

**GENERAL**

The ST-037-022-5000N is a Silicon Semiconductor "N"-doped bulk type Temperature Sensing Element that develops a large resistive change with temperature. This thermoresistive device is etched from a solid piece of doped material and has a minimum of molecular slippages and/or dislocations resulting in a highly reliable device. When used as recommended, a signal resolvable to 0.001° F is possible.

Although the change in resistance with temperature is non-linear, when the temperature sensing element is used with passive resistive elements to form a bridge as shown in figure 1. the resulting signal is linearized by R3. The individual passive elements R1 and R2 have no effect on linearization and can be used to provide an offset or bridge balance at any temperature within the operating range.

The temperature sensing element can be bonded with epoxy to materials which can affect the data slightly due to the differences in thermal expansion between the silicon and the material to which it is being bonded. The effect is less than 1%/100°F for materials with a Thermal Coefficient of 10 microinch/inch/°F or less.

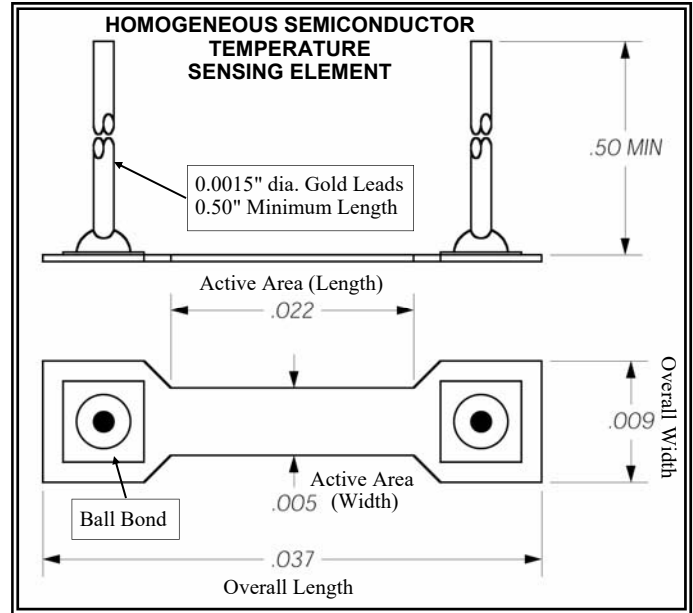
The mass of the temperature sensing element is small and will respond to a 180 deg F change of temperature in water in less than two milliseconds.

**FEATURES**

- HIGH RELIABILITY
- LOW COST
- FAST RESPONSE
- HIGH RESOLUTION

**APPLICATIONS**

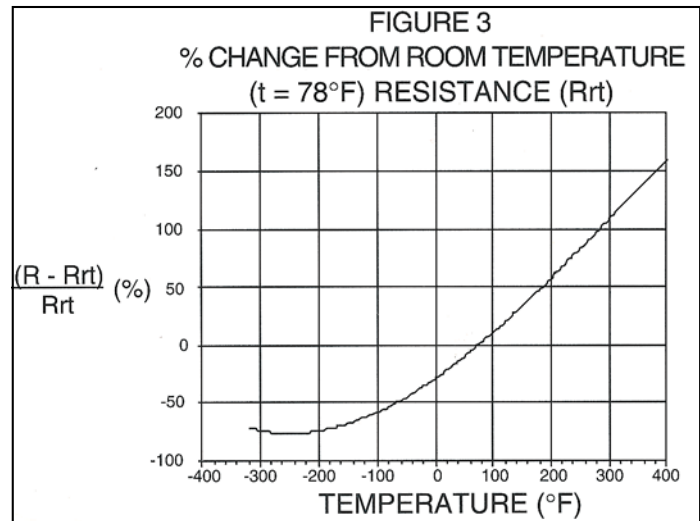
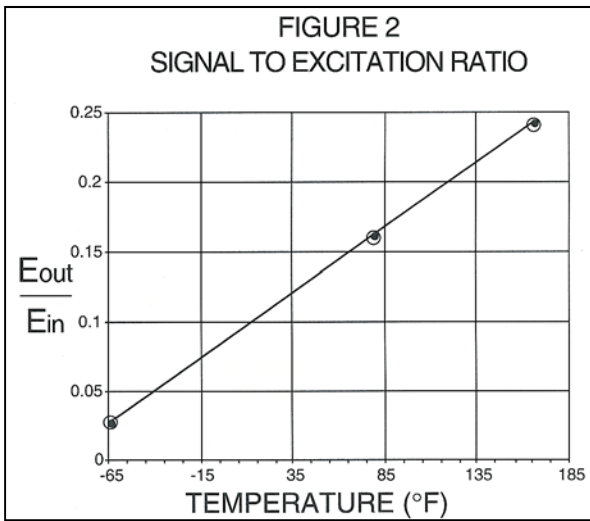
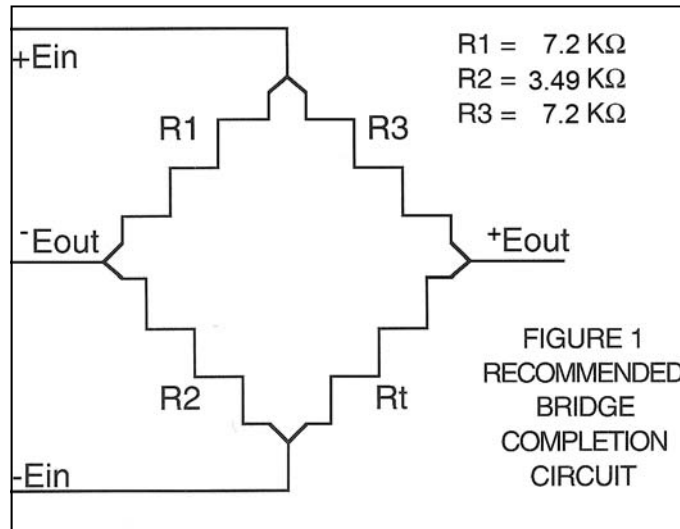
Useful in Lines, Storage Tanks, Air Conditioners, Fuses and Anemometers



**SPECIFICATIONS**

Material	Czochralski pulled "N"-doped bulk Silicon	
Resistance vs. Temperature (Nominal)		Temperature Range
2,800 Ω (2600-3000)		-65°F
5,000 Ω (4700-5300)		78°F
6,900 Ω (6500-7500)		165°F
Reverse Resistance	Less than 0.2% of Reading at 78°F, Maximum	
Thickness (Active Area)	.0005 inch (max)	
Leads (gold)	0.0015 inch diameter with a 0.50 inch minimum length	
Contact	Silicon Gold Nickel Fused	
Attachment	Ball Bond	
Linear Temperature Range (Bridged)	-65°F to +165°F	
Operating Temperature Range	-100°F to +400°F	
Linearity when operated in Bridge as specified	±0.25°F/100°F; ±0.5°F/200°F	

ST-037-022-5000N



$$R = 0.025 T^2 + 14.916 T + 3935$$

R = Sensor Resistance in Ohms  
T = Degrees F

Ordering Guidelines				Example				
				<b>ST-037-022-5000N</b> ST Specifies Semiconductor Temperature Sensing Element 037 Specifies Total Length 022 Specifies Active Length 5000 Specifies Nominal Resistance of 5000Ω at ambient N Specifies Dopant "N"				
<b>S1 Single Gage Pricing</b>								
1-4	5-9	10-24	25-49	50-99	100-150	151-300	301-500	501-1000
\$30.22	\$24.47	\$19.93	\$16.13	\$13.48	\$12.02	\$10.73	\$9.76	\$9.42