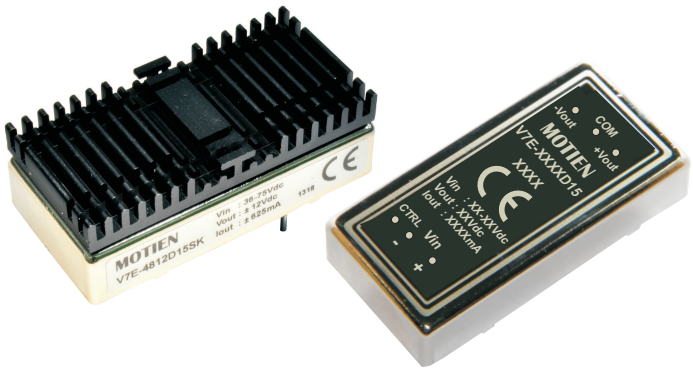
V7E Series

15W 2:1 Regulated Single & Dual output

MOTIEN TECHNOLOGY

Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1600~3500 VDC Isolation
- No Minimum Load Required
- Efficiency up to 89%
- Extended Operating Temperature Range -40 ~ 85°C max.
- Continuous Short Circuit Protection
- Over Current Protection
- Soft Start
- EMI Complies With EN55032 Class A
- Optional Heat-sink



CE

The V7E series is a family of high performance and cost effective 15W single and dual output DC/Dc converters. Encapsulated in a 2"X1" nickel coated brass case , featuring Active clamp switching technology - providing perfect regulation from no load to full load. Which is suitable for network distributed power source. High efficiency up to 89% - Output voltages are available from 3.3V, 5V, 12V, 15V and±3.3V,±5V, ±12V,±15V and input ranges of 2:1 ranging from 12V (9V~18V), 24V(18V~36V) and 48V (36V~75V) .

ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS

Output Voltage Accuracy	±1%, max,
Maximum Output Current	See table, max,
Line Regulation	±0.5%, max.
Load Regulation(Io=0% to 100%)(1)	Single: ±0.5%, max. Dual: ±1.0%, max.
Cross Regulation (Dual Output) (2)	±5%
Ripple&Noise (3)	75mVp-p, max.
Over Current Protection	140% of FL, typ.
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)
Temperature Coefficient	±0.02%/°C
Capacitive Load (4)	See table, max.
Transient Recovery Time (5)	250μs, typ.
Transient Response Deviation(5)	±3%, max.

INPUT SPECIFICATIONS

Input Voltage Range		See table
Under Voltage Lockout		
12V Models	Module ON / OFF	8.6Vdc / 7.9Vdc, typ.
24V Models	Module ON / OFF	17.8Vdc / 16Vdc, typ.
48V Models	Module ON / OFF	33.5Vdc / 30.5Vdc, typ.
Start up Time (Nominal Vin and constant resistive load)		20mS, typ.
Input Filter		Pi Type
Input Current(No-Load)		See table, max.
Input Current(Full-Load)		See table, typ.
Input Reflected Ripple Current(6)		20mAp-p, typ.
CTRL(7) Module ON		2.5 to 5.5 Vdc or Open
Module OFF		-0.7 to 0.8Vdc
CTRL OFF Input Current		2.5mA, typ

ENVIRONMENTAL SPECIFICATIONS

Operating Ambient Temperature		-40°C ~ +85°C(See Derating Curve) -40°C ~ +70°C(For 100% load)
Maximum Case Temperature		100°C
Thermal Impedance (Nature Convection)	Without Heat-sink	12°C/W
	With Heat-sink	10°C/W
Storage Temperature		-40°C ~ +125°C.
Cooling		Nature Convection

EMC SPECIFICATIONS

Radiated Emissions	EN55032	CLASS A
Conducted Emissions (7)	EN55032	CLASS A
ESD	IEC 61000-4-2	Perf. Criteria A
RS	IEC 61000-4-3	Perf. Criteria A
EFT(8)	IEC 61000-4-4	Perf. Criteria A
Surge(8)	IEC 61000-4-5	Perf. Criteria A
CS	IEC 61000-4-6	Perf. Criteria A
PFMF	IEC 61000-4-8	Perf. Criteria A

GENERAL SPECIFICATIONS

Efficiency	See table, typ.
I/O Isolation Voltage(60sec)	
Input/Output	1600Vdc-3500Vdc
Case/Input & Output	1600Vdc
Isolation Resistance	1000 MΩ, min.
Isolation Capacitance	1200 pF, typ.
Switching frequency	300kHz, typ.
Humidity	95% rel H
Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
Safety Standard (designed to meet)	IEC/EN 60950-1

PHYSICAL SPECIFICATIONS

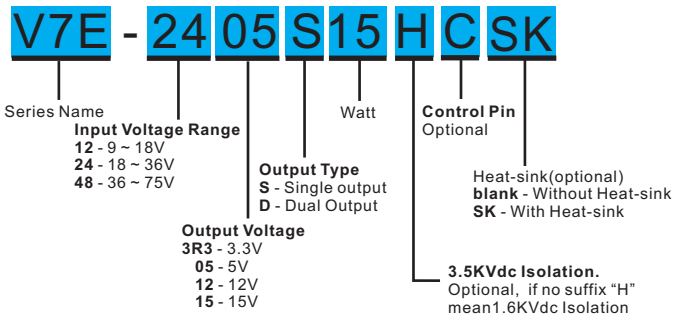
Case Material	Nickel-coated Copper
Pin Material	Φ1.0mm Brass Solder-coated
Potting Material	Epoxy (UL94V-0 rated)
Weight	31.0g
Dimensions	2.00"x1.00"x0.4"

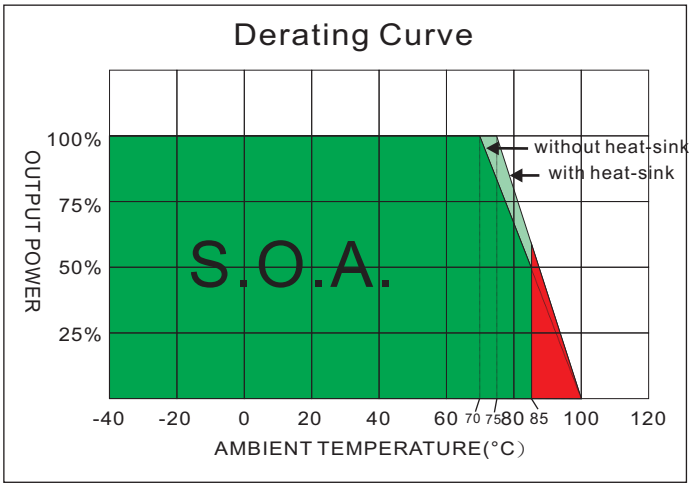
ABSOLUTE SPECIFICATIONS (9)

These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.

Input Surge Voltage(100mS)	
12 Models	30 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.)
V7E-123R3S15	9-18	30	1031	3.3	0	3000	82	3300
V7E-1205S15	9-18	30	1524	5	0	3000	84	3300
V7E-1212S15	9-18	30	1453	12	0	1250	88	1000
V7E-1215S15	9-18	30	1436	15	0	1000	89	680
V7E-123R3D15	9-18	30	1031	±3.3	0	±1500	82	±1000
V7E-1205D15	9-18	30	1506	±5	0	±1500	85	±1000
V7E-1212D15	9-18	30	1453	±12	0	±625	88	±470
V7E-1215D15	9-18	30	1453	±15	0	±500	88	±330
V7E-243R3S15	18-36	25	515	3.3	0	3000	82	3300
V7E-2405S15	18-36	25	753	5	0	3000	85	3300
V7E-2412S15	18-36	25	718	12	0	1250	89	1000
V7E-2415S15	18-36	25	718	15	0	1000	89	680
V7E-243R3D15	18-36	25	515	±3.3	0	±1500	82	±1000
V7E-2405D15	18-36	25	753	±5	0	±1500	85	±1000
V7E-2412D15	18-36	25	718	±12	0	±625	88	±470
V7E-2415D15	18-36	25	718	±15	0	±500	88	±330
V7E-483R3S15	36-75	20	257	3.3	0	3000	82	3300
V7E-4805S15	36-75	20	376	5	0	3000	85	3300
V7E-4812S15	36-75	20	359	12	0	1250	89	1000
V7E-4815S15	36-75	20	359	15	0	1000	89	680
V7E-483R3D15	36-75	20	257	±3.3	0	±1500	82	±1000
V7E-4805D15	36-75	20	376	±5	0	±1500	85	±1000
V7E-4812D15	36-75	20	363	±12	0	±625	88	±470
V7E-4815D15	36-75	20	363	±15	0	±500	88	±330

Suffix "H" means 3.5KVdc isolation

NOTE

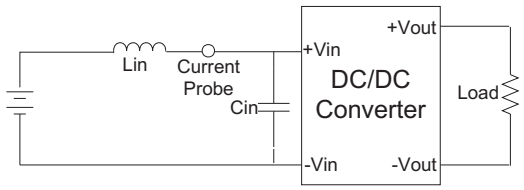
1. Load regulation for dual output: minimum load to full load balanced on all outputs.
2. One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
3. Measured with 20MHz bandwidth and 1.0μF ceramic capacitor.
4. Tested by minimal Vin and constant resistive load.
5. Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
6. Measured Input reflected ripple current with a simulated source inductance of 12μH.
7. To order the converter with CTRL function, please add suffix C (e.g. V7E-4812S10C).
8. Input filter components (C1, L, C2) 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.
9. An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
   The filter capacitor Motien suggest: Nippon chemi-con KY series, 220μF/100V.
10. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

TEST CONFIGURATIONS

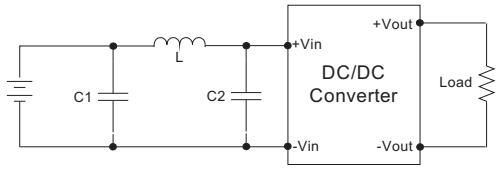
Input Reflected Ripple Current Test Step

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



EMI Filter

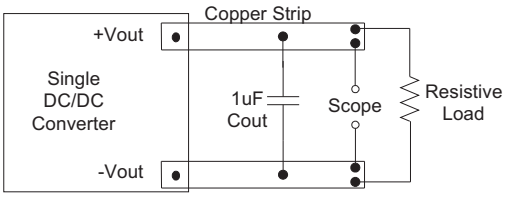
Input filter components (C1,L,C2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



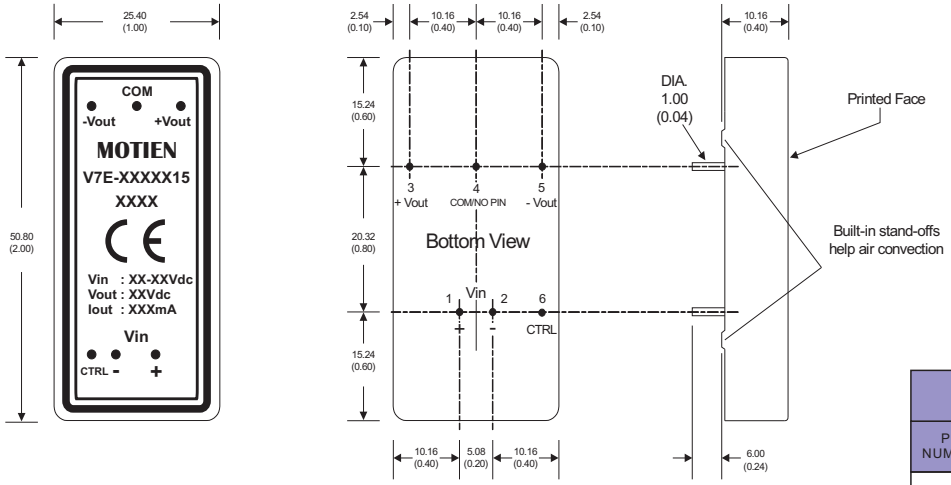
	C1	L	C2
V7E-12XXXXX	330uF/100V	12uH	100uF/100V
V7E-24XXXXX	330uF/100V	12uH	100uF/100V
V7E-48XXXXX	330uF/100V	12uH	100uF/100V

Output Ripple & Noise Measurement Test

Use a capacitor Cout(1.0μF) measurement.
The Scope measurement bandwidth is 0-20MHz.



MECHANICAL SPECIFICATIONS



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)

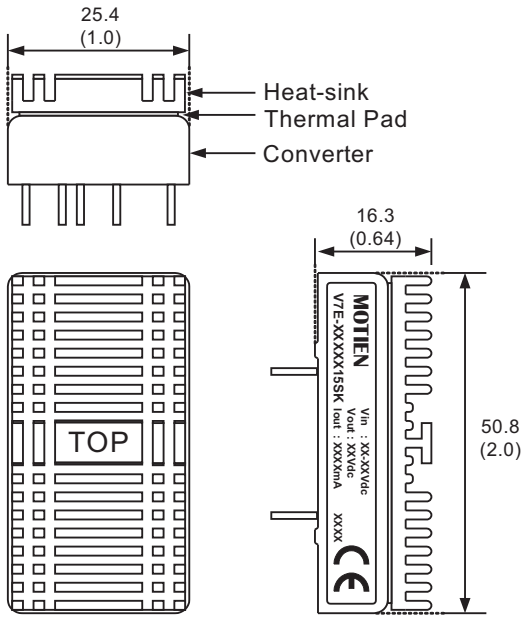
PIN CONNECTIONS				
PIN NUMBER	Standard		Remote Control (Optional)	
	SINGLE	DUAL	SINGLE	DUAL
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
3	+V Output	+V Output	+V Output	+V Output
4	N.P.	Common	N.P.	Common
5	−V Output	−V Output	−V Output	−V Output
6	N.P.	N.P.	CTRL	CTRL

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

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

MECHANICAL SPECIFICATIONS

With Heat-sink



Order code:	V7E-XXXXS15SK(contain: heat-sink, thermal pad)
Material:	Aluminum
Finish:	Anodic treatment (black)
Weight:	11.2 g (0.39oz) (without converter)

Note:
1. Converters will be supplied with heat-sinks already mounted.
   Please contact factory for quotation.