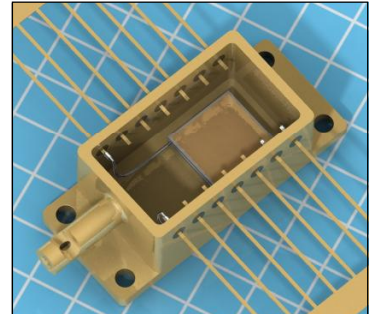


# Thermoelectric Sub-mount Datasheet RMT Ltd.

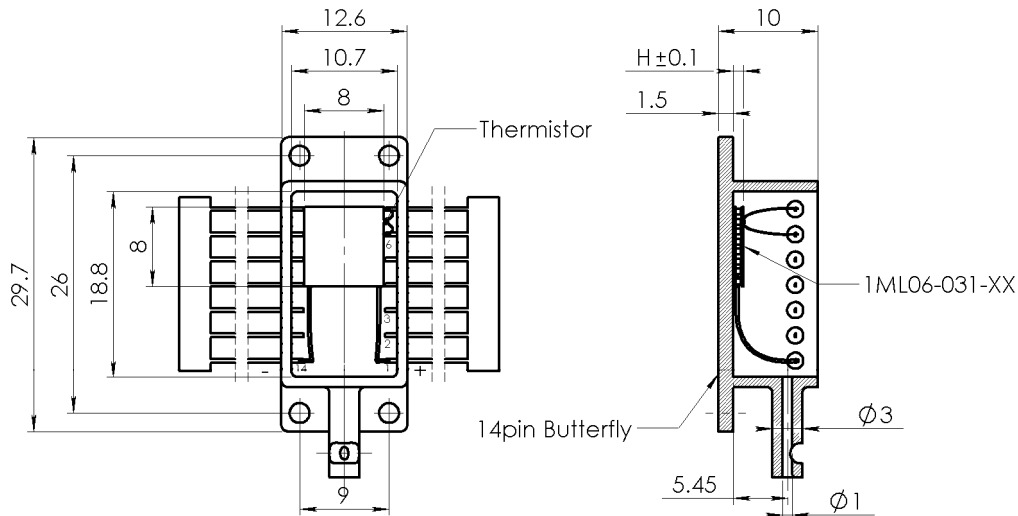
## Performance parameters BTF14.1ML0603105

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
1ML06-031-05	69	6.87	3.0	3.8	0.09	1.7
1ML06-031-09	71	4.06	1.8			2.1
1ML06-031-12	72	3.11	1.3			2.4

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



## Technical Drawing



## Ordering Options

**A. Header material**  
CuW base, Kovar frame

**B. Header finish**  
Gold plating

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

**D. TEC Mounting**

- Soldering
  - Solder 199 (SnZn,  $T_{melt}=199^{\circ}C$ ) (used as standard)
  - Solder 138 (SnBi,  $T_{melt}=138^{\circ}C$ )
  - Solder 183 (PbSn,  $T_{melt}=183^{\circ}C$ )
- Epoxy gluing

**E. TEC Leads Connection**  
Solder 230 (SnSb,  $T_{melt}=230^{\circ}C$ )

**F. TEC Ceramics**  
Pure  $Al_2O_3$  (100%)

**G. TEC Cold Side Finish**

- Blank ceramics
- Metallized
  - Ni / Sn(Bi)
  - Gold plating
- Metallized and Pre-tinned
  - Solder 94 (PbSnBi,  $T_{melt}=94^{\circ}C$ )
  - Solder 117 (InSn,  $T_{melt}=117^{\circ}C$ )
  - Solder 138 (SnBi,  $T_{melt}=138^{\circ}C$ )
  - Solder 183 (PbSn,  $T_{melt}=183^{\circ}C$ )
  - Solder 199 (SnZn,  $T_{melt}=199^{\circ}C$ )

**H. Thermistor (optional)**  
NTC thermistor type TB  
Resistance nominal
 

- 2.2 kOhm@20C
- 10.0 kOhm@20C

Individual calibration is available in  $-65..+85^{\circ}C$

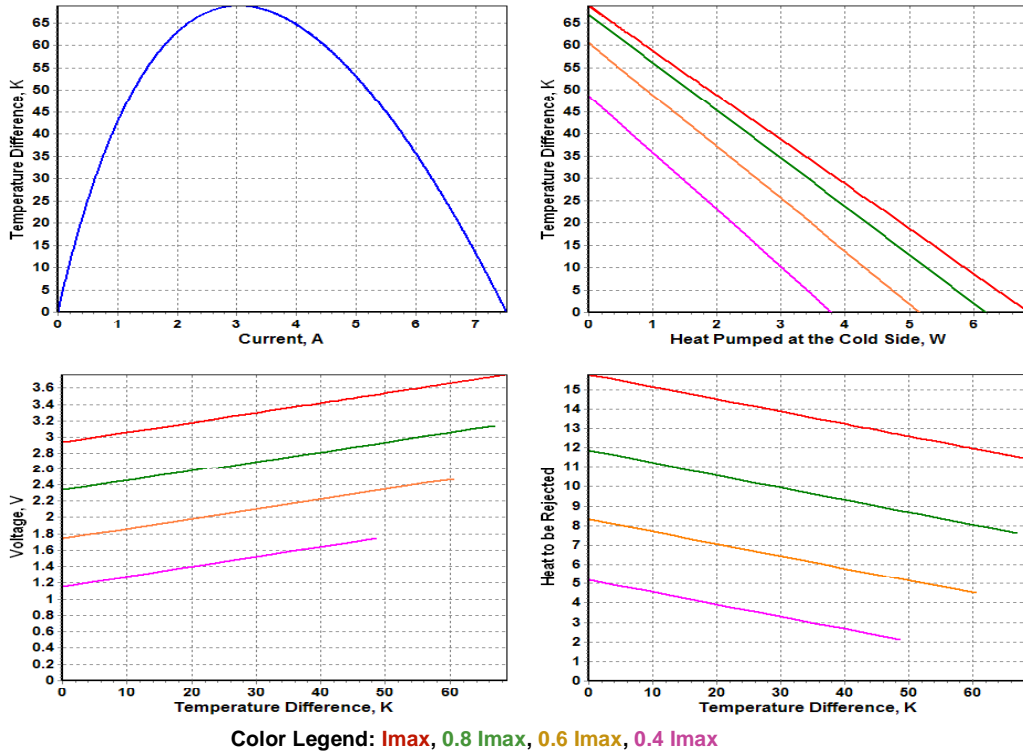
**I. Thermistor Mounting**  
Epoxy Gluing

**J. Thermistor Leads Connect**  
Solder 230 (SnSb,  $T_{melt}=230^{\circ}C$ )

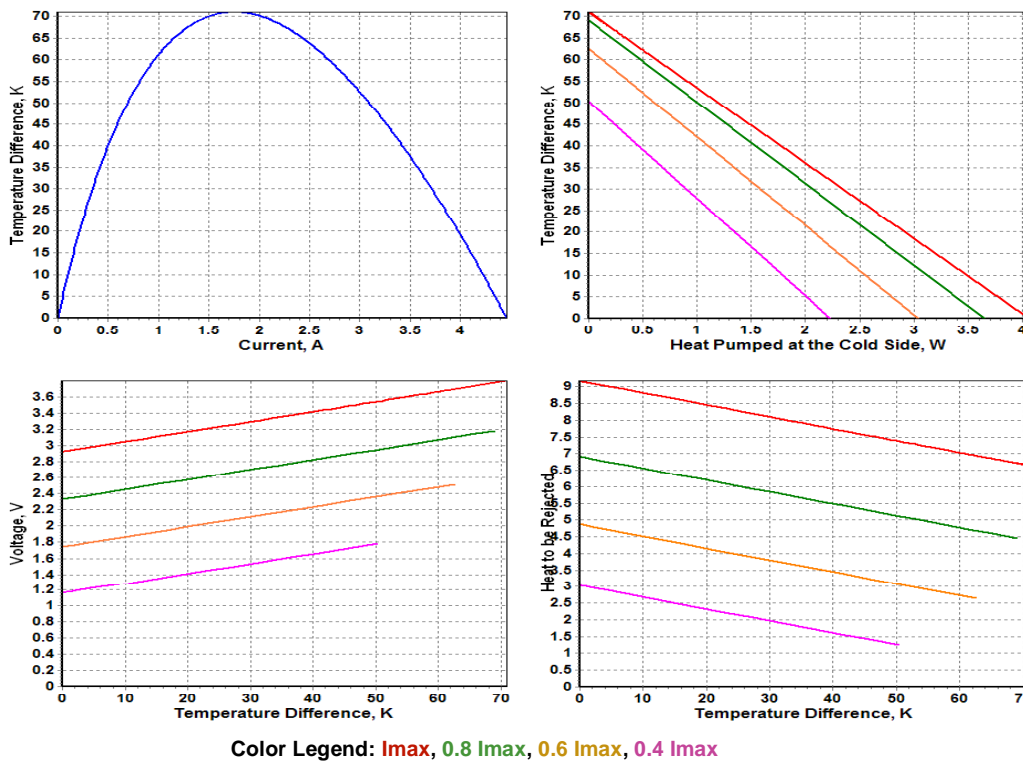
**K. Pinout configuration**  
Can be specified by customer

# Thermoelectric Sub-mount Datasheet RMT Ltd.

## BTF14.1ML0603105 Standard Performance Plots



## BTF14.1ML0603109 Standard Performance Plots

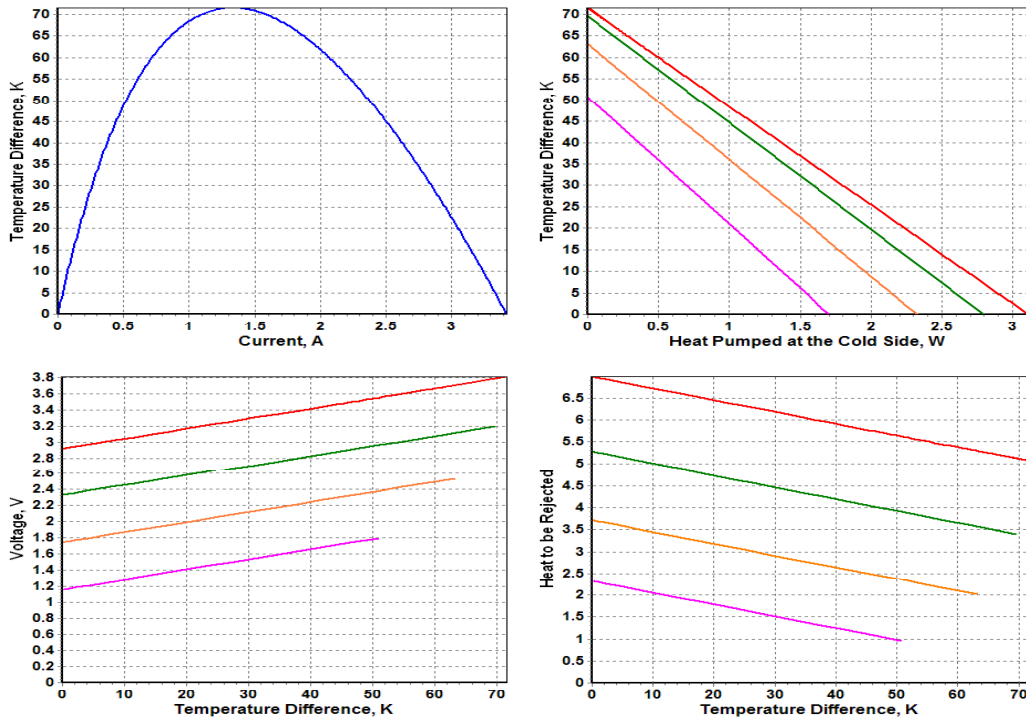


Performance plots are created with TECCAD Software. TECCAD is available for download from RMT Ltd. website - [www.rmtltd.ru](http://www.rmtltd.ru)

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BTF14.1ML0603112

Standard Performance Plots



Color Legend: 1.0 A, 0.8 A, 0.6 A, 0.4 A

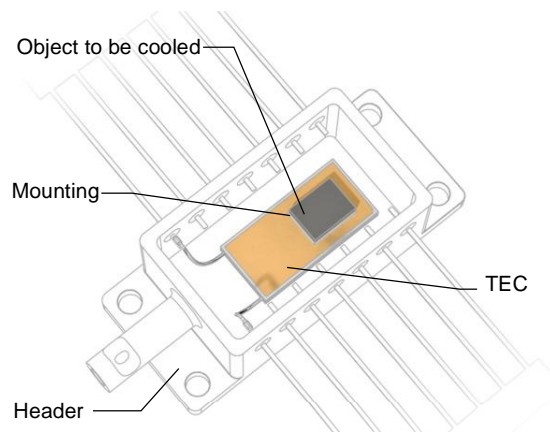
Applications Tips

Cautions

- Do not heat TE module more than 200°C (TEC assembled at 230°C) or 160°C (TEC 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

- 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:
  - Never overheat TEC (Cautions. Item 1).
  - Use solder with melting point less than TEC mounting solder (Ordering Options. Item C).
- 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

