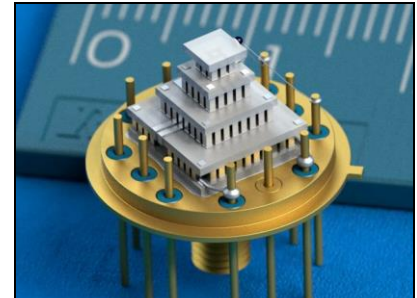


## Performance Parameters

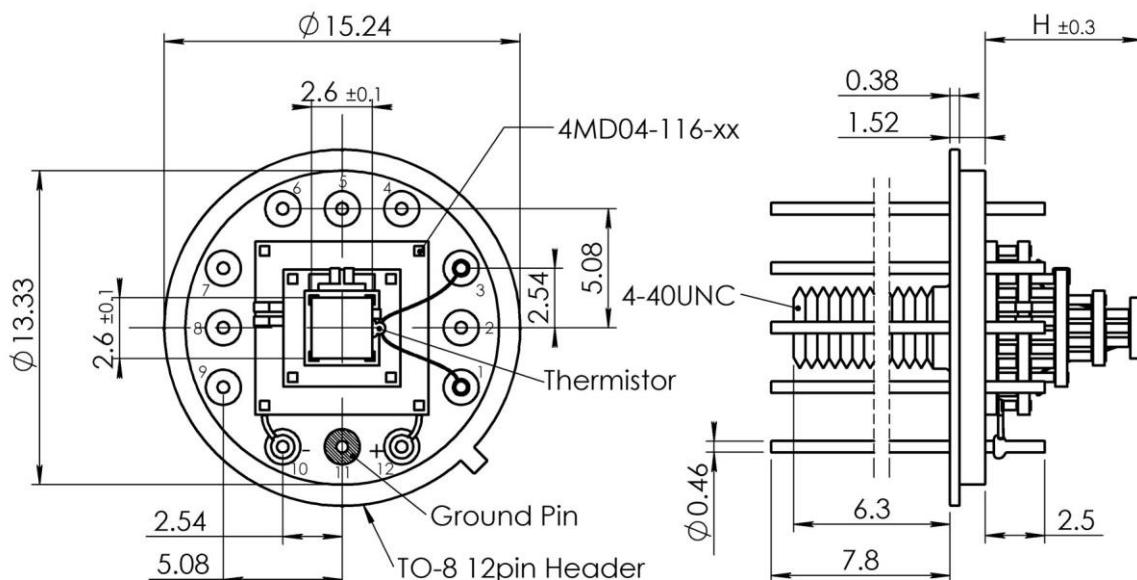
TO812.4MD04116xx

Mounted TEC Type	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V	$R_t$ K/W	H mm
4MD04-116-xx (n=116)						
4MD04-116-05	123	0.6	1.0	8.6	1.19	4.9
4MD04-116-08	125	0.4	0.7			6.1
4MD04-116-10	126	0.3	0.6			6.9
4MD04-116-12	126	0.3	0.5			7.7
4MD04-116-15	126	0.2	0.4			8.9



Performance data is specified at 300K, vacuum (thermal resistance incl.)

## Dimensions



## Manufacturing options

**A. Header material:**

Kovar or CRS (Cold Rolled Steel)

**B. Header surface finish:**

Au coating (base and pins)

**C. TEC to Header mounting:**

Solder 206 ( $T_{melt}=206^{\circ}\text{C}$ , Sn-Ag-In, flux-free process)

**D. TEC Ceramics Material:**

1. Pure  $\text{Al}_2\text{O}_3$  (100%) – used by default
2. Alumina ( $\text{Al}_2\text{O}_3$  – 96%)
3. Aluminum Nitride (AlN)

**E. TEC Cold Side Finish:**

1. Blank ceramics (not metallized)
2. Metallized (Au coating)
3. Metallized and pre-tinned (various solder for pre-tinning available)

**F. Thermistor (optional)**

Can be mounted to cold side ceramics edge.

**G. Thermistor mounting:**

Epoxy gluing

**H. Pinout configuration:**

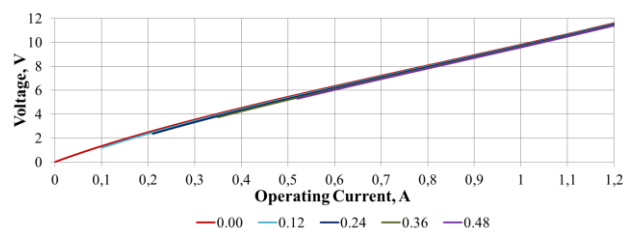
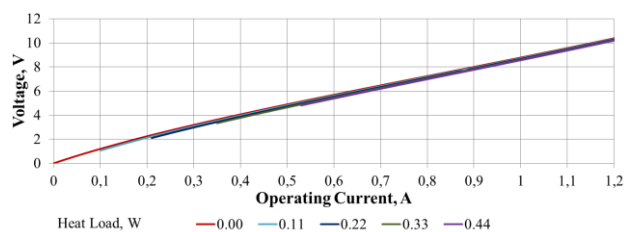
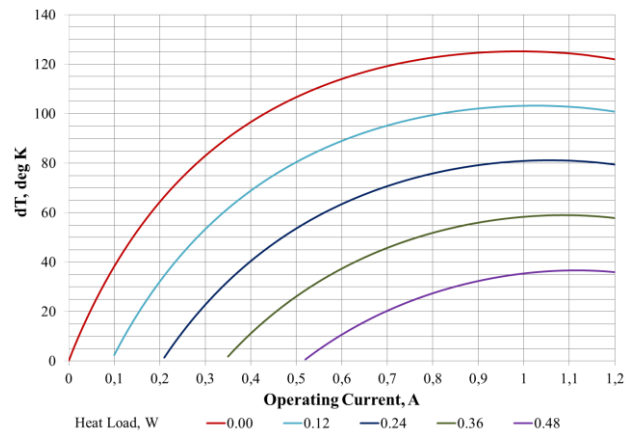
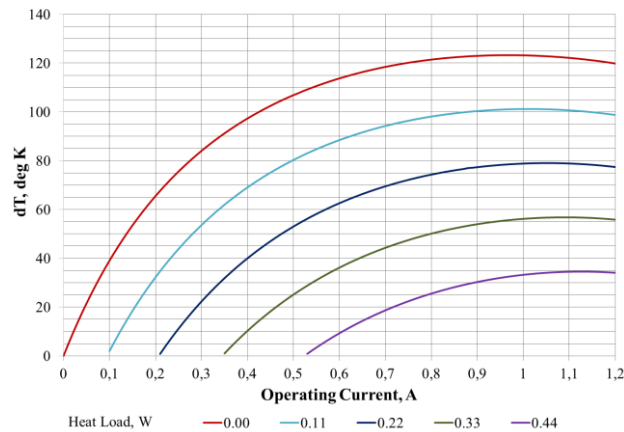
The drawing contains standard pinout, can be revised by request

## Performance Data

4MD04-116-05

27°C, Vacuum	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-05	123	0.6	1.0	8.6

50°C, N <sub>2</sub>	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-05	125	0.6	1.0	9.7



**Note:** Performance data is specified at optimal heatsink. TO-8 Header thermal resistance is included into estimations. Use TECCad Software for estimations under different conditions or contact RMT Ltd or it's branches directly.

## Performance Data

4MD04-116-08

27°C, Vacuum	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-08	125	0.4	0.7	8.6

50°C, N <sub>2</sub>	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-08	121	0.4	0.7	9.7

**Note:** Performance data is specified at optimal heatsink. TO-8 Header thermal resistance is included into estimations. Use TECCad Software for estimations under different conditions or contact RMT Ltd or it's branches directly.

## Performance Data

4MD04-116-10

27°C, Vacuum	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-10	126	0.3	0.6	8.6

50°C, N <sub>2</sub>	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-10	117	0.3	0.6	9.7

**Note:** Performance data is specified at optimal heatsink. TO-8 Header thermal resistance is included into estimations. Use TECCad Software for estimations under different conditions or contact RMT Ltd or it's branches directly.

### Performance Data

4MD04-116-12

27°C, Vacuum	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-12	126	0.3	0.5	8.6

50°C, N <sub>2</sub>	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-12	115	0.3	0.5	9.7

**Note:** Performance data is specified at optimal heatsink. TO-8 Header thermal resistance is included into estimations. Use TECCad Software for estimations under different conditions or contact RMT Ltd or it's branches directly.

### Performance Data

4MD04-116-15

27°C, Vacuum	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-15	126	0.2	0.4	8.6

50°C, N <sub>2</sub>	$\Delta T_{max}$ K	$Q_{max}$ W	$I_{max}$ A	$U_{max}$ V
4MD04-116-15	108	0.2	0.4	9.7

**Note:** Performance data is specified at optimal heatsink. TO-8 Header thermal resistance is included into estimations. Use TECCad Software for estimations under different conditions or contact RMT Ltd or it's branches directly.

### Application Tips

- Never heat up the sub-assembly more than 200°C.
- Never use the sub-assembly without an attached heat sink. Header is NOT a heatsink by itself.

- Connect TE cooler to DC power supply according to specified polarity.
- Do not apply current/voltage higher than specified max values

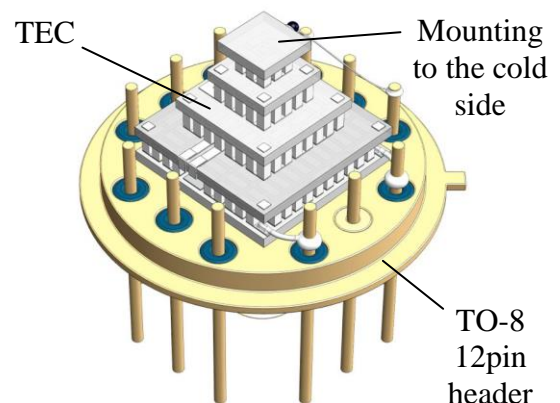
### Mounting to TEC cold side

- Soldering of object to be cooled.

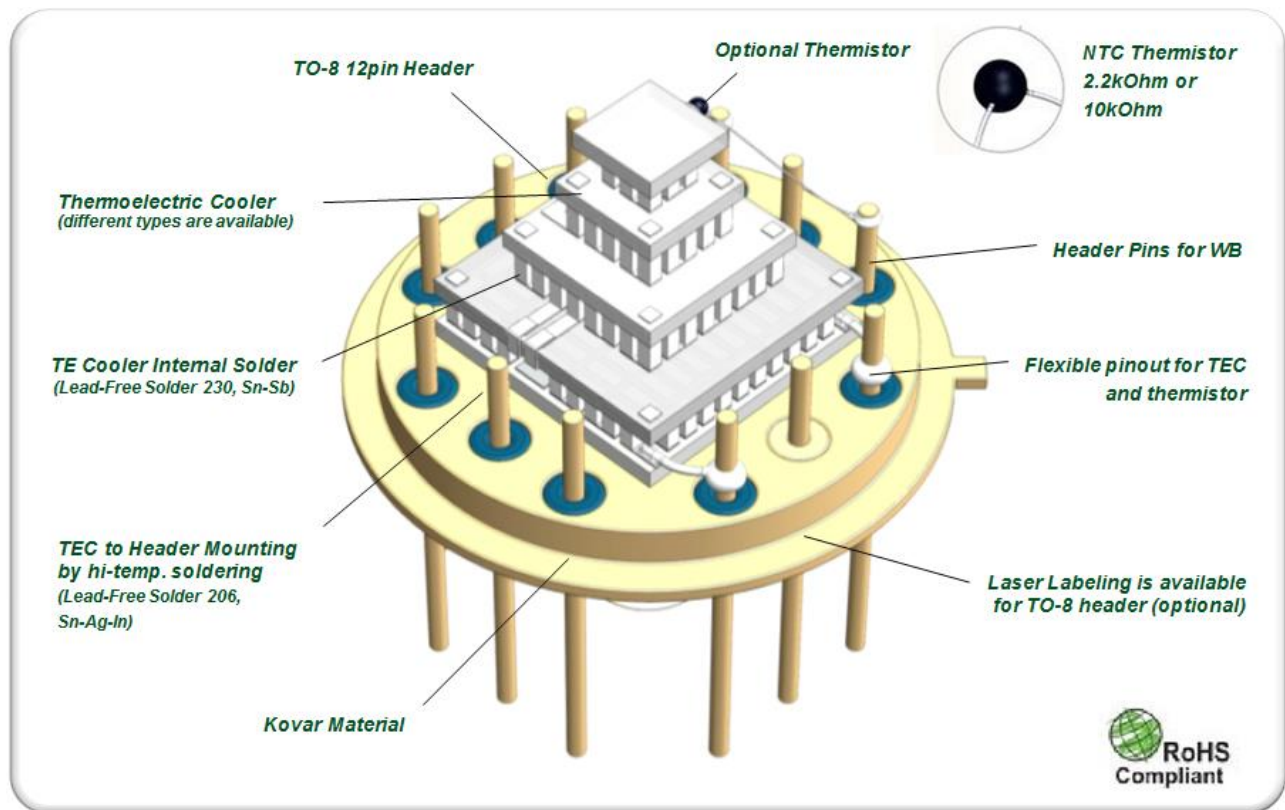
Method is suitable for a TE module with the metallized cold side (Ordering Options. Item E). Soldering requires careful procedures:

- Never overheat TEC (Application Tips. Item 1).
  - Use solder with melting point less than 200°C.
- Gluing of object to be cooled.

Method is available by glues with good thermoconductive properties. Not recommended for high vacuum applications and long operations at high temperature.



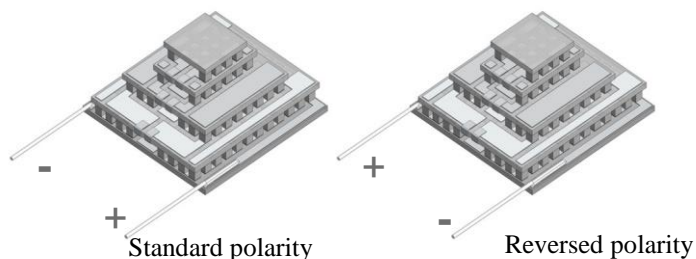
## Sub-assembly Overview



## Additional Options for TEC

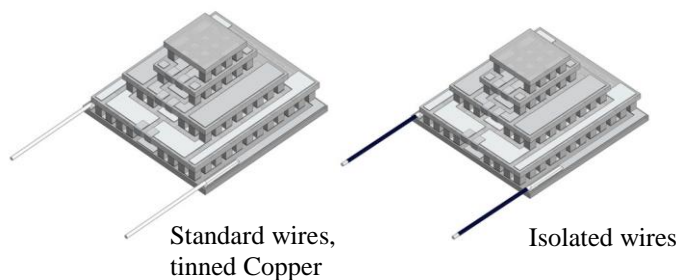
### TEC Polarity

TEC Polarity can be modified by request. The specified polarity in this datasheet is typical. It can be reversed in accordance to Customer application requirements.



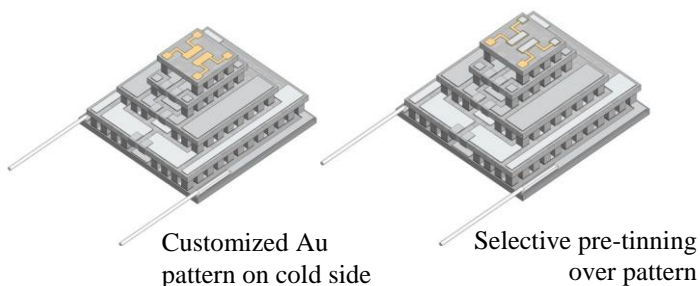
### Terminal Wires Options

The wires are of tinned Copper, blank (not isolated) by default. Various options for isolated wires are available by request. The available solutions include isolated wires, isolated color-coded wires, flexible multicore wires and more



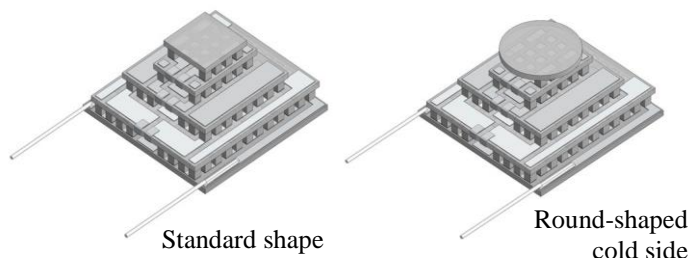
### Customized Au Patterns

Customized Au patterns on thermoelectric cooler cold side are available by request. Selective Pre-tinning over pattern is also available. Please, contact RMT Ltd for additional information about customized Au patterns requirements.



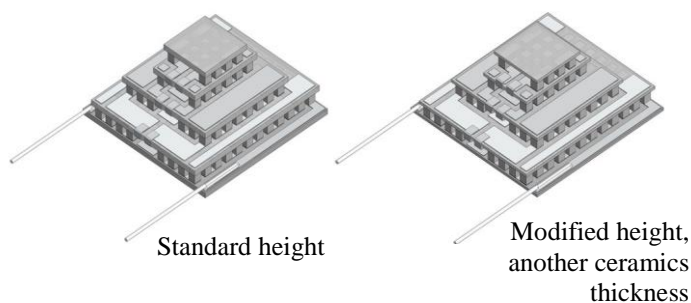
### Cold Side modification

TEC Cold Side can be modified by request. The dimensions and shape of 4-stage thermoelectric cooler can be revised to Customer application. RMT Ltd has full-featured flexibility in TEC design and modification.



### TEC Height modification

Standard 4-stage TEC height can be modified without performance changes by using ceramics of different thickness. Standard 4-stage thermoelectric cooler height (specified in the datasheet) may be modified by request.



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