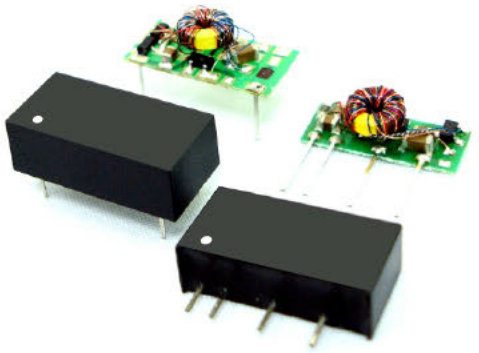
# V1-0.75W Series

SCHMID-M

*0.75W 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

The V1 series is a family of cost effective 0.75W 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 ±3% maximum. Standard features include an input range of ±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 | ±3% |
| Line regulation | ±1.2% / Per 1% Vin Change |
| Load regulation | (From 20% to 100% Load) ±10%<br>(Output 3.3V Model) ±20% |
| Ripple & noise (20 MHz bandwidth)(1) | 75mV pk pk |
| Temperature coefficient | ±0.02%/°C |
| Capacitor load(2) | See table |

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

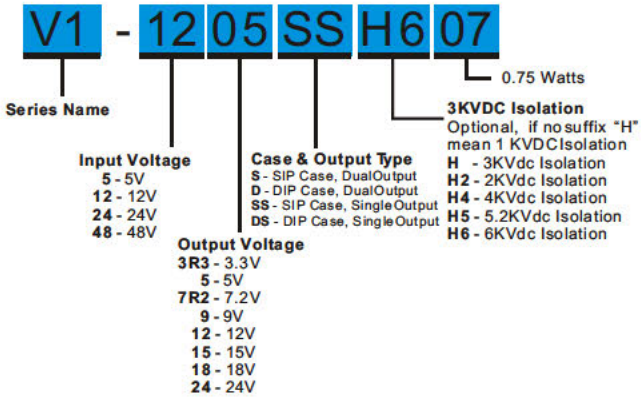
| GENERAL SPECIFICATIONS | |
|---|---|
| Efficiency | See table |
| I/O Isolation Voltage(3 sec) | |
| Input/Output | 1000~6000Vdc |
| I/O Isolation Capacitance | 60 pF Typ. |
| I/O Isolation Resistance | 1000M Ohm |
| Switching Frequency | Variable 80kHz |
| Humidity | 95% rel H |
| Reliability Calculated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

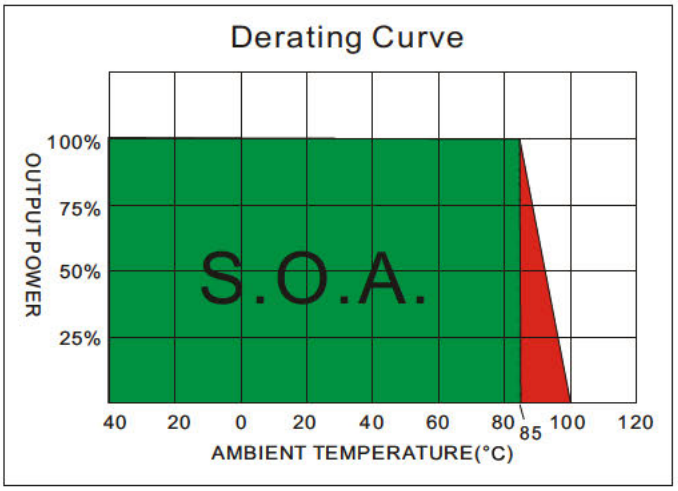
| PHYSICAL SPECIFICATIONS | |
|---|---|
| Case Material | Non conductive Black Plastic(UL94V 0 rated) |
| Pin Material | 0.5mm Alloy42 Solder coated |
| Potting Material | Epoxy (UL94V 0 rated) |
| Weight | (SIP/2.3g) (DIP/2.6g) |
| Dimensions | SIP Case 0.76"x0.24"x0.39"<br>DIP Case 0.80"x0.40"x0.27"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

| 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<br>(1.5mm from case 10sec.) | 260°C |

## PART NUMBER STRUCTURE




## MODEL SELECTION GUIDE

| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current No Load (mA) | INPUT Current Full Load (mA) | OUTPUT Voltage (Vdc) | OUTPUT Current Full load (mA) | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|---|---|---|---|---|---|---|---|
| V1 053R3S07 | 5 | 30 | 230 | ±3.3 | ±113.6 | 65 | ±100 |
| V1 0505S07 | 5 | 30 | 211 | ±5 | ±75 | 71 | ±100 |
| V1 057R2S07 | 5 | 30 | 202 | ±7.2 | ±52 | 74 | ±100 |
| V1 0509S07 | 5 | 30 | 202 | ±9 | ±41.6 | 74 | ±100 |
| V1 0512S07 | 5 | 30 | 197 | ±12 | ±31.2 | 76 | ±100 |
| V1 0515S07 | 5 | 30 | 197 | ±15 | ±25 | 76 | ±100 |
| V1 0518S07 | 5 | 30 | 189 | ±18 | ±20.8 | 79 | ±100 |
| V1 0524S07 | 5 | 30 | 189 | ±24 | ±15.6 | 79 | ±100 |
| V1 123R3S07 | 12 | 20 | 126 | ±3.3 | ±113.6 | 65 | ±100 |
| V1 1205S07 | 12 | 20 | 85 | ±5 | ±75 | 73 | ±100 |
| V1 127R2S07 | 12 | 20 | 84 | ±7.2 | ±52 | 74 | ±100 |
| V1 1209S07 | 12 | 20 | 84 | ±9 | ±41.6 | 74 | ±100 |
| V1 1212S07 | 12 | 20 | 80 | ±12 | ±31.2 | 78 | ±100 |
| V1 1215S07 | 12 | 20 | 78 | ±15 | ±25 | 80 | ±100 |
| V1 1218S07 | 12 | 20 | 78 | ±18 | ±20.8 | 80 | ±100 |
| V1 1224S07 | 12 | 20 | 80 | ±24 | ±15.6 | 78 | ±100 |
| V1 243R3S07 | 24 | 10 | 46 | ±3.3 | ±113.6 | 67 | ±100 |
| V1 2405S07 | 24 | 10 | 42 | ±5 | ±75 | 74 | ±100 |
| V1 247R2S07 | 24 | 10 | 41 | ±7.2 | ±52 | 76 | ±100 |
| V1 2409S07 | 24 | 10 | 41 | ±9 | ±41.6 | 76 | ±100 |
| V1 2412S07 | 24 | 10 | 40 | ±12 | ±31.2 | 78 | ±100 |
| V1 2415S07 | 24 | 10 | 40 | ±15 | ±25 | 78 | ±100 |
| V1 2418S07 | 24 | 10 | 40 | ±18 | ±20.8 | 78 | ±100 |
| V1 2424S07 | 24 | 10 | 40 | ±24 | ±15.6 | 78 | ±100 |
| V1 483R3S07 | 48 | 6 | 25 | ±3.3 | ±113.6 | 62 | ±100 |
| V1 4805S07 | 48 | 6 | 24 | ±5 | ±75 | 65 | ±100 |
| V1 487R2S07 | 48 | 6 | 22 | ±7.2 | ±52 | 70 | ±100 |
| V1 4809S07 | 48 | 6 | 21 | ±9 | ±41.6 | 72 | ±100 |
| V1 4812S07 | 48 | 6 | 21 | ±12 | ±31.2 | 74 | ±100 |
| V1 4815S07 | 48 | 6 | 21 | ±15 | ±25 | 74 | ±100 |
| V1 4818S07 | 48 | 6 | 21 | ±18 | ±20.8 | 72 | ±100 |
| V1 4824S07 | 48 | 6 | 22 | ±24 | ±15.6 | 70 | ±100 |

Suffix "H" means 3 KVdc isolation
Suffix "H2" means 2 KVdc isolation
Suffix "H4" means 4 KVdc isolation
Suffix "H5" means 5.2 KVdc isolation
Suffix "H6" means 6 KVdc isolation

| MODEL NUMBER | INPUT Voltage Range (Vdc) | INPUT Current No Load (mA) | INPUT Current Full Load (mA) | OUTPUT Voltage (Vdc) | OUTPUT Current Full load (mA) | EFFICIENCY @FL(%) | Capacitor Load(uF) |
|---|---|---|---|---|---|---|---|
| V1 053R3D07 | 5 | 30 | 230 | ±3.3 | ±113.6 | 65 | ±100 |
| V1 0505D07 | 5 | 30 | 211 | ±5 | ±75 | 71 | ±100 |
| V1 057R2D07 | 5 | 30 | 202 | ±7.2 | ±52 | 74 | ±100 |
| V1 0509D07 | 5 | 30 | 202 | ±9 | ±41.6 | 74 | ±100 |
| V1 0512D07 | 5 | 30 | 197 | ±12 | ±31.2 | 76 | ±100 |
| V1 0515D07 | 5 | 30 | 197 | ±15 | ±25 | 76 | ±100 |
| V1 0518D07 | 5 | 30 | 189 | ±18 | ±20.8 | 79 | ±100 |
| V1 0524D07 | 5 | 30 | 189 | ±24 | ±15.6 | 79 | ±100 |
| V1 123R3D07 | 12 | 20 | 126 | ±3.3 | ±113.6 | 65 | ±100 |
| V1 1205D07 | 12 | 20 | 85 | ±5 | ±75 | 73 | ±100 |
| V1 127R2D07 | 12 | 20 | 84 | ±7.2 | ±52 | 74 | ±100 |
| V1 1209D07 | 12 | 20 | 84 | ±9 | ±41.6 | 74 | ±100 |
| V1 1212D07 | 12 | 20 | 80 | ±12 | ±31.2 | 78 | ±100 |
| V1 1215D07 | 12 | 20 | 78 | ±15 | ±25 | 80 | ±100 |
| V1 1218D07 | 12 | 20 | 78 | ±18 | ±20.8 | 80 | ±100 |
| V1 1224D07 | 12 | 20 | 80 | ±24 | ±15.6 | 78 | ±100 |
| V1 243R3D07 | 24 | 10 | 46 | ±3.3 | ±113.6 | 67 | ±100 |
| V1 2405D07 | 24 | 10 | 42 | ±5 | ±75 | 74 | ±100 |
| V1 247R2D07 | 24 | 10 | 41 | ±7.2 | ±52 | 76 | ±100 |
| V1 2409D07 | 24 | 10 | 41 | ±9 | ±41.6 | 76 | ±100 |
| V1 2412D07 | 24 | 10 | 40 | ±12 | ±31.2 | 78 | ±100 |
| V1 2415D07 | 24 | 10 | 40 | ±15 | ±25 | 78 | ±100 |
| V1 2418D07 | 24 | 10 | 40 | ±18 | ±20.8 | 78 | ±100 |
| V1 2424D07 | 24 | 10 | 40 | ±24 | ±15.6 | 78 | ±100 |
| V1 053R3SS07 | 5 | 30 | 205 | 3.3 | 227.3 | 73 | 220 |
| V1 0505SS07 | 5 | 30 | 200 | 5 | 150 | 75 | 220 |
| V1 057R2SS07 | 5 | 30 | 202 | 7.2 | 104.2 | 74 | 220 |
| V1 0509SS07 | 5 | 30 | 200 | 9 | 83.3 | 75 | 220 |
| V1 0512SS07 | 5 | 30 | 197 | 12 | 62.5 | 76 | 220 |
| V1 0515SS07 | 5 | 30 | 197 | 15 | 50 | 76 | 220 |
| V1 0518SS07 | 5 | 30 | 197 | 18 | 41.7 | 76 | 220 |
| V1 0524SS07 | 5 | 30 | 194 | 24 | 31.2 | 77 | 220 |
| V1 123R3SS07 | 12 | 20 | 85 | 3.3 | 227.3 | 73 | 220 |
| V1 1205SS07 | 12 | 20 | 84 | 5 | 150 | 74 | 220 |
| V1 127R2SS07 | 12 | 20 | 84 | 7.2 | 104.2 | 74 | 220 |
| V1 1209SS07 | 12 | 20 | 83 | 9 | 83.3 | 75 | 220 |
| V1 1212SS07 | 12 | 20 | 81 | 12 | 62.5 | 77 | 220 |
| V1 1215SS07 | 12 | 20 | 80 | 15 | 50 | 78 | 220 |
| V1 1218SS07 | 12 | 20 | 80 | 18 | 41.7 | 78 | 220 |
| V1 1224SS07 | 12 | 20 | 80 | 24 | 31.2 | 78 | 220 |
| V1 243R3SS07 | 24 | 10 | 42 | 3.3 | 227.3 | 74 | 220 |
| V1 2405SS07 | 24 | 10 | 42 | 5 | 150 | 74 | 220 |
| V1 247R2SS07 | 24 | 10 | 41 | 7.2 | 104.2 | 75 | 220 |
| V1 2409SS07 | 24 | 10 | 41 | 9 | 83.3 | 75 | 220 |
| V1 2412SS07 | 24 | 10 | 40 | 12 | 62.5 | 78 | 220 |
| V1 2415SS07 | 24 | 10 | 40 | 15 | 50 | 78 | 220 |
| V1 2418SS07 | 24 | 10 | 40 | 18 | 41.7 | 78 | 220 |
| V1 2424SS07 | 24 | 10 | 39 | 24 | 31.2 | 80 | 220 |

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|---|---|---|---|---|---|---|---|
| V1 483R3SS07 | 48 | 6 | 21 | 3.3 | 227.3 | 72 | 220 |
| V1 4805SS07 | 48 | 6 | 21 | 5 | 150 | 72 | 220 |
| V1 487R2SS07 | 48 | 6 | 21 | 7.2 | 104.2 | 72 | 220 |
| V1 4809SS07 | 48 | 6 | 21 | 9 | 83.3 | 74 | 220 |
| V1 4812SS07 | 48 | 6 | 21 | 12 | 62.5 | 74 | 220 |
| V1 4815SS07 | 48 | 6 | 20 | 15 | 50 | 75 | 220 |
| V1 4818SS07 | 48 | 6 | 20 | 18 | 41.7 | 75 | 220 |
| V1 4824SS07 | 48 | 6 | 21 | 24 | 31.2 | 73 | 220 |
| V1 053R3DS07 | 5 | 30 | 205 | 3.3 | 227.3 | 73 | 220 |
| V1 0505DS07 | 5 | 30 | 200 | 5 | 150 | 75 | 220 |
| V1 057R2DS07 | 5 | 30 | 202 | 7.2 | 104.2 | 74 | 220 |
| V1 0509DS07 | 5 | 30 | 200 | 9 | 83.3 | 75 | 220 |
| V1 0512DS07 | 5 | 30 | 197 | 12 | 62.5 | 76 | 220 |
| V1 0515DS07 | 5 | 30 | 197 | 15 | 50 | 76 | 220 |
| V1 0518DS07 | 5 | 30 | 197 | 18 | 41.7 | 76 | 220 |
| V1 0524DS07 | 5 | 30 | 194 | 24 | 31.2 | 77 | 220 |
| V1 123R3DS07 | 12 | 20 | 85 | 3.3 | 227.3 | 73 | 220 |
| V1 1205DS07 | 12 | 20 | 84 | 5 | 150 | 74 | 220 |
| V1 127R2DS07 | 12 | 20 | 84 | 7.2 | 104.2 | 74 | 220 |
| V1 1209DS07 | 12 | 20 | 83 | 9 | 83.3 | 75 | 220 |
| V1 1212DS07 | 12 | 20 | 81 | 12 | 62.5 | 77 | 220 |
| V1 1215DS07 | 12 | 20 | 80 | 15 | 50 | 78 | 220 |
| V1 1218DS07 | 12 | 20 | 80 | 18 | 41.7 | 78 | 220 |
| V1 1224DS07 | 12 | 20 | 80 | 24 | 31.2 | 78 | 220 |
| V1 243R3DS07 | 24 | 10 | 42 | 3.3 | 227.3 | 74 | 220 |
| V1 2405DS07 | 24 | 10 | 42 | 5 | 150 | 74 | 220 |
| V1 247R2DS07 | 24 | 10 | 41 | 7.2 | 104.2 | 75 | 220 |
| V1 2409DS07 | 24 | 10 | 41 | 9 | 83.3 | 75 | 220 |
| V1 2412DS07 | 24 | 10 | 40 | 12 | 62.5 | 78 | 220 |
| V1 2415DS07 | 24 | 10 | 40 | 15 | 50 | 78 | 220 |
| V1 2418DS07 | 24 | 10 | 40 | 18 | 41.7 | 78 | 220 |
| V1 2424DS07 | 24 | 10 | 39 | 24 | 31.2 | 80 | 220 |

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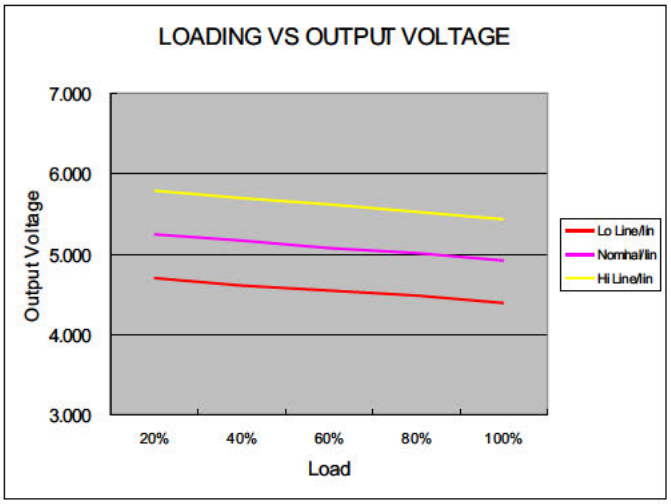
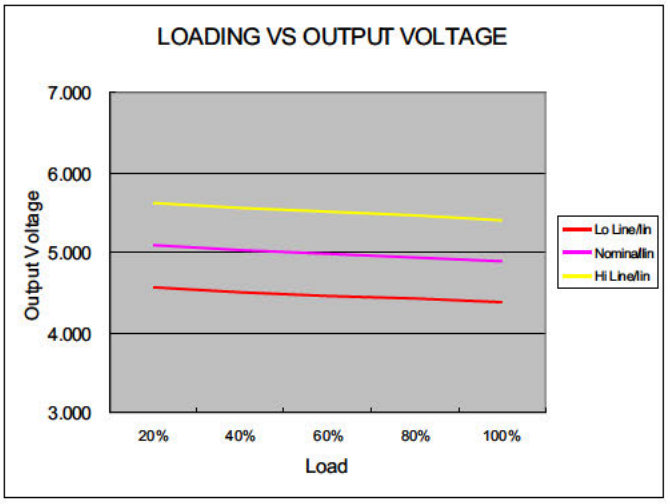
## NOTE

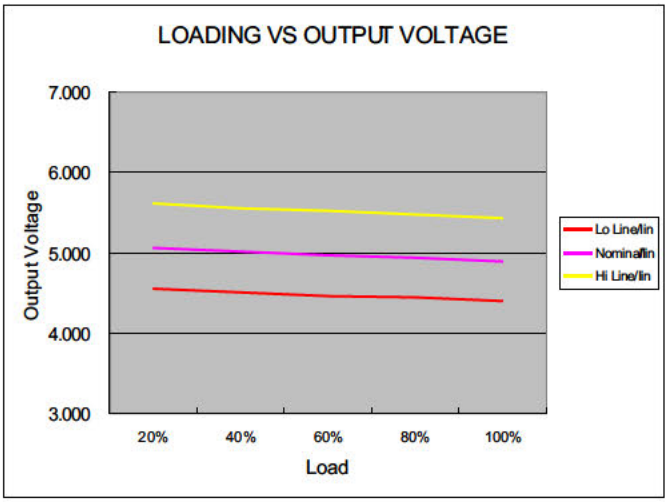
1. Ripple/Noise measured with 20MHz bandwidth.
2. Tested by minimal Vin and constant resistive load.
3. Measured Input reflected ripple current with a simulated source inductance of 12uH.
4. Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.
5. Operation under no load conditions will not damage these devices, however they may not meet all listed specifications.



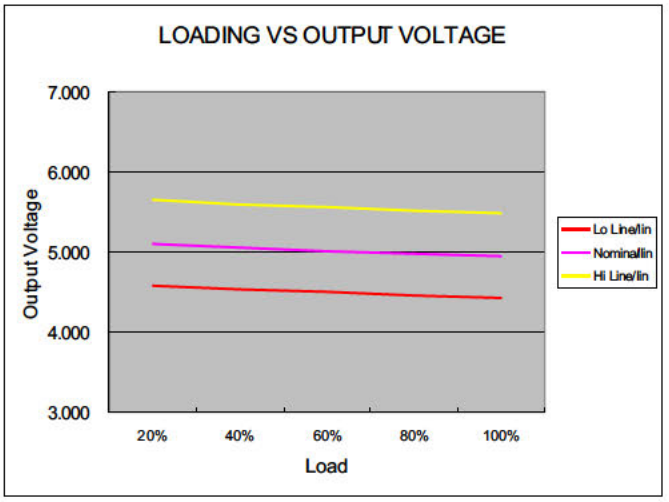

5 Models




12 Models

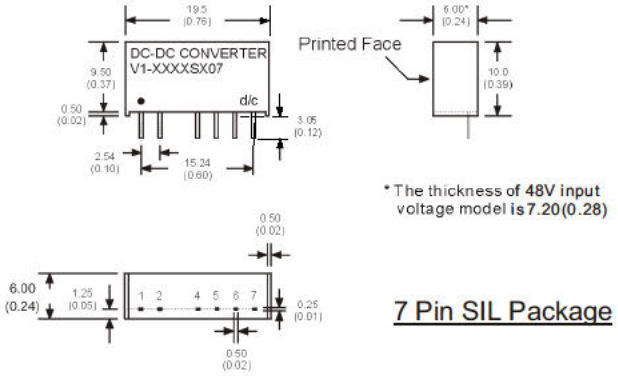



24 Models

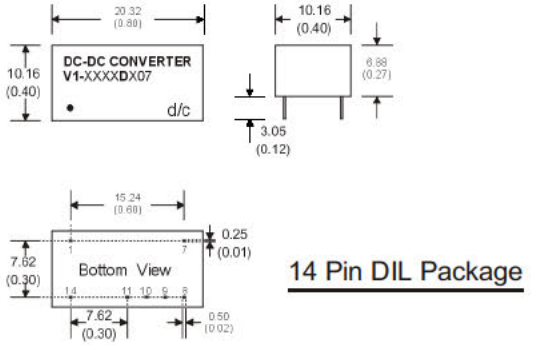



48 Models

## 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 )