

Series HV & THV

3-15W Isolated Regulated Low Profile DC-DC Converter



PRODUCT OVERVIEW

The HV series are regulated DC-DC converters with a wide 17 to 170V input range and low profile – 0.500". Over 30 models are available in both single and dual outputs, through hole and terminal strip. They can operate over the temperature range of -25°C to +70°C without derating, a heat sink or active cooling.



FEATURES

- Up to 15W output models
- Encapsulated semiconductors, conservatively rated for maximum reliability
- Low profile – down to 0.500" height
- Wide input voltage range - 70 to 170V
- 3.3 to 48V output models
- Up to 1000VDC isolation at 100MΩ
- Input/output isolation
- Single and dual output
- No heat sink or derating required
- No external components 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
- Special Input Voltage, Output Voltage, Isolation Voltage or Output Power

T	HV	A	28	S
MOUNTING	SERIES NAME	OUTPUT POWER	NOMINAL OUTPUT VOLTAGE	# OF OUTPUTS
BLANK = THRU HOLE T = TERMINAL STRIP	HV	A = 3W B = 5W C = 10W D = 15W	3.3 = 3.3V 5 = 5V 5.2 = 5.2V 12 = 12V 15 = 15V 24 = 24V 28 = 28V 48 = 48V	S = SINGLE D = DUAL

MODEL LIST

SINGLE OUTPUT

Through Hole	Terminal Strip	Output Voltage [VDC]	Output Current		Output Power [W]	Efficiency ⁽²⁾ [%] typ.	Output Ripple @ 1MHz BW [mVp-p max]
			Min. ⁽¹⁾ [mA]	Max. [mA]			
HVA3.3S	-	3.3	60.6	606	2	63	50
HVA5S	-	5	60.0	600	3	65	
HVA5.2S	-	5.2	57.7	577	3	65	
HVA12S	-	12	25.0	250	3	67	
HVA15S	-	15	20.0	200	3	67	
HVA24S	-	24	12.5	125	3	68	
HVA28S	-	28	10.7	107	3	68	
HVB3.3S	THVB3.3S	3.3	100.0	1000	3.3	67	50
HVB5S	THVB5S	5	100.0	1000	5	70	
HVB5.2S	THVB5.2S	5.2	96.2	962	5	70	
HVB12S	THVB12S	12	41.7	417	5	73	
HVB15S	THVB15S	15	33.3	333	5	73	
HVB24S	THVB24S	24	20.8	208	5	74	
HVB28S	THVB28S	28	17.9	179	5	74	
HVB48S	THVB48S	48	10.4	104	5	74	150
HVC3.3S	THVC3.3S	3.3	151.5	1515	5	67	50
HVC5S	THVC5S	5	160.0	1600	8	69	
HVC5.2S	THVC5.2S	5.2	153.8	1538	8	69	
HVC12S	THVC12S	12	83.3	833	10	75	
HVC15S	THVC15S	15	66.7	667	10	77	
HVC24S	THVC24S	24	41.7	417	10	77	
HVC28S	THVC28S	28	35.7	357	10	77	
HVC48S	THVC48S	48	20.8	208	10	74	200
HVD3.3S	THVD3.3S	3.3	181.8	1818	6	68	50
HVD5S	THVD5S	5	200.0	2000	10	70	
HVD5.2S	THVD5.2S	5.2	192.3	1923	10	70	
HVD12S	THVD12S	12	125.0	1250	15	75	
HVD15S	THVD15S	15	100.0	1000	15	76	
HVD24S	THVD24S	24	62.5	625	15	76	
HVD28S	THVD28S	28	53.6	536	15	76	
HVD48S	THVD48S	48	31.3	313	15	74	200

Note 1: Maintain minimum 10% of rated load to prevent a voltage surge.

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

MODEL LIST**DUAL OUTPUT**

Through Hole	Terminal Strip	Output Voltage [±VDC]	Output Current		Output Power [±W]	Efficiency ⁽²⁾ [%] typ.	Output Ripple Per Output @ 1MHz BW [mVp-p max]
			Min. ⁽¹⁾ [±mA]	Max. [±mA]			
HVA5D	-	5	30.0	300	1.5	63	50
HVA12D	-	12	12.5	125	1.5	65	25
HVA15D	-	15	10.0	100	1.5	67	25
HVB5D	THVB5D	5	50.0	500	2.5	70	50
HVB12D	THVB12D	12	20.8	208	2.5	73	25
HVB15D	THVB15D	15	16.7	167	2.5	73	25
HVC5D	THVC5D	5	80.0	800	4	68	50
HVC12D	THVC12D	12	41.7	417	5	75	25
HVC15D	THVC15D	15	33.3	333	5	76	25
HVD5D	THVD5D	5	100.0	1000	5	69	50
HVD12D	THVD12D	12	62.5	625	7.5	75	25
HVD15D	THVD15D	15	50.0	500	7.5	76	25

Note 1: Maintain minimum 10% of rated load to prevent a voltage surge.

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

Note 3: Dual output loads must be balanced.

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		70	120	170	VDC

OUTPUT

Parameter	Condition	Min.	Typ.	Max.	Units
Line Regulation	HVA12S, HVA15S, HVA24S & HVA28S	-	-	0.5	±%
	All other models	-	-	1	
Load Regulation	25-100% load	-	-	2	±%
Output Voltage Tolerance	Nominal V_{IN} , Full Load	-	-	2	±%

ENVIRONMENTAL

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient without derating	-25	-	+70	°C
Storage Temperature Range	Ambient	-55	-	+105	°C
Temperature Coefficient		-	0.02	-	%/°C
Cooling	Free Air Convection				

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

Parameter	Condition	Min.	Typ.	Max.	Units
Isolation Voltage		1000	-	-	VDC
Insulation Resistance		100	-	-	MΩ
Switching Frequency		-	133	-	kHz
Size (L x W x H)	HVA models	1.5 x 1.5 x 0.5 (38.1 x 38.1 x 12.7)			inches (mm)
	HVB models	2 x 1.5 x 0.5 (50.8 x 38.1 x 12.7)			
	HVC models	2.22 x 1.825 x 0.5 (56.388 x 46.355 x 12.7)			
	HVD models	2.3 x 2.3 x 0.5 (58.42 x 58.42 x 12.7)			
	THVB models	2.55 x 1.5 x 0.5 (64.77 x 38.1 x 12.7)			
	THVC models	2.77 x 1.825 x 0.5 (70.358 x 46.355 x 12.7)			
	THVD models	2.85 x 2.3 x 0.5 (72.39 x 58.42 x 12.7)			
Weight	HVA models	-	34	-	grams
	HVB models	-	45	-	
	HVC models	-	60	-	
	HVD models	-	82	-	
	THVB models	-	54	-	
	THVC models	-	71	-	
	THVD models	-	88	-	
Case	Diallyl Phthalate (DAP)				
Potting	Vacuum Impregnated Epoxy				
Box Packaging (W x L x H)	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)

PROTECTIONS & FEATURES

Parameter	Condition	Min.	Typ.	Max.	Units
Short circuit	Continuous				

DESIGNED TO MEET

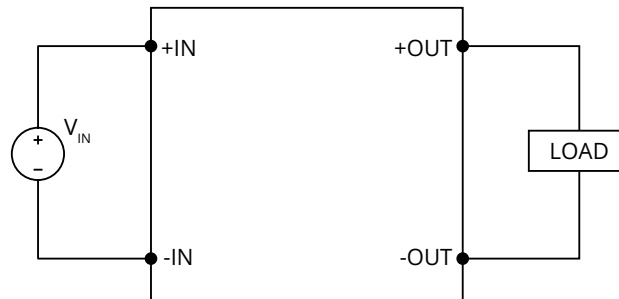
Test	Referenced Standard	Description
Vibration	MIL-STD-202	Method 204, Vibration, High Frequency, Condition D
Shock	MIL-STD-202	Method 213, Shock (Specified Pulse), Condition I
Humidity	MIL-STD-202	Method 106, Moisture Resistance
Altitude	MIL-STD-202	Method 105, Barometric Pressure (Reduced), Condition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

OPTIONS AVAILABLE - CONTACT PICO FOR PART NUMBER

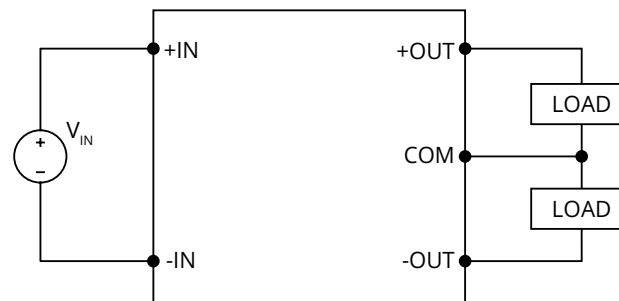
Parameter	Referenced Standard	Description
Stabilization Bake	MIL-STD-883	Referenced Method 1008 Non-operating maximum storage temperature for 24 hours
Temperature Cycle	MIL-STD-883	Referenced Method 1010 Non-operating at temperature extremes, 15 mins/temp, 10 cycles
Burn-In	MIL-STD-883	Referenced Method 1015 Max operating temperature for 160 hours

TYPICAL CONNECTION CIRCUIT

SINGLE OUTPUTS



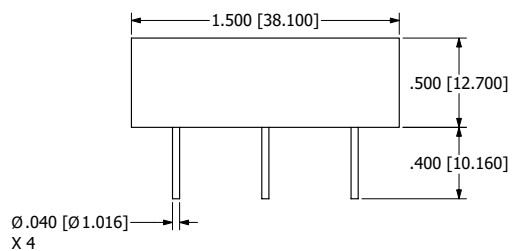
DUAL OUTPUTS



MECHANICAL DRAWINGS

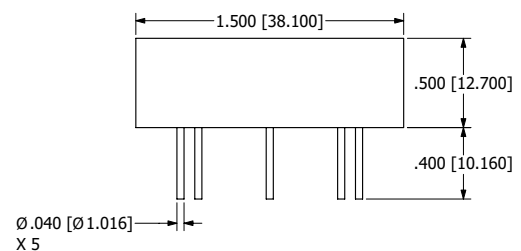
HVA MODELS

SINGLE OUTPUTS



BOTTOM VIEW

DUAL OUTPUTS



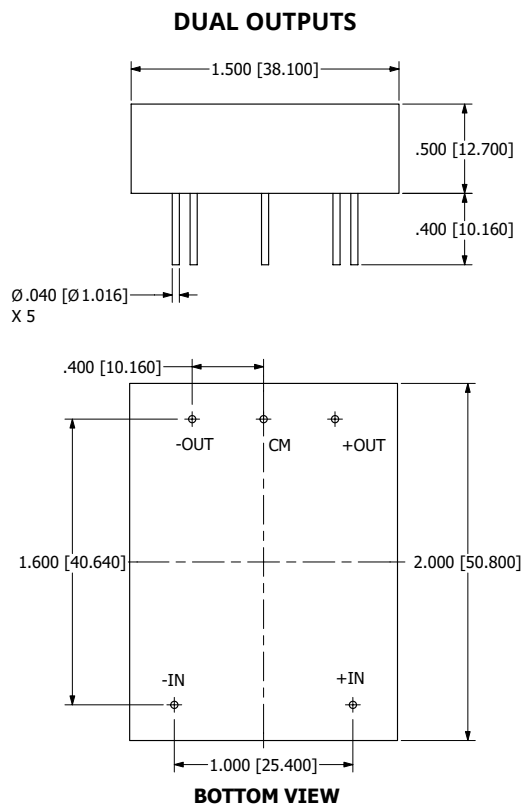
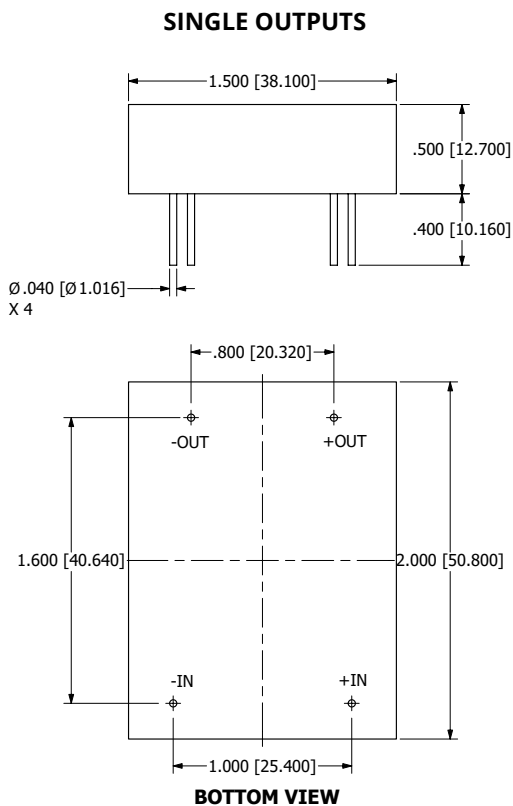
BOTTOM VIEW

NOTES

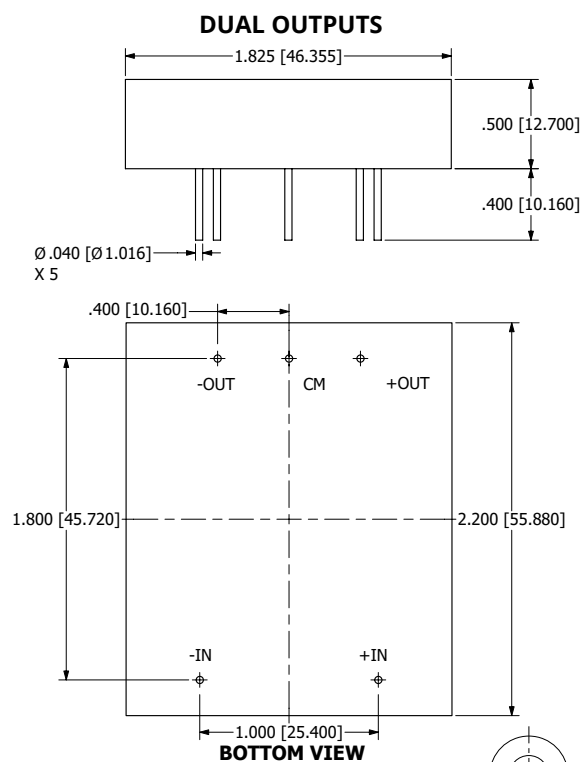
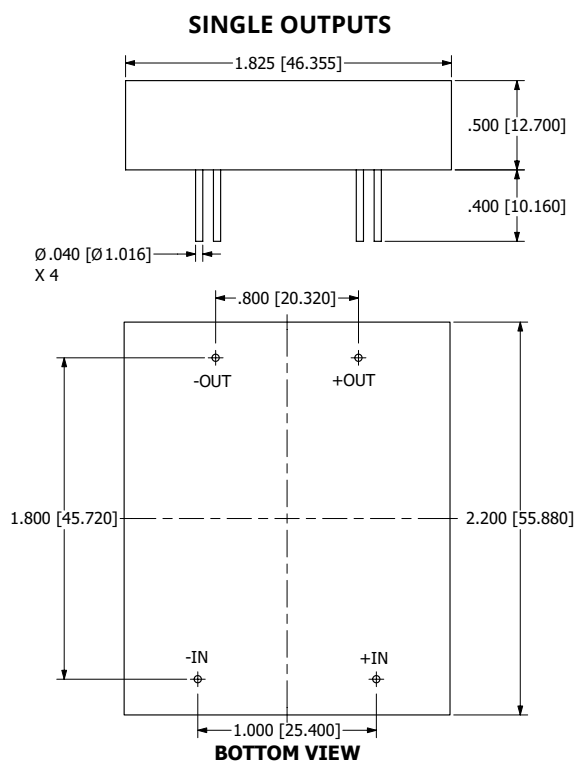
a. ALL DIMENSIONS ARE IN INCHES, [] = MM

MECHANICAL DRAWINGS

HVB MODELS



HVC MODELS



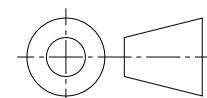
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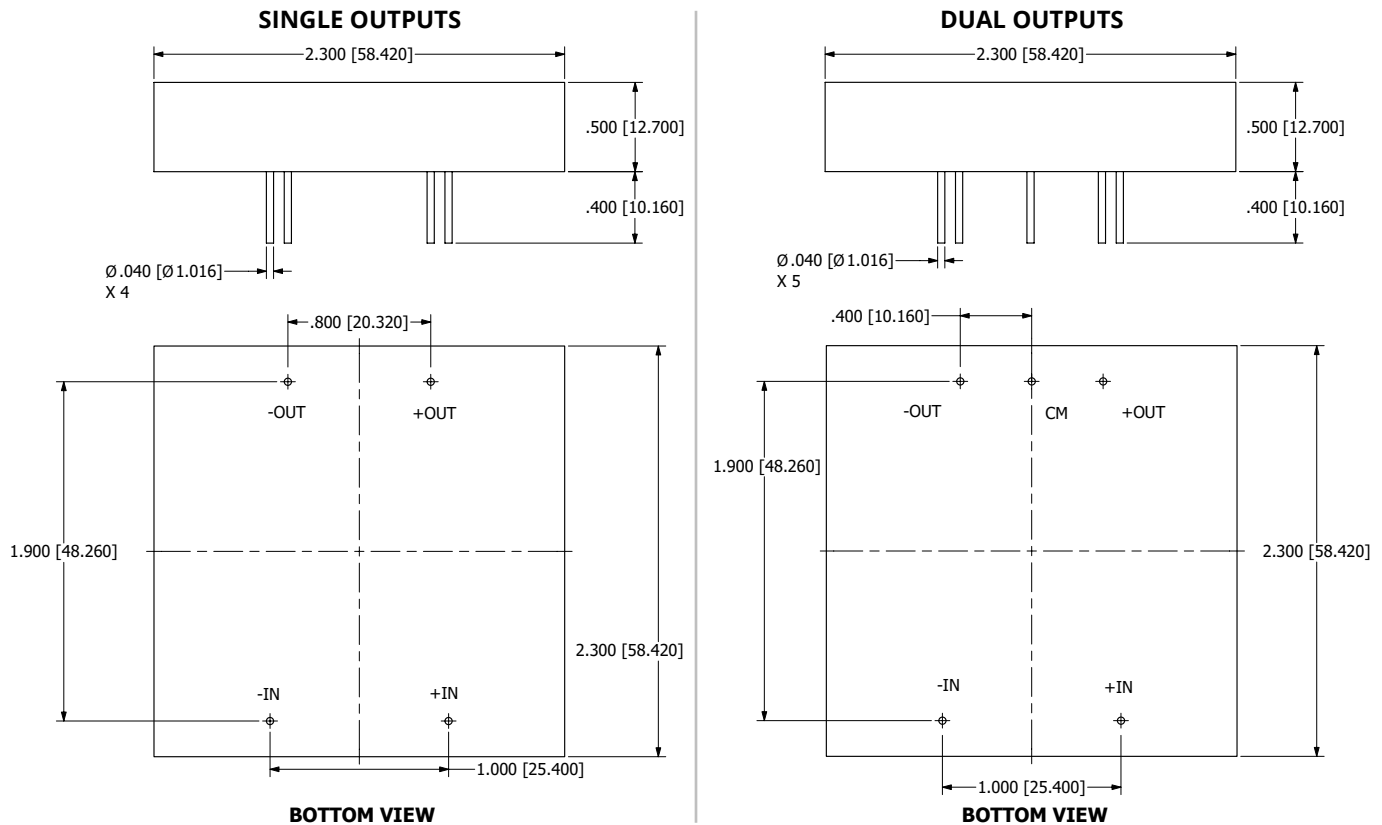
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6 of 9

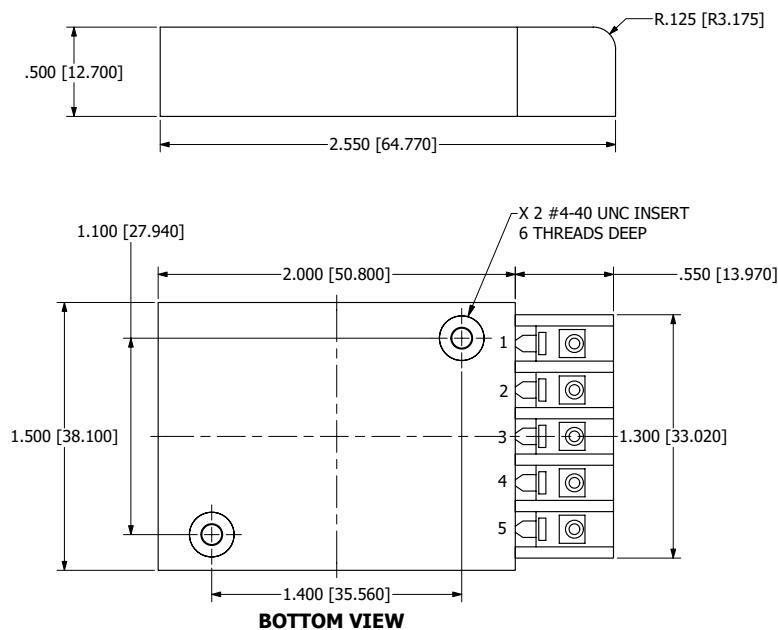


MECHANICAL DRAWINGS

HVD MODELS



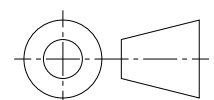
THVA MODELS



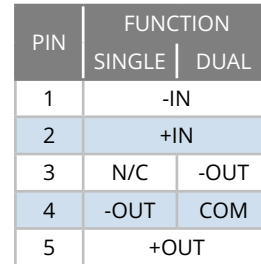
PIN	FUNCTION	
	SINGLE	DUAL
1	-IN	
2	+IN	
3	N/C	-OUT
4	-OUT	COM
5		+OUT

NOTES

- ALL DIMENSIONS ARE IN INCHES, [] = MM
- RECOMMENDED MOUNTING TORQUE: 3-5 IN-LBS

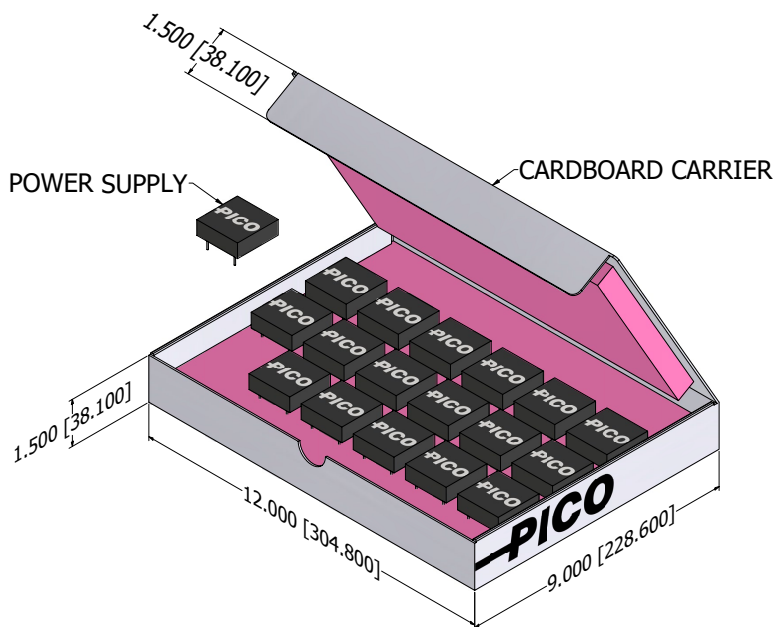
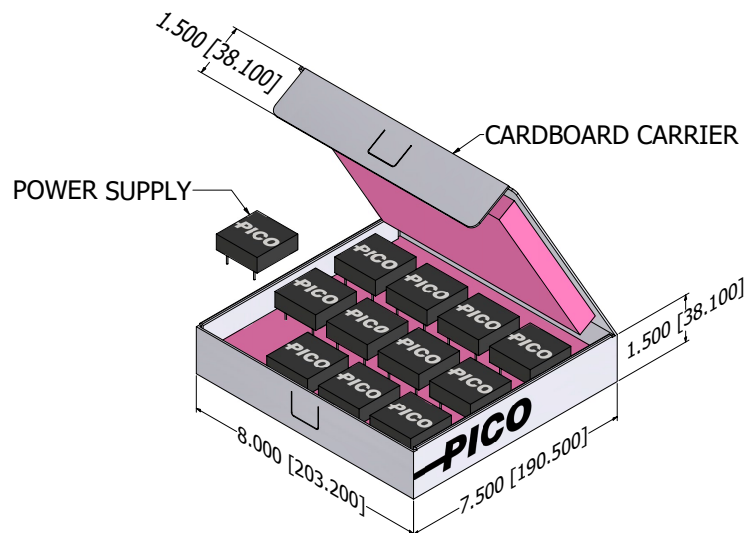


THVC MODELS



PIN	FUNCTION	
	SINGLE	DUAL
1	-IN	
2	+IN	
3	N/C	-OUT
4	-OUT	COM
5	+OUT	

The diagram shows the orthographic projection of a truncated cone. On the left is the top view, which consists of two concentric circles. A horizontal centerline and a vertical centerline intersect at the center. To the right of the top view is the front view, which is a trapezoid. A horizontal centerline extends from the top view through the front view.



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