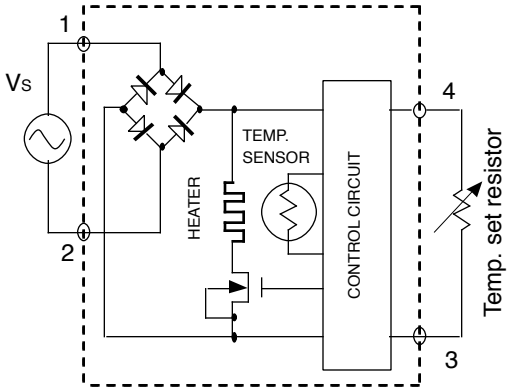
DN520-40

DATA SHEET

SUBMINATURE PROPORTIONALLY CONTROLLED A.C. HEATER

HEATER BLOCK DIAGRAM



GENERAL DESCRIPTION

The DN520-40 is a subminiature proportionally controlled 115Volt A.C 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 fiber optic components and crystal oscillators. The DN520-40 is in a ceramic package and can supply up to 32 watts of power from an unregulated power supply.

FEATURES

- BERYLLIA BASE FOR GOOD THERMAL CONDUCTION
- REGULATION TEMPERATURE FROM 40˚C TO 100˚C
- 115 VOLT A.C. OPERATION
- ELECTRICALLY ISOLATED FROM THE CASE

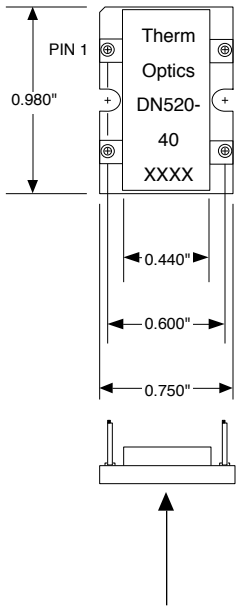
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage	V_S	125	V_{AC}
Power Dissipation	P_D	60	Watts
Operating Temperature	T_{MAX}	120	˚C
Storage Temperature	T_{MIN}	- 65 to +150	˚C

OPERATING CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
Supply Voltage (Pin 1 to Pin 2)	V_S	100	125	V_{AC}
Turn On Current Range at V_S = 115 V_{AC}	I_S	0.250	0.300	A_{AC}
Steady State Supply Current @ V_S = 115 V_{AC}	I_S	0.008	0.440	A_{AC}
Temperature Variation over Operating Voltage	ΔT_V		2	˚C
Temperature Variation with Load	ΔT_L		10	˚C
Control Temperature Range	T_C	T_A + 5	100	˚C
Control Resistor Value Pin 3 to Pin 4 (See Figure 1)	R	0		Ω
Maximum Control Temperature when R_C = 0	T_{MAX}		120	˚C
Operating frequency range	f_O	45	420	Hz

OUTLINE DIMENSIONS



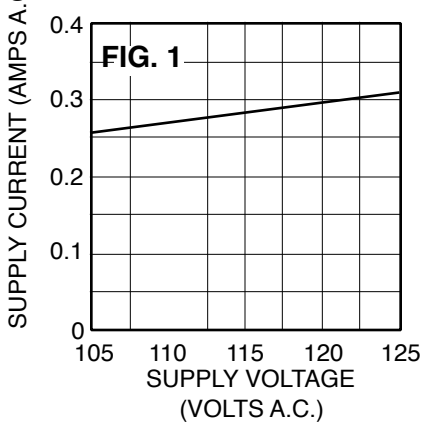
BERYLLIA BASE

ACTUAL SIZE

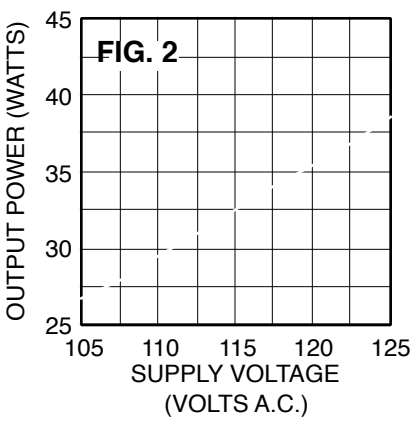
Heater Temperature vs Temperature Set Resistor

T °C	RS KΩ	T °C	RS KΩ	T °C	RS KΩ	T °C	RS KΩ
0	360.1	29	79.6	58	20.2	87	4.6
1	340.6	30	75.8	59	19.3	88	4.4
2	322.3	31	72.2	60	18.4	89	4.1
3	305.0	32	68.8	61	17.5	90	3.9
4	288.7	33	65.5	62	16.7	91	3.6
5	273.4	34	62.5	63	15.9	92	3.4
6	259.0	35	59.5	64	15.2	93	3.2
7	245.4	36	56.8	65	14.5	94	3.0
8	232.5	37	54.1	66	13.8	95	2.8
9	220.4	38	51.6	67	13.2	96	2.6
10	209.0	39	49.2	68	12.5	97	2.4
11	198.3	40	46.9	69	11.9	98	2.2
12	188.1	41	44.8	70	11.4	99	2.0
13	178.5	42	42.7	71	10.8	100	1.8
14	169.4	43	40.7	72	10.3	101	1.68
15	160.8	44	38.9	73	9.8	102	1.52
16	152.7	45	37.1	74	9.3	103	1.37
17	145.1	46	35.4	75	8.9	104	1.23
18	137.8	47	33.8	76	8.4	105	1.09
19	131.0	48	32.3	77	8.0	106	0.95
20	124.5	49	30.8	78	7.6	107	0.82
21	118.3	50	29.4	79	7.2	108	0.70
22	112.5	51	28.1	80	6.8	109	0.58
23	107.0	52	26.8	81	6.5	110	0.46
24	101.8	53	25.5	82	6.1	111	0.35
25	96.9	54	24.4	83	5.8	112	0.25
26	92.2	55	23.2	84	5.5	113	0.14
27	87.8	56	22.2	85	5.2	114	0.04
28	83.6	57	21.2	86	4.9		

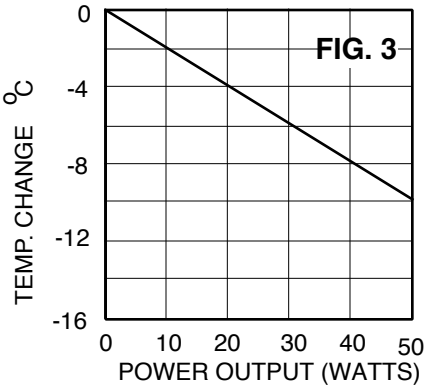
MAX. START UP CURRENT VS. SUPPLY VOLTAGE



MAX. THERMAL POWER AVAILABLE VS. SUPPLY VOLTAGE



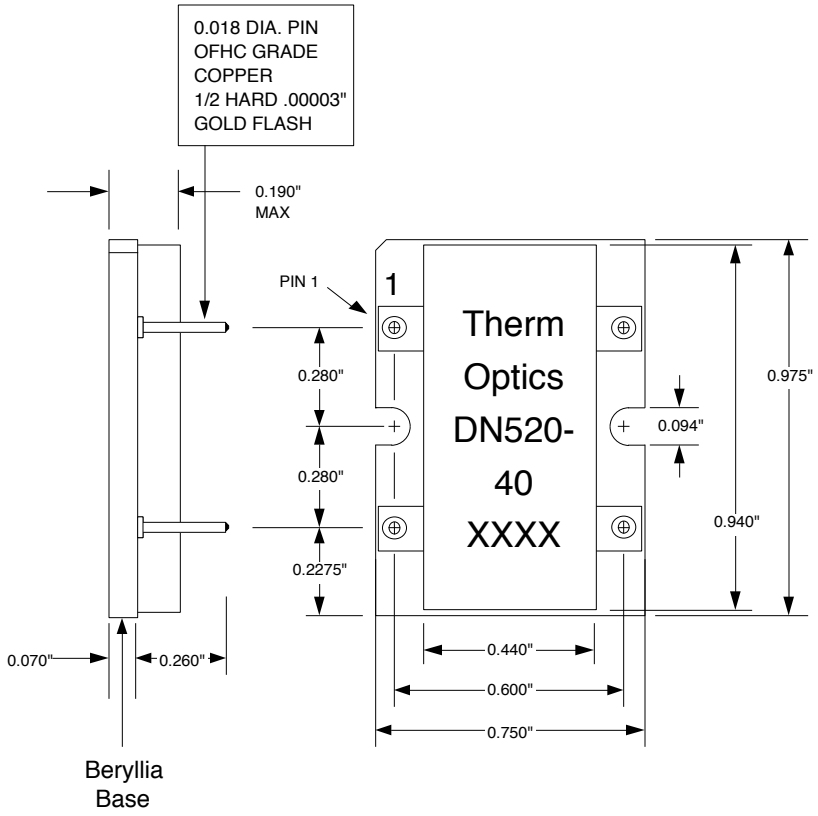
TYPICAL BASE TEMPERATURE CHANGE WITH POWER DISSIPATION



The base material of the DN520-40 is Beryllia which provides efficient energy transfer from the heating element located inside the heater and the heating surface of the the DN520-40. The temperature drop across the Beryllia substrate, as a function of power transfer, is shown in figure 3.

The thermal interface between the DN520-40 heater and the device being heated causes a temperature drop. Care should be taken to make sure that a good thermal interface exists between the two surfaces.

DN520-40 MECHANICAL DIMENSIONS



NOTES:

1. The DN520-40 heaters are tested for gross leaks in Fluorocarbon at 125˚C.
2. Optimum heat transfer between the DN520-40 and the device being heated occurs when a thermal compound, such as Dow Corning 340, is applied to the mounting surface of the heater.

ThermOptics™

Last Updated 6/25/01