

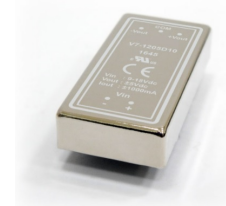


V7 - 10W Series

10W 2:1 Regulated Single & Dual output

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1500VDC Isolation
- Continuous Short Circuit Protection
- Efficiency up to 86%
- -40 ~ 85°C Operation Temperature Range
- EMI Complies With EN55032 Class A

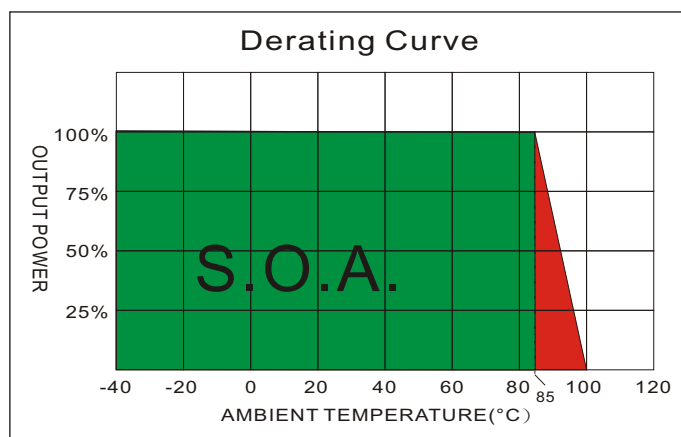
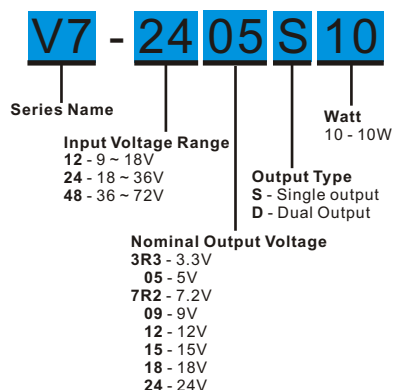


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The V7 series is a family of cost effective 10W single & dual output DC-DC converters. These converters are made with nickle-coated brass case in a 2"x1" with high performance features such as 1500 VDC input/output isolation voltage, continuous short 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 86% 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		EMC SPECIFICATIONS		
Voltage accuracy	±1%, max.	Radiated Emissions	EN55032	CLASS A
Line regulation	±0.5%, max.	Conducted Emissions(6)	EN55032	CLASS A
Load regulation(0% to 100% Load)	(Single Output) ±0.5%, max. (Dual Output) ±1.0%, max.	ESD	IEC61000-4-2	Perf. Criteria A
Ripple & noise (20 MHz bandwidth)(1)	100mV pk-pk, max.	RS	IEC61000-4-3	Perf. Criteria A
Over-current protection	140% of FL, typ.	EFT	IEC61000-4-4	Perf. Criteria A
Short circuit protection	Indefinite(Automatic Recovery)	Surge (7)	IEC61000-4-5	Perf. Criteria A
Temperature coefficient	±0.02%/°C	CS	IEC61000-4-6	Perf. Criteria A
Capacitor load(2)	See table, max.	PFMF	IEC61000-4-8	Perf. Criteria A
Transient Recovery Time(3)	250µs, typ.	PHYSICAL SPECIFICATIONS		
Transient Response Deviation(3)	±3%, max.	Case Material	Nickel-coated Brass	
INPUT SPECIFICATIONS		Pin Material	Φ1.0mm Brass Solder-coated	
Input Voltage Range	See table	Potting Material	Epoxy (UL94V-0 rated)	
Start up Time(Nominal Vin and constant resistive load)	20mS, typ.	Weight	31.0g	
Input Current(No-Load)	See table, max.	Dimensions	2.00"x1.00"x0.40"	
Input Current(Full-Load)	See table, typ.	ENVIRONMENT SPECIFICATIONS		
Input Filter	Pi Type	Operating Temperature	-40°C~85°C(See Derating Curve)	
Input Reflected Ripple Current(4)	35mA pk-pk	Maximum Case Temperature	100°C	
GENERAL SPECIFICATIONS		Storage Temperature	-40°C~125°C	
Efficiency	See table, typ.	Cooling	Nature Convection	
I/O Isolation Voltage(60sec)		ABSOLUTE MAXIMUM RATINGS(8)		
Input/Output	1500Vdc	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.		
Case/Input & Output	1000Vdc	Input Surge Voltage(100mS)		
I/O Isolation Capacitance	500 pF, Typ.	12 Models	25 Vdc, max.	
I/O Isolation Resistance	1000 MΩ, min.	24 Models	50 Vdc, max.	
Switching Frequency	200kHz, typ.	48 Models	100 Vdc, max.	
Humidity	95% rel H	Soldering Temperature	260°C, max.	
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs	(1.5mm from case 10sec max.)		
Safety Standard(5)	UL/cUL 60950-1, 62368-1 IEC/EN 60950-1, 62368-1			
Safety Approvals(5)	UL/cUL 60950-1, 62368-1 IEC/EN 60950-1, 62368-1			

V7 - 10W 2:1 Regulated Single & Dual output
PART NUMBER STRUCTURE

MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
V7-123R3S10	9-18	30	705	3.3	0	2000	78	2200
V7-1205S10	9-18	30	1016	5	0	2000	82	2200
V7-127R2S10	9-18	30	1004	7.2	0	1388	83	1000
V7-1209S10	9-18	30	1004	9	0	1111	83	1000
V7-1212S10	9-18	30	992	12	0	833	84	680
V7-1215S10	9-18	30	992	15	0	666	84	470
V7-1218S10	9-18	30	980	18	0	555	85	470
V7-1224S10	9-18	30	980	24	0	416	85	330
V7-123R3D10	9-18	30	1068	±3.3	0	±1000	78	±1000
V7-1205D10	9-18	30	1016	±5	0	±1000	82	±1000
V7-127R2D10	9-18	30	1004	±7.2	0	±694	83	±680
V7-1209D10	9-18	30	992	±9	0	±555	84	±470
V7-1212D10	9-18	30	992	±12	0	±416	84	±470
V7-1215D10	9-18	30	980	±15	0	±333	85	±330
V7-1218D10	9-18	30	980	±18	0	±277	85	±220
V7-1224D10	9-18	30	980	±24	0	±208	85	±220
V7-243R3S10	18-36	25	352	3.3	0	2000	78	2200
V7-2405S10	18-36	25	508	5	0	2000	82	2200
V7-247R2S10	18-36	25	502	7.2	0	1388	83	1000
V7-2409S10	18-36	25	496	9	0	1111	84	1000
V7-2412S10	18-36	25	496	12	0	833	84	680
V7-2415S10	18-36	25	490	15	0	666	85	470
V7-2418S10	18-36	25	490	18	0	555	85	470
V7-2424S10	18-36	25	484	24	0	416	86	330
V7-243R3D10	18-36	25	352	±3.3	0	±1000	78	±1000
V7-2405D10	18-36	25	508	±5	0	±1000	82	±1000
V7-247R2D10	18-36	25	502	±7.2	0	±694	83	±680
V7-2409D10	18-36	25	502	±9	0	±555	83	±470
V7-2412D10	18-36	25	496	±12	0	±416	84	±470
V7-2415D10	18-36	25	496	±15	0	±333	84	±330
V7-2418D10	18-36	25	490	±18	0	±277	85	±220
V7-2424D10	18-36	25	490	±24	0	±208	85	±220

V7 - 10W 2:1 Regulated Single & Dual output

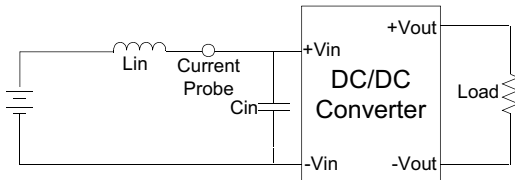
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
V7-483R3S10	36-72	20	176	3.3	0	2000	78	2200
V7-4805S10	36-72	20	251	5	0	2000	83	2200
V7-487R2S10	36-72	20	251	7.2	0	1388	83	1000
V7-4809S10	36-72	20	248	9	0	1111	84	1000
V7-4812S10	36-72	20	248	12	0	833	84	680
V7-4815S10	36-72	20	248	15	0	666	84	470
V7-4818S10	36-72	20	245	18	0	555	85	470
V7-4824S10	36-72	20	245	24	0	416	86	330
V7-483R3D10	36-72	20	176	±3.3	0	±1000	78	±1000
V7-4805D10	36-72	20	254	±5	0	±1000	82	±1000
V7-487R2D10	36-72	20	248	±7.2	0	±694	84	±680
V7-4809D10	36-72	20	248	±9	0	±555	84	±470
V7-4812D10	36-72	20	245	±12	0	±416	85	±470
V7-4815D10	36-72	20	245	±15	0	±333	85	±330
V7-4818D10	36-72	20	242	±18	0	±277	86	±220
V7-4824D10	36-72	20	242	±24	0	±208	86	±220

NOTE

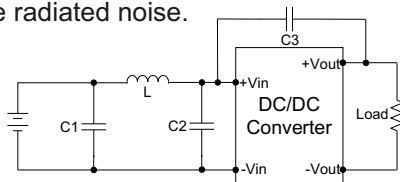
1. Measured with 20MHz bandwidth and 10µF ceramic capacitor.
2. Tested by minimal Vin and constant resistive load.
3. Tested by normal Vin and 25% load step change (5%-50%-25% of b).
4. Measured input reflected ripple current with a simulated source inductance of 12µH and a source capacitor Qn(47µF, ESR<1.0Ω at 100KHz).
5. Safety certificates are available for models with 1500Vdc isolation only.
6. Input filter components (C1,L,C2,C3) are used to help meet conducted emissions requirement for the module, which application refer to the EMI Filter of design & feature configuration..
These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
7. An external filter capacitor is required if the module has to meet IEC61000-4-5.
The filter capacitor Mottien suggest: Nippon Chemi-con KY series, 220µF/100V.
8. Exceeding the absolute ratings of the unit could cause damage. This is not allowed for continuous operating.
9. 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} ($12\mu\text{H}$) and a source capacitor C_{in} ($47\mu\text{F}$, $\text{ESR} < 1.0\Omega$ at 100KHz) at nominal input and full load.


EMI Filter

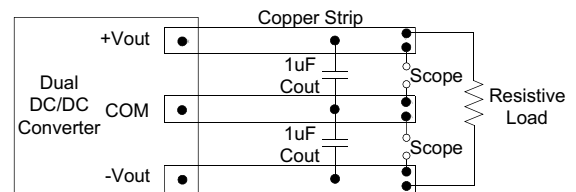
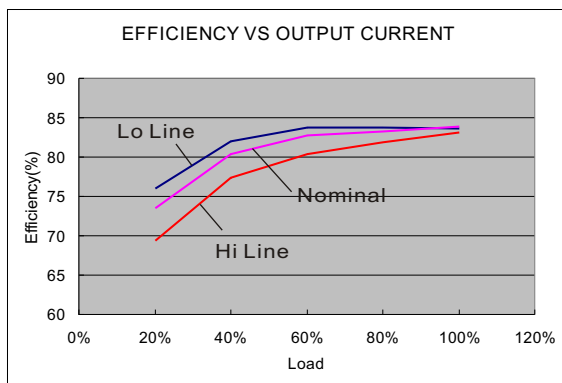
Input filter components ($C1, L, C2, C3$) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



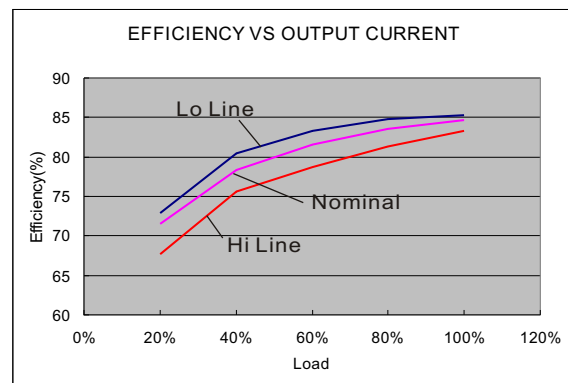
	C1	L	C2	C3
V7-12XXXXXX	330uF/100V	12uH	100uF/100V	1808,1000pF/3KV
V7-24XXXXXX	330uF/100V	12uH	100uF/100V	1808,1000pF/3KV
V7-48XXXXXX	330uF/100V	12uH	100uF/100V	1808,1000pF/3KV

Output Ripple & Noise Measurement Test

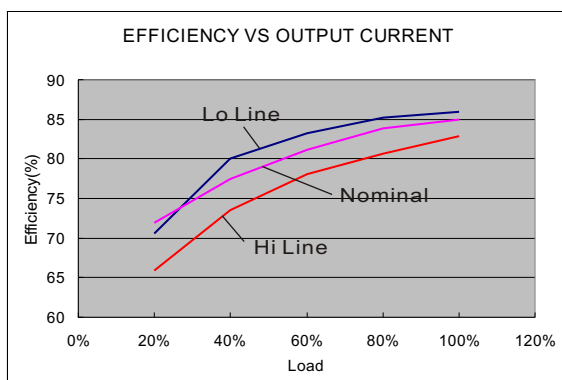
Use a capacitor C_{out} ($1.0\mu\text{F}$) measurement. The Scope measurement bandwidth is $0-20\text{MHz}$.


ELECTRICAL CHARACTERISTIC CURVES


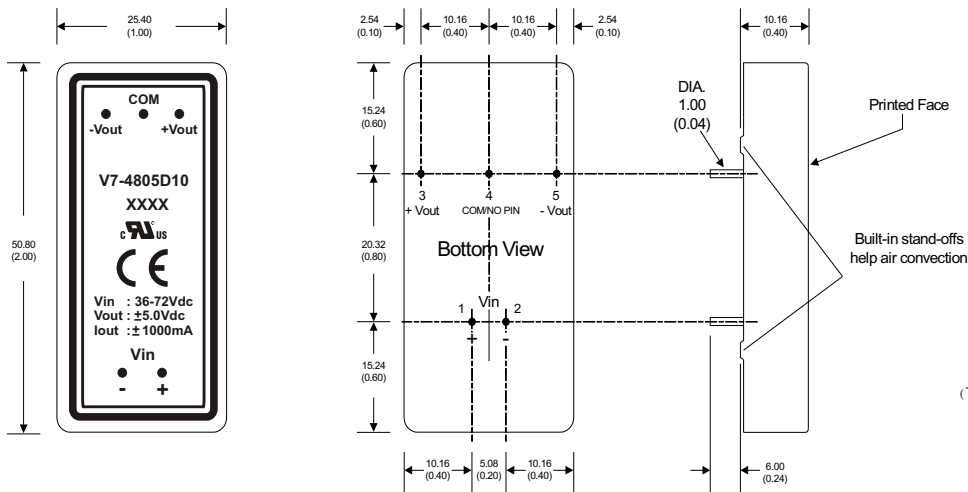
12 Models



24 Models



48 Models

V7 - 10W 2:1 Regulated Single & Dual output
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

(The Pin Connection of high isolation one is the same with normal one.)

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)