

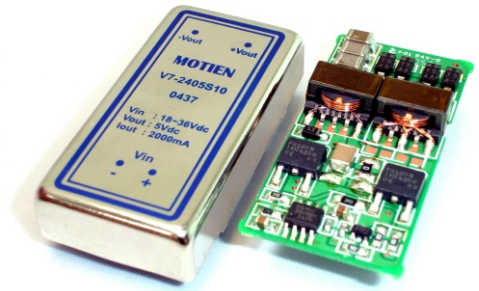
V7 - 12W Series



12W 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 86%
- -40 ~ 85°C Operation Temperature Range
- EMI Complies With EN55022 Class A



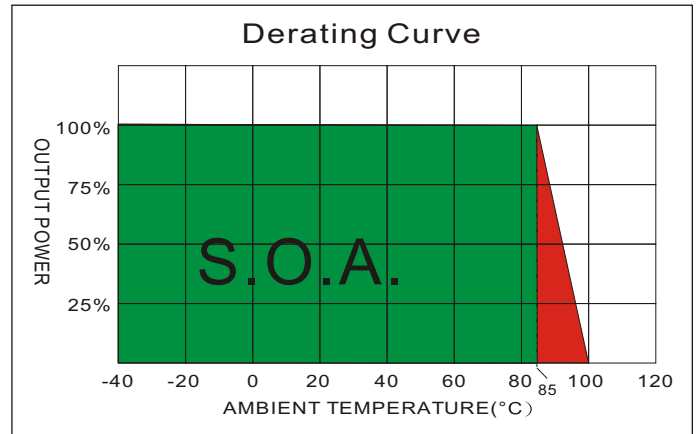
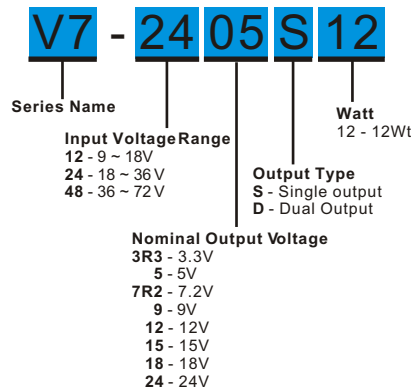
The V7 series is a family of cost effective 12W single & dual output DC-DC converters. These converters are made with nickle-coated brass case in a 2"x1" with high performance features such as 1500 VDC input/output isolation voltage, continuous short circuit protection with automatic restart and tight 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 $\pm 1\%$ maximum.

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

OUTPUT SPECIFICATIONS	
Voltage accuracy	$\pm 1\%$
Line regulation	$\pm 0.5\%$
Load regulation(0% to 100% Load)	(Single Output) $\pm 0.5\%$ (Dual Output) $\pm 1.0\%$
Ripple & noise(20 MHz bandwidth)(1)	100mV pk-pk
Over-current protection	140% of max. Iout
Short circuit protection	Indefinite(Automatic Recovery)
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$
Capacitor load(2)	See table
Transient Recovery Time(3)	250us, typ
Transient Response Deviation(3)	$\pm 3\%$, max
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	Pi Type
Input Reflected Ripple Current(4)	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	500 pF Typ.
I/O Isolation Resistance	1000M Ohm
Switching Frequency	Typical 200kHz
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard : (designed to meet)	IEC 60950-1
EMC SPECIFICATIONS	
Radiated Emissions	EN55022 CLASS A FCC 47 CFR Part 15 Subpart A CLASS A
ESD	IEC 61000-4-2 Perf. Criteria B
RS	IEC 61000-4-3 Perf. Criteria A
PHYSICAL SPECIFICATIONS	
Case Material	Nickel-coated Brass
Pin Material	$\varnothing 1.0\text{mm}$ Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	30.0g
Dimensions	2.00"x1.00"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(5)	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Voltage(100mS)	
12 Modes	-0.7~25 Vdc
24 Modes	-0.7~50 Vdc
48 Modes	-0.7~100 Vdc
Soldering Temperature (1.5mm from case 10sec.)	260°C

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PARTNUMBER STRUCTURE



MODEL SELECTION GUIDE

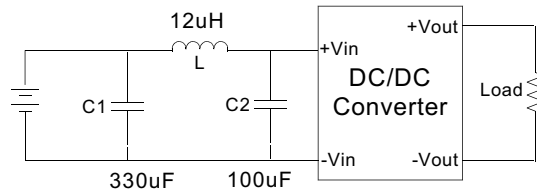
MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (%)	Capacitor Load (uF)
		No Load (mA)	Full Load (mA)		Min Load (mA)	Full Load (mA)		
V7-123R3 S12	9-18	30	835	3.3	0	2400	79	3300
V7-1205 S12	9-18	30	1219	5	0	2400	82	3300
V7-127R2 S12	9-18	30	1204	7.2	0	1666	83	2200
V7-1209 S12	9-18	30	1204	9	0	1333	83	1000
V7-1212 S12	9-18	30	1190	12	0	1000	84	1000
V7-1215 S12	9-18	30	1190	15	0	800	84	680
V7-1218 S12	9-18	30	1176	18	0	666	85	470
V7-1224 S12	9-18	30	1176	24	0	500	85	470
V7-123R3D12	9-18	30	835	±3.3	0	±1200	79	±1000
V7-1205D12	9-18	30	1219	±5	0	±1200	82	±1000
V7-127R2D12	9-18	30	1204	±7.2	0	±833	83	±680
V7-1209D12	9-18	30	1190	±9	0	±666	84	±470
V7-1212D12	9-18	30	1190	±12	0	±500	84	±470
V7-1215D12	9-18	30	1176	±15	0	±400	85	±330
V7-1218D12	9-18	30	1176	±18	0	±333	85	±220
V7-1224D12	9-18	30	1176	±24	0	±250	85	±220
V7-243R3 S12	18-36	25	417	3.3	0	2400	79	3300
V7-2405 S12	18-36	25	609	5	0	2400	82	3300
V7-247R2 S12	18-36	25	602	7.2	0	1666	83	2200
V7-2409 S12	18-36	25	595	9	0	1333	84	1000
V7-2412 S12	18-36	25	595	12	0	1000	84	1000
V7-2415 S12	18-36	25	588	15	0	800	85	680
V7-2418 S12	18-36	25	588	18	0	666	85	470
V7-2424 S12	18-36	25	581	24	0	500	86	470
V7-243R3D12	18-36	25	417	±3.3	0	±1200	79	±1000
V7-2405D12	18-36	25	609	±5	0	±1200	82	±1000
V7-247R2D12	18-36	25	602	±7.2	0	±833	83	±680
V7-2409D12	18-36	25	602	±9	0	±666	83	±470
V7-2412D12	18-36	25	595	±12	0	±500	84	±470
V7-2415D12	18-36	25	595	±15	0	±400	84	±330
V7-2418D12	18-36	25	588	±18	0	±333	85	±220
V7-2424D12	18-36	25	588	±24	0	±250	85	±220

V7 - 12W 2:1 Regulated Single & Dual output

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 S12	36-72	20	208	3.3	0	2400	79	3300
V7-4805 S12	36-72	20	301	5	0	2400	83	3300
V7-487R2 S12	36-72	20	301	7.2	0	1666	83	2200
V7-4809 S12	36-72	20	297	9	0	1333	84	1000
V7-4812 S12	36-72	20	297	12	0	1000	84	1000
V7-4815 S12	36-72	20	297	15	0	800	84	680
V7-4818 S12	36-72	20	294	18	0	666	85	470
V7-4824 S12	36-72	20	294	24	0	500	86	470
V7-483R3D12	36-72	20	208	±3.3	0	±1200	79	±1000
V7-4805D12	36-72	20	304	±5	0	±1200	82	±1000
V7-487R2D12	36-72	20	297	±7.2	0	±833	84	±680
V7-4809D12	36-72	20	297	±9	0	±666	84	±470
V7-4812D12	36-72	20	294	±12	0	±500	85	±470
V7-4815D12	36-72	20	294	±15	0	±400	85	±330
V7-4818D12	36-72	20	290	±18	0	±333	86	±220
V7-4824D12	36-72	20	290	±24	0	±250	86	±220

NOTE

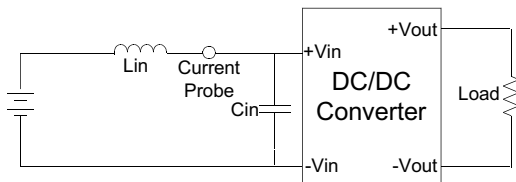
1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
4. Measured Input reflected ripple current with a simulated source inductance of 12uH.
5. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
6. Operation under no-load conditions will not damage these devices, however they may not meet all listed specifications.
7. Suggest adding input external filter (C1, C2, L) to meet conducted emissions (EN55022 Class A)



TEST CONFIGURATIONS

Input Reflected Ripple Current Test Step

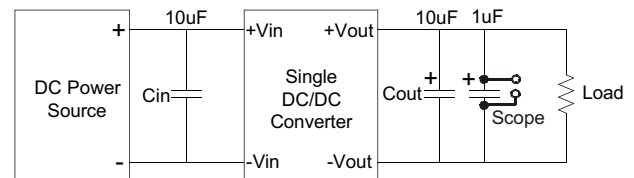
Input reflected ripple current is measured through a source inductor Lin(12uH) and a source capacitor Cin(47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



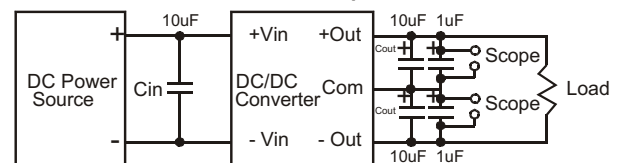
Output Ripple & Noise Measurement Test

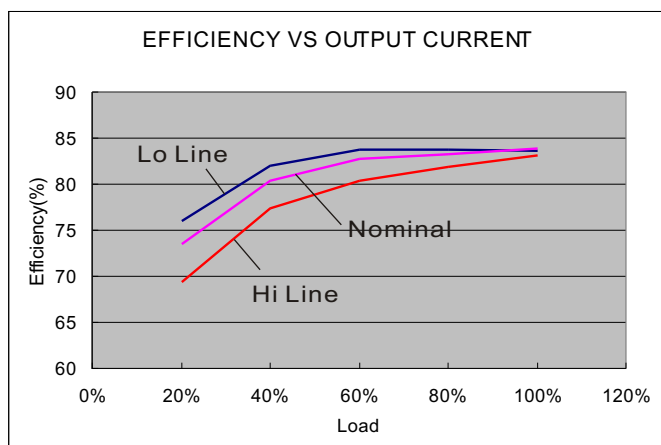
To reduce ripple and noise, it is recommended to use a 1uF ceramic disk capacitor and a 10uF electrolytic capacitor to at the output.

Single Output

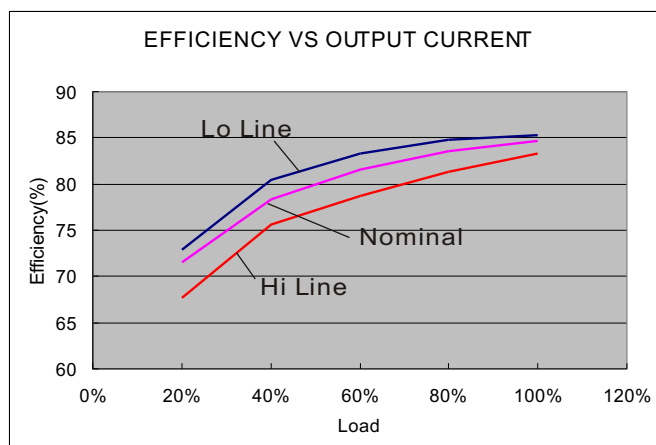


Dual Output

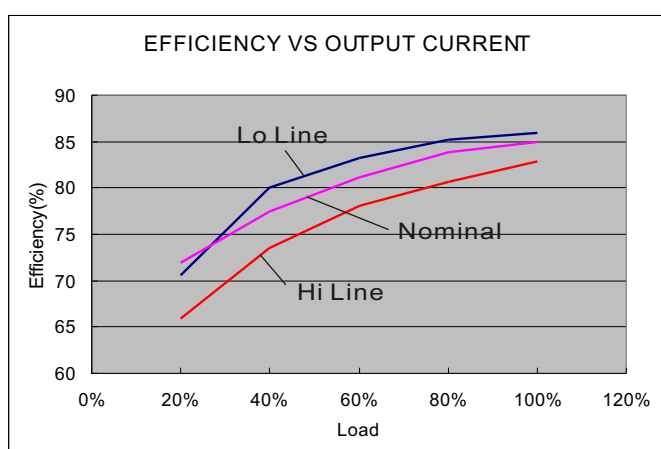




12 Models

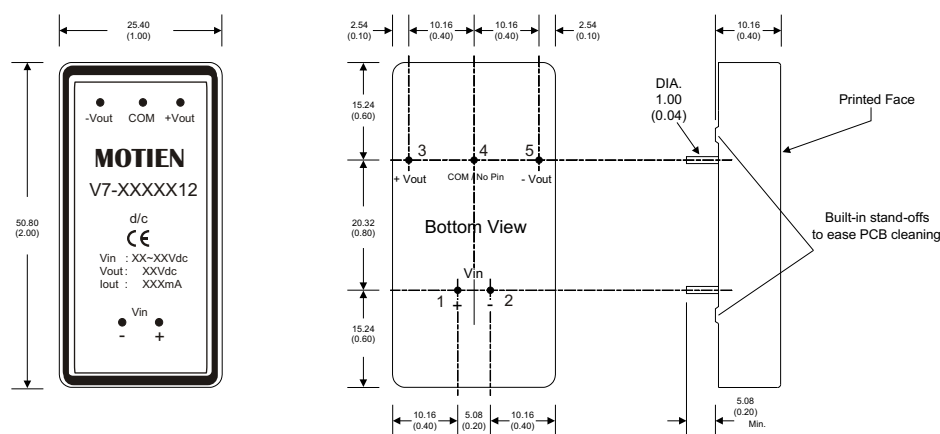


24 Models



48 Models

MECHANICAL SPECIFICATIONS



Notes : All dimensions are typical in millimeters (inches).

1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
2. Pin pitch tolerance: ± 0.35 (± 0.014)
3. Case Tolerance: ± 0.5 (± 0.02)

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