%
Ripple & noise(20 MHz bandwidth)(1)	100mV pk-pk
Over-current protection	140% of max. Iout
Short circuit protection	Indefinite(Automatic Recovery)
Temperature coefficient	±0.02%/°C
Capacitor load(2)	See table

INPUT SPECIFICATIONS	
Voltage Range	See table
Start up Time(Nominal Vin and constant resistive load)	20mS, typ.
Max. Input Current	See table
No-Load Input Current	See table
Input Filter	Capacitors
Input Reflected Ripple Current(3)	35mA pk-pk

GENERAL SPECIFICATIONS	
Efficiency	See table
I/O Isolation Voltage(3 sec)	Input/Output 1500Vdc Case/Input & Output 1000Vdc
I/O Isolation Capacitance	1000 pF typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	Typical 125kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1

PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Brass
Pin Material	Ø1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0-rated)
Weight	60.0g
Dimensions	2.00"x2.00"x0.40"

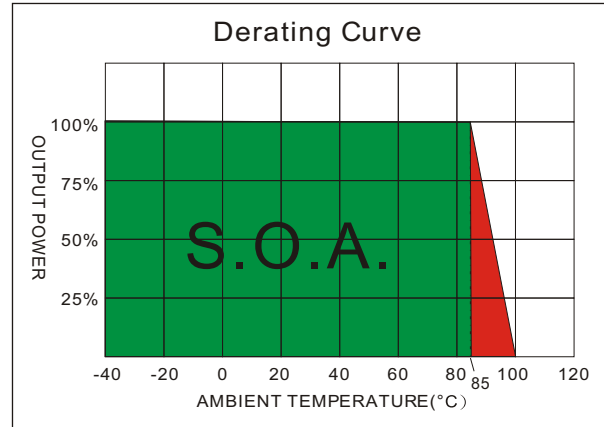
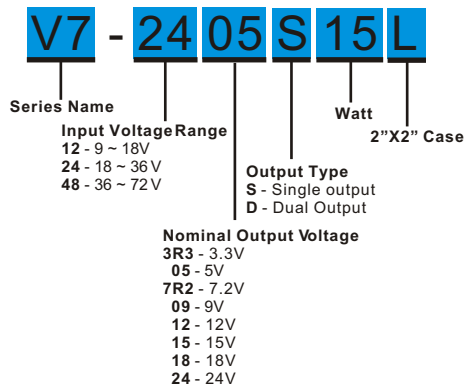
ENVIRONMENT SPECIFICATIONS	
Operating Temperature	-40°C~85°C(See Derating Curve)
Maximum Case Temperature	100°C
Storage Temperature	-40°C~125°C
Cooling	Nature Convection

ABSOLUTE MAXIMUM RATINGS(4)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Surge Voltage(100mS)	
12 Models	25 Vdc max.
24 Models	50 Vdc max.
48 Models	100 Vdc max.
Soldering Temperature (1.5mm from case 10sec.max)	260°C

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PARTNUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (%)	Capacitor Load(µF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
V7-123R3 S15L	9-18	30	1031	3.3	0	3000	80	3300
V7-1205 S15L	9-18	30	1524	5	0	3000	82	3300
V7-127R2 S15L	9-18	30	1506	7.2	0	2083	83	2200
V7-1209 S15L	9-18	30	1470	9	0	1666	85	1000
V7-1212 S15L	9-18	30	1470	12	0	1250	85	1000
V7-1215 S15L	9-18	30	1470	15	0	1000	85	680
V7-1218 S15L	9-18	30	1470	18	0	833	85	470
V7-1224 S15L	9-18	30	1453	24	0	625	86	470
V7-123R3D 15L	9-18	30	1031	±3.3	±0	±1500	80	±1000
V7-1205D1 5L	9-18	30	1524	±5	±0	±1500	82	±1000
V7-127R2D 15L	9-18	30	1506	±7.2	±0	±1041	83	±680
V7-1209D1 5L	9-18	30	1488	±9	±0	±833	84	±470
V7-1212D1 5L	9-18	30	1488	±12	±0	±625	84	±470
V7-1215D1 5L	9-18	30	1488	±15	±0	±500	84	±330
V7-1218D1 5L	9-18	30	1470	±18	±0	±416	85	±220
V7-1224D1 5L	9-18	30	1470	±24	±0	±312	85	±220
V7-243R3 S15L	18-36	25	515	3.3	0	3000	80	3300
V7-2405 S15L	18-36	25	744	5	0	3000	84	3300
V7-247R2 S15L	18-36	25	744	7.2	0	2083	84	2200
V7-2409 S15L	18-36	25	735	9	0	1666	85	1000
V7-2412 S15L	18-36	25	735	12	0	1250	85	1000
V7-2415 S15L	18-36	25	726	15	0	1000	86	680
V7-2418 S15L	18-36	25	726	18	0	833	86	470
V7-2424 S15L	18-36	25	726	24	0	625	86	470
V7-243R3D 15L	18-36	25	515	±3.3	±0	±1500	80	±1000
V7-2405D1 5L	18-36	25	753	±5	±0	±1500	83	±1000
V7-247R2D 15L	18-36	25	744	±7.2	±0	±1041	84	±680
V7-2409D1 5L	18-36	25	735	±9	±0	±833	85	±470
V7-2412D1 5L	18-36	25	726	±12	±0	±625	86	±470
V7-2415D1 5L	18-36	25	726	±15	±0	±500	86	±330
V7-2418D1 5L	18-36	25	726	±18	±0	±416	86	±220
V7-2424D1 5L	18-36	25	718	±24	±0	±312	87	±220

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MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (%)	Capacitor Load (uF)
		No-Load (mA)	Full Load (mA)		Min. load (mA)	Full load (mA)		
V7-483R3 S15L	36-72	20	257	3.3	0	3000	80	3300
V7-4805 S15L	36-72	20	372	5	0	3000	84	3300
V7-487R2 S15L	36-72	20	372	7.2	0	2083	84	2200
V7-4809 S15L	36-72	20	367	9	0	1666	85	1000
V7-4812 S15L	36-72	20	363	12	0	1250	86	1000
V7-4815 S15L	36-72	20	359	15	0	1000	87	680
V7-4818 S15L	36-72	20	359	18	0	833	87	470
V7-4824 S15L	36-72	20	359	24	0	625	87	470
V7-483R3D 15L	36-72	20	257	±3.3	±0	±1500	80	±1000
V7-4805D1 5L	36-72	20	372	±5	±0	±1500	84	±1000
V7-487R2D 15L	36-72	20	372	±7.2	±0	±1041	84	±680
V7-4809D1 5L	36-72	20	367	±9	±0	±833	85	±470
V7-4812D1 5L	36-72	20	363	±12	±0	±625	86	±470
V7-4815D1 5L	36-72	20	359	±15	±0	±500	87	±330
V7-4818D1 5L	36-72	20	359	±18	±0	±416	87	±220
V7-4824D1 5L	36-72	20	359	±24	±0	±312	87	±220

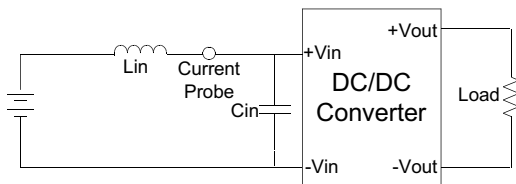
NOTE

1. Ripple/Noise measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
2. Tested by minimal V_{in} and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.

TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

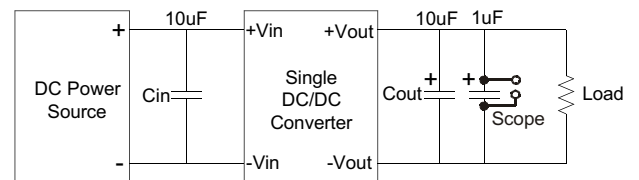
Input reflected ripple current is measured through a source inductor L_{in} (12uH) and a source capacitor C_{in} (47uF, ESR < 1.0Ω at 100KHz) at nominal input and full load.



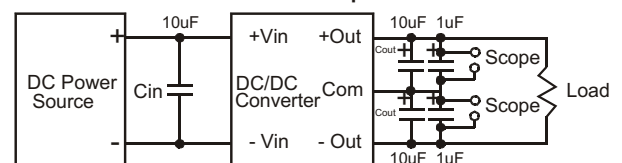
Output Ripple & Noise Measurement Test

To reduce ripple and noise, it is recommended to use a 1uF ceramic disk capacitor and a 10uF electrolytic capacitor to at the output.

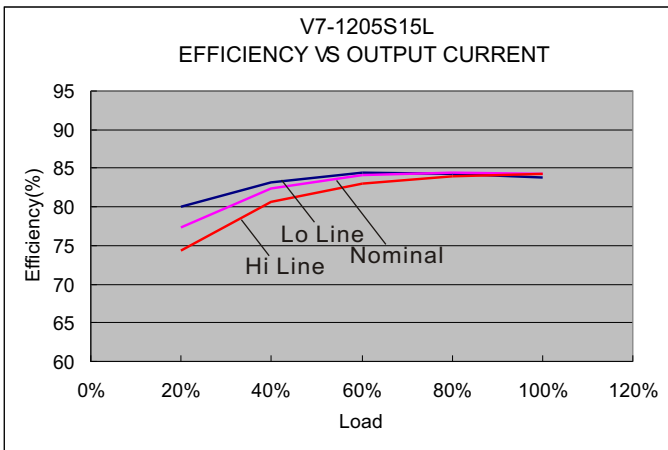
Single Output



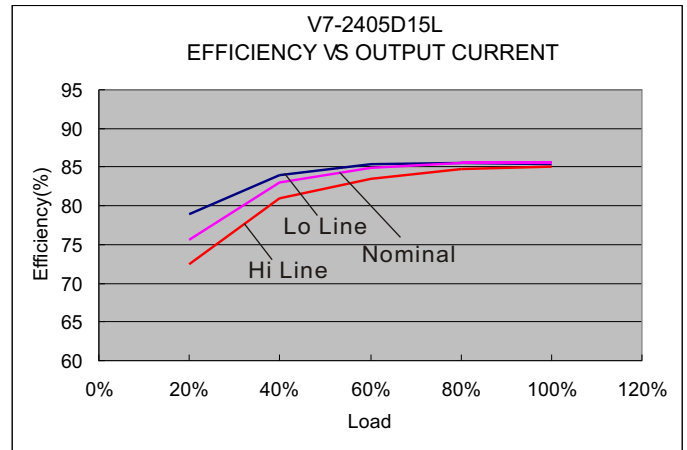
Dual Output



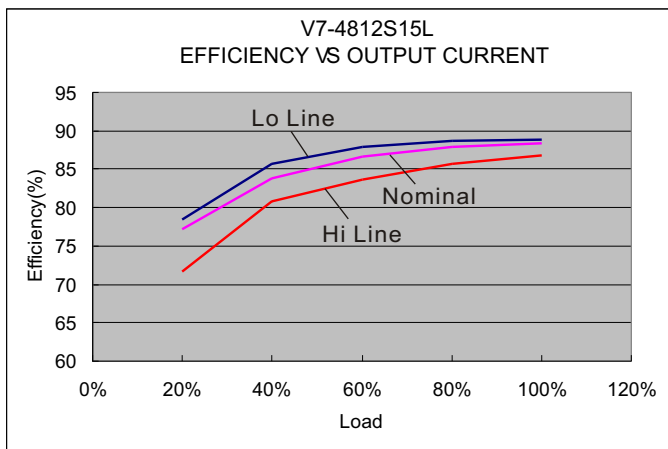
ELECTRICAL CHARACTERISTIC CURVES



12 Models

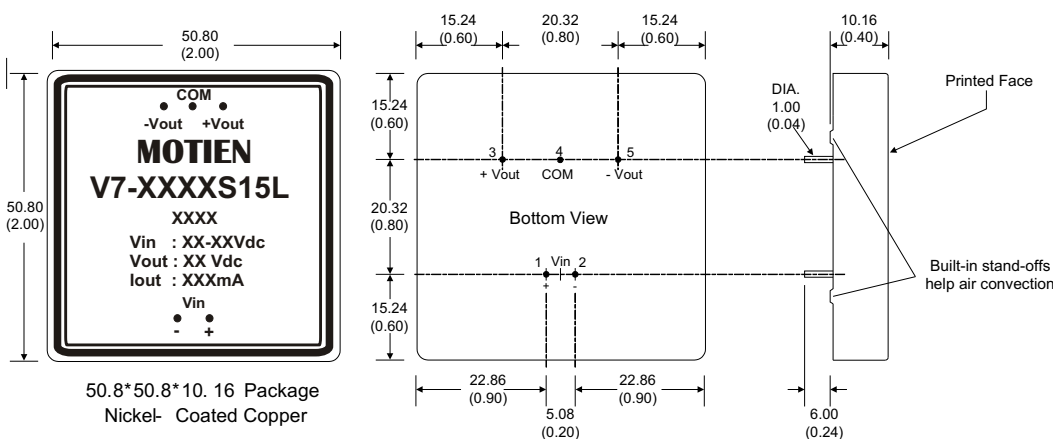


24 Models



48 Models

MECHANICAL SPECIFICATIONS



PIN CONNECTIONS		
PIN NUMBER	SINGLE	DUAL
1	+V Input	+V Input
2	-V Input	-V Input
3	+V Output	+V Output
4	N.P.	Common
5	-V Output	-V Output

- All dimensions are typical in millimeters (inches).
1. Pin diameter: 1.0 ±0.05 (0.04 ±0.002)
 2. Pin pitch and length tolerance: ±0.35 (±0.014)
 3. Case Tolerance: ±0.5 (±0.02)