

Series AVR

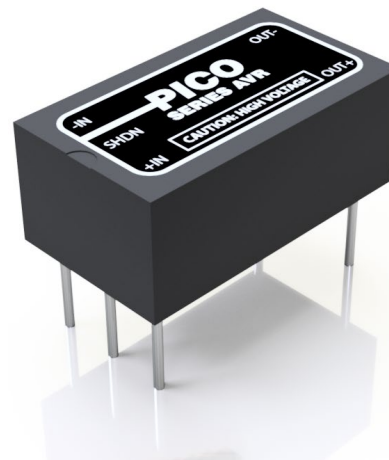
1W Isolated Regulated High Voltage DC-DC Converter

PICO
Electronics, Inc.

PRODUCT OVERVIEW

The AVR series modules are miniature isolated DC-DC converters and are fully regulated from no to full load. These modules have shutdown feature, low ripple and are protected against input overvoltage, output short-circuit, overtemperature and over current. They can operate over the temperature range of -25°C to +70°C without derating, a heat sink or active cooling.

These modules are suitable for applications such as electron beam deflection or focussing, photomultiplier tubes or piezo transducers.



FEATURES

- 1W output power
- At least $\pm 10\%$ input voltage range
- Up to 1000V output models
- Protected against input overvoltage, output short-circuit, overtemperature, and over current
- Input/output isolation
- No minimum load
- Shutdown feature
- Low ripple
- Low profile - 0.500"

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

24

INPUT VOLTAGE RANGE

5 = 4.5 - 5.5V

12 = 10.5 - 13.5V

24 = 21 - 27V

28 = 25 - 32V

AVR

SERIES NAME

AVR

500

NOMINAL OUTPUT VOLTAGE

100 = 100V

200 = 200V

300 = 300V

400 = 400V

500 = 500V

600 = 600V

700 = 700V

800 = 800V

900 = 900V

1000 = 1000V

MODEL LIST

Pico Part Number	Input Voltage	Output Voltage [VDC]	Output Current		Efficiency		Input Current ⁽¹⁾ [mA] typ.
			Min. [mA]	Max. [mA]	Low Line [%] typ.	High Line [%] typ.	
5AVR100	5	100	0	10	58	46	410
5AVR200		200		5			
5AVR300		300		3.333			
5AVR400		400		2.5			
5AVR500		500		2			
5AVR600		600		1.667			
5AVR700		700		1.429			
5AVR800		800		1.25			
5AVR900		900		1.111			
5AVR1000		1000		1			
12AVR100	12	100	0	10	63	49	165
12AVR200		200		5			
12AVR300		300		3.333			
12AVR400		400		2.5			
12AVR500		500		2			
12AVR600		600		1.667			
12AVR700		700		1.429			
12AVR800		800		1.25			
12AVR900		900		1.111			
12AVR1000		1000		1			
24AVR100	24	100	0	10	65	50	80
24AVR200		200		5			
24AVR300		300		3.333			
24AVR400		400		2.5			
24AVR500		500		2			
24AVR600		600		1.667			
24AVR700		700		1.429			
24AVR800		800		1.25			
24AVR900		900		1.111			
24AVR1000		1000		1			
28AVR100	28	100	0	10	65	50	65
28AVR200		200		5			
28AVR300		300		3.333			
28AVR400		400		2.5			
28AVR500		500		2			
28AVR600		600		1.667			
28AVR700		700		1.429			
28AVR800		800		1.25			
28AVR900		900		1.111			
28AVR1000		1000		1			

Note 1: Tested at 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	5AVR models	4.5	5	5.5	VDC
	12AVR models	10.5	12	13.5	
	24AVR models	21	24	27	
	28AVR models	25	28	32	

OUTPUT

Parameter	Condition	Min.	Typ.	Max.	Units
Line Regulation		-	-	0.1	%
Load Regulation	0-100% load	-	-	0.25	%
Output Power		-	-	1	W
Output Voltage Ripple	1MHz Bandwidth, Peak-to-peak	-	-	0.25	%
Output Voltage Overshoot	50% to 100% load step	-	5	-	%
Output Recovery Time	Within 1% V_{OUT}	-	30	-	ms
Output Voltage Tolerance	Nominal V_{IN} , Full Load	-	-	0.25	±%

ENVIRONMENTAL

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient without derating	-25	-	+70	$^{\circ}\text{C}$
Storage Temperature Range	Ambient	-55	-	+125	$^{\circ}\text{C}$
Temperature Coefficient		-	-	0.025	%/ $^{\circ}\text{C}$
Cooling	Free Air Convection				

GENERAL

Parameter	Condition	Min.	Typ.	Max.	Units
Operating Frequency		25	-	33	kHz
Isolation Voltage	Input to output	1500	-	-	VDC
Insulation Resistance		100	-	-	M Ω
Size	L x W x H	1.25 x 0.7 x 0.5 (31.75 x 17.78 x 12.7)			inches (mm)
Weight		-	14.5	-	grams
Case	Glass Reinforced Polymer				
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	Output Current Limit, self-recovery		-	130	-	%
Overtemperature	Internal, Non-latched shutdown, self-recovery		-	95	-	°C
Input Over Voltage	Non-latched shutdown, self-recovery		-	25	-	%
Shutdown (SHDN)	Non-latched shutdown Self-recovery	Shutdown	-	0.28	-	VDC
		Restart	Open or High Z			

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

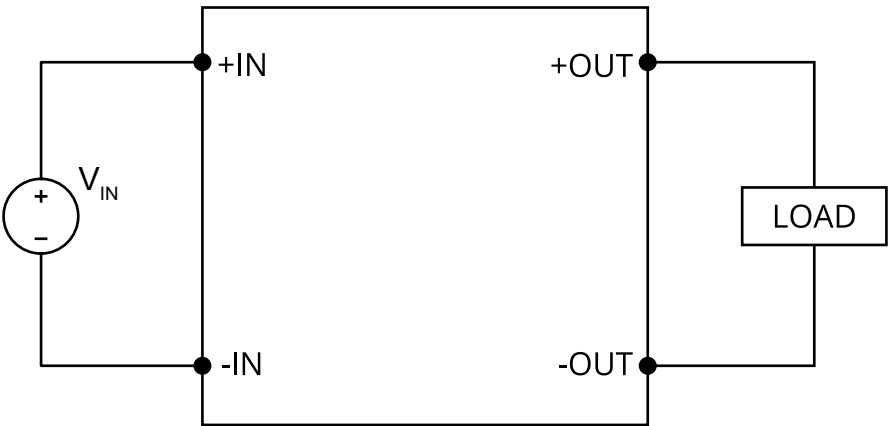
DESIGNED TO MEET

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

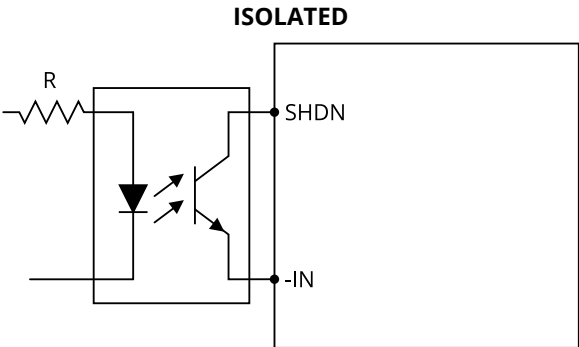
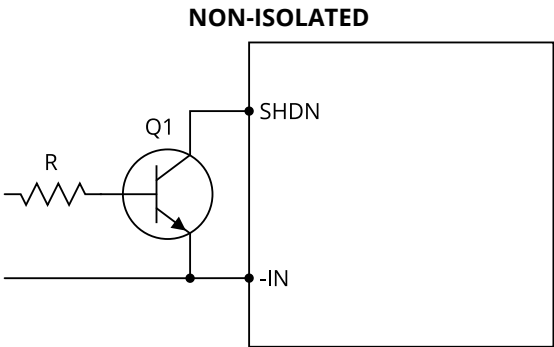
OPTIONS AVAILABLE – CONTACT PICO FOR PART NUMBER

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

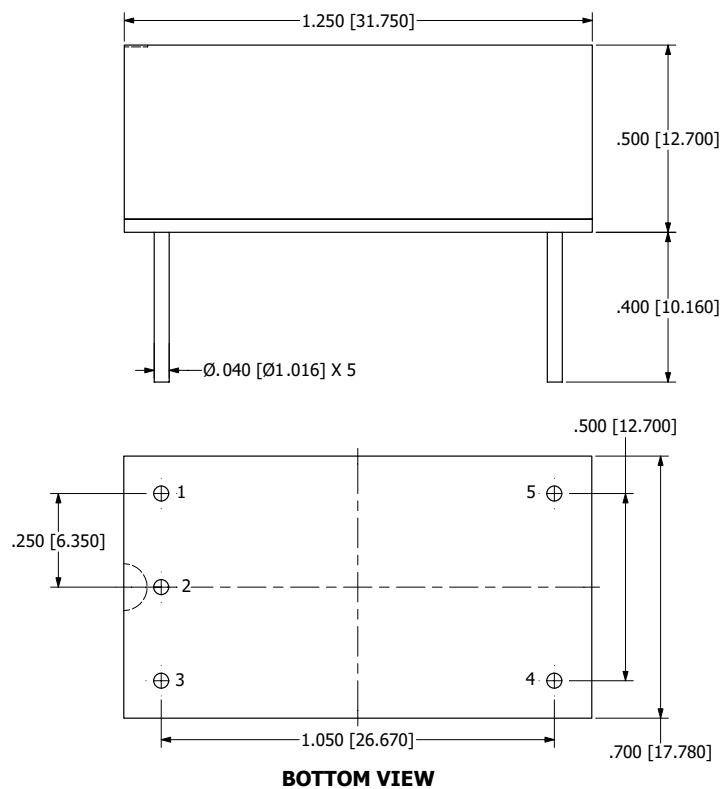
TYPICAL CONNECTION CIRCUIT



SHUTDOWN

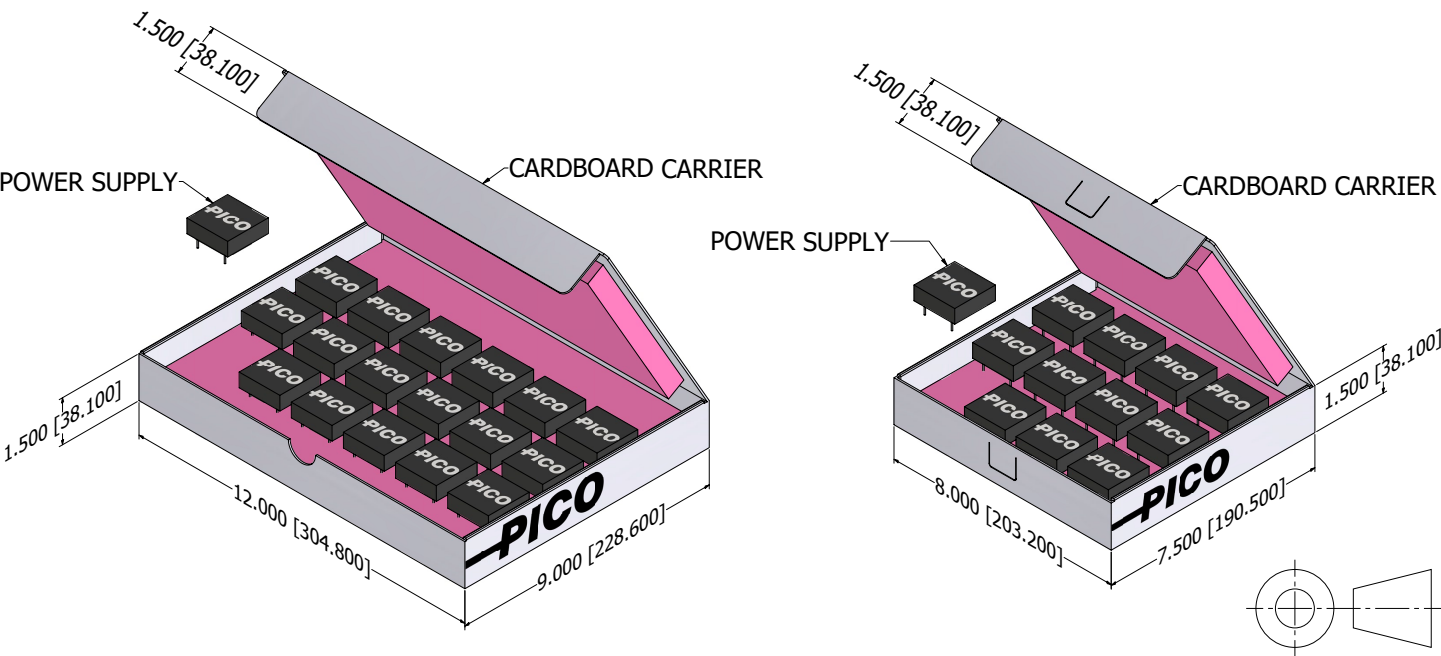


MECHANICAL DRAWINGS



PIN	FUNCTION
1	+IN
2	SHDN
3	-IN
4	-OUT
5	+OUT

BOX PACKAGING - BULK



Pico warrants each product manufactured by us and sold by us or an authorized representative, to be free from defects in material and workmanship. If properly used, it will perform within its applicable specifications for a period of one year after original shipment. Pico's obligation under this guarantee is limited to repairing or replacing our product to the original purchaser. This warranty is in lieu of all other warranties, express or implied and constitutes fulfillment of our obligations to the purchaser. We do not guarantee that the products can be used for a particular purpose other than those solely covered by the product's specifications. Pico must be notified if the product must meet particular certifications and/or standards. We assume no liability, in any event, for consequential damages, for anticipated or lost profits, incidental damages or loss of time or other losses incurred by the purchaser or any third party in connection with products covered by this warranty or otherwise. The purchaser will indemnify and hold Pico harmless for any damages, losses, costs, etc. from usage not within the product's specifications. Pico must be consulted before usage of its products in a nuclear, radioactive or space environment.

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