

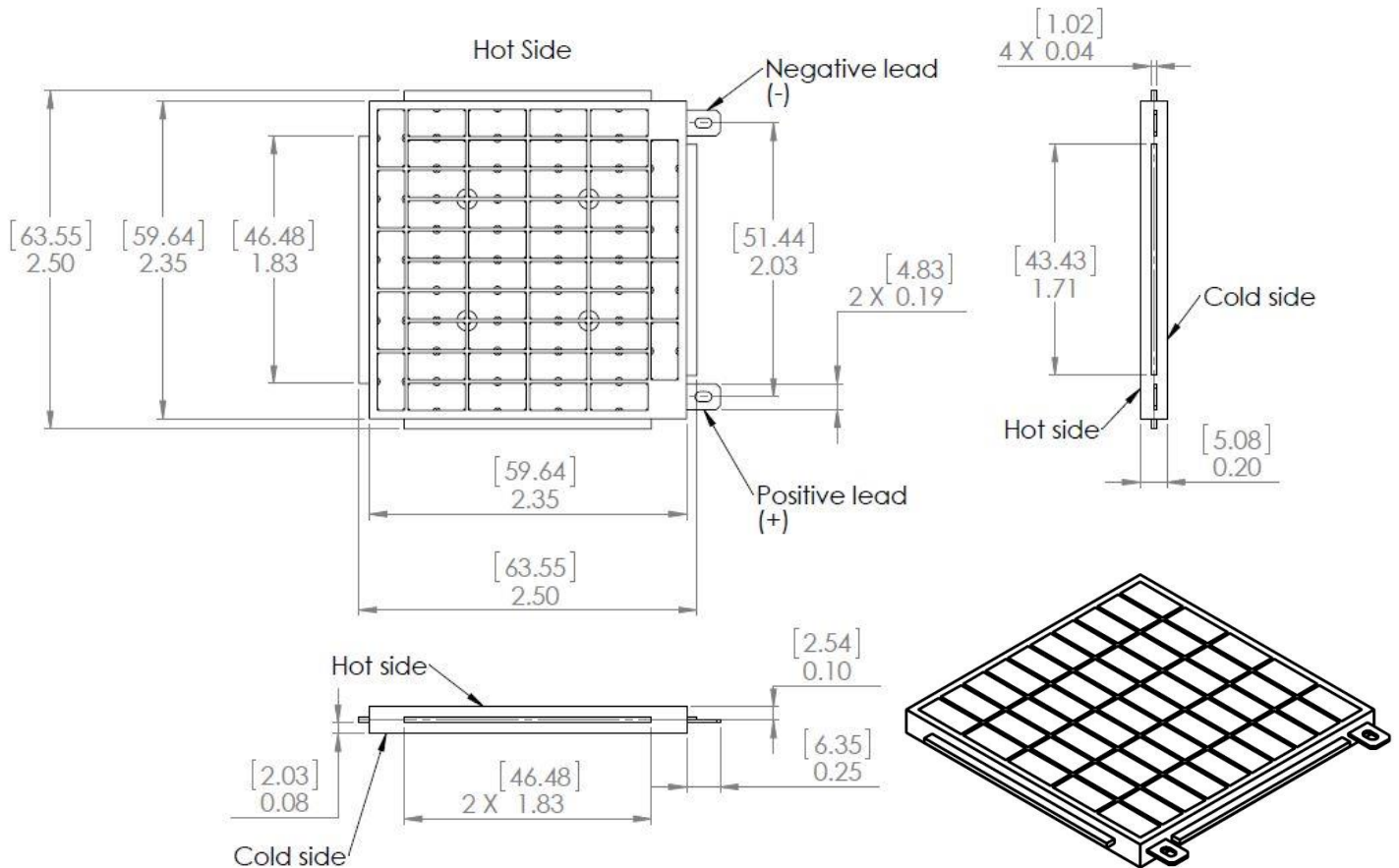
## FEATURES

- **Produces > 14 watts of power**  
( $T_h=250^{\circ}\text{C}$ ,  $T_c=50^{\circ}\text{C}$ )
- **Intermittent Operation beyond  $350^{\circ}\text{C}$**
- **Intermittent Power up to 25 watts**
- **Rugged Construction** (no ceramic, no solders, fiber reinforced construction makes module tolerant to abuse)
- **Long life** (> 10 years when properly used)
- **98 couples**  $(\text{Bi,Sb})_2(\text{Te,Se})_3$
- **Produce 10mW @  $\Delta T=5^{\circ}\text{C}$**
- **Some modules may have braided copper leads**

## DESCRIPTION

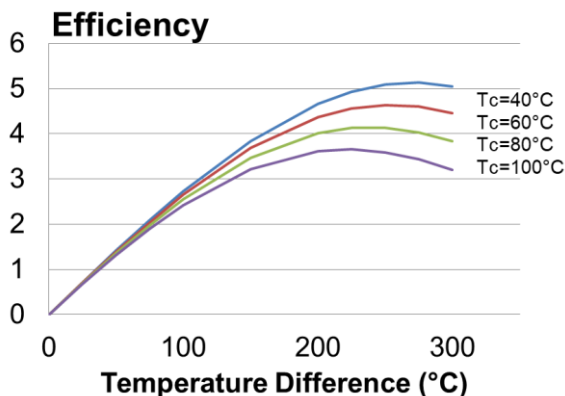
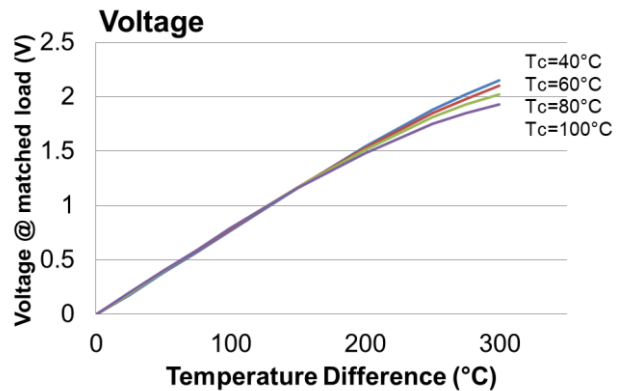
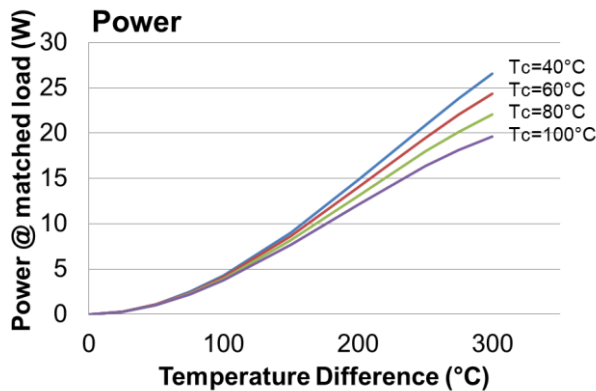
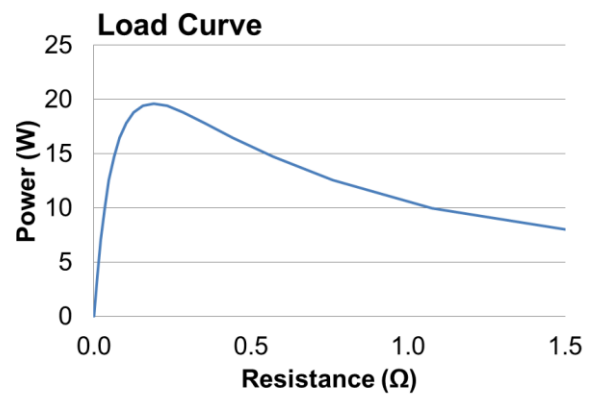
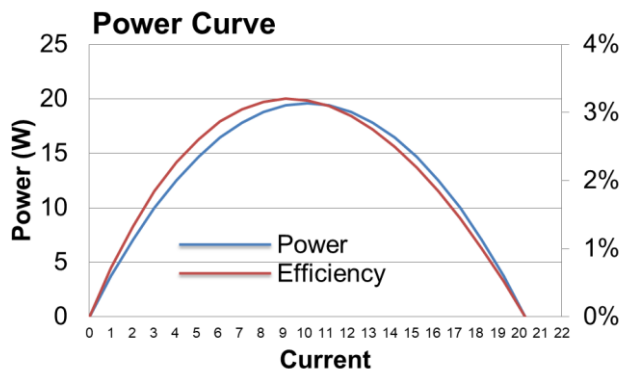
The HZ-14 module is designed to generate power and is able to tolerate intermittent temperatures up to  $350^{\circ}\text{C}$ , but for maximum life expectancy it should not exceed  $250^{\circ}\text{C}$ . These high temperature properties are made possible by the bonded metal conductors that eliminate the presence of all solders.

While the module is optimized for waste heat recovery, its reversible properties make it suitable as a thermoelectric cooler, especially for high temperature applications where sensitive electronic equipment must be cooled to below the ambient temperatures.



# 14 watt module Data Sheet

Thermal and Electrical Characteristics					
Parameter	Conditions	min	typ	max	units
Power	Th=250°C, Tc=50°C @matched load	14.0	15	16	Watts
Open Circuit Voltage	Th=250°C, Tc=50°C	2.8	3.0	3.2	Volts
Matched load Voltage	Th=250°C, Tc=50°C	1.4	1.5	1.6	Volts
Internal Resistance	Th=250°C, Tc=50°C	0.15	0.16	0.17	Ω
	T = 25°C	0.09	0.1	0.11	Ω
Current	Th=250°C, Tc=50°C @matched load	8.0	9.0	10.0	Amps
	Th=250°C, Tc=50°C @short circuit	16	18	20	Amps
Heat Flux	Th=250°C, Tc=50°C @matched load	330	350	370	Watts
	Th=250°C, Tc=50°C open circuit	200	210	220	Watts
Heat Flux Density	Th=250°C, Tc=50°C @matched load	9	10	11	W/cm <sup>2</sup>
Mass		48	49	50	grams



Stated temperatures are assumed to be on the module surface and not the heat exchangers. Module surfaces are conductive and require the use of an insulator when used against metal heat exchangers. Ceramic wafers with thermal grease provide optimum performance.

Recommended mounting pressure is 100 to 200 psi uniformly distributed over the module surface.

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