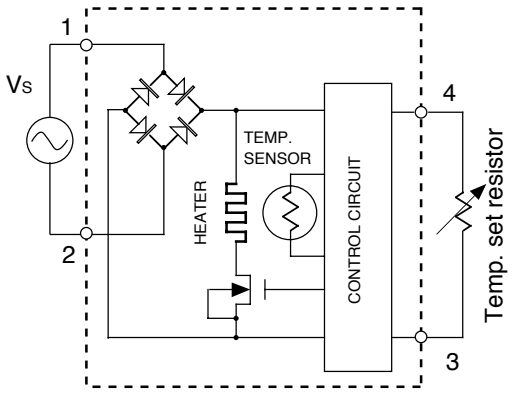
DATA SHEET

DN520-50

PROPORTIONALLY CONTROLLED A.C. HEATER

The DN520-50 is a proportionally controlled 115 Volt 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 microwave filters and crystal oscillators. The DN520-50 is in a ceramic package and can supply up to 50 Watts of power from an unregulated supply.

HEATER BLOCK DIAGRAM



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

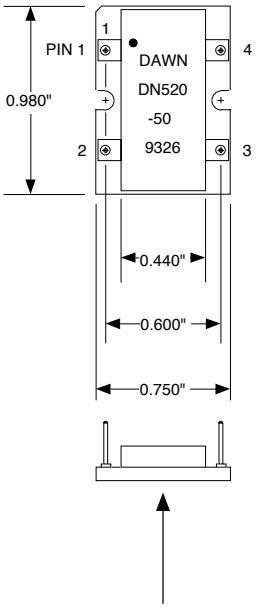
Rating	Symbol	Value	Unit
Supply Voltage	V_S	125	Vac
Power Dissipation	P_D	60	Watts
Operating Temperature	T_{MAX}	120	°C
Storage Temperature	T_{MIN}	- 65 to +150	°C

OPERATING CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit
Supply Voltage (Pin 1 to Pin 2)	V_S	100	125	Vac
Steady State Supply Current @ V_S = 115 Vac	I_S	0.008	0.440	Aac
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_C	0		Ω
Maximum Control Temperature when R_C = 0 Ω	T_{MAX}		120	°C
Turn on power at start-up @ V_S = 115 Vac	P_D	50		Watts
Operating frequency range	fo	45	420	Hz

OUTLINE DIMENSIONS

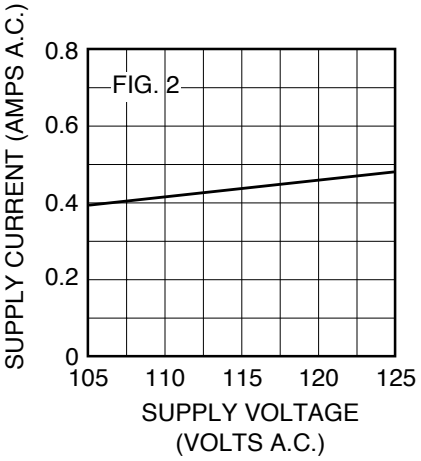
ACTUAL SIZE



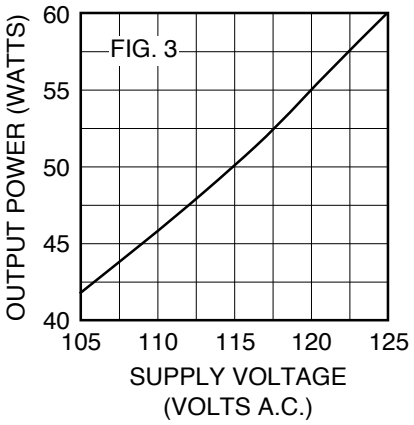
Heater Temperature (TC) vs. TemperatureSet Resistor (RS)

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	1.80
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		

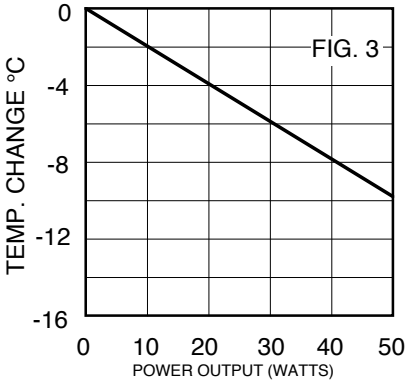
Max. Start-up Current Supply vs. Supply Voltage



Max. Thermal Power Available vs. Supply Voltage

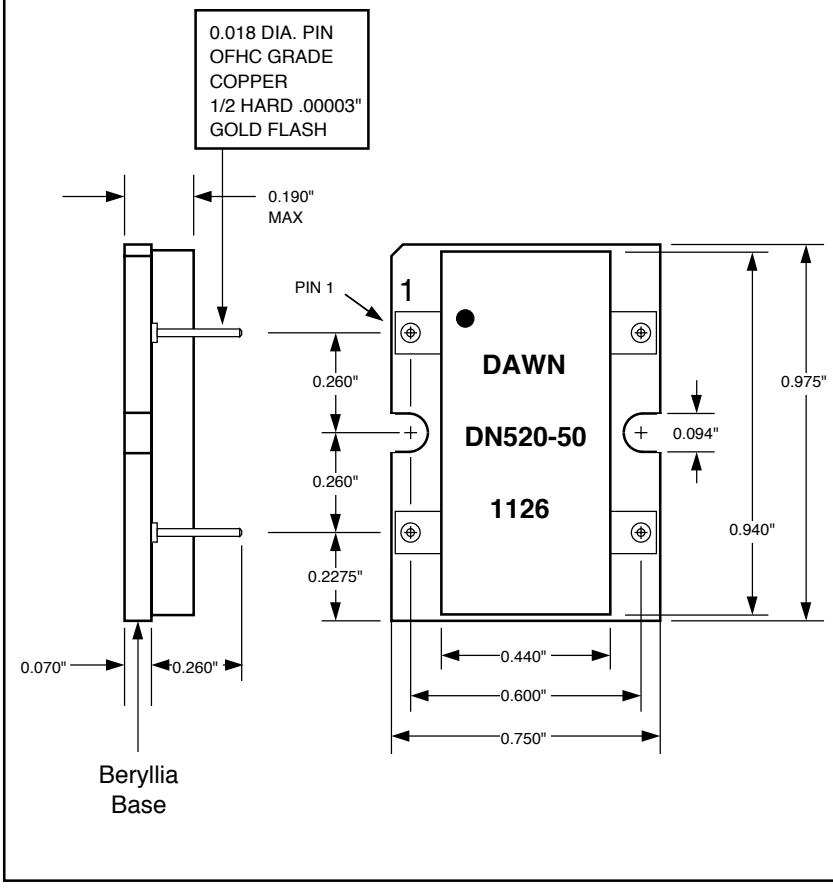


TYPICAL BASE TEMPERATURE CHANGE WITH POWER DISSIPATION



The base material of the DN520-50 is Beryllia which provides efficient energy transfer from the heating element located inside the heater and the heating surface of the DN520-50. The temperature drop across the Beryllia substrate, as a function of power transfer, is shown in figure 3. The thermal interface between the DN520-50 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.

DN520-50 MECHANICAL DIMENSIONS



NOTES:

1. All DN520-50 heaters are tested for gross leaks with 3M™ FC-40 Fluorinert™ at 125° C.
2. Optimum heat transfer between the DN525 and the device being heated occurs when a thermal compound, such as Dow Corning 340, is applied to the mounting surface of the heater.

12/2011