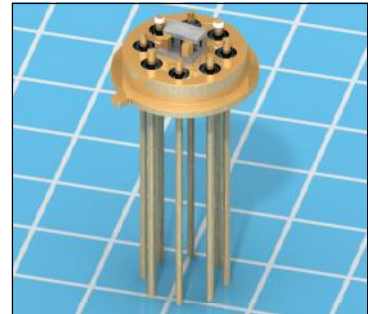


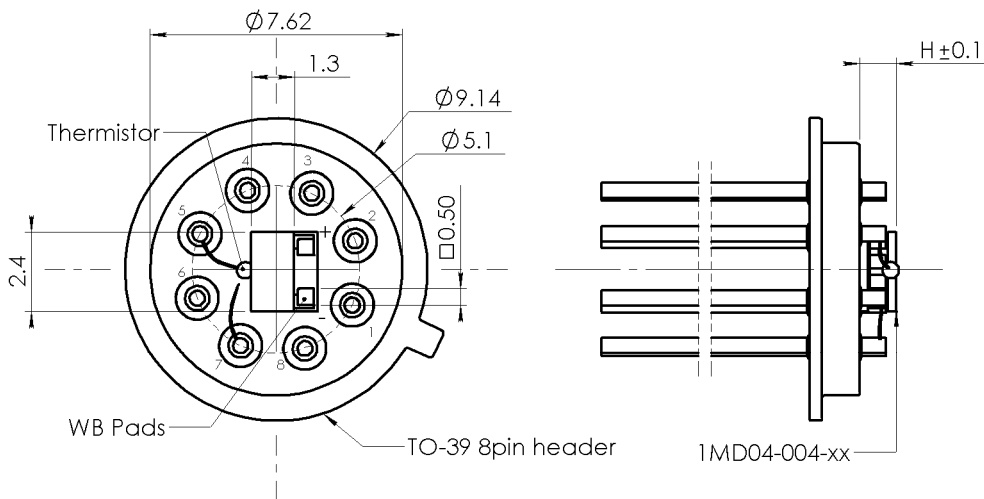
Performance parameters TO3908.1MD04004xx

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
1MD04-004-05	65	0.36	1.3	0.48	10.60	1.1
1MD04-004-08	68	0.24	0.8			1.4
1MD04-004-10	69	0.20	0.7			1.6
1MD04-004-12	70	0.17	0.6			1.8
1MD04-004-15	70	0.14	0.5			2.1

Performance data are given for Thot=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<sub>melt</sub>=117°C)
  - 1.2 Solder 138 (SnBi, T<sub>melt</sub>=138°C)
  - 1.3 Solder 183 (PbSn, T<sub>melt</sub>=183°C)
  - 1.4 Solder 199 (SnZn, T<sub>melt</sub>=199°C)
2. Epoxy gluing

**D. TEC Leads Connection**

Solder 230 (SnSb, T<sub>melt</sub>=230°C)

**E. TEC Ceramics**

1. Pure Al<sub>2</sub>O<sub>3</sub> (100%) - standard
2. Alumina (Al<sub>2</sub>O<sub>3</sub> - 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<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)

**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

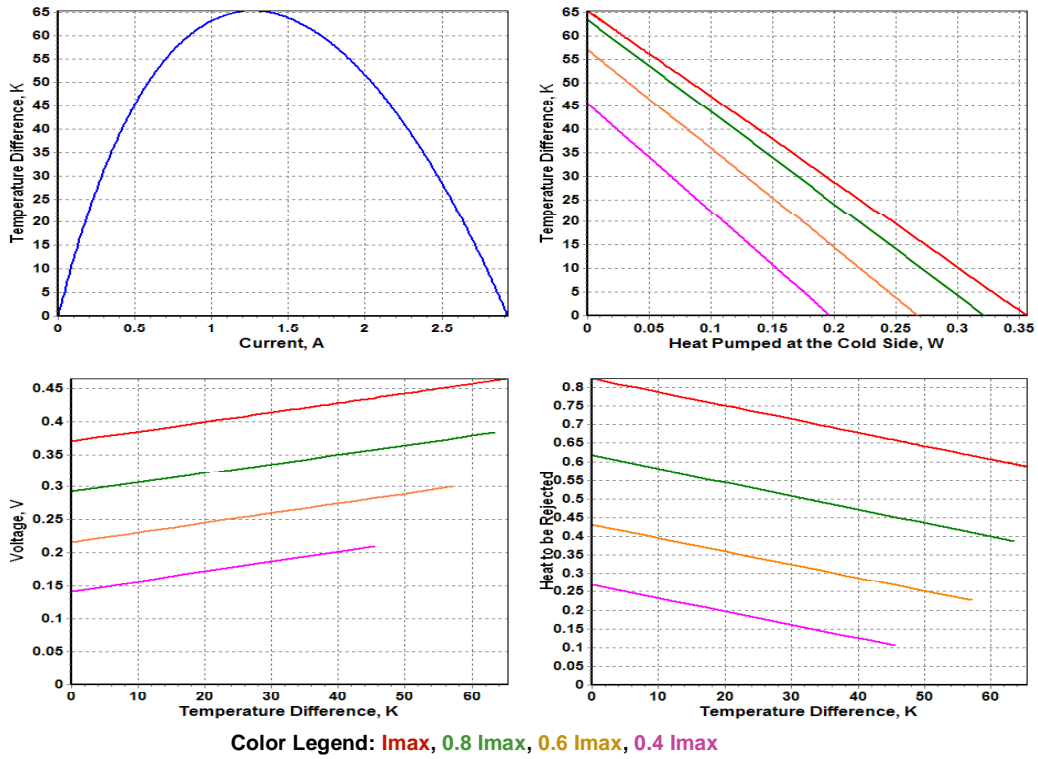
**I. Thermistor Leads Connect**

Solder 230 (SnSb, T<sub>melt</sub>=230°C)

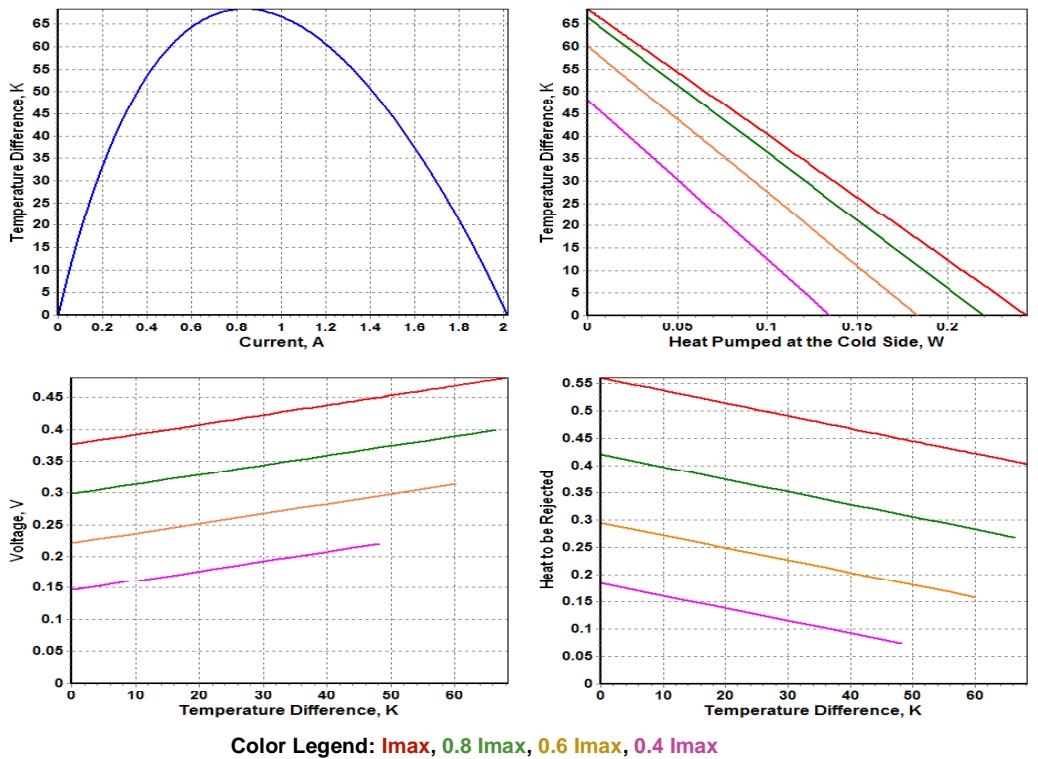
**J. Pinout configuration**

Can be specified by customer

TO3908.1MD0400405 Standard Performance Plots



TO3908.1MD0400408 Standard Performance Plots

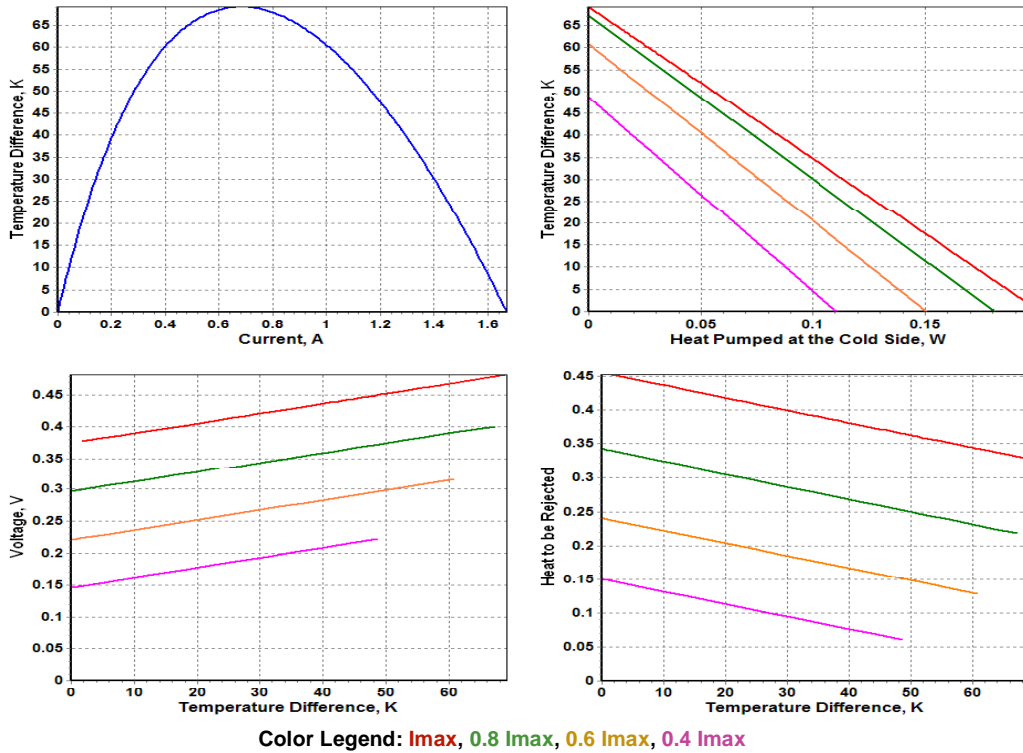


Performance plots are created with TECCAD Software. TECCAD is available for download from RMT Ltd. website - [www.rmtltd.ru](http://www.rmtltd.ru)

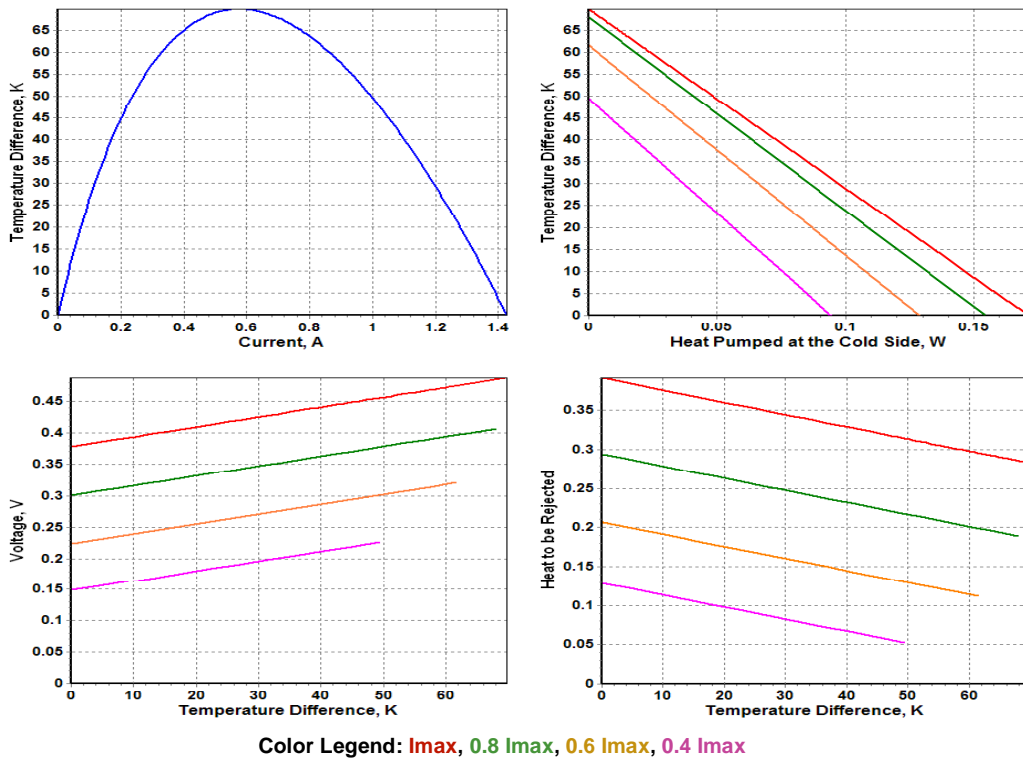
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Thermoelectric Sub-mount Datasheet RMT Ltd.

TO3908.1MD0400410 Standard Performance Plots



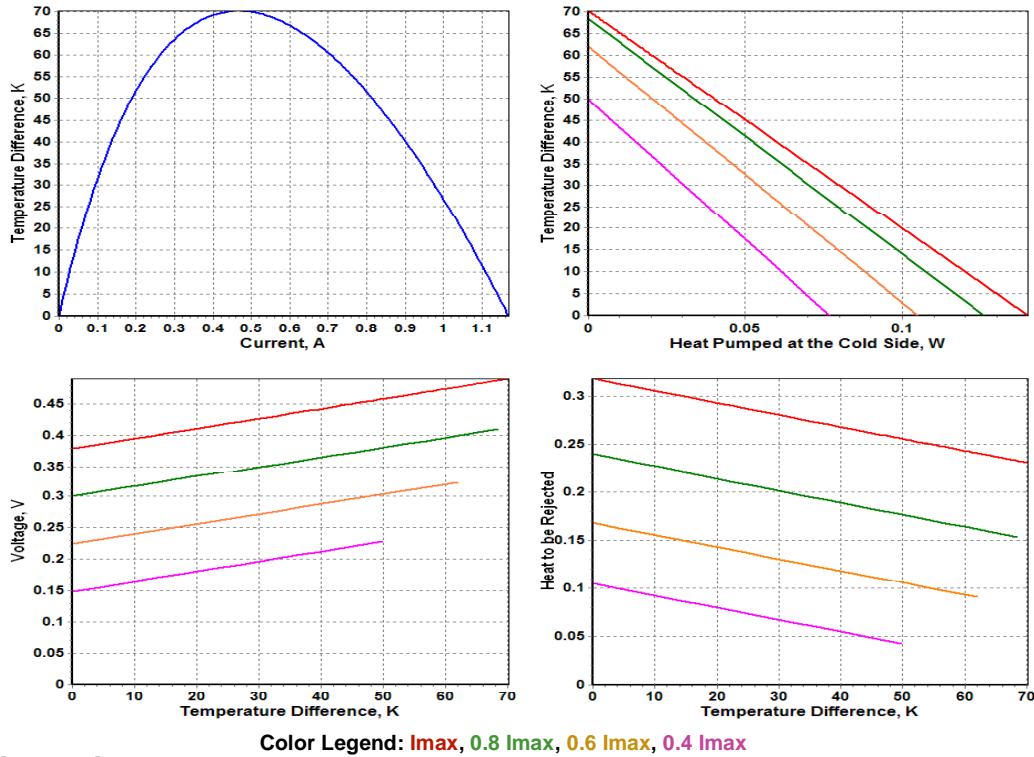
TO3908.1MD0400412 Standard Performance Plots



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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TO3908.1MD0400415 Standard Performance Plots



Color Legend: 1.0  $I_{max}$ , 0.8  $I_{max}$ , 0.6  $I_{max}$ , 0.4  $I_{max}$

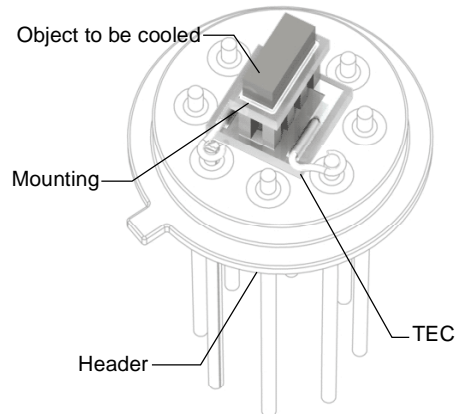
**Applications Tips**

**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