

DATA SHEET

SUBMINIATURE PROPORTIONALLY CONTROLLED HEATER

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

FEATURES

- BERYLLIA BASE FOR GOOD THERMAL CONDUCTION
- REGULATION TEMPERATURE FROM 40°C TO 100°C
- 28 VOLT OPERATION
- ELECTRICALLY ISOLATED FROM THE CASE

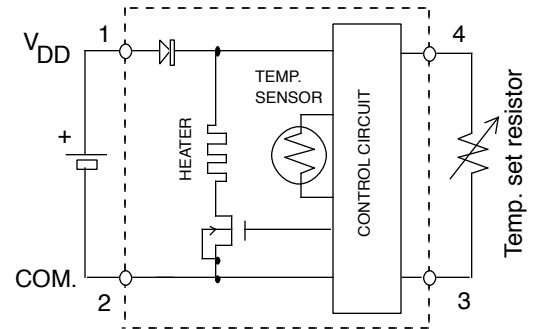
MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|-----------------------|-----------|-------------|-------|
| Supply Voltage | V_{DD} | 35 | VDC |
| Reverse Voltage | V_R | -50 | VDC |
| Power Dissipation | P_D | 35 | Watts |
| Operating Temperature | T_{max} | 120 | °C |
| Storage Temperature | T_{min} | -65 to +150 | °C |

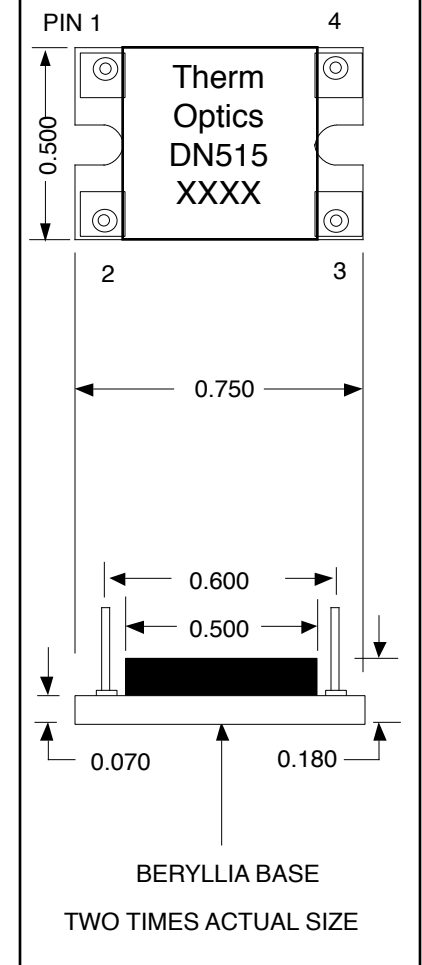
OPERATING CHARACTERISTICS

| Characteristic | Symbol | Min | Max | Unit |
|--|--------------|-------|-----|----------|
| Supply Voltage (Pin 1 to Pin 2) | V_{DD} | +20 | +35 | VDC |
| Steady State Supply Current @ $V_{DD} = +28$ VDC | I_S | 0.015 | 1.0 | IDC |
| 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 | | Ω |
| Maximum Control Temperature when $R_C = 0$ | T_{max} | | 120 | °C |
| Turn on power at start-up @ $V_{DD} = +28$ Volts | P_D | 25 | 28 | Watts |

HEATER BLOCK DIAGRAM



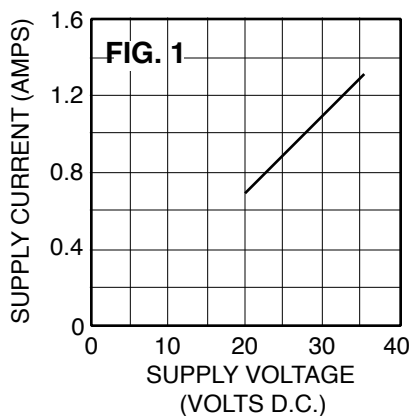
OUTLINE DIMENSIONS



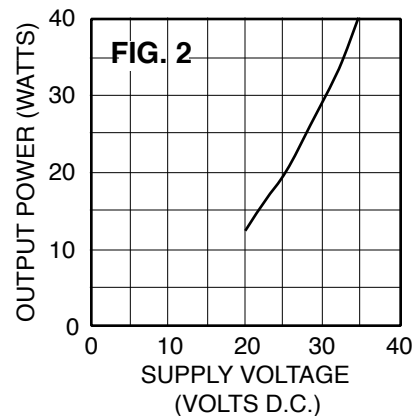
Heater Temperature vs Temperature Set Resistor

| 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 | | |

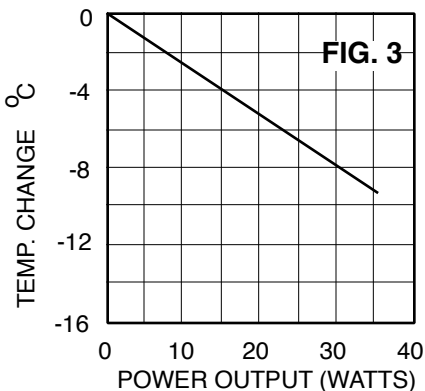
MAX. START UP CURRENT VS. SUPPLY VOLTAGE



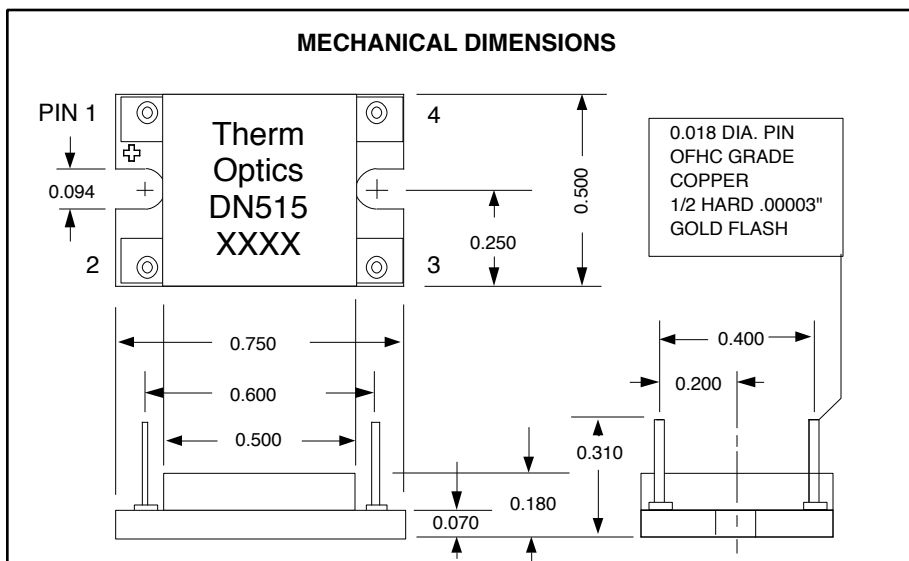
MAX. THERMAL POWER AVAILABLE VS. SUPPLY VOLTAGE



TYPICAL BASE TEMPERATURE CHANGE WITH POWER DISSIPATION

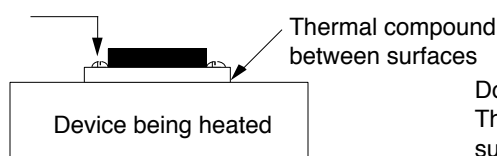


MECHANICAL DIMENSIONS



MOUNTING THE DN-515 HEATER

#2-56 mounting screws



Do not over tighten the mounting screws. This may result in breaking the ceramic substrate.

NOTES:

- 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.
- The DN515 heaters are tested for gross leaks in Fluorocarbon at 125°C.
- Operation is possible from 100°C to 120°C, however electrical performance is not guaranteed. The input decreases to less than 20 mA when the ambient temperature is 120°C.
- Special environmental testing is available on request.