Keywords: thermocouple, pre-amp, gain amplifier, zener diode, compensation, op amp, thermocoupler, opamps, preamp

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APPLICATION NOTE 3

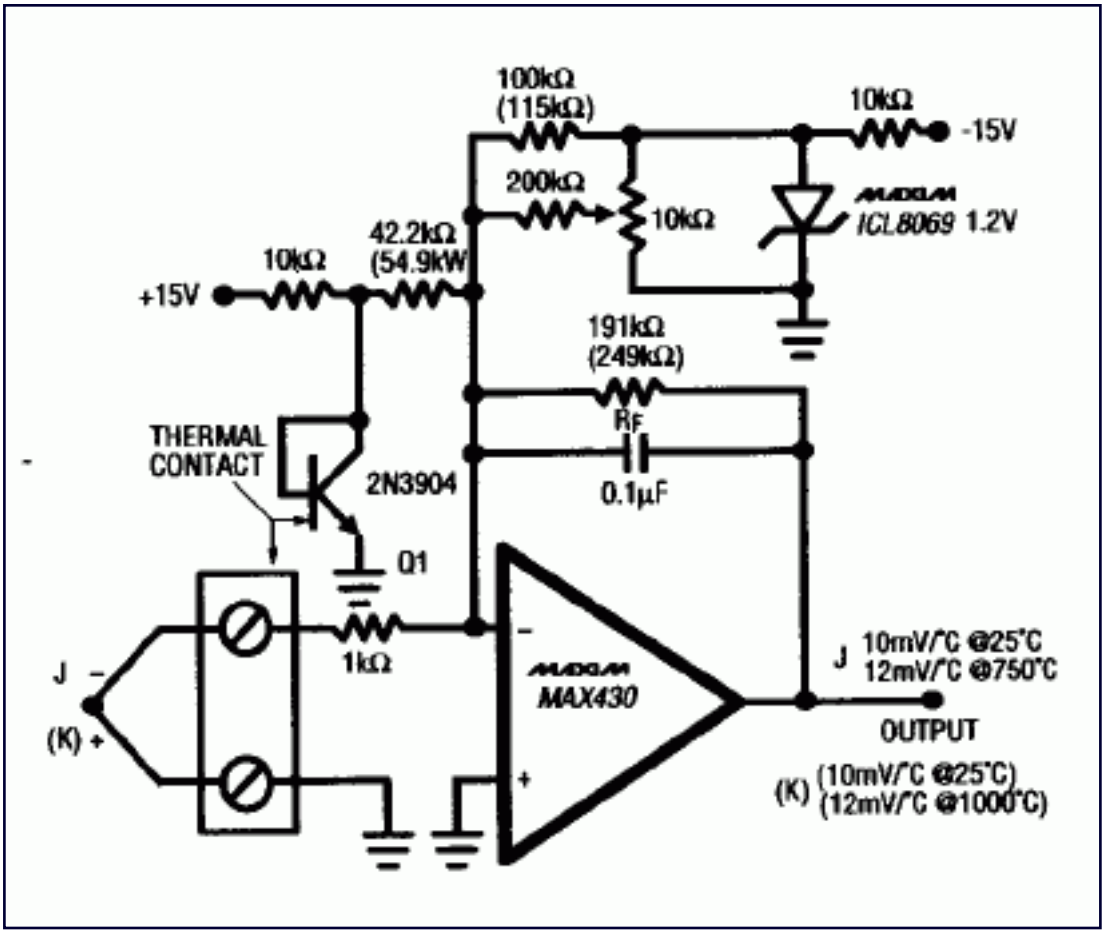
Thermocouple Pre Amp

Abstract: Using a preamp to increase the output magnitude of a J-type thermocoupler. The simple circuit provides compensation over temperature as well as calibration capability.

Thermocouple Preamp

The MAX430 is operated at a gain of 191 to convert the 52µV/°C output of the type J thermocouple to a 10mV/°C signal. The -2.2mV/°C tempco of the 2N3904 is added into the summing junction with a gain of 42.2 to provide cold junction compensation. The ICL8069 is used to remove the offset caused by the 600mV initial voltage of the 2N3904. Adjust the 10K trimpot for the proper reading with the 2N3904 and isothermal connection block at a temperature near the center of the circuit's operating range.

Use the component values shown in parentheses when using a type K thermocouple.



More Information

For technical questions and support: http://www.maxim-ic.com/support
For samples: http://www.maxim-ic.com/samples
Other questions and comments: http://www.maxim-ic.com/contact

Related Parts

MAX430: QuickView -- Full (PDF) Data Sheet

AN3, AN 3, APP3, Appnote3, Appnote 3