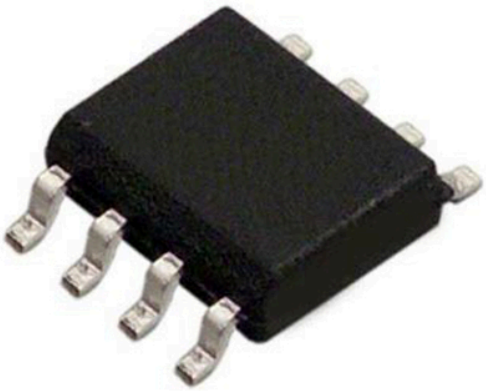
General Features

The Xiao HV Components 5140 model E is a real time low latency redundant multi medium voltage thermistor array. Temperature readings are aggregated and resolved to ± 0.2 pico-Celsius. Output is routed to an analog signal along the 13C and 13D pins. Operating temperatures are rated for conditions of -60 ºC to a maximum of 1500 ºC with the optional tungsten carbide insolation package. The XHC5140E nominal power draw is 50 mW at 5V.



Applications

<> Precision temperature readings for digital conversion
<> Redundant hardware based thermal limiting gate
<> Critical thermal feedback systems

Typical Circuit Arrangement

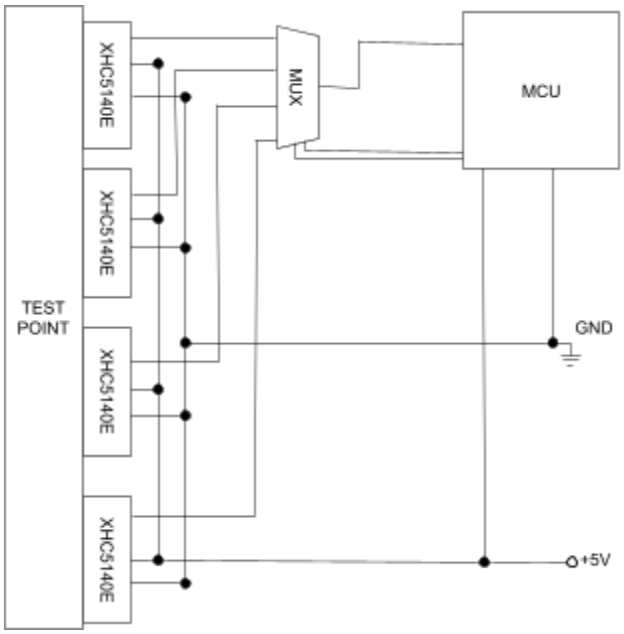
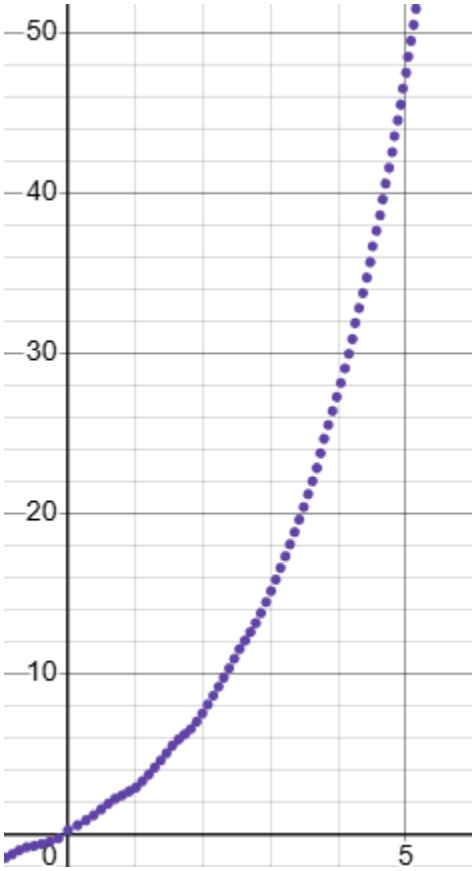


Figure above. Typical circuit diagram using a XHC5140E

Sensor Data Table

Parameter	***Notes***	***Ranges***
Input Voltage		5.0V
Output Voltage		-1.0V to 3.3V
Discretized Measurement Mode Pin	*Drive high to pulse measurements*	0V to 3.3V
Secondary Output Voltage		-1.0V to 3.3V
Wide band output Pin	*Drive high to enable Extreme Thermal Condition (ETC) operation mode*	0V to 3.3V

NTC V vs T (ºC) Graph



Voltage Conversion Formula

Measurement conversion factor 1

$T_{NTC} = (1.626^{Voltage}) \times 4.57\ ^{o}C/V - 4.4\ ^{o}C$

Measurement conversion factor 2

$$T_{ETC} = (5.81^{Voltage}) - \int_{0}^{\infty} \sqrt[7]{ln(Voltage) \cdot 4.2^{\sqrt{Voltage}}}\, dVoltage$$