ThermOptics®

DATA SHEET

SUBMINIATURE PROPORTIONALLY CONTROLLED HEATER

HEATER BLOCK DIAGRAM

GENERAL DESCRIPTION

The DN515 is a subminiature 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 and crystal oscillators. The DN515 is in a ceramic package and can supply up to 28 watts of power from an unregulated 28 Volt power supply.

FEATURES

• BERYLLIA BASE FOR GOOD THERMAL CONDUCTION
• REGULATION TEMPERATURE FROM 5°C ABOVE AMBIENT TO 100°C
• 28 T0 50 VOLT OPERATION
• ELECTRICALLY ISOLATED FROM THE CASE

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage	V_{DD}	35	V_{DC}
Reverse Voltage (Pin 1 to Pin 2)	V_R	-50	V_{DC}
Power Dissipation	P_D	35	Watts
Operating Temperature	T_{MAX}	120	°C
Storage Temperature	T_{MIN}	-65 to +150	°C

OUTLINE DIMENSIONS

PIN 1   4

DAWN
DN515
DATE CODE

0.500"

2   3

0.750"

0.600"

0.500"

0.070"   0.180"

BERYLLIA BASE

TWO TIMES ACTUAL SIZE

Characteristic	Symbol	Min	Max	Unit
Supply Voltage (Pin 1 to Pin 2)	V_{DD}	+20	+35	Vdc
Steady State Supply Current @ V_{DD} = +28 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	T_A +5	100	°C
Control Resistor Value Pin 3 to Pin 4 (See Chart)	R_S	0		Ohm
Maximum Control Temperature when Rs= 0 Ohms	T_{MAX}		120	°C
Turn on power at start-up @ V_{DD} = +28 Vdc	P_D	25	28	Watts

T_A ---- Ambient Temperature
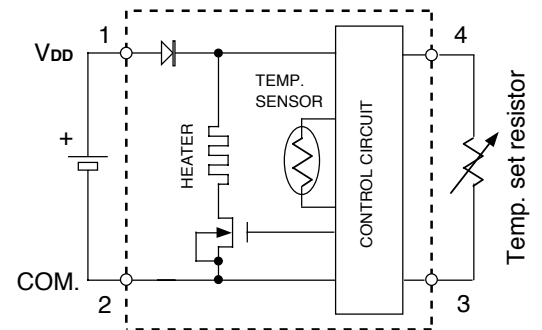
ThermOptics®
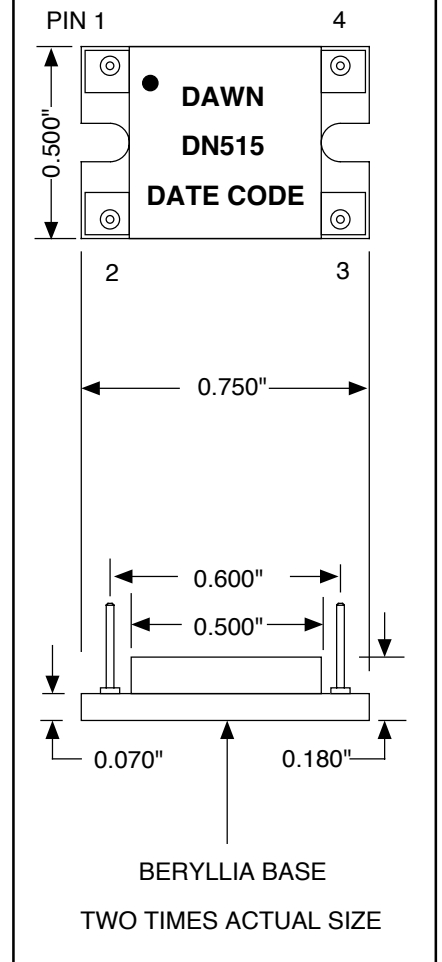
Heater Temperature (T$_C$) vs. TemperatureSet Resistor (R$_S$)

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 vs. Supply Voltage

Supply Current (Amps) vs. Supply Voltage (Volts D.C.)
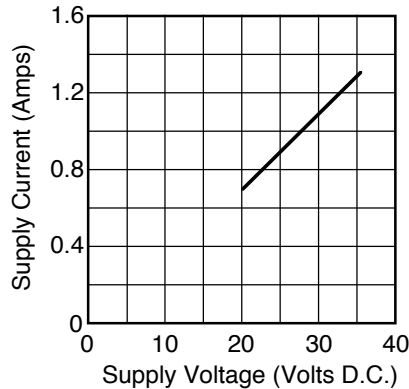
Max. Heater Power Available vs. Supply Voltage

Output Power (Watts) vs. Supply Voltage (Volts D.C.)
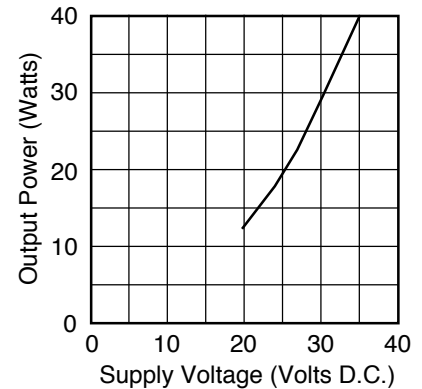
Typical Base Temperature Change vs. Power Dissipation

Temp. Change °C vs. Heater Power (Watts)

MECHANICAL DIMENSIONS

PIN 1
0.094"
DAWN
DN515
DATE CODE
2   3   4

0.500" 0.250"

0.018 DIA. PIN OFHC GRADE COPPER 1/2 HARD .00003" GOLD FLASH

0.750" 0.600" 0.500" 0.400" 0.200" 0.310" 0.180" 0.070"
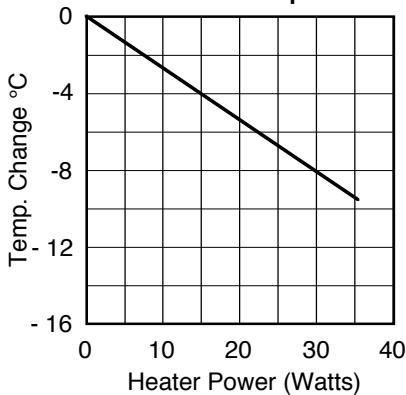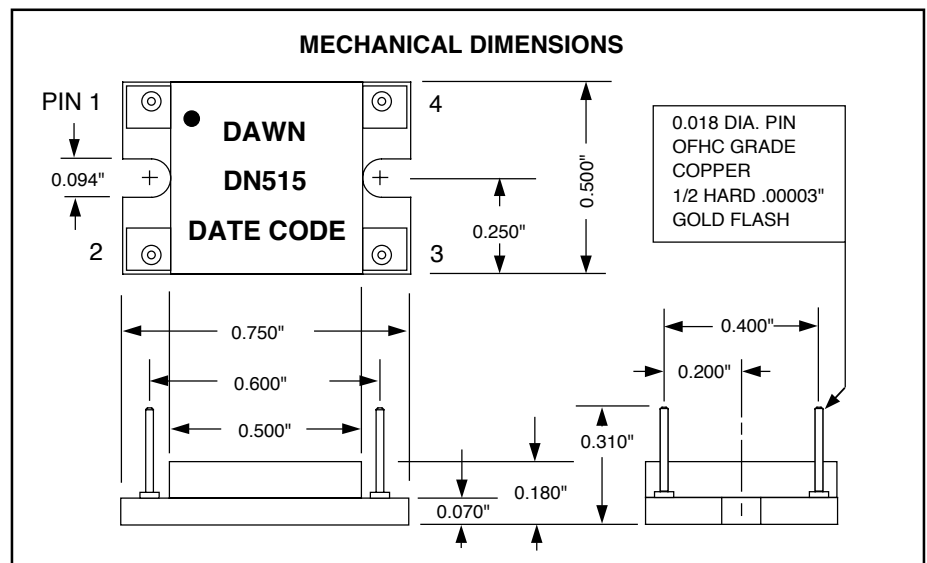
Mounting the DN515 Heater

#43 DRILL O.O89" DIA. CLEARANCE HOLES.

0.650"

DAWN DN515 XXXX

Mounting Tips

1. Make sure that the surface of the device that the heater is mounted to is flat.

2. Make sure that the surface of the heater and devices being heated is clean. Any particles between the surfaces will cause poor heat transfer and can cause potential breakage of the heater substrate.

3. Tighten screws to one inch pound of torque. Alternate tighting of screws to guarantee that the heater is flat.

2-56 SCREW

Fiber Washer DWG. 100042

Thermal compound such as Dow Corning 340 is uniformally dispensed between the heater and the device being heated.

2-56 NUT

Device being heated

Tighten screws to one inch pound of torque.

Completed Assembly

NOTES:

1. Optimum heat transfer between the DN515 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. All DN515 heaters are tested for gross leaks with 3M™ FC-40 Fluorinert™ at 125°C.

3. Special enviromental testing is available on request.

ThermOptics®

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