

**HERMETICALLY SEALED PROPORTIONALLY CONTROLLED
METAL PACKAGE HEATER HYBRID 52280-108-X**



Features:

- Self-contained
- Programmable via a single external resistor

Applications:

- Ideal for microwave oscillators
- Telecommunications
- Other areas where temperature control is needed

DESCRIPTION

The 52280-108 heater is a self-contained hybrid circuit heater programmable for temperature by a single external resistor. The system is ideal for microwave oscillators, telecommunications and other areas where temperature control is needed.

Typical Electrical Characteristic for DC 52280-108-X- Metal Package Heater

Power Consumption	15 Watts @ Vin = 18 Vdc
Recommended Operating Voltage (See Note 1)	18 Vdc
Voltage Limits	18 Vdc Min, 32 Vdc Max
Reverse Voltage Protection	50 Vdc Max
Operating Current Range	0.005 to 0.835 A
Turn-on Current	0.860 A
Quiescent Current	Less than .008 A

Typical Temperature Characteristics

Control Range	+50°C to +100°C
Variation with Load (See Note 2)	10° C Max
Input Voltage Variation (See Note 3)	±2°C
Maximum Control Temperature (See Note 4)	+115°C
Operating Case Temperature (Tc) with 7.5Kohm pins 3&4	+75°C+/- 3°C

Environmental Characteristics

Operating Temperature	-55°C to +100°C
Altitude	70,000 Ft. Max
Shock	1500G Max
Vibration	50G at 2,000 Hz Max
Humidity	Greater than 95%

Part Number Ordering Guide

52280-108-1 Heater, with Burn-In Screening

52280-108-2 Heater, without Burn-In Screening

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Reliability for 52280-108-X

Each hybrid circuit is subjected to the following reliability screening per MIL-PRF-38534:

- Precap internal visual Methods 2017 and 2032
- High Temperature stabilization bake, Method 1008, Condition C
- Temperature cycling, Method 1010, Condition B
- Constant acceleration, Method 2001, Condition B, Y axis only
- Optional burn-in per Mii specifications
 - 52280-108 – 1 for Burn-In
 - 52280-108 – 2 for No Burn-In
- Fine and Gross leak test, Method 1014, Conditions A₁ & C₁

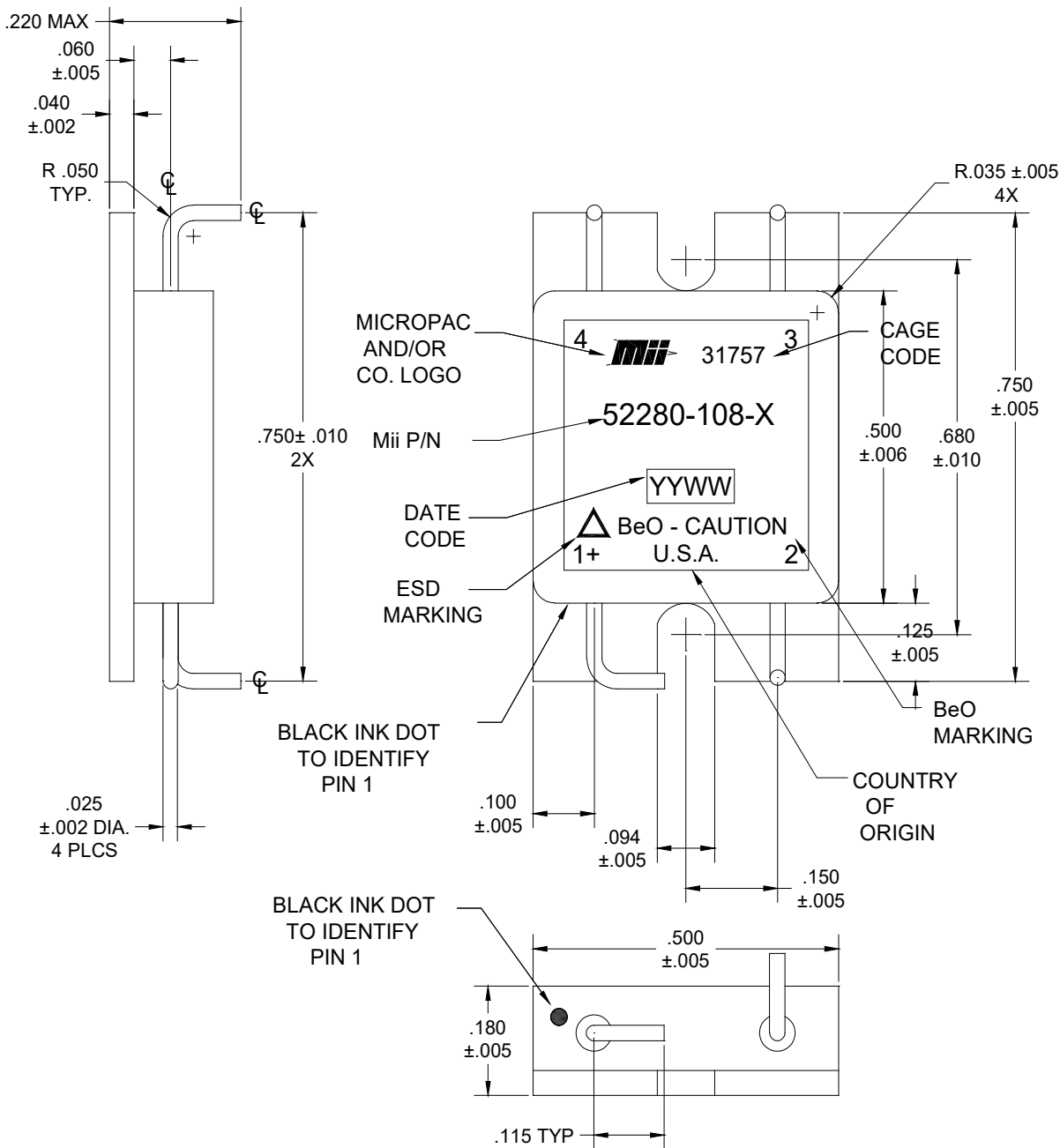
Notes

1. The heater is operational from 18 VDC to 32 VDC; however, for optimum performance 18 VDC is recommended.
2. Maximum temperature variation for current change from 5% over quiescent to 95% of turn on current.
3. Maximum temperature variation over operating voltage range when ambient temperature is constant and the supply current is between 5% over quiescent and 95% of turn on current.
4. Maximum temperature with any value of control resistor, including 0 ohms.
 - All metal package hermetically sealed heaters are leak tested to meet MIL-PRF-38534, Method 1014, test conditions A & C, with a maximum leak rate of 5×10^{-8} atm-cc/sec.
 - Optimum heat transfer is obtained by using a thermal joint compound such as Dow Corning 340 on the mounting surface.
 - Operation is possible above 100°C, but electrical performance is not guaranteed. Input current decays to ≤ 20 mA max at 115°C without damage to the heater.
 - All Micropac heaters are protected against reverse voltage up to 50 V.
 - Maximum power rating for control resistor is 1/8 watt. Precise resistor values should be determined by measuring the surface temperature.
 - Micropac Industries, Inc. will work with the potential customer for voltage and wattage ratings not currently available.
5. Pin 1 is positive input
Pin 2 is negative input
Pin 3 and Pin 4 are control resistor, reference Table 1
6. The maximum Metal Package Heater weight is 4 grams
7. The operating case temperature and tolerance of +75°C +/- 3°C shall be verified during 100% acceptance testing using a 7.5K Ohm control resistor. Acceptance testing shall be performed as part of 100% device screening

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52280-108-X



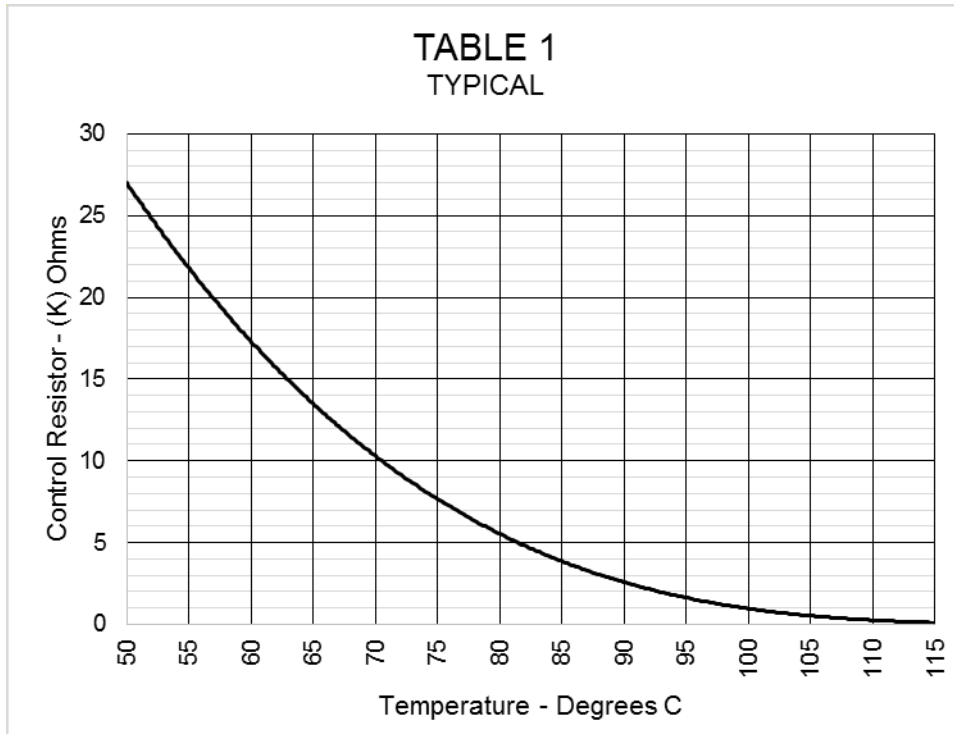
NOTES:

1. MATERIAL: FRAME: COLD ROLLED STEEL TYPE C1010 OR C1020 OR C12L14.
BASE: CDA 101 TYPE COPPER.
PINS: 52 ALLOY, COPPER CORED.
2. PLATING: BODY: ELECTROLESS NICKEL 150-350 MICROINCHES THICK PER MIL-C-26074.
LEADS: GOLD PLATE 30-100 MICROINCHES THICK OVER ELECTROLESS NICKEL
PLATE 150-350 MICROINCHES THICK.
3. SEAL: SEAM SEAL

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**METAL PACKAGE HEATER
TYPICAL HEATER CURRENT
TABLE 1**



NOTES:

1. LOAD EQUAL TO 2.30oz.
2. MATERIAL: COPPER
3. SIZE 1.5" X 1.7" X 1/2"

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