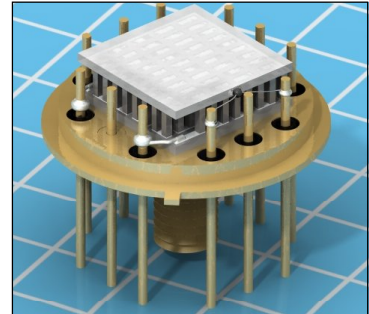


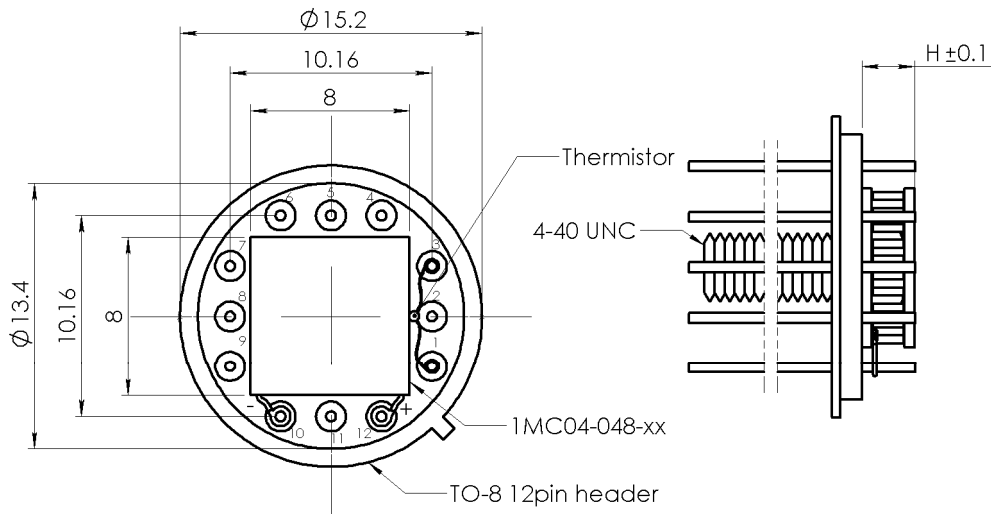
Performance parameters TO812.1MC04048xx

Mounted TEC Type	DT <sub>max</sub> , K	Q <sub>max</sub> , W	I <sub>max</sub> , A	U <sub>max</sub> , V	R <sub>t</sub> , K/W	H, mm
1MC04-048-05	65	4.31	1.3	5.61	1.07	1.6
1MC04-048-08	68	2.93	0.8			1.9
1MC04-048-10	69	2.42	0.7			2.1
1MC04-048-12	70	2.05	0.6			2.3
1MC04-048-15	70	1.68	0.5			2.6

Performance data are given for  $T_{hot}=300K$  vacuum



Technical Drawing



Ordering Options

**A. Header material**

Kovar

**B. Header finish**

1. Gold plating
2. Ni plating

**C. TEC Mounting**

1. Soldering
  - 1.1 Solder 117 (InSn,  $T_{melt}=117^{\circ}C$ )
  - 1.2 Solder 138 (SnBi,  $T_{melt}=138^{\circ}C$ )
  - 1.3 Solder 183 (PbSn,  $T_{melt}=183^{\circ}C$ )
  - 1.4 Solder 199 (SnZn,  $T_{melt}=199^{\circ}C$ )
2. Epoxy gluing

**D. TEC Leads Connection**

Solder 230 (SnSb,  $T_{melt}=230^{\circ}C$ )

**E. TEC Ceramics**

1. Pure  $Al_2O_3$  (100%) - standard
2. Alumina ( $Al_2O_3$  - 96%) - optional
3. Aluminum Nitride (AlN) - optional

**F. TEC Cold Side Finish**

1. Clear ceramics
2. Metallized
  - 2.1 Ni / Sn(Bi)
  - 2.2 Gold plating
3. Metallized and Pre-tinned
  - 3.1 Solder 94 (PbSnBi,  $T_{melt}=94^{\circ}C$ )
  - 3.2 Solder 117 (InSn,  $T_{melt}=117^{\circ}C$ )
  - 3.3 Solder 138 (SnBi,  $T_{melt}=138^{\circ}C$ )
  - 3.4 Solder 183 (PbSn,  $T_{melt}=183^{\circ}C$ )
  - 3.5 Solder 199 (SnZn,  $T_{melt}=199^{\circ}C$ )

**G. Thermistor (optional)**

NTC thermistor type TB  
Resistance nominal  
1. 2.2 kOhm@20C  
2. 10.0 kOhm@20C

Individual calibration is available in -65..+85°C

**H. Thermistor Mounting**

Epoxy Gluing

**I. Thermistor Leads Connect**

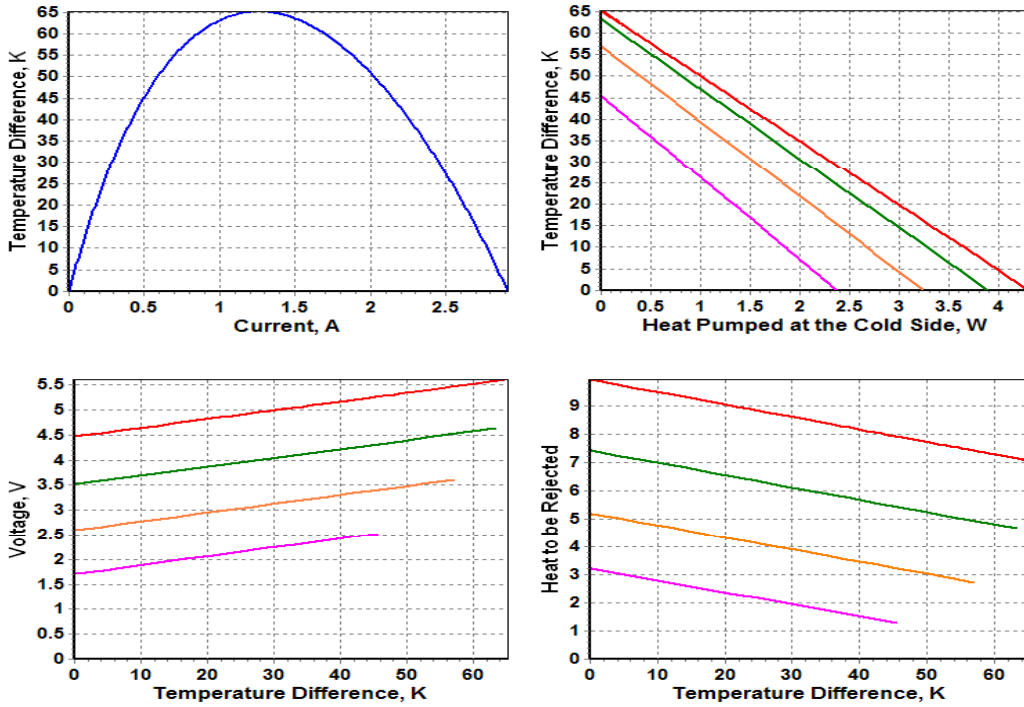
Solder 230 (SnSb,  $T_{melt}=230^{\circ}C$ )

**J. Pinout configuration**

Can be specified by customer

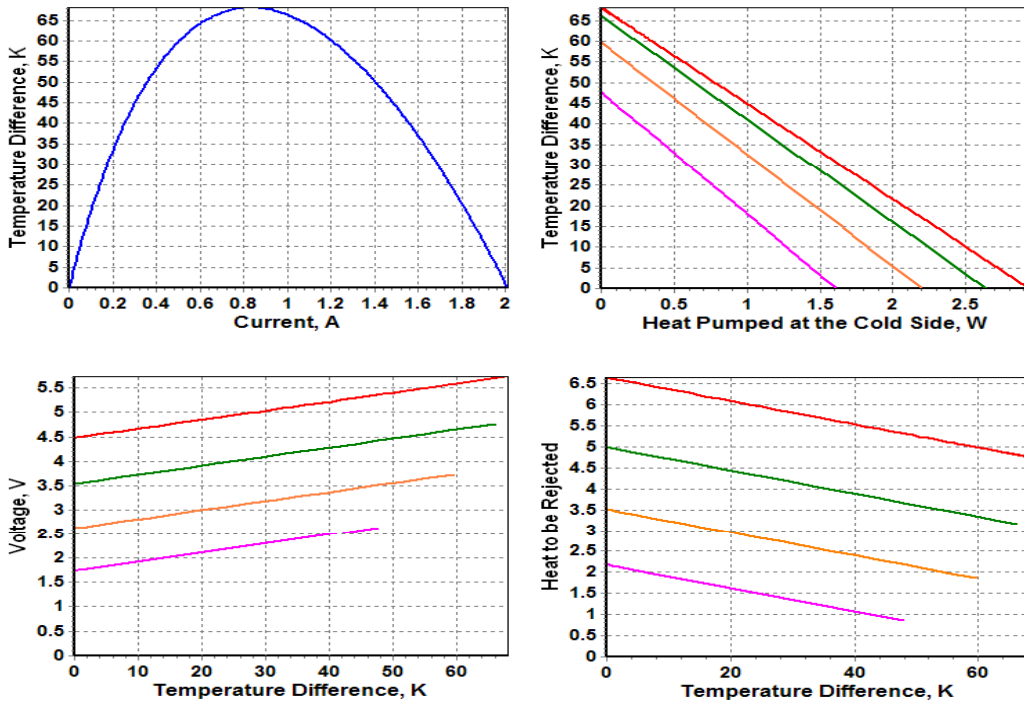
Thermoelectric Sub-mount Datasheet RMT Ltd.

TO812.1MC0404805 Standard Performance Plots



Color Legend: **I<sub>max</sub>**, **0.8 I<sub>max</sub>**, **0.6 I<sub>max</sub>**, **0.4 I<sub>max</sub>**

TO812.1MC0404808 Standard Performance Plots



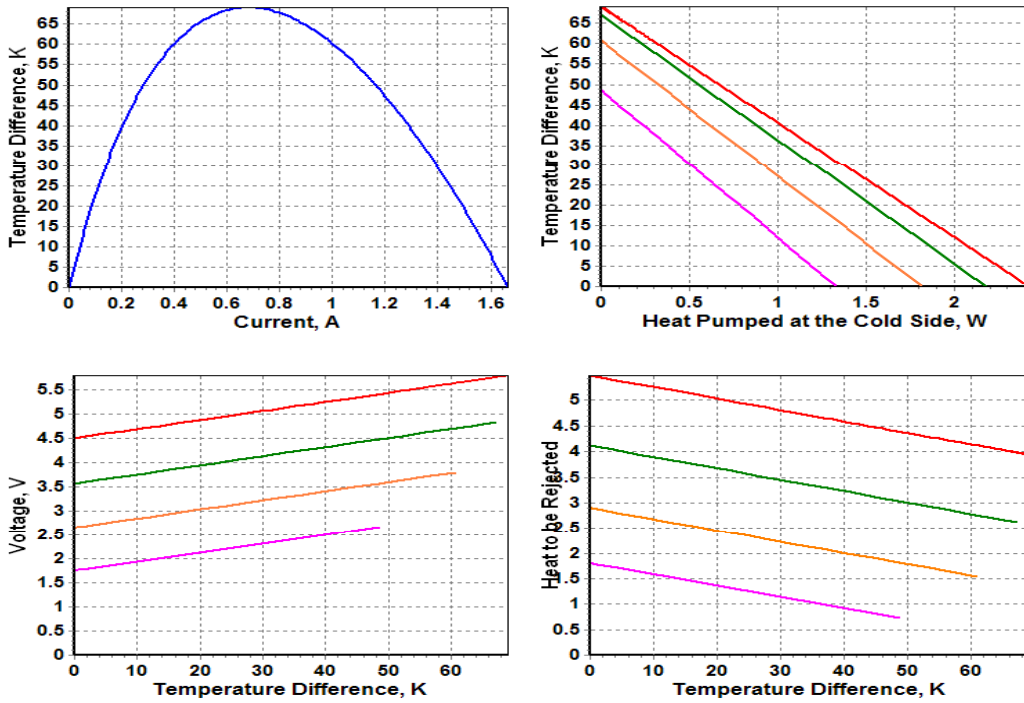
Color Legend: **I<sub>max</sub>**, **0.8 I<sub>max</sub>**, **0.6 I<sub>max</sub>**, **0.4 I<sub>max</sub>**

Performance plots are created with TECCAD Software. TECCAD is available for download from RMT Ltd. website - [www.rmtltd.ru](http://www.rmtltd.ru)

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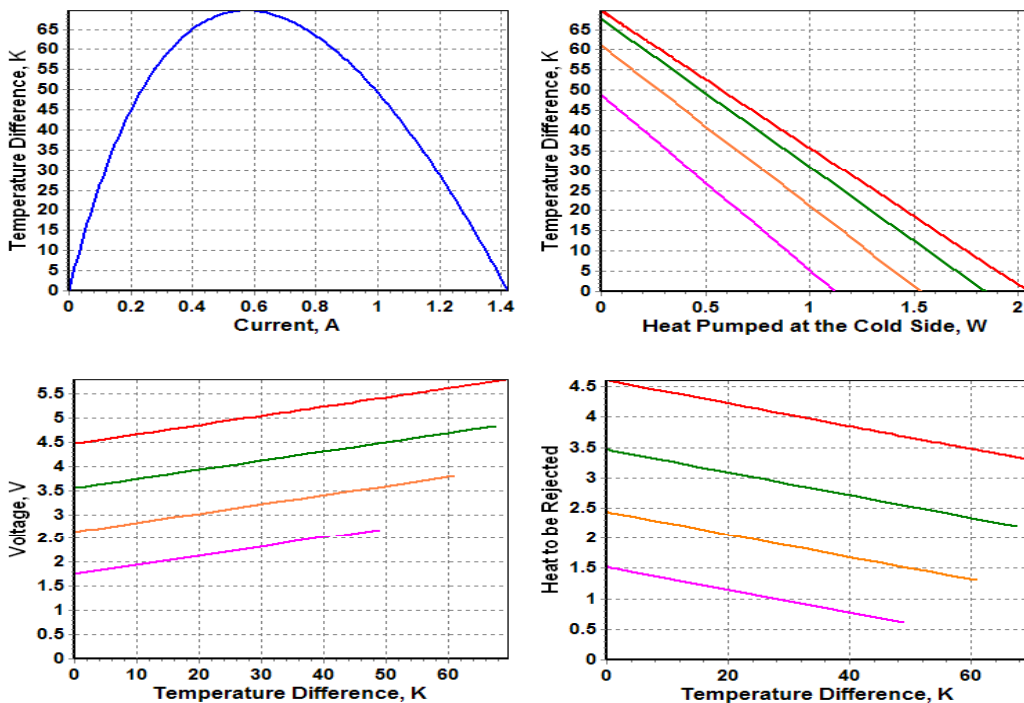
Thermoelectric Sub-mount Datasheet RMT Ltd.

TO812.1MC0404810 Standard Performance Plots



Color Legend: **I**max, 0.8 **I**max, 0.6 **I**max, 0.4 **I**max

TO812.1MC0404812 Standard Performance Plots

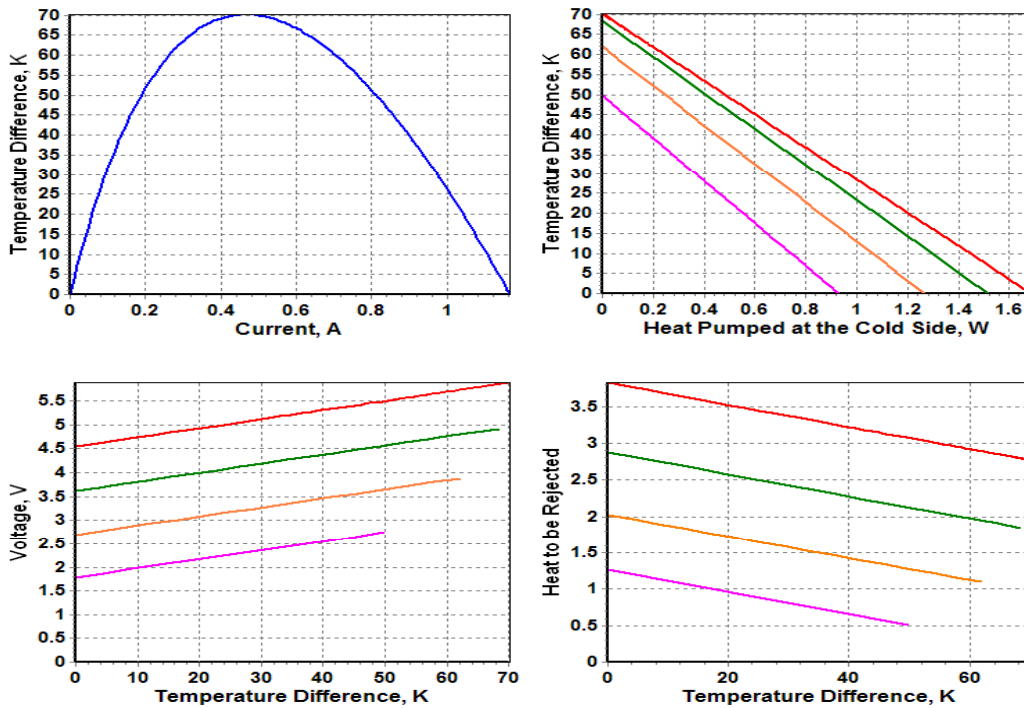


Color Legend: **I**max, 0.8 **I**max, 0.6 **I**max, 0.4 **I**max

Performance plots are created with TECCAD Software. TECCAD is available for download from RMT Ltd. website - [www.rmtltd.ru](http://www.rmtltd.ru)

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TO812.1MC0404815 Standard Performance Plots



Color Legend: **Imax**, **0.8 Imax**, **0.6 Imax**, **0.4 Imax**

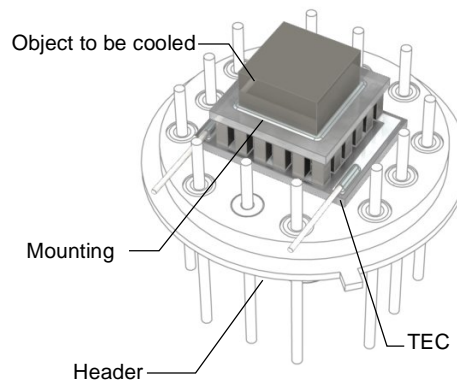
**Applications Tips**

**Cautions**

1. Do not heat TE module more than 200°C (TEC assembled at 230°C) or 160°C (TEC assembled at 183°C).
2. Do not use TE module without attached heat sink at hot (bottom) side.
3. Connect TE sub-mount to a DC power supply in accordance to polarity.
4. Do not apply DC current higher than  $I_{max}$ .

**Installation**

1. Soldering of object to be cooled.
  - Method suitable for a TE module with the metallized cold side (Ordering Options. Item F). Soldering requires careful procedures:
    - A. Never overheat TEC (Cautions. Item 1).
    - B. Use solder with melting point less than TEC mounting solder (Ordering Options. Item C).
2. Gluing of object to be cooled.
  - Method available by glues with good thermoconductive properties. Not recommended for high vacuum applications and long operations at high temperature.



**Definitions**

Value	Description	Notes
$\Delta T_{max}$	Maximum temperature difference at $I=I_{max}$	rated at $Q_{max}=0$ , at other $Q$ it should be estimated as $\Delta T = \Delta T_{max}(1 - Q/Q_{max})$
$Q_{max}$	Maximum heat pumping capacity at $I=I_{max}$	rated at $\Delta T=0$ , at other $\Delta T$ it should be estimated as $Q = Q_{max}(1 - \Delta T/\Delta T_{max})$
$I_{max}$	Maximum current	Electric parameters resulting in greatest $\Delta T_{max}$
$U_{max}$	Maximum voltage drop	
$R_t$	Header thermal resistance	
-xx	Thermoelectric pellet length code	Pellet length is "-xx" x 10 (in mm)
$T_{hot}$	TEC hot side temperature	Performance data shown in specifications are given for $T_{hot}=300$ K, vacuum
H	Total TEC height	All dimensions are given in mm