V7L - 30W Series

30W 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 88%
- -40 ~ 85°C Operation Temperature Range

The V7L series is a family of cost effective 30W single & dual output DC-DC converters. These converters are made with nickle-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 88% 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%, max.
Line regulation		±0.5%, max.
Load regulation	Single (0% to 100% Load)	±0.5%, max.
	Dual (10% to 100% Load)	±0.5%, max.
Ripple & noise (20 MHz bandwidth)(1)		100mV pk-pk, max.
Over-current protection		140% of FL, typ.
Short circuit protection		Indefinite(Automatic Recovery)
Temperature coefficient		±0.02%/°C
Capacitor load(2)		See table, max.

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

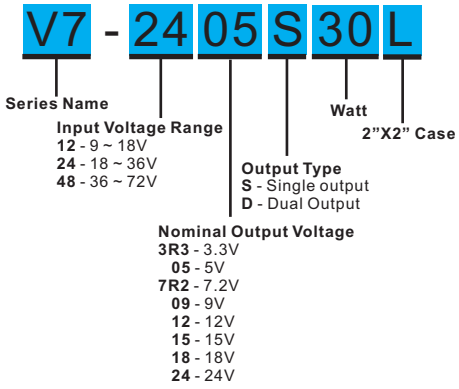
GENERAL SPECIFICATIONS	
Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1500Vdc
Case/Input & Output	1000Vdc
I/O Isolation Capacitance	1000 pF, typ.
I/O Isolation Resistance	1000 MΩ, min.
Switching Frequency	125kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard (designed to meet)	IEC/EN 60950-1 , 62368-1
	UL/cUL 60950-1 , 62368-1

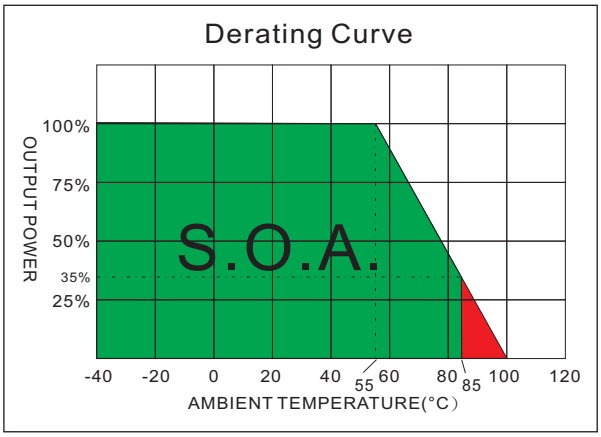
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Brass
Pin Material	Φ1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	60.0g
Dimensions	2.00"x2.00"x0.40"

ENVIRONMENT SPECIFICATIONS	
Operating Temperature	-40°C~85°C(See Derating Curve)
Temperature	-40°C~55°C(For 100% load)
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, max.

PART NUMBER STRUCTURE





MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
V7-1205S30L	9-18	30	3048	5	0	6000	82	3300
V7-127R2S30L	9-18	30	3012	7.2	0	4166	83	2200
V7-1209S30L	9-18	30	2976	9	0	3333	84	1000
V7-1212S30L	9-18	30	2976	12	0	2500	84	1000
V7-1215S30L	9-18	30	2941	15	0	2000	85	1000
V7-1218S30L	9-18	30	2941	18	0	1666	85	680
V7-1224S30L	9-18	30	2941	24	0	1250	85	470
V7-123R3D30L	9-18	25	2115	±3.3	±0	±3000	78	±2200
V7-1205D30L	9-18	25	3048	±5	±0	±3000	82	±2200
V7-127R2D30L	9-18	25	3012	±7.2	±0	±2083	83	±1000
V7-1209D30L	9-18	25	2976	±9	±0	±1666	84	±1000
V7-1212D30L	9-18	25	2976	±12	±0	±1250	84	±1000
V7-1215D30L	9-18	35	2941	±15	±0	±1000	85	±470
V7-1218D30L	9-18	35	2941	±18	±0	±833	85	±330
V7-1224D30L	9-18	35	2941	±24	±0	±625	85	±220
V7-243R3S30L	18-36	25	1031	3.3	0	6000	80	3300
V7-2405S30L	18-36	25	1488	5	0	6000	84	3300
V7-247R2S30L	18-36	25	1488	7.2	0	4166	84	2200
V7-2409S30L	18-36	25	1436	9	0	3333	87	1000
V7-2412S30L	18-36	25	1436	12	0	2500	87	1000
V7-2415S30L	18-36	25	1436	15	0	2000	87	1000
V7-2418S30L	18-36	25	1436	18	0	1666	87	680
V7-2424S30L	18-36	25	1436	24	0	1250	87	470
V7-243R3D30L	18-36	25	1057	±3.3	±0	±3000	78	±2200
V7-2405D30L	18-36	25	1488	±5	±0	±3000	84	±2200
V7-247R2D30L	18-36	25	1488	±7.2	±0	±2083	84	±1000
V7-2409D30L	18-36	25	1470	±9	±0	±1666	85	±1000
V7-2412D30L	18-36	25	1470	±12	±0	±1250	85	±1000
V7-2415D30L	18-36	25	1436	±15	±0	±1000	87	±470
V7-2418D30L	18-36	25	1436	±18	±0	±833	87	±330
V7-2424D30L	18-36	30	1436	±24	±0	±625	87	±220

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current No-Load (mA, max.)	INPUT Current Full Load (mA, typ.)	OUTPUT Voltage (Vdc)	OUTPUT Current Min. load (mA)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (%, typ.)	Capacitor Load @FL (μF, max.)
V7-483R3S30L	36-72	20	522	3.3	0	6000	79	3300
V7-4805S30L	36-72	20	753	5	0	6000	83	3300
V7-487R2S30L	36-72	20	744	7.2	0	4166	84	2200
V7-4809S30L	36-72	20	744	9	0	3333	84	1000
V7-4812S30L	36-72	20	726	12	0	2500	86	1000
V7-4815S30L	36-72	20	710	15	0	2000	88	1000
V7-4818S30L	36-72	20	710	18	0	1666	88	680
V7-4824S30L	36-72	20	710	24	0	1250	88	470
V7-483R3D30L	36-72	20	515	±3.3	±0	±3000	80	±2200
V7-4805D30L	36-72	20	735	±5	±0	±3000	85	±2200
V7-487R2D30L	36-72	20	735	±7.2	±0	±2083	85	±1000
V7-4809D30L	36-72	20	735	±9	±0	±1666	85	±1000
V7-4812D30L	36-72	20	718	±12	±0	±1250	87	±1000
V7-4815D30L	36-72	20	710	±15	±0	±1000	88	±470
V7-4818D30L	36-72	20	710	±18	±0	±833	88	±330
V7-4824D30L	36-72	20	710	±24	±0	±625	88	±220

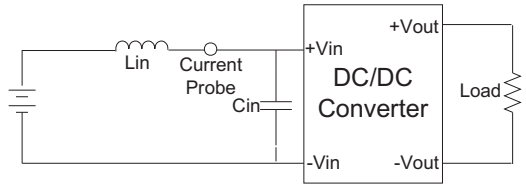
NOTE

1.Ripple/Noise measured with 20MHz bandwidth use a 1uF ceramic disk capacitor and a 10uF electrolytic capacitor to at the output.
2.Tested by minimal Vin 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

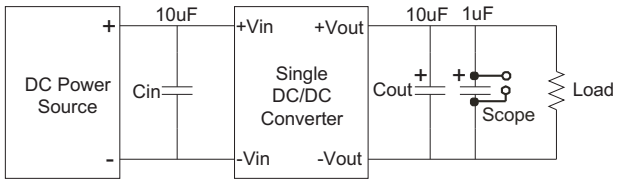
Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



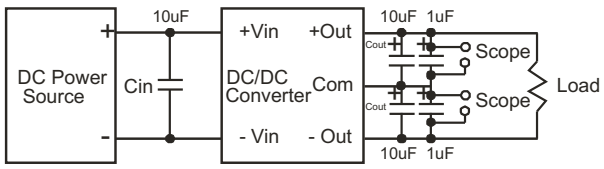
Output Ripple & Noise Measurement Test

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

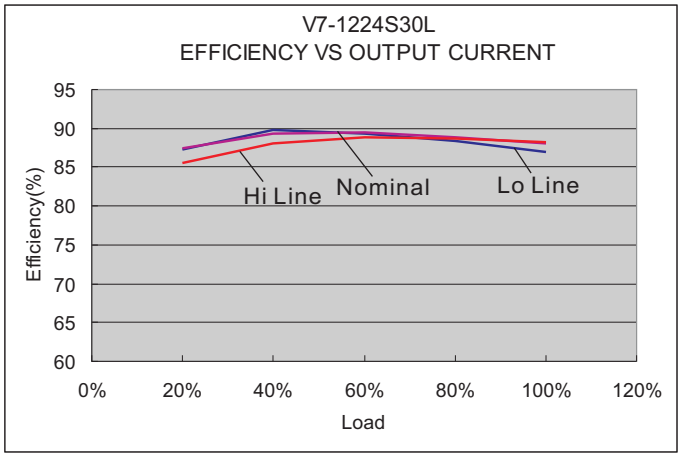
Single Output



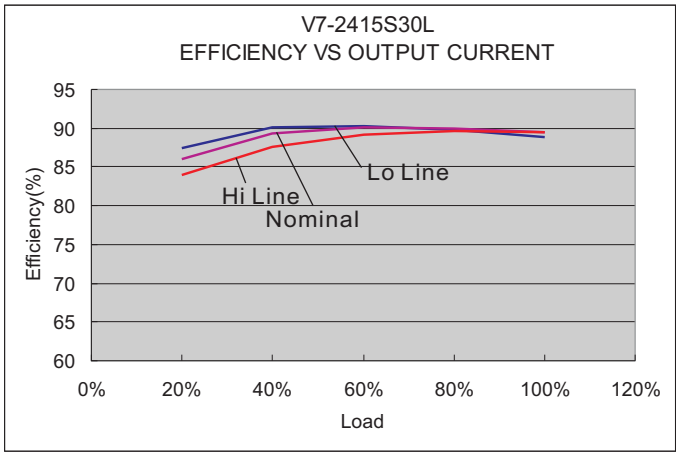
Dual Output



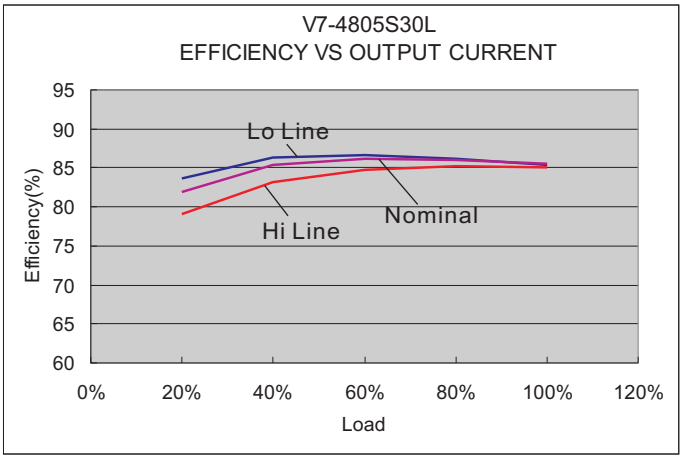
ELECTRICAL CHARACTERISTIC CURVES



12 Models

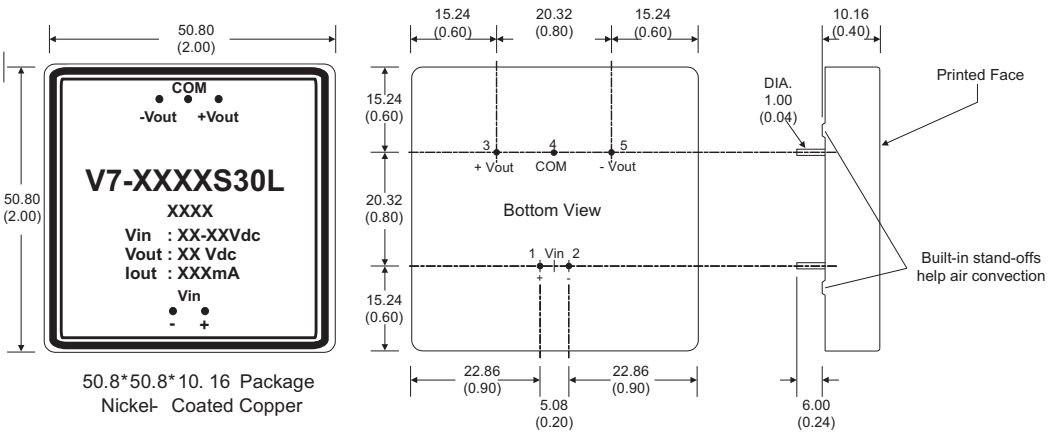


24 Models



48 Models

MECHANICAL SPECIFICATIONS



50.8*50.8*10. 16 Package
Nickel- Coated Copper

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)

DRAWING: Leo APPROVED: Kem

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