

V1-0.75W Series

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, 24Vdc 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		PHYSICAL SPECIFICATIONS	
Voltage accuracy	$\pm 3\%$	Case Material	Non-conductive Black Plastic(UL94V-0 rated)
Line regulation	$\pm 1.2\%$ / Per 1% Vin Change	Pin Material	0.5mm Alloy42 Solder-coated
Load regulation	(From 20% to 100% Load) $\pm 10\%$ (Output 3.3V Model) $\pm 20\%$	Potting Material	Epoxy (UL94V-0 rated)
Ripple & noise (20 MHz bandwidth)(1)	75mV pk-pk	Weight	(SIP/2.3g) (DIP/2.6g)
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$	Dimensions	SIP Case 0.76"x0.24"x0.39" DIP Case 0.80"x0.40"x0.27"
Capacitor load(2)	See table		
INPUT SPECIFICATIONS		ENVIRONMENT SPECIFICATIONS	
Voltage Range	$\pm 10\%$	Operating Temperature	-40°C~85°C(See Derating Curve)
Max. Input Current	See table	Maximum Case Temperature	100°C
No-Load Input Current	See table	Storage Temperature	-40°C~125°C
Input Filter	Capacitors	Cooling	Nature Convection
Input Reflected Ripple Current(3)	20mA pk-pk		
ABSOLUTE MAXIMUM RATINGS(4)		GENERAL SPECIFICATIONS	
These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.		Efficiency	See table
Input Surge Voltage(100mS)		I/O Isolation Voltage(60sec)	
5 Models	7 Vdc ,max.	Input/Output	1000~6000Vdc
12 Models	15 Vdc ,max.	I/O Isolation Capacitance	60 pF Typ.
24 Models	28 Vdc ,max.	I/O Isolation Resistance	1000M Ohm
Soldering Temperature	260°C ,max.	Switching Frequency	Variable 80kHz
(1.5mm from case 10sec max.)		Humidity	95% rel H
		Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
		Safety Standard (designed to meet)	IEC/EN 60950-1 , 62368-1 UL/cUL 60950-1 , 62368-1

V1 - 0.75W Unregulated Single & Dual output

PART NUMBER STRUCTURE

V1 - 12 05 SS 07 H6

Series Name

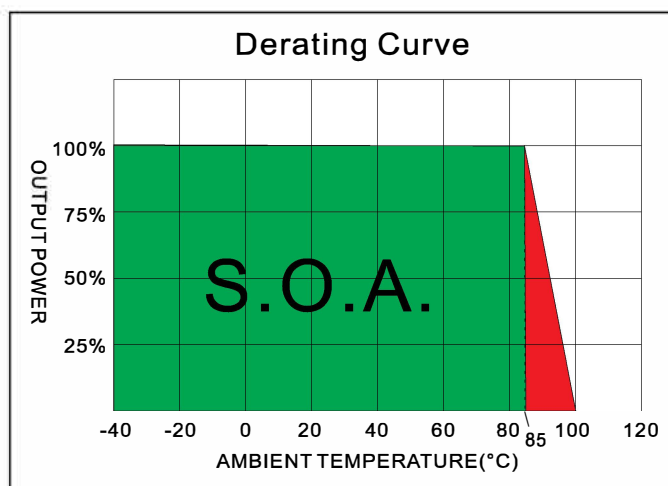
Input Voltage
 05 - 5V
 12 - 12V
 24 - 24V

Case & Output Type
 S - SIP Case, Dual Output
 D - DIP Case, Dual Output
 SS - SIP Case, Single Output
 DS - DIP Case, Single Output

Output Voltage
 3R3 - 3.3V
 05 - 5V
 7R2 - 7.2V
 09 - 9V
 12 - 12V
 15 - 15V
 18 - 18V
 24 - 24V

0.75 Watts

3KVDC Isolation
 Optional, if no suffix "H"
 mean 1 KVDC Isolation
 H - 3KVdc Isolation
 H2 - 2KVdc Isolation
 H4 - 4KVdc Isolation
 H5 - 5.2KVdc Isolation
 H6 - 6KVdc Isolation



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
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
V1-053R3D07	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

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

V1 - 0.75W Unregulated Single & Dual output

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% typ)	Capacitor Load @FL (IF max.)
		No-Load (mA max.)	Full Load (mA typ)				
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	100
V1-0505SS07	5	30	200	5	150	75	100
V1-057R2SS07	5	30	202	7.2	104.2	74	100
V1-0509SS07	5	30	200	9	83.3	75	100
V1-0512SS07	5	30	197	12	62.5	76	100
V1-0515SS07	5	30	197	15	50	76	100
V1-0518SS07	5	30	197	18	41.7	76	100
V1-0524SS07	5	30	194	24	31.2	77	100
V1-123R3SS07	12	20	85	3.3	227.3	73	100
V1-1205SS07	12	20	84	5	150	74	100
V1-127R2SS07	12	20	84	7.2	104.2	74	100
V1-1209SS07	12	20	83	9	83.3	75	100
V1-1212SS07	12	20	81	12	62.5	77	100
V1-1215SS07	12	20	80	15	50	78	100
V1-1218SS07	12	20	80	18	41.7	78	100
V1-1224SS07	12	20	80	24	31.2	78	100
V1-243R3SS07	24	10	42	3.3	227.3	74	100
V1-2405SS07	24	10	42	5	150	74	100
V1-247R2SS07	24	10	41	7.2	104.2	75	100
V1-2409SS07	24	10	41	9	83.3	75	100
V1-2412SS07	24	10	40	12	62.5	78	100
V1-2415SS07	24	10	40	15	50	78	100
V1-2418SS07	24	10	40	18	41.7	78	100
V1-2424SS07	24	10	39	24	31.2	80	100
V1-053R3DS07	5	30	205	3.3	227.3	73	100
V1-0505DS07	5	30	200	5	150	75	100
V1-057R2DS07	5	30	202	7.2	104.2	74	100
V1-0509DS07	5	30	200	9	83.3	75	100
V1-0512DS07	5	30	197	12	62.5	76	100
V1-0515DS07	5	30	197	15	50	76	100
V1-0518DS07	5	30	197	18	41.7	76	100
V1-0524DS07	5	30	194	24	31.2	77	100

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

**V1 - 0.75W Unregulated Single & Dual output**

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current Full load (mA)	EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)				
V1-123R3DS07	12	20	85	3.3	227.3	73	100
V1-1205DS07	12	20	84	5	150	74	100
V1-127R2DS07	12	20	84	7.2	104.2	74	100
V1-1209DS07	12	20	83	9	83.3	75	100
V1-1212DS07	12	20	81	12	62.5	77	100
V1-1215DS07	12	20	80	15	50	78	100
V1-1218DS07	12	20	80	18	41.7	78	100
V1-1224DS07	12	20	80	24	31.2	78	100
V1-243R3DS07	24	10	42	3.3	227.3	74	100
V1-2405DS07	24	10	42	5	150	74	100
V1-247R2DS07	24	10	41	7.2	104.2	75	100
V1-2409DS07	24	10	41	9	83.3	75	100
V1-2412DS07	24	10	40	12	62.5	78	100
V1-2415DS07	24	10	40	15	50	78	100
V1-2418DS07	24	10	40	18	41.7	78	100
V1-2424DS07	24	10	39	24	31.2	80	100

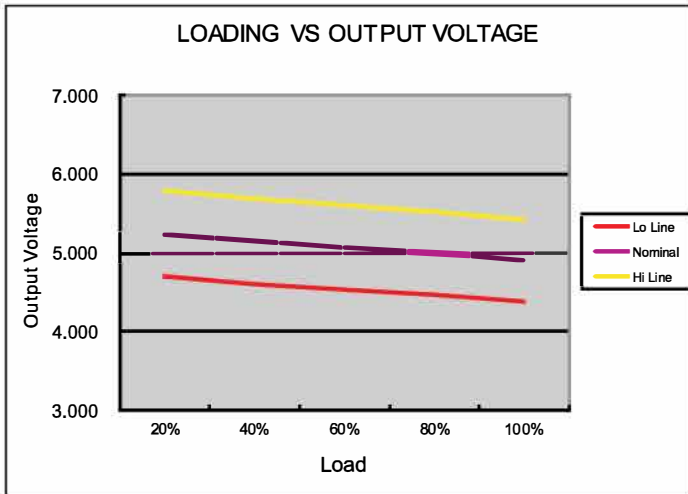
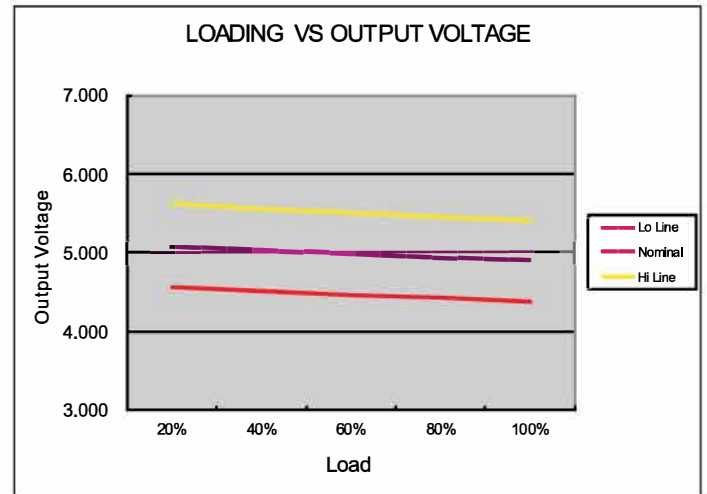
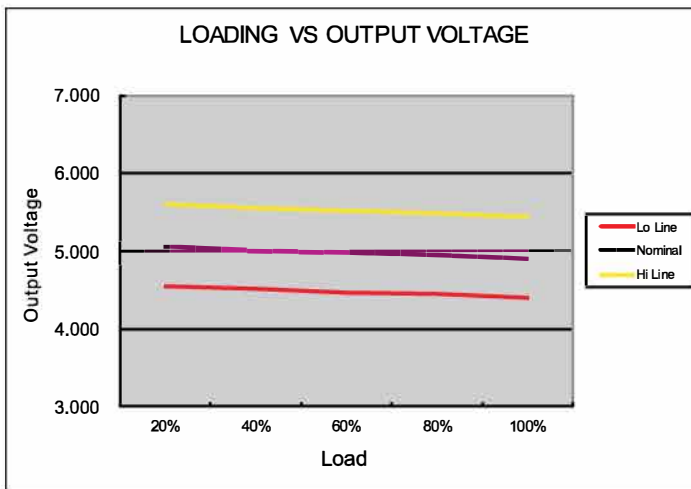
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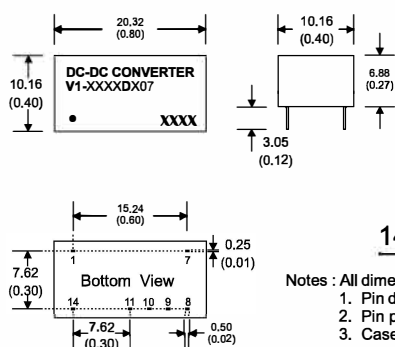
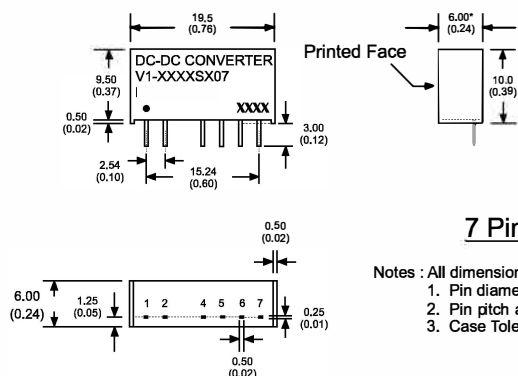
Suffix "H2" means 2 KVdc isolation
 Suffix "H6" means 6 KVdc isolation

Suffix "H4" means 4 KVdc isolation

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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 12uH and a source capacitor $C_{in}(47\mu F, ESR < 1.0\Omega \text{ at } 100KHz)$.
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

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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