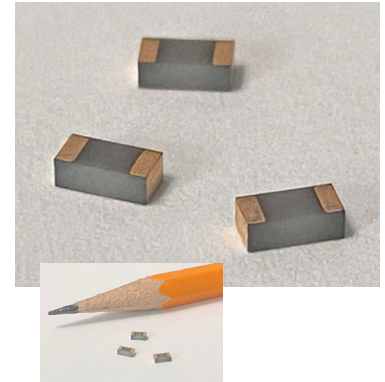


# Aluminum Nitride Ceramic Chip Used To Transfer Heat

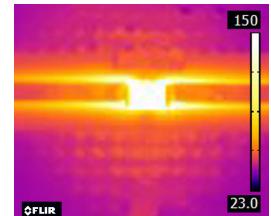
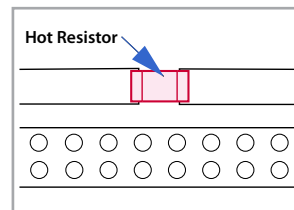
IPP's Cool Chip is designed to draw heat from one location that is too hot and move it to a different location that can absorb the heat. These devices are manufactured on a highly thermally conductive ceramic substrate (Aluminum Nitride) that is electrically isolated and safe to use. The terminals are gold-plated over nickel, making them easy to solder with many different alloy types. These devices are ideal for small, compact areas with high heat concentrations, intended for both military and commercial applications. Cool Chips are made in the USA with the same high quality that IPP is known for.

**APPLICATIONS:** PIN and Laser Diodes, RF Amplifiers, Capacitors, Transistors, Power Supplies, Filters, Resistors



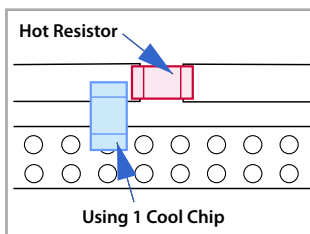
## Thermal Testing Shows Significant Reduction in Temperature Using Cool Chip

The following thermal images are from actual tests taken with our Cool Chips. These images show the heat generated from a resistor which is mounted on a PCB that has a dielectric constant of 2.20 and a thermal conductivity of 0.20 (W/mK). The Aluminum Nitride substrate has a thermal conductivity of 170 W/mK.



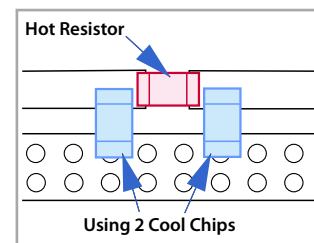
Without the Cool Chip, the resistor was running at 150.0°C

### Results with One Cool Chip



After installing one Cool Chip, as shown on left, with one side soldered to a heat sink, the temperature of the resistor changed as follows:

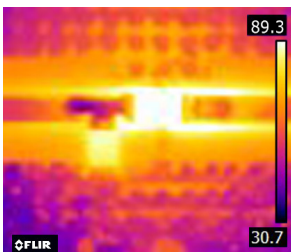
### Results with Two Cool Chips



After installing two Cool Chips as shown on left, with one side soldered to a heat sink, the temperature of the resistor changed as follows:

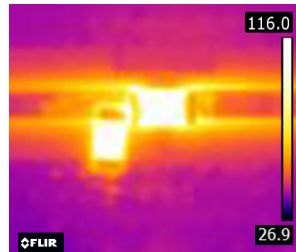
#### Cool Chip with Edge Wrap

IPP-CCN1206-40  
From: 150.0° C  
To: 89.3° C



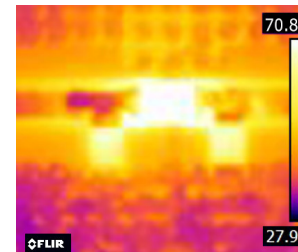
#### Cool Chip with No Edge Wrap

IPP-CCN1206-40N  
From: 150.0° C  
To: 116.0° C



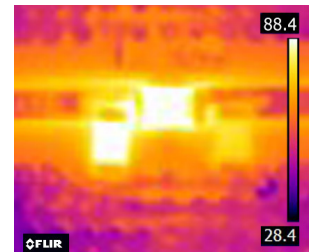
#### Cool Chips with Edge Wrap

IPP-CCN1206-40  
From: 150.0° C  
To: 70.8° C



#### Cool Chips with No Edge Wrap

IPP-CCN1206-40N  
From: 150.0° C  
To: 88.4° C



Results may vary depending on the PCB materials used, the heatsink material and the heatsink path.

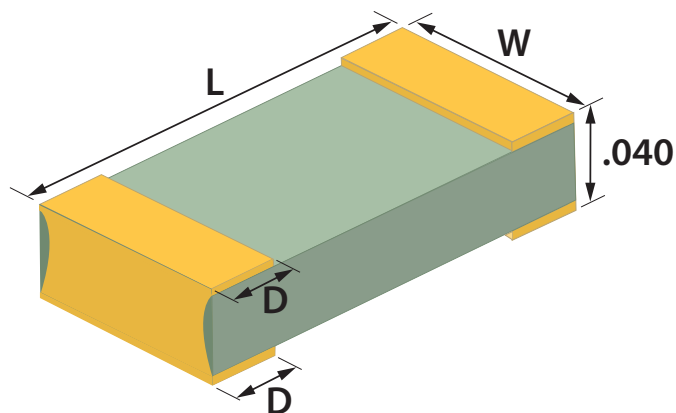
**Part Numbering:** Brand IPP-CC Substrate Material N Case Size - Thickness 1206 - 40 Terminal Type N

The “N” for substrate material identifies Aluminum Nitride (ALN) is being used.  
Default Terminal Type is Wrapped Cool Chip. Add N to part number for “No Wrap” Terminal.

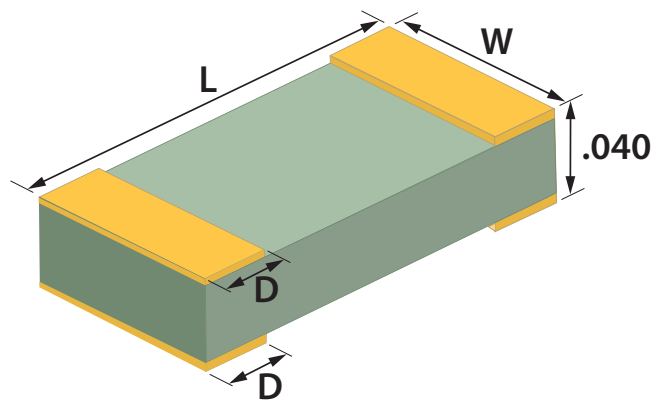
Part Numbers	Dimensions: inches (mm)			Thermal Resistance (W/°C)	Capacitance Series (pF)	Capacitance Shunt (pF)
	L	W	D			
IPP-CCN0805-40	0.080 (2.032)	0.050 (1.270)	0.020 (0.508)	9.26	< 0.10	< 0.10
IPP-CCN0805-40N	0.080 (2.032)	0.050 (1.270)	0.020 (0.508)	13.90	< 0.10	< 0.10
IPP-CCN1206-40	0.120 (3.048)	0.060 (1.524)	0.025 (0.635)	11.58	< 0.10	< 0.10
IPP-CCN1206-40N	0.120 (3.048)	0.060 (1.524)	0.025 (0.635)	14.67	< 0.10	< 0.10
IPP-CCN1010-40	0.100 (2.540)	0.100 (2.540)	0.020 (0.508)	5.80	< 0.10	< 0.15
IPP-CCN1010-40N	0.100 (2.540)	0.100 (2.540)	0.020 (0.508)	9.26	< 0.10	< 0.15

Tolerance for all dimensions is +/- .005

**Edge Wrapped Cool Chip**  
(Wrapped on both edges)



**No Edge Wrapped Cool Chip**  
(Terminal Type “N” identifies No Wrap)



**Packaging:**

Volumes under 250 pieces supplied in Waffle Packs.  
Volumes 250 and higher are on Tape and Reel.



MADE IN U.S.A.