

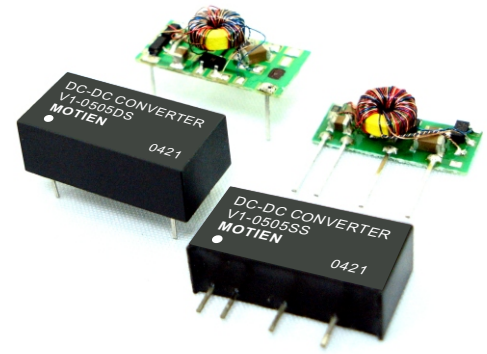
V1-1W Series



1W Unregulated Single & Dual output

Features

- 7 Pin SIL / 14 Pin DIL Package
- 1000 VDC Isolation
- Up to 6000 VDC Isolation
- Low Ripple and Noise
- Efficiency up to 80%
- -40 ~ 85°C Operation Temperature Range
- Non-Conductive Black Plastic Case
- EN55022 CLASS B For SIP Series



The V1 series is a family of cost effective 1W single & dual output DC-DC converters. These converters achieve low cost and ultra-miniature SIP 7 pin or DIP 14 pin size. Devices are encapsulated using flame retardant resin. The models operate from input voltage of 5, 12, 24, 48 Vdc 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 1000Vdc~6000Vdc input/output isolation, high efficiency operation and output voltage accuracy of $\pm 3\%$ maximum. Standard features include an input range of $\pm 10\%$ tolerance and low output noise and ripple.

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

| OUTPUT SPECIFICATIONS | |
|-------------------------------------|--|
| Voltage accuracy | $\pm 3\%$ |
| Line regulation | $\pm 1.2\%$ / Per 1% Vin Change |
| Load regulation | (From 20% to 100% Load) $\pm 10\%$ (Output 3.3V Model) $\pm 20\%$ |
| Ripple & noise(20 MHz bandwidth)(1) | 75mV pk-pk |
| Temperature coefficient | $\pm 0.02\%/^{\circ}\text{C}$ |
| Capacitor load(2) | See table |

| INPUT SPECIFICATIONS | |
|-----------------------------------|------------|
| Voltage Range | $\pm 10\%$ |
| Max. Input Current | See table |
| No-Load Input Current | See table |
| Input Filter | Capacitors |
| Input Reflected Ripple Current(3) | 20mA pk-pk |

| GENERAL SPECIFICATIONS | |
|--|----------------|
| Efficiency | See table |
| I/O Isolation Voltage(3 sec) Input/Output | 1000~6000Vdc |
| I/O Isolation Capacitance | 60 pF Typ. |
| I/O Isolation Resistance | 1000M Ohm |
| Switching Frequency | Variable 80kHz |
| Humidity | 95% rel H |
| Reliability Calculated MTBF(MIL-HDBK-217 F) | >1.121 Mhrs |
| Safety Standard : (designed to meet) | IEC 60950-1 |

| EMC SPECIFICATIONS (For SIP Series) | | |
|-------------------------------------|------------------------------|------------------|
| Radiated Emissions | EN55022 | CLASS B |
| | FCC 47 CFR Part 15 Subpart A | CLASS B |
| ESD | IEC 61000-4-2 | Perf. Criteria B |
| RS | IEC 61000-4-3 | Perf. Criteria A |

| PHYSICAL SPECIFICATIONS | |
|-------------------------|--|
| Case Material | Non-conductive Black Plastic(UL94V-0 rated) |
| Pin Material | 0.5mm Alloy42 Solder-coated |
| Potting Material | Epoxy (UL94V-0 rated) |
| Weight | (SIP/2.3g) (DIP/2.6g) |
| Dimensions | SIP Case 0.76"x0.24"x0.39" DIP Case 0.80"x0.40"x0.27" |

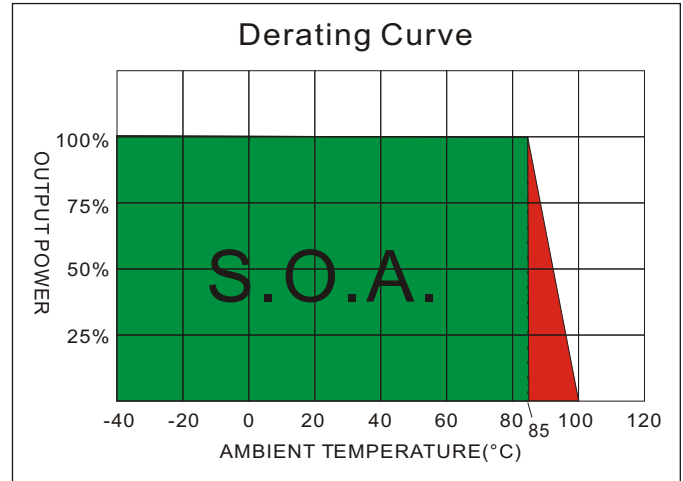
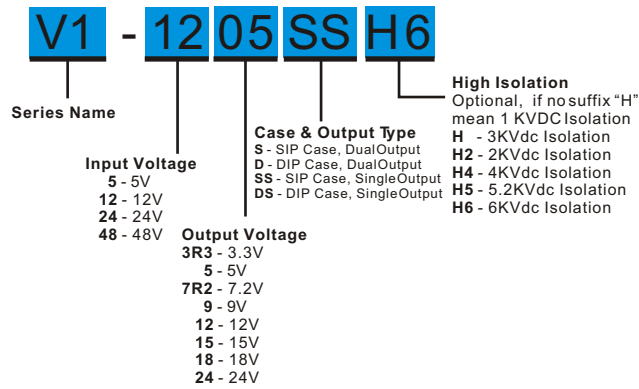
| ENVIRONMENT SPECIFICATIONS | |
|----------------------------|--------------------------------|
| Operating Temperature | -40°C~85°C(See Derating Curve) |
| Maximum Case Temperature | 100°C |
| Storage Temperature | -40°C~125°C |
| Cooling | Nature Convection |

| ABSOLUTE MAXIMUM RATINGS(4) | | |
|--|--|----------|
| These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability. | | |
| Input Voltage(100mS) | | |
| 5 Modes | | 0~7 Vdc |
| 12 Modes | | 0~15 Vdc |
| 24 Modes | | 0~28 Vdc |
| 48 Modes | | 0~54 Vdc |
| Lead Soldering Temperature (1.5mm from case 10sec.) | | 260°C |

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, MOTIEN Technologies accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.

V1 - 1W Unregulated Single & Dual output

PARTNUMBER STRUCTURE



MODEL SELECTION GUIDE

| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current | | OUTPUT Voltage (Vdc) | OUTPUT Current Full load (mA) | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|--------------|---------------------------|---------------|----------------|----------------------|-------------------------------|-------------------|--------------------|
| | | No-Load (mA) | Full Load (mA) | | | | |
| V1-053R3S | 5 | 30 | 307 | ±3.3 | ±151.5 | 65 | ±100 |
| V1-0505S | 5 | 30 | 270 | ±5 | ±100 | 74 | ±100 |
| V1-057R2S | 5 | 30 | 259 | ±7.2 | ±69.44 | 77 | ±100 |
| V1-0509S | 5 | 30 | 256 | ±9 | ±55.55 | 78 | ±100 |
| V1-0512S | 5 | 30 | 256 | ±12 | ±41.67 | 78 | ±100 |
| V1-0515S | 5 | 30 | 250 | ±15 | ±33.33 | 80 | ±100 |
| V1-0518S | 5 | 30 | 253 | ±18 | ±27.77 | 79 | ±100 |
| V1-0524S | 5 | 30 | 250 | ±24 | ±20.83 | 80 | ±100 |
| V1-123R3S | 12 | 20 | 126 | ±3.3 | ±151.5 | 66 | ±100 |
| V1-1205S | 12 | 20 | 111 | ±5 | ±100 | 75 | ±100 |
| V1-127R2S | 12 | 20 | 109 | ±7.2 | ±69.44 | 76 | ±100 |
| V1-1209S | 12 | 20 | 109 | ±9 | ±55.55 | 76 | ±100 |
| V1-1212S | 12 | 20 | 106 | ±12 | ±41.67 | 78 | ±100 |
| V1-1215S | 12 | 20 | 104 | ±15 | ±33.33 | 80 | ±100 |
| V1-1218S | 12 | 20 | 104 | ±18 | ±27.77 | 80 | ±100 |
| V1-1224S | 12 | 20 | 109 | ±24 | ±20.83 | 76 | ±100 |
| V1-243R3S | 24 | 10 | 61 | ±3.3 | ±151.5 | 68 | ±100 |
| V1-2405S | 24 | 10 | 56 | ±5 | ±100 | 74 | ±100 |
| V1-247R2S | 24 | 10 | 54 | ±7.2 | ±69.44 | 76 | ±100 |
| V1-2409S | 24 | 10 | 54 | ±9 | ±55.55 | 76 | ±100 |
| V1-2412S | 24 | 10 | 53 | ±12 | ±41.67 | 78 | ±100 |
| V1-2415S | 24 | 10 | 53 | ±15 | ±33.33 | 78 | ±100 |
| V1-2418S | 24 | 10 | 53 | ±18 | ±27.77 | 78 | ±100 |
| V1-2424S | 24 | 10 | 53 | ±24 | ±20.83 | 78 | ±100 |
| V1-483R3S | 48 | 6 | 34 | ±3.3 | ±151.5 | 60 | ±100 |
| V1-4805S | 48 | 6 | 30 | ±5 | ±100 | 70 | ±100 |
| V1-487R2S | 48 | 6 | 30 | ±7.2 | ±69.44 | 70 | ±100 |
| V1-4809S | 48 | 6 | 29 | ±9 | ±55.55 | 72 | ±100 |
| V1-4812S | 48 | 6 | 28 | ±12 | ±41.67 | 74 | ±100 |
| V1-4815S | 48 | 6 | 28 | ±15 | ±33.33 | 74 | ±100 |
| V1-4818S | 48 | 6 | 29 | ±18 | ±27.77 | 72 | ±100 |
| V1-4824S | 48 | 6 | 30 | ±24 | ±20.83 | 70 | ±100 |

Suffix "H" means 3 KVdcisolation
Suffix "H5" means 5.2 KVdcisolation

Suffix "H2" means 2 KVdcisolation
Suffix "H6" means 6 KVdcisolation

Suffix "H4" means 4 KVdcisolation

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

V1 - 1W Unregulated 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) | | Full load (mA) | | | |
| V1-053R3D | 5 | 30 | 307 | ±3.3 | ±151.5 | 65 | ±100 | |
| V1-0505D | 5 | 30 | 270 | ±5 | ±100 | 74 | ±100 | |
| V1-057R2D | 5 | 30 | 259 | ±7.2 | ±69.44 | 77 | ±100 | |
| V1-0509D | 5 | 30 | 256 | ±9 | ±55.55 | 78 | ±100 | |
| V1-0512D | 5 | 30 | 256 | ±12 | ±41.67 | 78 | ±100 | |
| V1-0515D | 5 | 30 | 250 | ±15 | ±33.33 | 80 | ±100 | |
| V1-0518D | 5 | 30 | 256 | ±18 | ±27.77 | 78 | ±100 | |
| V1-0524D | 5 | 30 | 266 | ±24 | ±20.83 | 75 | ±100 | |
| V1-123R3D | 12 | 20 | 126 | ±3.3 | ±151.5 | 66 | ±100 | |
| V1-1205D | 12 | 20 | 111 | ±5 | ±100 | 75 | ±100 | |
| V1-127R2D | 12 | 20 | 115 | ±7.2 | ±69.44 | 72 | ±100 | |
| V1-1209D | 12 | 20 | 111 | ±9 | ±55.55 | 75 | ±100 | |
| V1-1212D | 12 | 20 | 106 | ±12 | ±41.67 | 78 | ±100 | |
| V1-1215D | 12 | 20 | 106 | ±15 | ±33.33 | 78 | ±100 | |
| V1-1218D | 12 | 20 | 111 | ±18 | ±27.77 | 75 | ±100 | |
| V1-1224D | 12 | 20 | 111 | ±24 | ±20.83 | 75 | ±100 | |
| V1-243R3D | 24 | 10 | 62 | ±3.3 | ±151.5 | 67 | ±100 | |
| V1-2405D | 24 | 10 | 57 | ±5 | ±100 | 72 | ±100 | |
| V1-247R2D | 24 | 10 | 59 | ±7.2 | ±69.44 | 70 | ±100 | |
| V1-2409D | 24 | 10 | 55 | ±9 | ±55.55 | 75 | ±100 | |
| V1-2412D | 24 | 10 | 53 | ±12 | ±41.67 | 78 | ±100 | |
| V1-2415D | 24 | 10 | 55 | ±15 | ±33.33 | 75 | ±100 | |
| V1-2418D | 24 | 10 | 57 | ±18 | ±27.77 | 72 | ±100 | |
| V1-2424D | 24 | 10 | 59 | ±24 | ±20.83 | 70 | ±100 | |
| V1-053R3SS | 5 | 30 | 267 | 3.3 | 303 | 75 | 220 | |
| V1-0505SS | 5 | 30 | 256 | 5 | 200 | 78 | 220 | |
| V1-057R2SS | 5 | 30 | 270 | 7.2 | 138.9 | 74 | 220 | |
| V1-0509SS | 5 | 30 | 267 | 9 | 111.1 | 75 | 220 | |
| V1-0512SS | 5 | 30 | 263 | 12 | 83.3 | 76 | 220 | |
| V1-0515SS | 5 | 30 | 263 | 15 | 66.7 | 76 | 220 | |
| V1-0518SS | 5 | 30 | 267 | 18 | 55.6 | 75 | 220 | |
| V1-0524SS | 5 | 30 | 278 | 24 | 41.7 | 72 | 220 | |
| V1-123R3SS | 12 | 20 | 113 | 3.3 | 303 | 74 | 220 | |
| V1-1205SS | 12 | 20 | 113 | 5 | 200 | 74 | 220 | |
| V1-127R2SS | 12 | 20 | 113 | 7.2 | 138.9 | 74 | 220 | |
| V1-1209SS | 12 | 20 | 111 | 9 | 111.1 | 75 | 220 | |
| V1-1212SS | 12 | 20 | 108 | 12 | 83.3 | 77 | 220 | |
| V1-1215SS | 12 | 20 | 106 | 15 | 66.7 | 78 | 220 | |
| V1-1218SS | 12 | 20 | 106 | 18 | 55.6 | 78 | 220 | |
| V1-1224SS | 12 | 20 | 113 | 24 | 41.7 | 75 | 220 | |
| V1-243R3SS | 24 | 10 | 56 | 3.3 | 303 | 75 | 220 | |
| V1-2405SS | 24 | 10 | 54 | 5 | 200 | 77 | 220 | |
| V1-247R2SS | 24 | 10 | 56 | 7.2 | 138.9 | 75 | 220 | |
| V1-2409SS | 24 | 10 | 56 | 9 | 111.1 | 75 | 220 | |
| V1-2412SS | 24 | 10 | 53 | 12 | 83.3 | 78 | 220 | |
| V1-2415SS | 24 | 10 | 53 | 15 | 66.7 | 78 | 220 | |
| V1-2418SS | 24 | 10 | 53 | 18 | 55.6 | 78 | 220 | |
| V1-2424SS | 24 | 10 | 53 | 24 | 41.7 | 78 | 220 | |

Suffix "H" means 3 KVdc isolation
 Suffix "H5" means 5.2 KVdc isolation

Suffix "H2" means 2 KVdc isolation
 Suffix "H6" means 6 KVdc isolation

Suffix "H4" means 4 KVdc isolation

The models listed above is KV 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

V1 - 1W Unregulated Single & Dual output

| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current | | OUTPUT Voltage (Vdc) | OUTPUT Current Full load (mA) | EFFICIENCY @FL(%) | Capacitor Load(μF) |
|--------------|---------------------------|---------------|----------------|----------------------|-------------------------------|-------------------|--------------------|
| | | No-Load (mA) | Full Load (mA) | | | | |
| V1-483R3SS | 48 | 6 | 29 | 3.3 | 303 | 72 | 220 |
| V1-4805SS | 48 | 6 | 29 | 5 | 200 | 72 | 220 |
| V1-487R2SS | 48 | 6 | 29 | 7.2 | 138.9 | 72 | 220 |
| V1-4809SS | 48 | 6 | 28 | 9 | 111.1 | 74 | 220 |
| V1-4812SS | 48 | 6 | 28 | 12 | 83.3 | 74 | 220 |
| V1-4815SS | 48 | 6 | 28 | 15 | 66.7 | 75 | 220 |
| V1-4818SS | 48 | 6 | 29 | 18 | 55.6 | 72 | 220 |
| V1-4824SS | 48 | 6 | 30 | 24 | 41.7 | 70 | 220 |
| V1-053R3DS | 5 | 30 | 267 | 3.3 | 303 | 75 | 220 |
| V1-0505DS | 5 | 30 | 256 | 5 | 200 | 78 | 220 |
| V1-057R2DS | 5 | 30 | 267 | 7.2 | 138.9 | 75 | 220 |
| V1-0509DS | 5 | 30 | 267 | 9 | 111.1 | 75 | 220 |
| V1-0512DS | 5 | 30 | 263 | 12 | 83.3 | 76 | 220 |
| V1-0515DS | 5 | 30 | 263 | 15 | 66.7 | 76 | 220 |
| V1-0518DS | 5 | 30 | 267 | 18 | 55.6 | 75 | 220 |
| V1-0524DS | 5 | 30 | 278 | 24 | 41.7 | 72 | 220 |
| V1-123R3DS | 12 | 20 | 113 | 3.3 | 303 | 74 | 220 |
| V1-1205DS | 12 | 20 | 113 | 5 | 200 | 74 | 220 |
| V1-127R2DS | 12 | 20 | 113 | 7.2 | 138.9 | 74 | 220 |
| V1-1209DS | 12 | 20 | 111 | 9 | 111.1 | 75 | 220 |
| V1-1212DS | 12 | 20 | 108 | 12 | 83.3 | 77 | 220 |
| V1-1215DS | 12 | 20 | 106 | 15 | 66.7 | 78 | 220 |
| V1-1218DS | 12 | 20 | 106 | 18 | 55.6 | 78 | 220 |
| V1-1224DS | 12 | 20 | 111 | 24 | 41.7 | 75 | 220 |
| V1-243R3DS | 24 | 10 | 56 | 3.3 | 303 | 75 | 220 |
| V1-2405DS | 24 | 10 | 54 | 5 | 200 | 77 | 220 |
| V1-247R2DS | 24 | 10 | 56 | 7.2 | 138.9 | 75 | 220 |
| V1-2409DS | 24 | 10 | 56 | 9 | 111.1 | 75 | 220 |
| V1-2412DS | 24 | 10 | 53 | 12 | 83.3 | 78 | 220 |
| V1-2415DS | 24 | 10 | 53 | 15 | 66.7 | 78 | 220 |
| V1-2418DS | 24 | 10 | 53 | 18 | 55.6 | 78 | 220 |
| V1-2424DS | 24 | 10 | 53 | 24 | 41.7 | 78 | 220 |

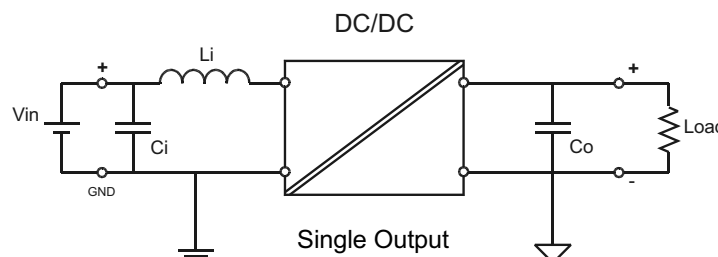
Suffix "H" means 3 KVdc isolation
 Suffix "H5" means 5.2 KVdc isolation

Suffix "H2" means 2 KVdc isolation
 Suffix "H6" means 6 KVdc isolation

Suffix "H4" means 4 KVdc isolation

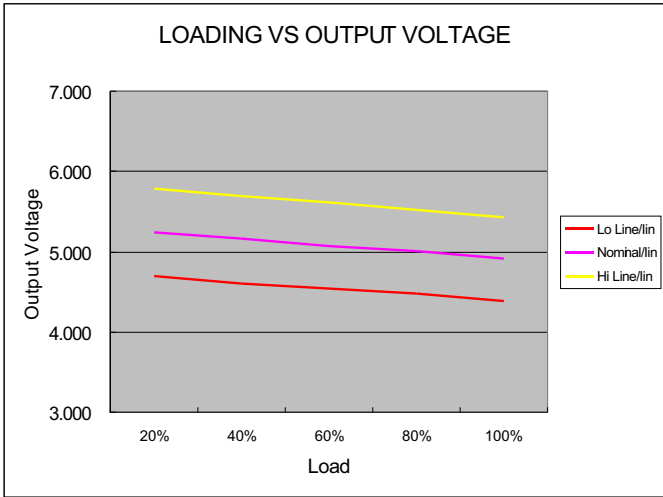
NOTE

1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal V_{in} and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12μH.
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.
6. For reduce converter's ripple & noise, it is recommended to add a 4.7μF~100μF(±4.7μF~±68μF for dual output) capacitor in output end. For EMI performance improvement, it is recommended to add a 12μH inductor and a 10μF~100μF capacitor in input end.

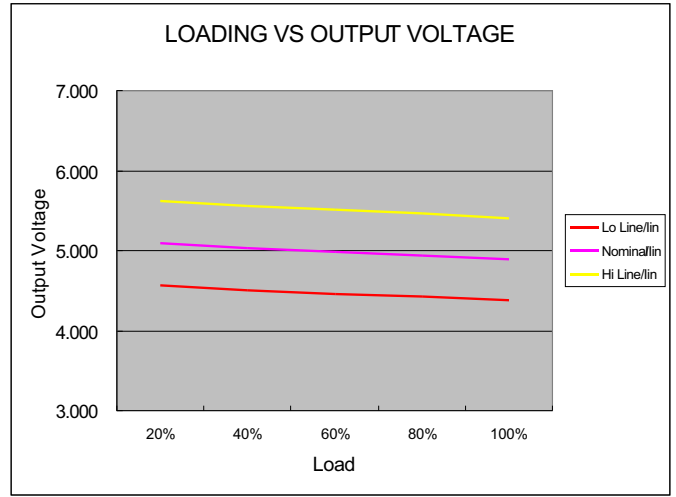


The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

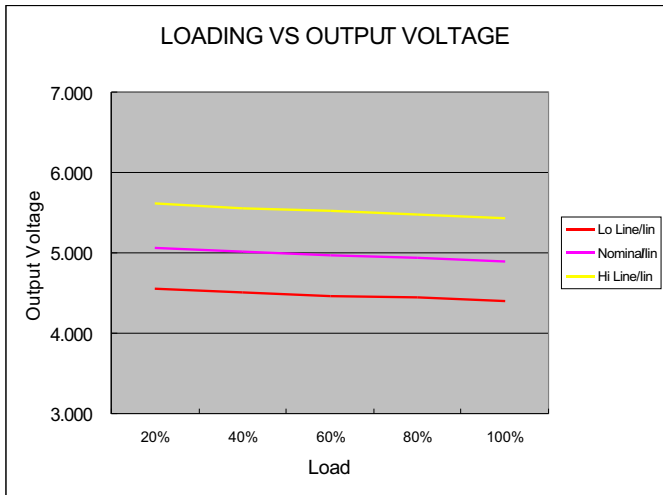
V1 - 1W Unregulated Single & Dual output



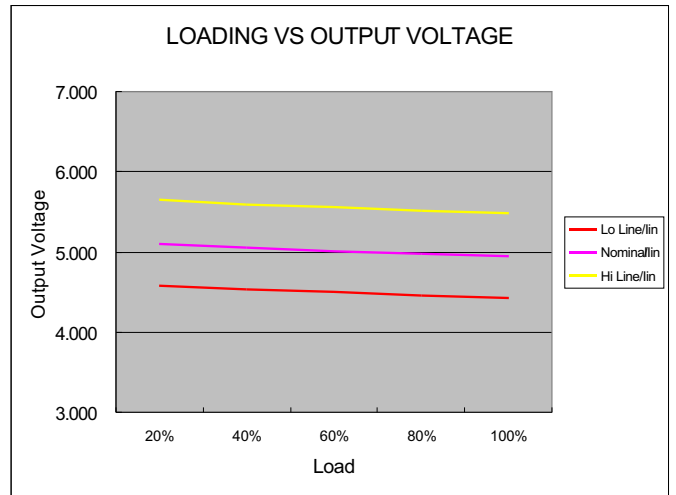
5 Models



12 Models

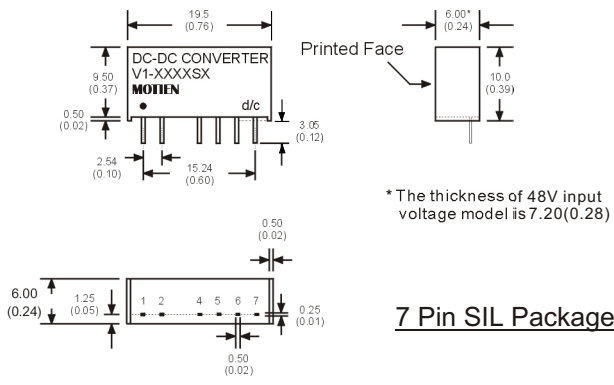


24 Models

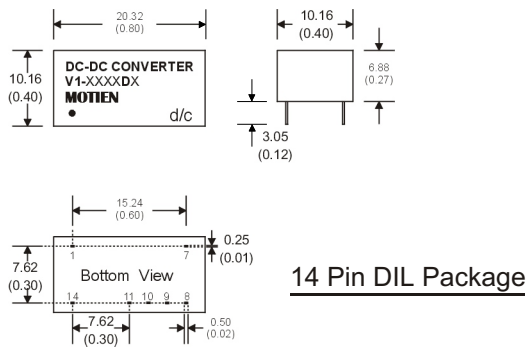


48 Models

MECHANICAL SPECIFICATIONS



| PIN CONNECTIONS | | | | |
|-----------------|-----------|-----------|-----------|-----------|
| PIN NUMBER | SINGLE | DUAL | SINGLE-H | DUAL-H |
| 1 | +V Input | +V Input | +V Input | +V Input |
| 2 | -V Input | -V Input | -V Input | -V Input |
| 4 | -V Output | -V Output | N.P. | N.P. |
| 5 | N.P. | Common | -V Output | -V Output |
| 6 | +V Output | +V Output | N.P. | Common |
| 7 | N.P. | N.P. | +V Output | +V Output |



| PIN CONNECTIONS | | | | |
|-----------------|-----------|-----------|-----------|-----------|
| PIN NUMBER | SINGLE | DUAL | SINGLE-H | DUAL-H |
| 1 | -V Input | -V Input | -V Input | -V Input |
| 7 | N.C. | N.C. | N.C. | N.C. |
| 8 | N.P. | Common | +V Output | +V Output |
| 9 | +V Output | +V Output | N.P. | Common |
| 10 | N.P. | N.P. | -V Output | -V Output |
| 11 | -V Output | -V Output | N.P. | N.P. |
| 14 | +V Input | +V Input | +V Input | +V Input |

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