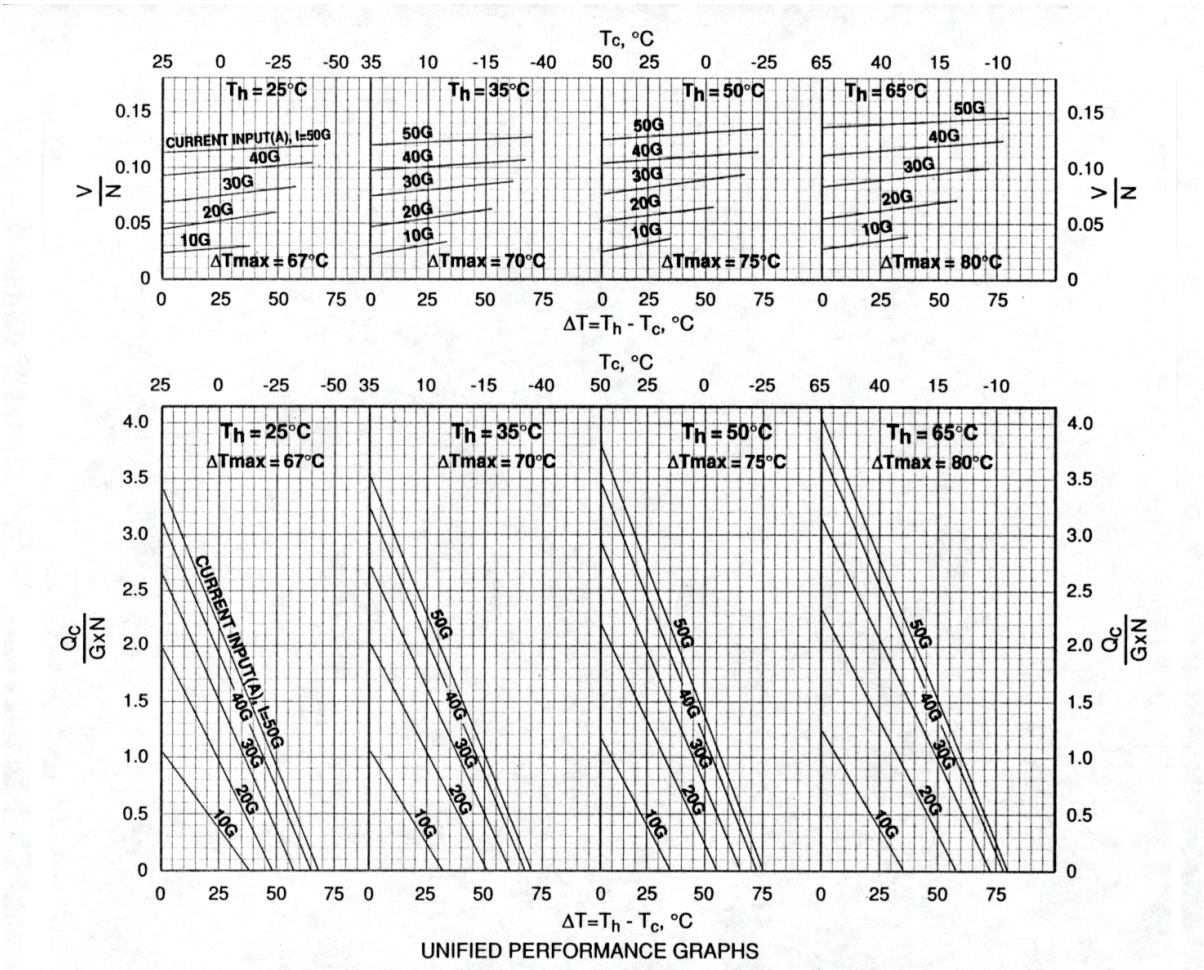
Verschiedene Leistungskurven



UNIFIED PERFORMANCE GRAPHS

T_C = Cold Face Temperature; T_h = Hot Face Temperature; I = Module Current, Amps; V = Module Voltage, Volts; Q_C = Watts Heat Pumped; N = Number of Thermocouples; G = Thermoelement Geometry Factor

CALCULATION METHODS

When using the Unified Performance Graphs, where are shown dependencies of cold junction temperatures or differences of temperatures of the following values: Qc/(G*N) and V/N at different temperatures of hot junctions and different operation currents for any THERM modules, one should bear in mind the following:

The value Qc is heat capacity pumped from cold junctions, I-module current, V-module voltage, N-number of thermocouples in the module and G-geometrical die factor equal to quotient of division of the die section area, measured in cubic centimeters, to it's length measured in centimeters. Values of N and G for each type of module can be obtained in module specification.

The Unified Performance Graphs allow to solve tasks of two types. The first one is to convert Unified Graphs values into irregular values for a specific module. The procedure is as follows:

1. Multiply the Graphs value Qc/(G*N) by product G*N for the selected module thus obtaining the value Qc in Watts.
2. Multiply the Graphs value V/N by the value N for the selected module thus obtaining the value V in Volts.
3. In order to obtain currents values for which appropriate dependencies are shown in the Graphs, one should calculate products 50*G, 40*G, etc., shown in the Graphs, thus obtaining I in Amperes.

The second type of tasks is to select an appropriate module from the table knowing Qc, Tc, and Th (cool capacity, temperatures of cold and hot surfaces of the module respectively) suitable for application of thermoelectric coolers. The procedure is as follows:

1. Calculate the difference of the temperatures ΔT=Th-Tc, and select operation current I for a module bearing in mind that Imax=50*G.

2. Obtain the value Qc/(G*N) using the Graphs, and knowing Qc calculate the value G*N.

3. Select an appropriate module in the manufactured modules table basing on the value G*N.