

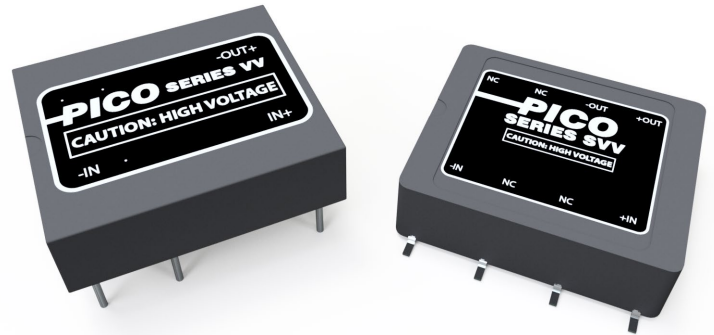
# Series VV & SVV (100-500V)

4W Isolated Proportional High Voltage DC-DC Converter

**PICO**  
Electronics, Inc.

## PRODUCT OVERVIEW

The VV series are unregulated DC-DC converters in a low profile package 0.400" (through hole) or 0.430" (surface mount) footprint with up to 500V single output models. They can operate over the temperature range of -25°C to +70°C without derating, a heat sink or active cooling.



## FEATURES

- 4W output power
- Output voltage is proportional to input voltage
- Up to 500V output models
- Wide input voltage range
- Through hole or surface mount packages
- Input/output isolation
- Low ripple
- No heat sink or derating required

Contact Pico for part number of available options:

- Expanded operating temp: -55°C to +85°C
- Select screening per MIL-STD-883:
  - Stabilization Bake
  - Temperature Cycle
  - Burn-In
- Available RoHS Compliant module
- Special Input Voltage, Output Voltage, Isolation Voltage or Output Power

**28**

INPUT VOLTAGE RANGE

- 5** = 2.5 - 5V
- 12** = 4 - 12V
- 24** = 6 - 24V
- 28** = 7 - 28V
- 48** = 14 - 48V

**VV**

MOUNTING TYPE

- VV** = THROUGH HOLE
- SVV** = SURFACE MOUNT

**500S**

NOMINAL OUTPUT VOLTAGE

- 100S** = 100V
- 200S** = 200V
- 300S** = 300V
- 400S** = 400V
- 500S** = 500V

**MODEL LIST**

Pico Part Number		Output Voltage		Output Current		Efficiency <sup>(2)</sup>	Output Ripple
Through Hole	Surface Mount	Min. [VDC]	Max. [VDC]	Min. <sup>(1)</sup> [mA]	Max. [mA]	[%] typ.	[%]
5VV100S	5SVV100S	47	100	2	40	83	0.5
5VV200S	5SVV200S	90	200	1	20	82	0.5
5VV300S	5SVV300S	130	300	0.675	13.5	82	0.3
5VV400S	5SVV400S	175	400	0.5	10	81	0.3
5VV500S	5SVV500S	220	500	0.4	8	81	0.2
12VV100S	12SVV100S	30	100	2	40	87	0.5
12VV200S	12SVV200S	60	200	1	20	85	0.5
12VV300S	12SVV300S	90	300	0.675	13.5	85	0.3
12VV400S	12SVV400S	120	400	0.5	10	84	0.3
12VV500S	12SVV500S	150	500	0.4	8	84	0.2
24VV100S	24SVV100S	23	100	2	40	85	0.4
24VV200S	24SVV200S	48	200	1	20	84	0.4
24VV300S	24SVV300S	70	300	0.675	13.5	84	0.3
24VV400S	24SVV400S	95	400	0.5	10	83	0.3
24VV500S	24SVV500S	120	500	0.4	8	83	0.2
28VV100S	28SVV100S	23	100	2	40	85	0.4
28VV200S	28SVV200S	48	200	1	20	84	0.4
28VV300S	28SVV300S	70	300	0.675	13.5	84	0.3
28VV400S	28SVV400S	95	400	0.5	10	83	0.3
28VV500S	28SVV500S	120	500	0.4	8	83	0.2
48VV100S	48SVV100S	27	100	2	40	89	0.5
48VV200S	48SVV200S	50	200	1	20	89	0.5
48VV300S	48SVV300S	73	300	0.675	13.5	90	0.2
48VV400S	48SVV400S	98	400	0.5	10	89	0.2
48VV500S	48SVV500S	130	500	0.4	8	89	0.2

Note 1: Maintain minimum 5% of rated load to prevent a voltage surge.

Note 2: Tested at maximum input voltage and full output load.

**SPECIFICATIONS (Nominal  $V_{IN}$ , Full Load,  $T_A = +25^{\circ}\text{C}$ , 1 hour warm up unless otherwise specified)****INPUT**

Parameter	Condition	Min.	Typ.	Max.	Units
Input Voltage Range	5VV or 5SVV models	2.5	-	5	VDC
	12VV or 12SVV models	4	-	12	
	24VV or 24SVV models	6	-	24	
	28VV or 28SVV models	7	-	28	
	48VV or 48SVV models	14	-	48	

**OUTPUT**

Parameter	Condition	Min.	Typ.	Max.	Units	
Line Regulation	Output voltage is proportional to input voltage					
Output Power		0.2	-	4	W	
Output Voltage Tolerance	Nominal $V_{IN}$ , Full Load	5VV models	-	-	5	±%
		All other models	-	-	3	±%

**ENVIRONMENTAL**

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient without derating	-25	-	+70	°C
Storage Temperature Range	Ambient	-55	-	+125	°C
Temperature Coefficient		-	0.02	-	%/°C
Cooling	Free Air Convection				

**GENERAL**

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Frequency	Min $V_{IN}$ to max $V_{IN}$	8	-	25	kHz
Isolation Voltage	Input to output	1000	-	-	VDC
Insulation Resistance		100	-	-	MΩ
Size (L x W x H)	Through hole	1.43 x 1.24 x 0.4 (36.322 x 31.496 x 10.16)			inches (mm)
	Surface Mount	1.43 x 1.24 x 0.43 (36.322 x 31.496 x 10.922)			
Weight		-	25	-	grams
Case	Glass Reinforced Polymer				
Potting	Vacuum Impregnated Epoxy				
Tube Packaging (W x H x L)	Series SVV	1.645 x 0.74 x 20 (41.783 x 18.796 x 508)			inches (mm)
Box Packaging (W x L x H)	Series VV	8 x 7.5 x 1.5 (203.2 x 190.5 x 38.1) or 12 x 9 x 1.5 (304.8 x 228.6 x 38.1)			inches (mm)
Moisture Sensitivity Level	Series SVV	IPC / JEDEC J-STD-020, Level 3			

**DESIGNED TO MEET**

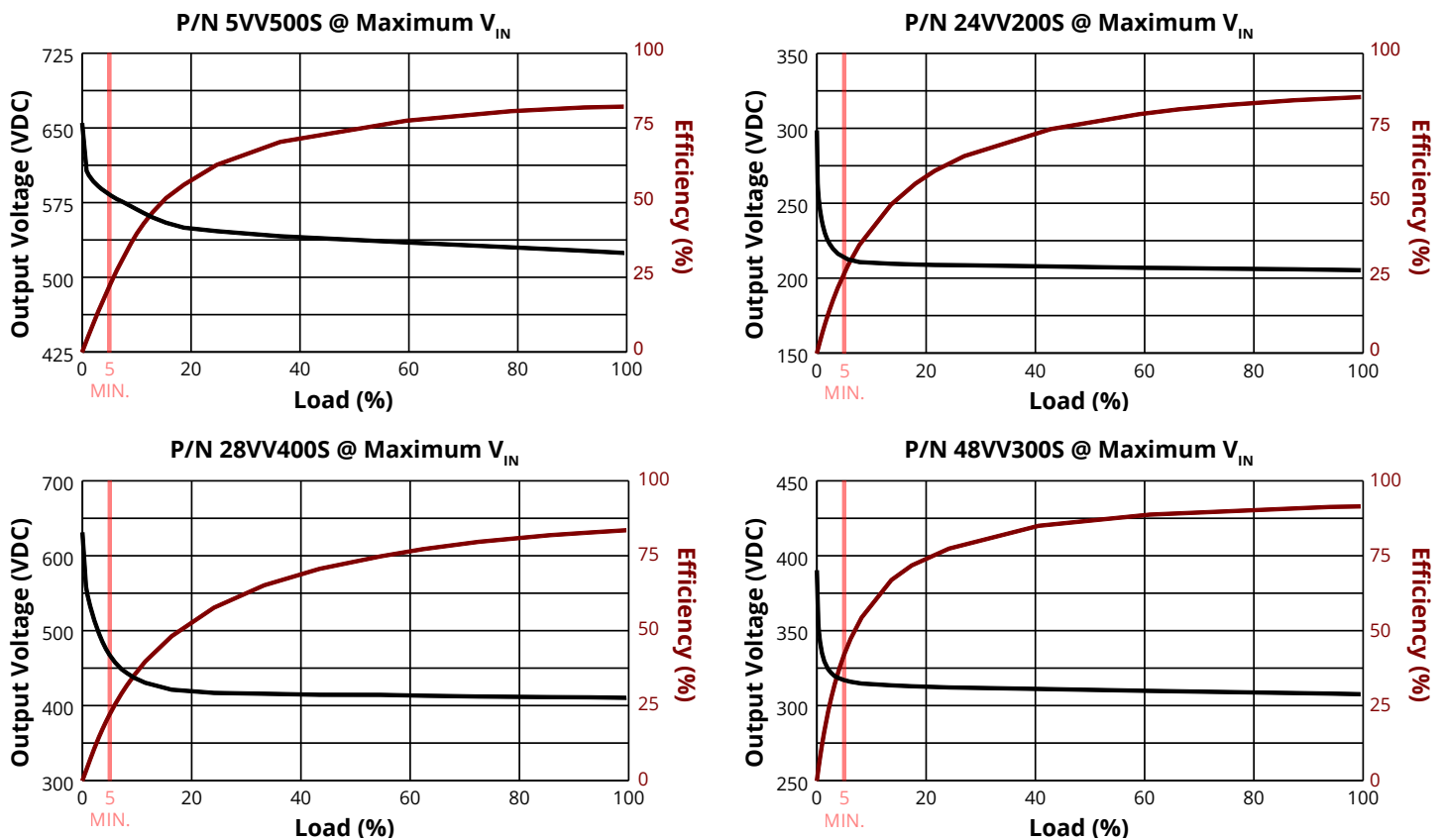
Test	Referenced Standard	Description
Vibration	MIL-STD-202	Method 204, Vibration, High Frequency, Condition D
Shock	MIL-STD-202	Method 213, Shock (Specified Pulse), Condition I
Humidity	MIL-STD-202	Method 106, Moisture Resistance
Altitude	MIL-STD-202	Method 105, Barometric Pressure (Reduced), Condition D

**SPECIFICATIONS (Nominal  $V_{IN}$ , Full Load,  $T_A = +25^\circ\text{C}$ , 1 hour warm up unless otherwise specified)**

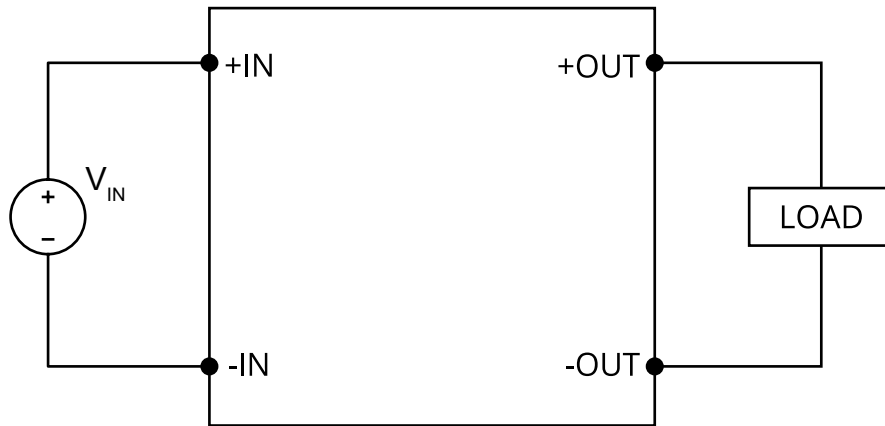
**OPTIONAL SCREENING TESTS - CONTACT PICO FOR PART NUMBER**

Parameter	Referenced Standard	Description
Stabilization Bake	MIL-STD-883	Referenced Method 1008 Non-operating maximum storage temperature for 24 hours
Temperature Cycle	MIL-STD-883	Referenced Method 1010 Non-operating at temperature extremes, 15 mins/temp, 10 cycles
Burn-In	MIL-STD-883	Referenced Method 1015 Max operating temperature for 160 hours
Expanded Ambient Operating Temperature		-55°C to +85°C
RoHS Compliance		-

**DATA CURVES (Nominal  $V_{IN}$ ,  $T_A = +25^\circ\text{C}$ , 1 hour warm up unless otherwise specified)**

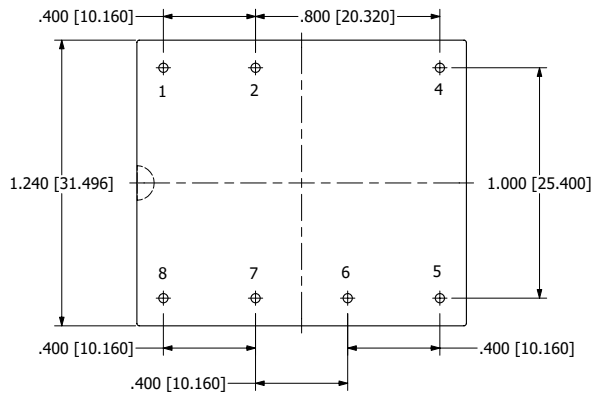
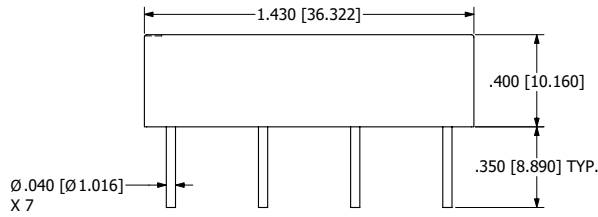


TYPICAL CONNECTION CIRCUIT



**MECHANICAL DRAWINGS**

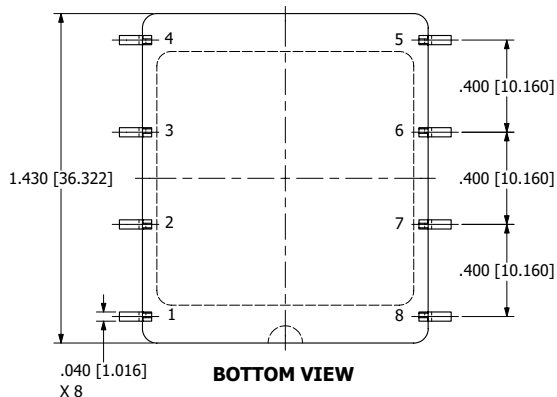
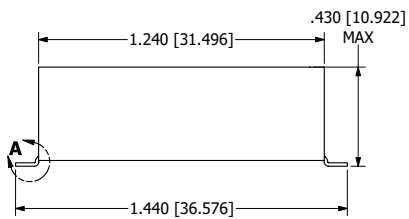
**THROUGH HOLE - SERIES VV**



**BOTTOM VIEW**

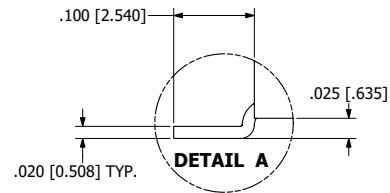
PIN	FUNCTION
1	-IN
2	N/C
3	N/P
4	+IN
5	+OUT
6	-OUT
7	N/C
8	N/C

**SURFACE MOUNT - SERIES SVV**

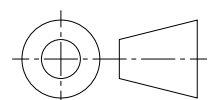


**BOTTOM VIEW**

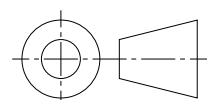
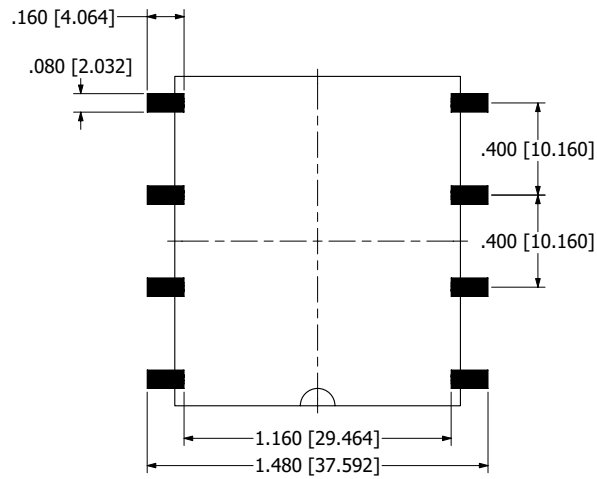
**LEAD DETAILS**



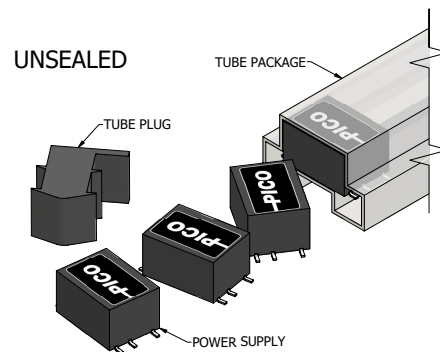
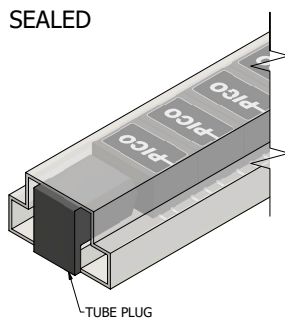
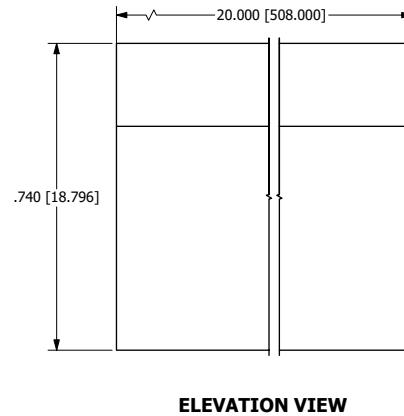
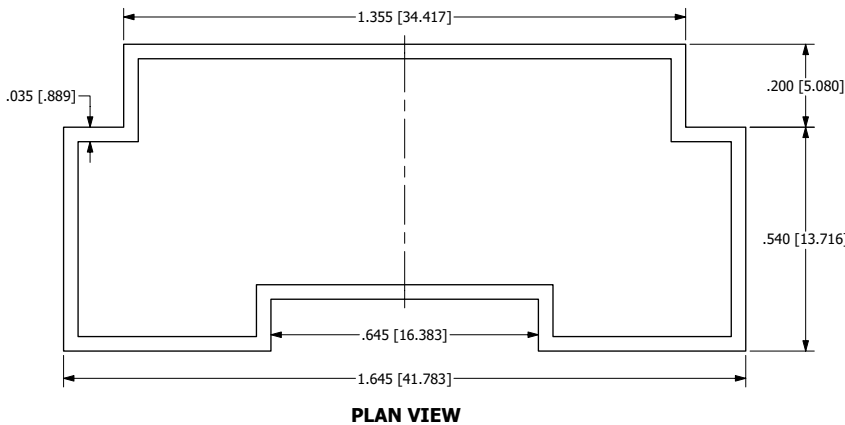
PIN	FUNCTION
1	-IN
2	N/C
3	N/C
4	+IN
5	+OUT
6	-OUT
7	N/C
8	N/C



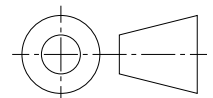
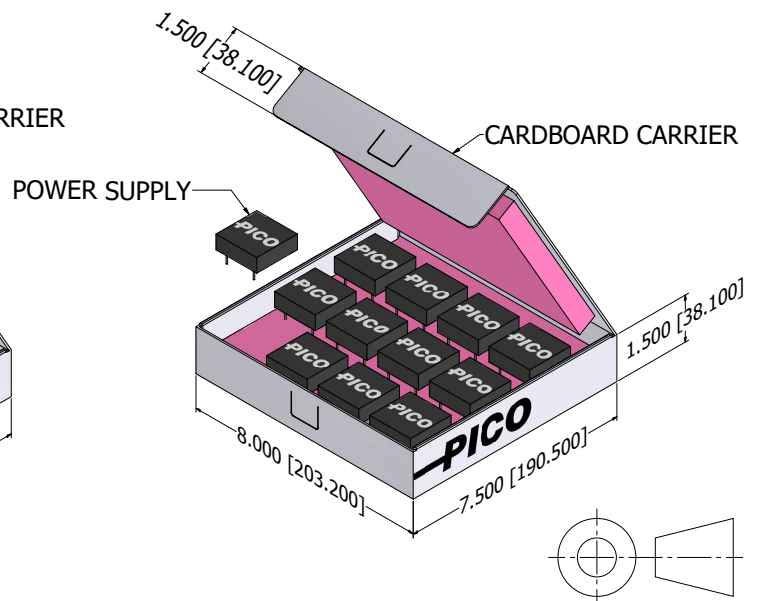
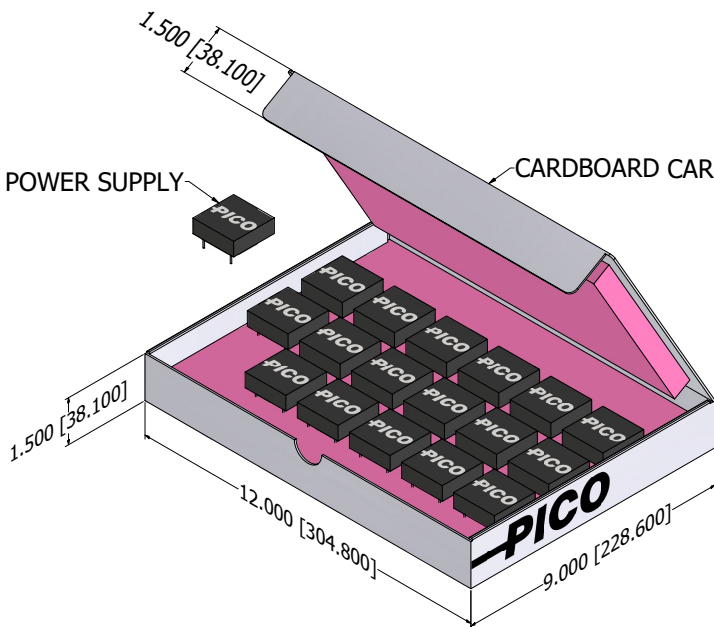
**RECOMMENDED LAND PATTERN DIMENSIONS**



**TUBE PACKAGING - SERIES SVV**



**BOX PACKAGING - BULK - SERIES VV**



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