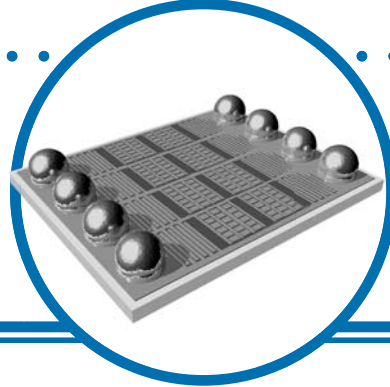


# Precision Ceramic Ball Grid Arrays

## CHC-Precision Series

- Ratio tolerances to  $\pm 0.05\%$
- Absolute tolerances to  $\pm 0.1\%$
- RoHS compliant terminations available
- Superior TaNFilm® resistors on ceramic substrate
- Same footprint as the industry standard SOIC-N package



IRC's TaNFilm® ceramic Precision Ball Grid Array offers precision tolerances in a ceramic BGA package. In addition, the TaNFilm® CHC Series provides all the unique qualities of our other TaNFilm® package configurations.

Precise state-of-the-art laser trimming provides close tolerances and tight ratios. The TaNFilm® process enables IRC to manufacture custom circuit configurations and multiple resistance values without sacrificing the tightest tolerance and tracking characteristics of precision networks. The Tantalum Nitride resistor material is self-passivating for environmental protection surpassing military requirements and guaranteeing exceptional ratio stability.

For applications requiring a high degree of reliability, stability, accuracy and low noise, plus the advantages of new resistor configurations, specify the IRC Precision Ceramic Ball Grid Arrays.

## Electrical Data

| Package | Power Rating at 70°C |         | Temperature Range | Maximum Voltage                      | Noise   | Substrate        | Termination                             |
|---------|----------------------|---------|-------------------|--------------------------------------|---------|------------------|-----------------------------------------|
|         | Element              | Network |                   |                                      |         |                  |                                         |
| 8-Pad   | 100mW                | 400mW   | -55°C to +150°C   | 50V<br>(not to exceed $\sqrt{PxR}$ ) | < -25dB | 99.5%<br>Alumina | Solder<br>plated over<br>nickel barrier |
| 16-Pad  | 100mW                | 800mW   |                   |                                      |         |                  |                                         |

## Manufacturing Capabilities

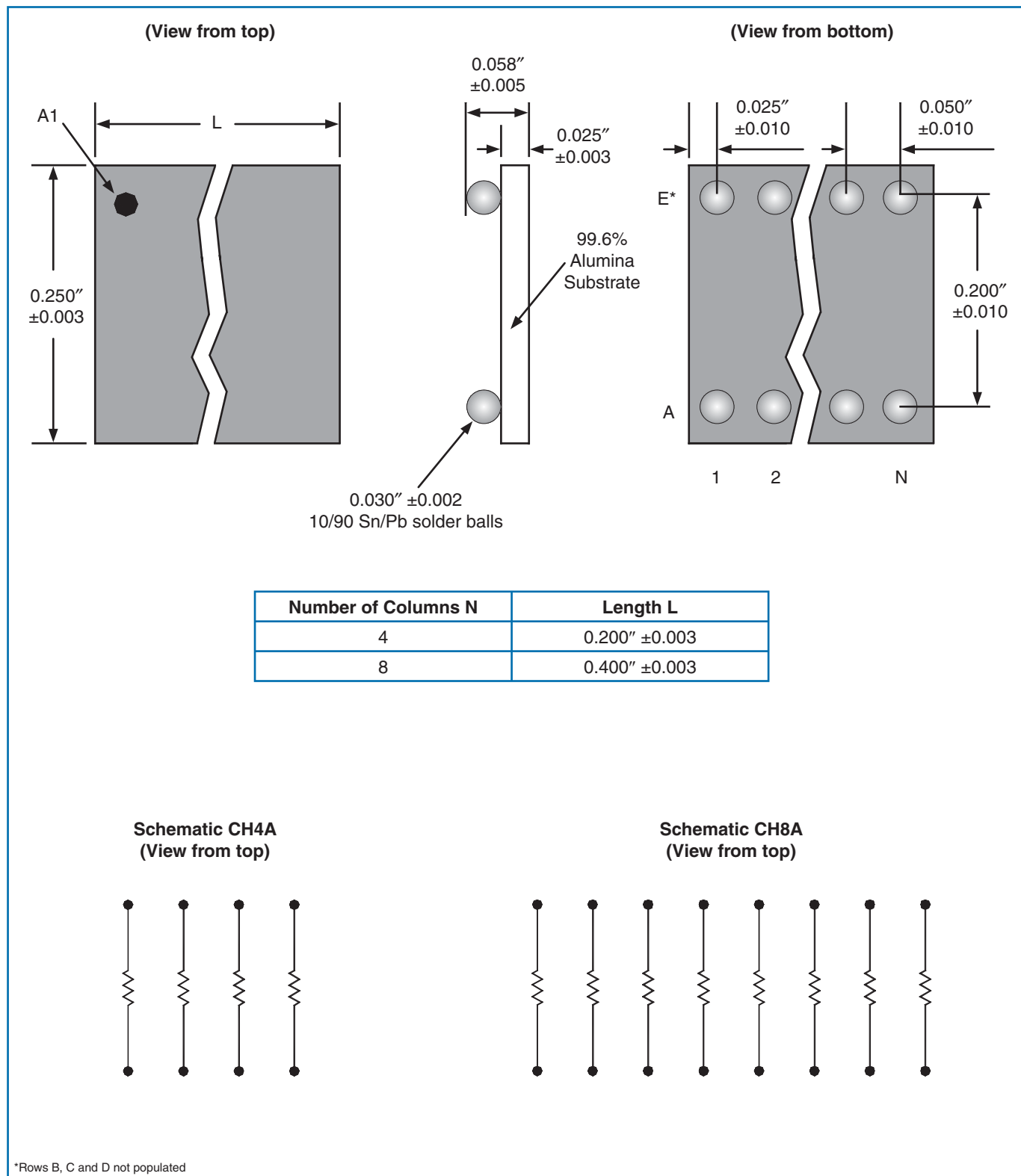
| Resistance Range | Available Absolute Tolerances | Available Ratio Tolerances (Ratio to R1) | Best Absolute TCR                  | Tracking TCR (Track to R1)        |
|------------------|-------------------------------|------------------------------------------|------------------------------------|-----------------------------------|
| 10Ω - 25Ω        | J G F D C                     | G F D                                    | $\pm 100\text{ppm}/^\circ\text{C}$ | $\pm 20\text{ppm}/^\circ\text{C}$ |
| 25.1Ω - 50Ω      | J G F D C                     | G F D C                                  | $\pm 50\text{ppm}/^\circ\text{C}$  | $\pm 10\text{ppm}/^\circ\text{C}$ |
| 50.1Ω - 200Ω     | J G F D C B                   | G F D C B                                | $\pm 25\text{ppm}/^\circ\text{C}$  | $\pm 5\text{ppm}/^\circ\text{C}$  |
| 201Ω - 100KΩ     | J G F D C B                   | G F D C B A                              | $\pm 25\text{ppm}/^\circ\text{C}$  | $\pm 5\text{ppm}/^\circ\text{C}$  |

### General Note

IRC reserves the right to make changes in product specification without notice or liability. All information is subject to IRC's own data and is considered accurate at time of going to print.

# Precision Ceramic Ball Grid Arrays

## Physical and Schematic Data



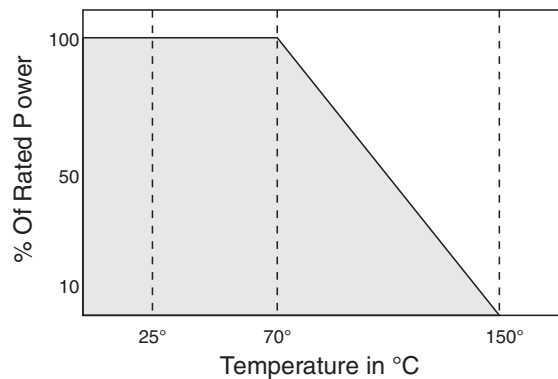
# Precision Ceramic Ball Grid Arrays



## Environmental Data

| Environmental Test Per MIL-PRF-83401 | Maximum $\Delta R$ | Typical $\Delta R$ |
|--------------------------------------|--------------------|--------------------|
| Thermal Shock And Power Conditioning | $\pm 0.1\%$        | $\pm 0.02\%$       |
| Low Temperature Operation            | $\pm 0.05\%$       | $\pm 0.02\%$       |
| Short-time Overload                  | $\pm 0.05\%$       | $\pm 0.02\%$       |
| Moisture Resistance                  | $\pm 0.1\%$        | $\pm 0.03\%$       |
| Shock                                | $\pm 0.1\%$        | $\pm 0.03\%$       |
| Vibration                            | $\pm 0.1\%$        | $\pm 0.03\%$       |
| Life                                 | $\pm 0.1\%$        | $\pm 0.03\%$       |
| High Temperature Exposure            | $\pm 0.1\%$        | $\pm 0.03\%$       |
| Low Temperature Storage              | $\pm 0.05\%$       | $\pm 0.01\%$       |

## Power Derating Curve



## Ordering Data

Prefix ..... **CHC** - **CH8A** - **03** - **1002** - **B** **B**

**Model** .....  
 CH4A = 8-pad with 10/90 Sn/Pb terminations  
 CH4ALF = 8-pad with RoHS compliant SnAgCu terminations  
 CH8A = 16-pad with 10/90 Sn/Pb terminations  
 CH8ALF = 16-pad with RoHS compliant SnAgCu terminations

**TCR Code** .....  
 01 =  $\pm 100$  ppm/°C Commercial Grade  
 02 =  $\pm 50$  ppm/°C Commercial Grade  
 03 =  $\pm 25$  ppm/°C Commercial Grade

**Resistor Code** .....  
 4-digit resistance code  
 Example: 1002 = 10K $\Omega$ ; 49R9 = 49.9 $\Omega$

**Absolute Tolerance Code** .....  
 J =  $\pm 5\%$ ; G =  $\pm 2\%$ ; F =  $\pm 1\%$ ; D =  $\pm 0.5\%$ ; C =  $\pm 0.25\%$ ; B =  $\pm 0.1\%$

**Optional R1 Ratio Tolerance Code** .....  
 F =  $\pm 1\%$ ; D =  $\pm 0.5\%$ ; B =  $\pm 0.1\%$ ; A =  $\pm 0.05\%$

For additional information or to discuss your specific requirements, please contact our Applications Team using the contact details below.