hytek microsystems

HY-7110
Micro-heater

Features:

♦ Beryllia base for good thermal conduction
♦ Regulation temperature from 40°C to 100°C
♦ Electrically isolated from the case
♦ Epoxy sealed
♦ Hermetically sealed and military screened
  units available

Miniature Proportionally Controlled Heater

Description:

The HY7110 is a miniature proportionally controlled heater whose temperature can be programmed with a single external resistor. This device is ideally suited for regulating the temperature of sensitive electronic components such as microwave filters, optical waveguides, multiplexers and crystal oscillators. The HY7110 in a ceramic package can supply up to 28 Watts of power from an unregulated 28 Volt supply.
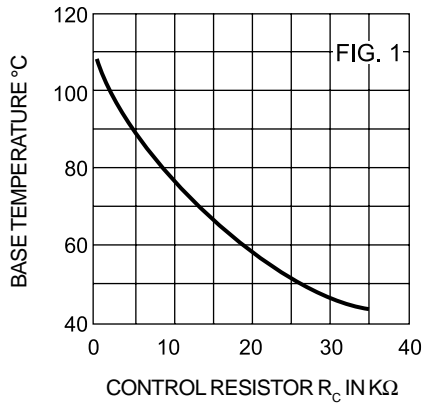
Maximum ratings:

Rating	Symbol	Value	Unit
Supply Voltage	V_{DD}	35	Vdc
Reverse Voltage	V_R	−50	Vdc
Power Dissipation	P_D	35	Watts
Operating Temperature (Case)	$T_{MAX/MIN}$	100/−20	°C
Storage Temperature Range		−65 to +150	°C
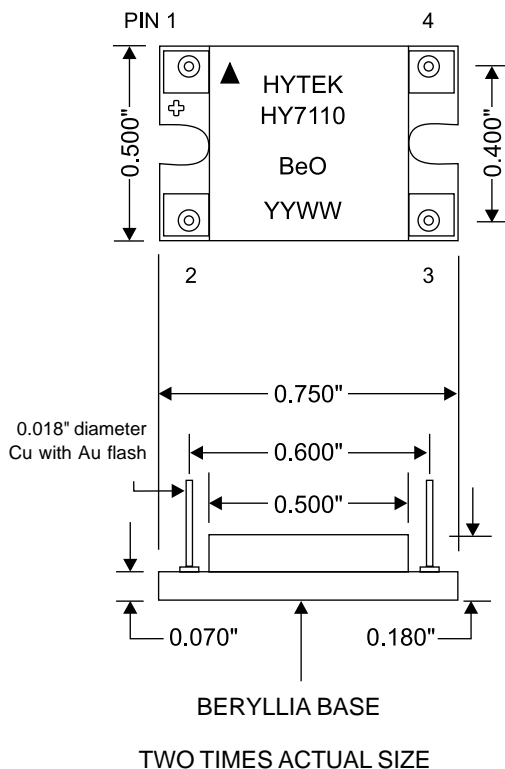
Operating characteristics:

Characteristic	Symbol	Min	Max	Unit
Supply Voltage (Pin 1 to Pin 2)	V_{DD}	+8	+35	Vdc
Steady State Supply Current @ V_{DD} = +35 Vdc	I_S	0.015	1.0	Adc
Temperature variation over operating voltage	ΔT_V		2	°C
Temperature variation with load	ΔT_L		10	°C
Control Temperature Range	T_C	50	100	°C
Control Resistor Value Pin 3 to Pin 4 (See Figure 1)	R_C	0	35K	Ω
Maximum Control Temperature when Rc = 0Ω	T_{MAX}		110	°C
Turn on power at start-up @V_{DD} = +28 Volts	P_D	25	28	Watts

OUTLINE DIMENSIONS

PIN 1   4

0.500"

HYTEK
HY7110

BeO

YYWW

0.400"

2   3

0.750"

0.018" diameter
Cu with Au flash

0.600"

0.500"

0.070"   0.180"

BERYLLIA BASE

TWO TIMES ACTUAL SIZE

TYPICAL BASE TEMPERATURE VS CONTROL RESISTOR

FIG. 1

BASE TEMPERATURE °C vs CONTROL RESISTOR R_C IN KΩ

MAX START-UP CURRENT VS SUPPLY VOLTAGE

FIG. 2

SUPPLY CURRENT (AMPS) vs SUPPLY VOLTAGE (VOLTS D.C.)
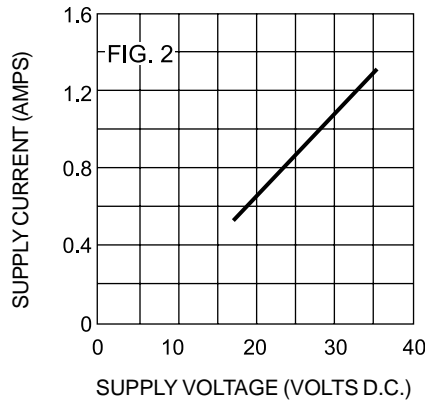
MAX THERMAL POWER AVAILABLE VS SUPPLY VOLTAGE

FIG. 3

OUTPUT POWER (WATTS) vs SUPPLY VOLTAGE (VOLTS D.C.)
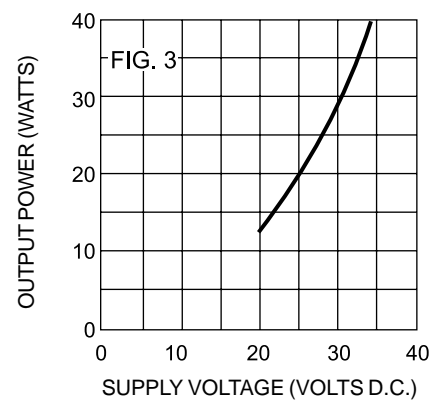
TYPICAL BASE TEMPERATURE LOSS WITH POWER DISSIPATION

FIG. 4

TEMPERATURE CHANGE °C vs POWER OUTPUT (WATTS) FROM HY7110

HEATER BLOCK DIAGRAM

HEATER BLOCK DIAGRAM

V_{DD} 1

+

HEATER

TEMP. SENSOR

CONTROL CIRCUIT

Temp. set resistor

4

COM. 2

3
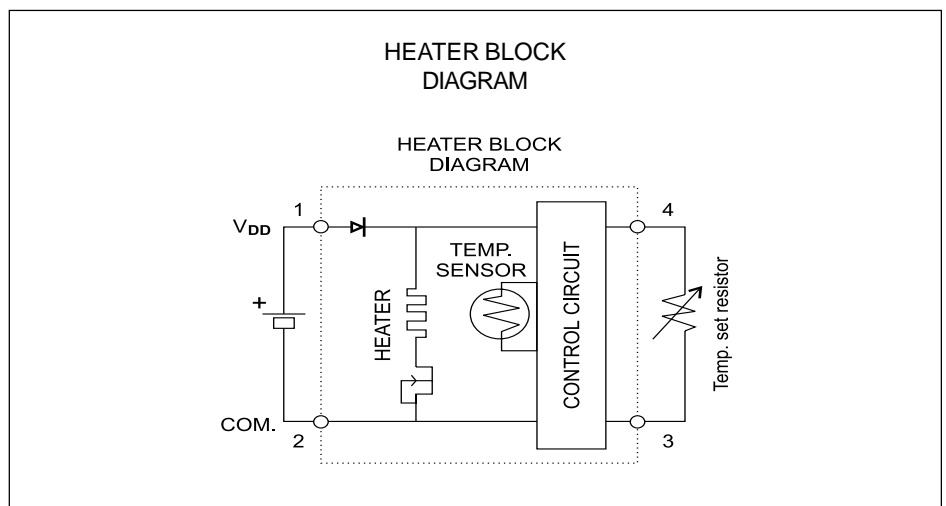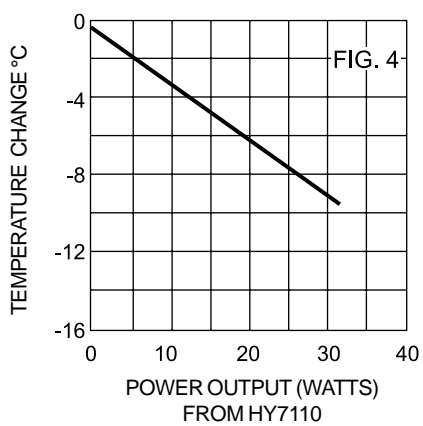
MOUNTING THE HY7110 HEATER

#2-56 mounting screws

Thermal compound between surfaces

Electrical pin not shown for clarity

Device being heated

Do not overtighten the mounting screws.
This may result in breaking the ceramic substrate.
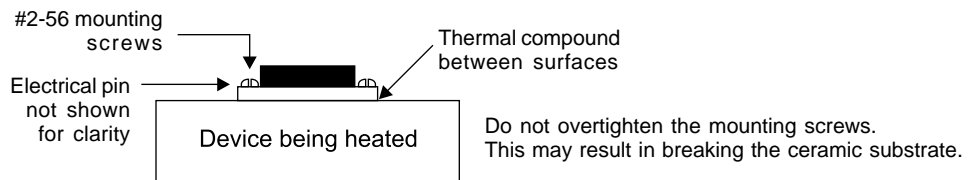
NOTES:

1. Optimum heat transfer between the HY7110 and the device being heated occurs when a thermal compound, such as Dow Corning 340, is applied to the mounting surface of the heater.

2. Operation is possible from 100 °C to 120°C, however electrical performance is not guaranteed.

3. Special environmental and electrical screening is available on request.

4. Special custom engineered micro-heater available on request.