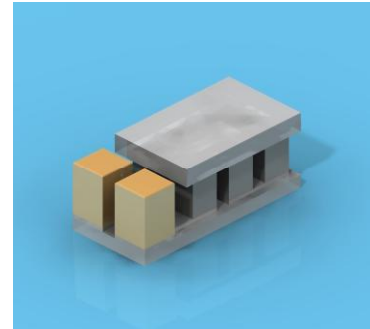


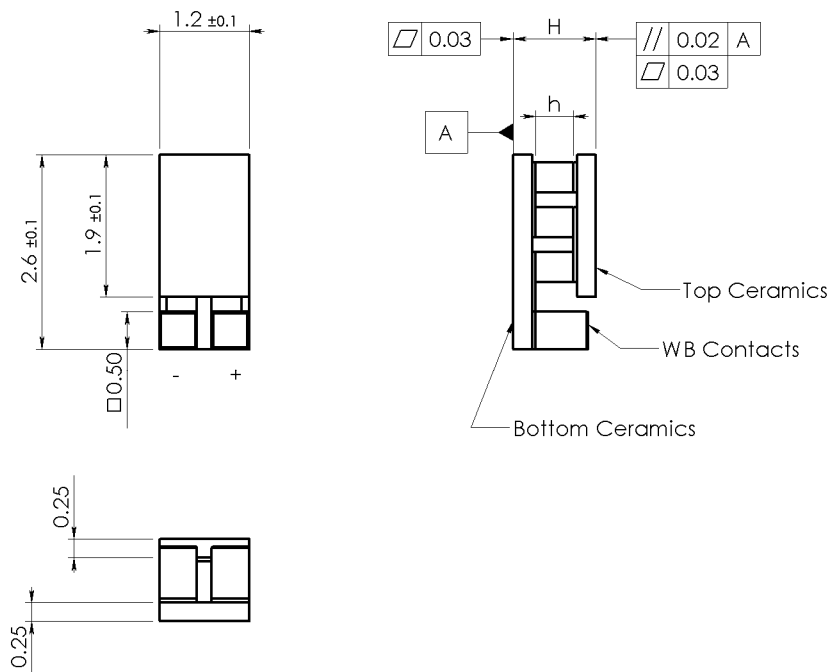
**Performance parameters**

Type	DT <sub>max</sub> K	Q <sub>max</sub> W	I <sub>max</sub> A	U <sub>max</sub> V	AC R Ohm	H mm	h mm
1MD04-003-xx (N=3)							
1MD04-003-05	70	0.31	1.5	0.35	0.19	1.1	0.5
1MD04-003-08	71	0.20	1.0		0.31	1.4	0.8
1MD04-003-10	72	0.16	0.8		0.38	1.6	1.0
1MD04-003-12	72	0.14	0.7		0.46	1.8	1.2
1MD04-003-15	72	0.11	0.60		0.57	2.1	1.5

*Performance data are given for Thot=300K vacuum*



**Technical Drawing**



**Ordering Options**

**A. TEC Internal Solder:**

Lead-free SnSb Solder (T<sub>melt</sub>=230°C)

**B. TEC Ceramics:**

1. Pure Al<sub>2</sub>O<sub>3</sub> (100%)
2. Alumina (Al<sub>2</sub>O<sub>3</sub> 96%)
3. Aluminium Nitride (AlN)

**C. Surface Finish (one or both)**

1. Blank Ceramics
2. Metallized:
  - 2.1 Ni-Sn plaiting
  - 2.2 Au plaiting
3. Metallized and Pre-tinned
  - 3.1 Solder 94 (PbSnBi, T<sub>melt</sub>=94°C)
  - 3.2 Solder 117 (InSn, T<sub>melt</sub>=117°C)
  - 3.3 Solder 138 (SnBi, T<sub>melt</sub>=138°C)
  - 3.4 Solder 183 (PbSn, T<sub>melt</sub>=183°C)
  - 3.5 Solder 199 (SnZn, T<sub>melt</sub>=199°C)

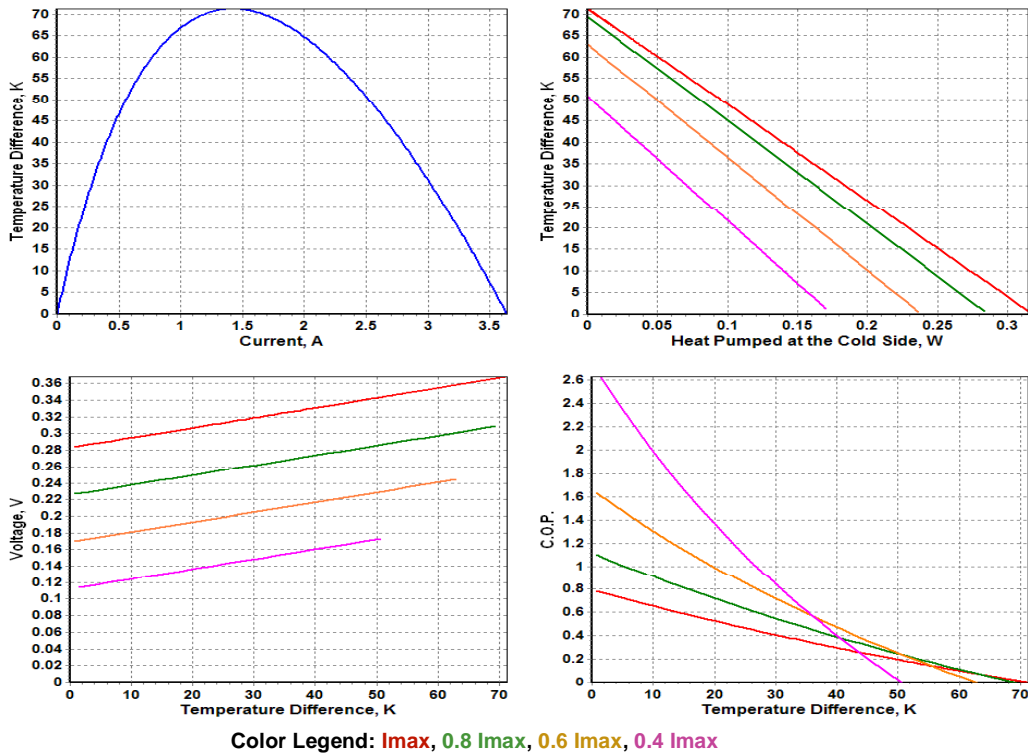
**D. Thermistor (optional)**

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

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

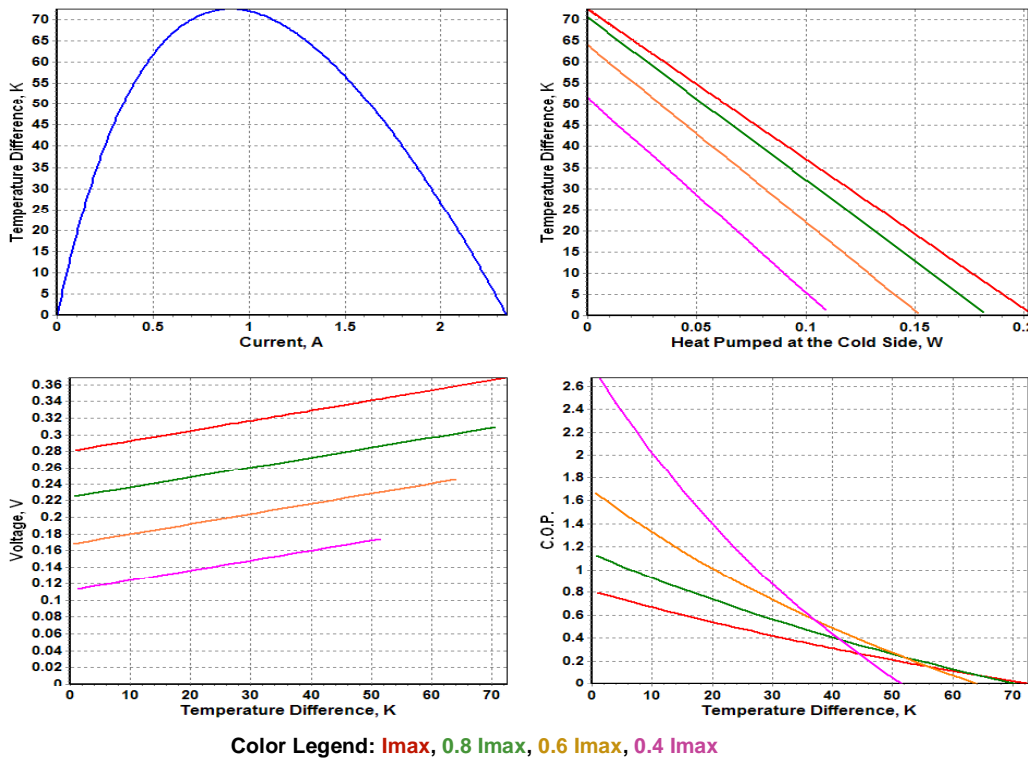
1MD04-003-05

Standard Performance Plots



1MD04-003-08

Standard Performance Plots

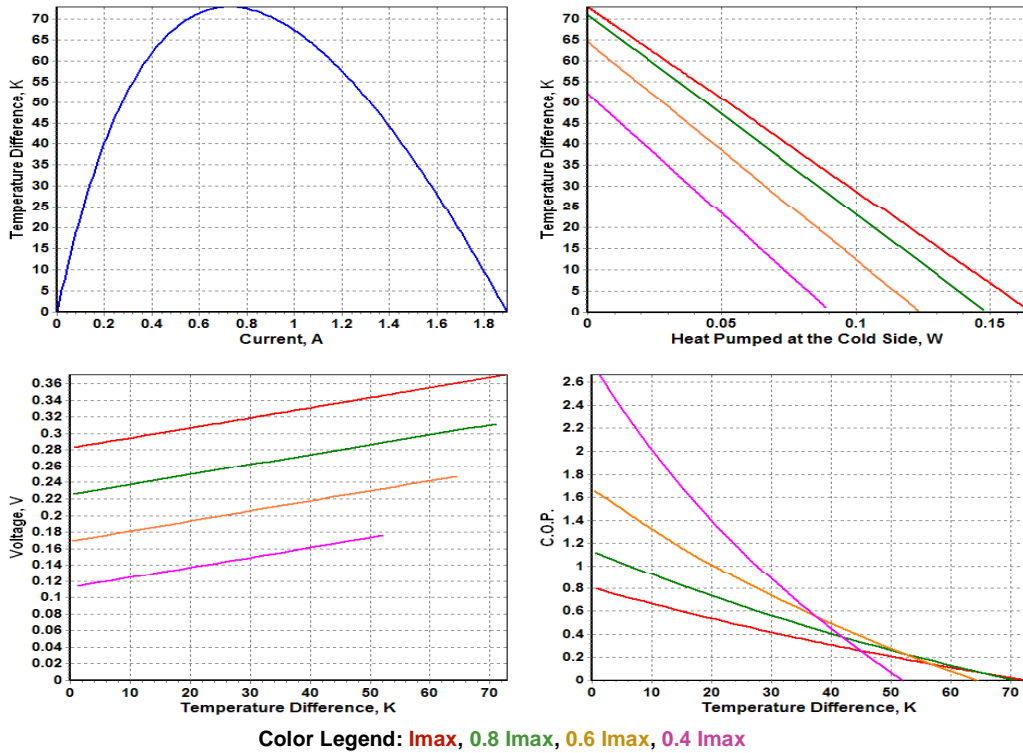


Performance plots are created with TECCAD Software. TECCAD is available for download from RMT Ltd. website - [www.rmtltd.ru](http://www.rmtltd.ru)

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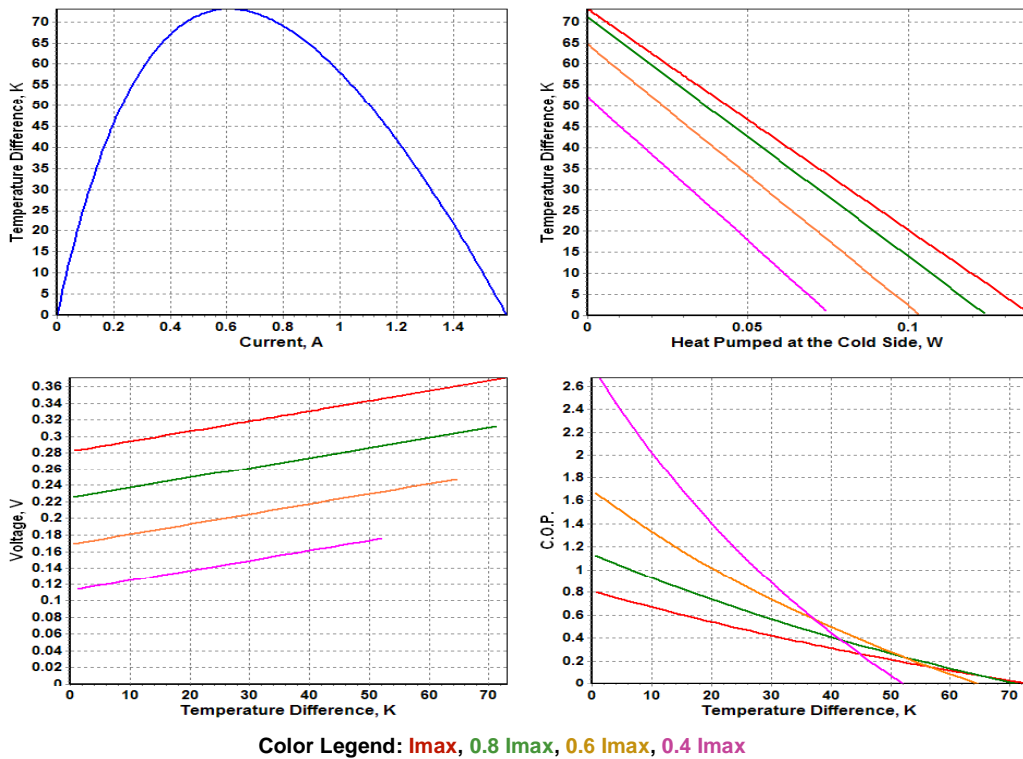
1MD04-005-10

Standard Performance Plots



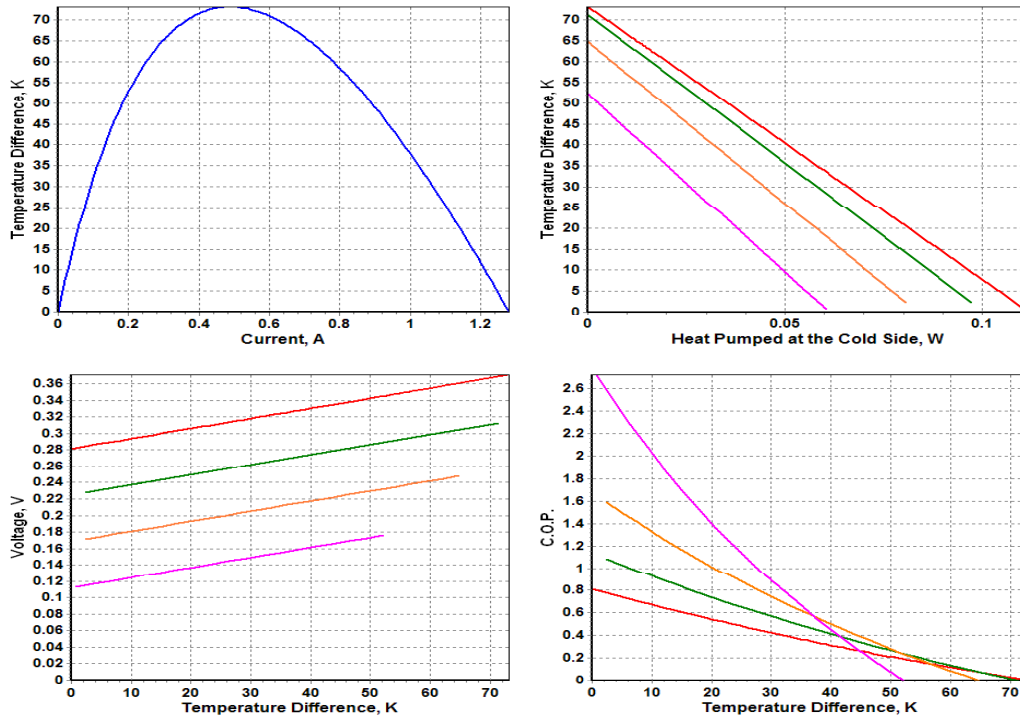
1MD04-003-12

Standard Performance Plots



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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Color Legend:  $I_{max}$ ,  $0.8 I_{max}$ ,  $0.6 I_{max}$ ,  $0.4 I_{max}$

Applications Tips

Cautions

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

Installation

1. Mechanical Mounting

TEC is placed between two heat exchangers. This construction is fixed by screws or in another mechanical way. It is suitable for large modules (with dimensions 30mmx30mm and larger). Miniature types require other assembling methods.

2. Soldering

This method is suitable for a TE module with metallized outside surfaces (cold and hot sides). RMT provides this option and also makes pre-tinning for TE modules. In comparison with a mechanical assembling method, soldering requires careful procedures.

3. Glueing

A glue is usually based on some epoxy compound filled with some thermoconductive material such as graphite or diamond powders, silver, SiN and others. The application of a specific type depends on application features and the type of a TE module.

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