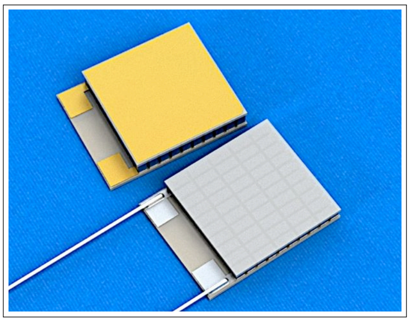
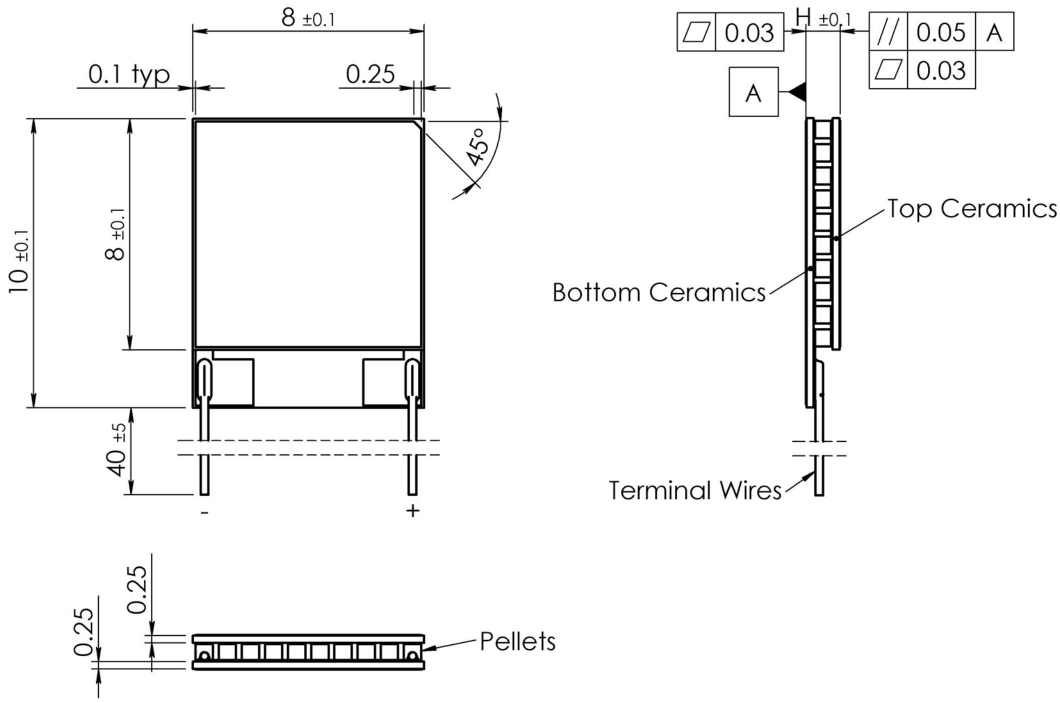
Performance Parameters — 1MDL06-050-XXt

Type	ΔT_{max} K	Q_{max} W	I_{max} A	U_{max} V	AC R Ohm	H mm
1MDL06-050-xxt (N=50)						
1MDL06-050-03t	68	18.91	5.2	6.3	0.89	0.9
1MDL06-050-05t	71	12.18	3.3		1.44	1.1
1MDL06-050-07t	72	8.97	2.4		1.98	1.3
1MDL06-050-09t	72	7.10	1.9		2.53	1.5
1MDL06-050-12t	73	5.41	1.4		3.35	1.8
1MDL06-050-15t	73	4.37	1.1		4.17	2.1

Performance data are given for 300K, vacuum



Dimensions



Manufacturing options

A. TEC Assembly:

* 1. Solder SnSb (T_{melt}=230°C)
2. Solder AuSn (T_{melt}=280°C)

B. Ceramics:

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

** - used by default*

C. Ceramics Surface Options:

1. Blank ceramics (not metallized)
2. Metallized (Au plating)
3. Metallized and pre-tinned with:
   - 3.1 Solder 117 (In-Sn, T_{melt} =117°C)
   - 3.2 Solder 138 (Sn-Bi, T_{melt} = 138°C)
   - 3.3 Solder 143 (In-Ag, T_{melt} = 143°C)
   - 3.4 Solder 157 (In, T_{melt} = 157°C)
   - 3.5 Solder 183 (Pb-Sn, T_{melt} =183°C)
   - 3.6 Optional (specified by Customer)

D. Thermistor (optional)

Can be mounted to cold side ceramics edge. Calibration is available by request.

E. Terminal contacts

1. Blank, tinned Copper
2. Insulated Wires
3. Insulated, color coded

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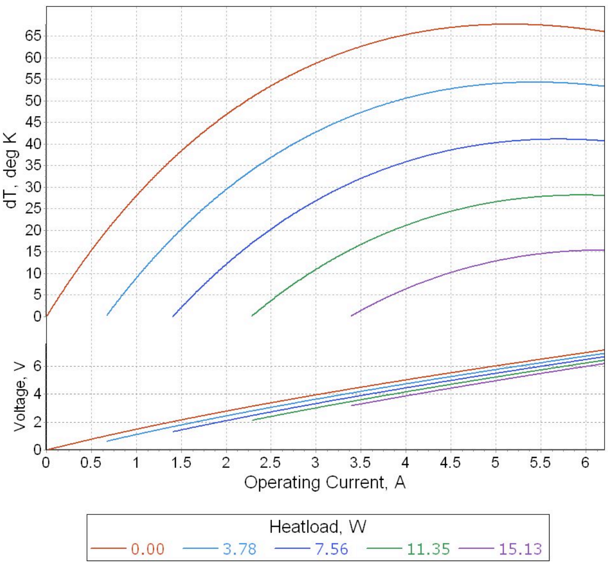
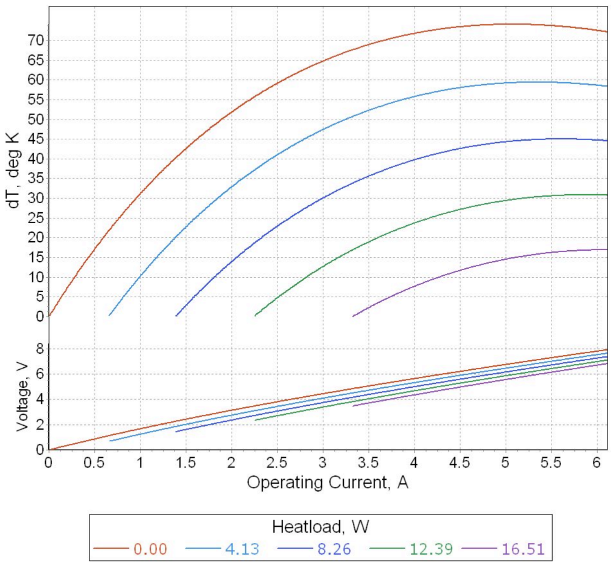
Performance Data 1MDL06-050-03t

@ 27ºC, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-03t	68	18.91	5.2	6.3

@50ºC, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-03t	74	20.64	5.2	6.9



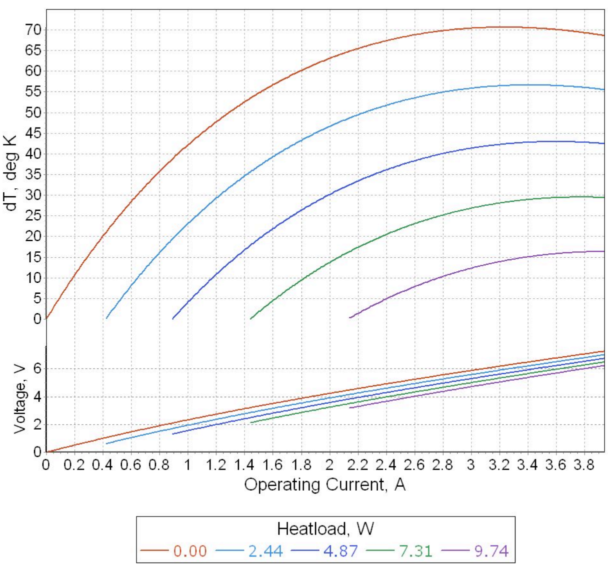


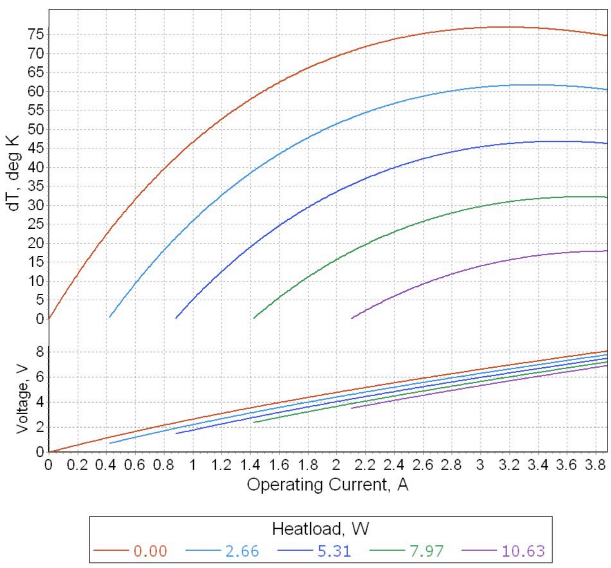
Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

Performance Data 1MDL06-050-05t

@ 27ºC, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-05t	71	12.18	3.3	6.3

@50ºC, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-05t	77	13.28	3.3	6.9





Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

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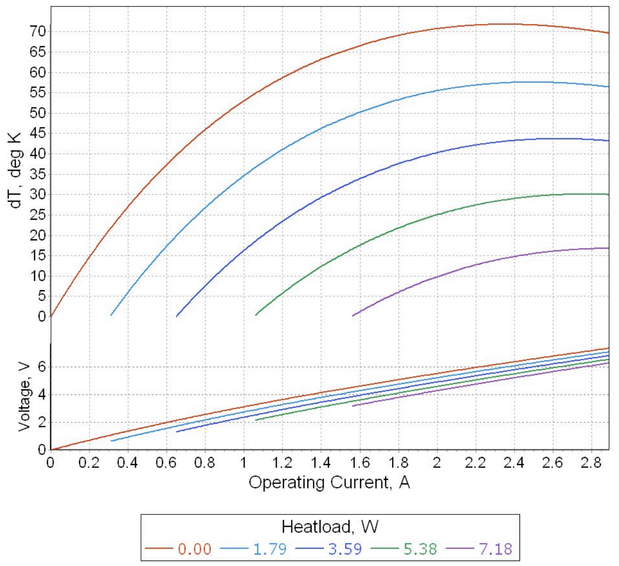
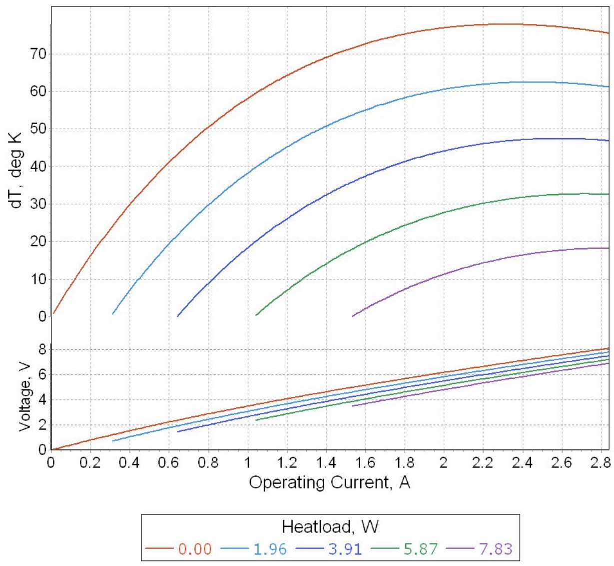
Performance Data — 1MDL06-050-07t

@ 27ºC, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-07t	72	8.97	2.4	6.3

@50ºC, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-07t	78	9.79	2.4	6.9



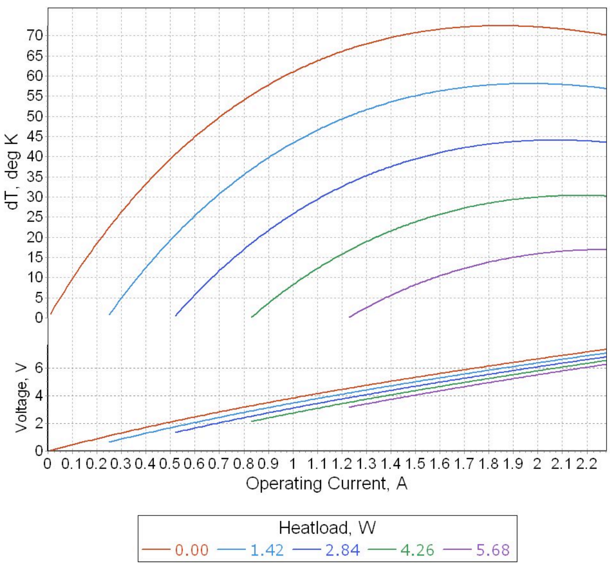


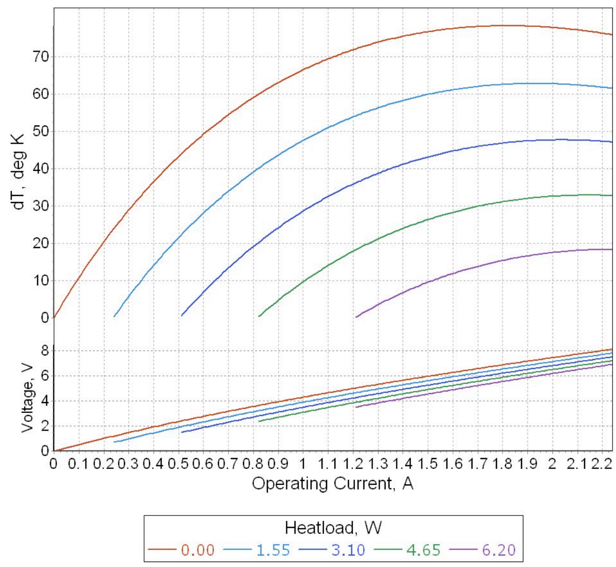
Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

Performance Data — 1MDL06-050-09t

@ 27ºC, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-09t	72	7.10	1.9	6.3

@50ºC, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-09t	78	7.75	1.9	6.9





Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

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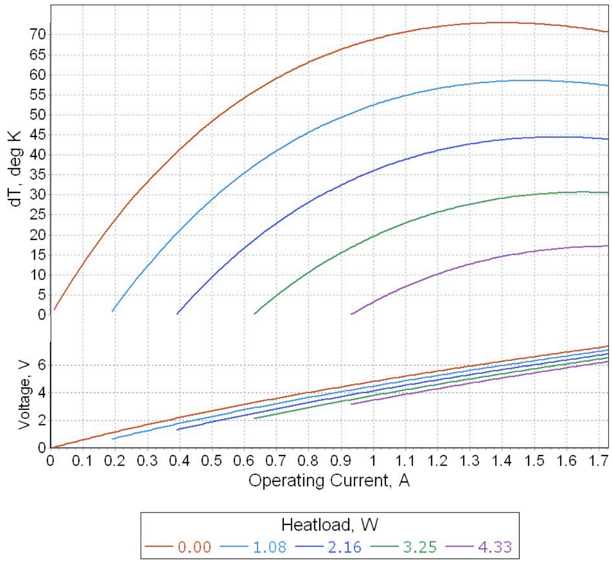
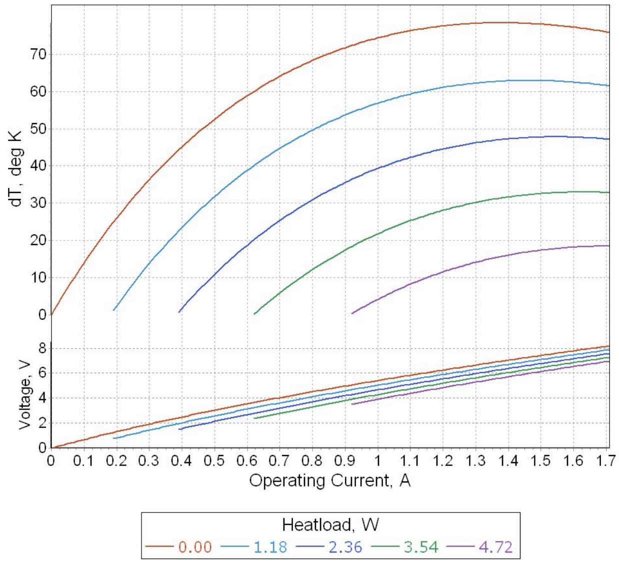
Performance Data — 1MDL06-050-12t

@ 27°C, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-12t	73	5.41	1.4	6.3

@50°C, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-12t	78	5.91	1.4	6.9



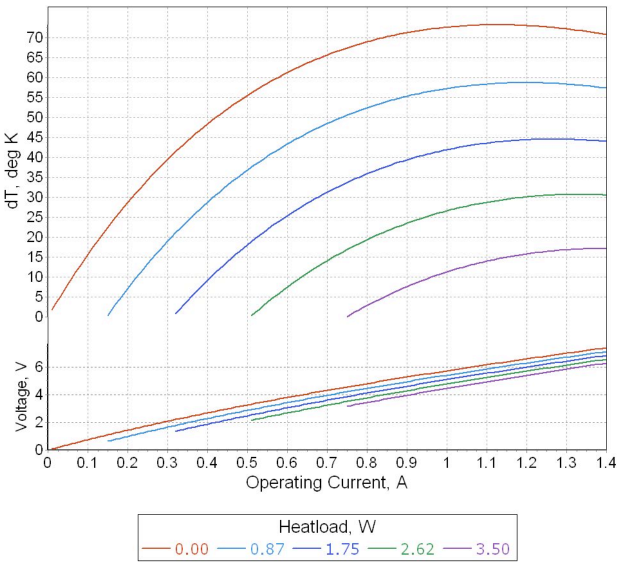


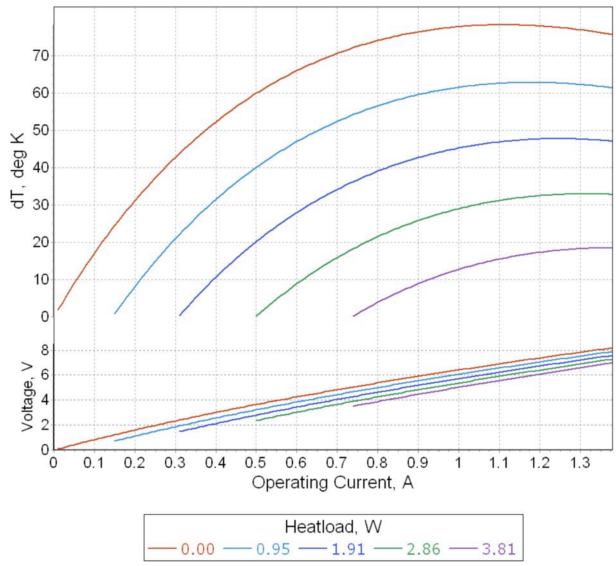
Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

Performance Data — 1MDL06-050-15t

@ 27°C, Vacuum	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-15t	73	4.37	1.1	6.3

@50°C, N2	ΔTmax K	Qmax W	Imax A	Umax V
1MDL06-050-15t	78	4.77	1.1	6.9





Note: Performance data is specified at optimal conditions (TEC hot side is stabilized at ambient temperature). Heatsink thermal resistance is not included into estimations. Use TECCad Software for estimations under different conditions.

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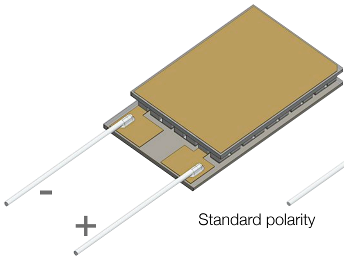
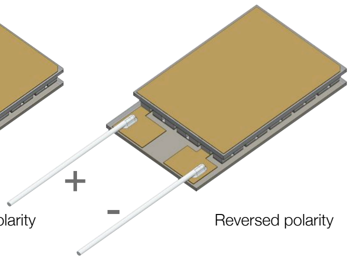
Additional Options

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.



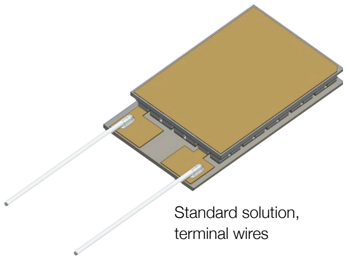
Standard polarity

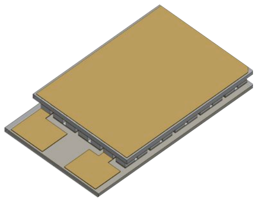


Reversed polarity

Terminal Wires Options

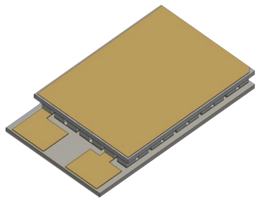
The standard solution is with terminal wires. TEC can be modified for WB process by request. In this case terminal wires are not mounted, TEC has Au plated WB pads.

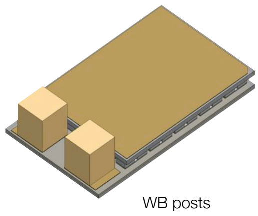

Standard solution, terminal wires


WB Solution, Au played WB pads

Optimization for WB process

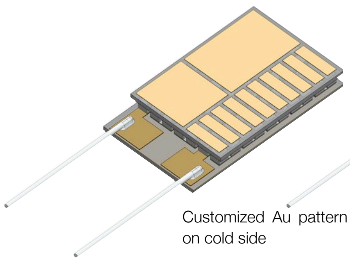
In case of WB optimization, the standard WB solution is with WB pads (no posts) by default. WB posts are available by request. The dimensions of WB posts can be modified and optimized for Customers application. WB posts are made of Copper, Au plated.

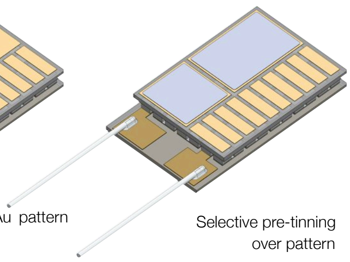

WB pads


WB posts

Customized Au Patterns

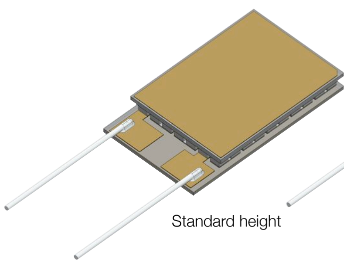
Customized Au patterns on thermoelectric cooler cold side are available by request. Selective Pre-tinning over pattern is also available. Please, contact RMT Ltd for additional information about customized Au patterns requirements.

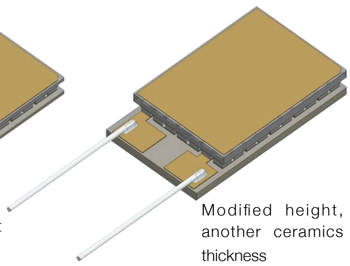

Customized Au pattern on cold side


Selective pre-tinning over pattern

TEC Height modification

Standard TEC height can be modified without performance changes by using ceramics of different thickness. Standard thermoelectric cooler height (specified in this datasheet) can be increased in a range +0.5..+1.5 mm by request.


Standard height


Modified height, another ceramics thickness

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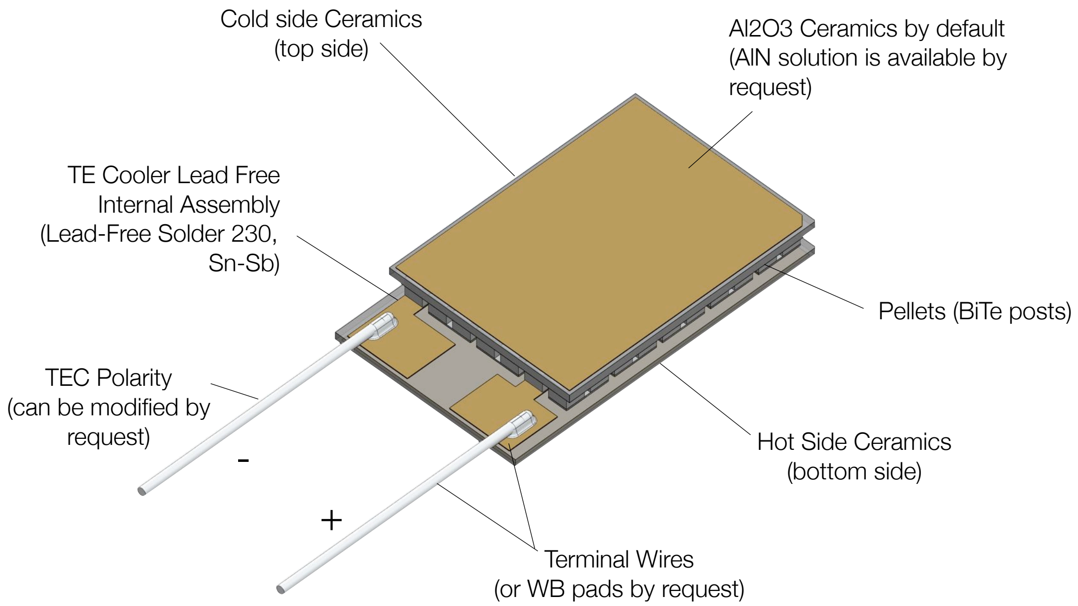
Thermoelectric Cooler Overview



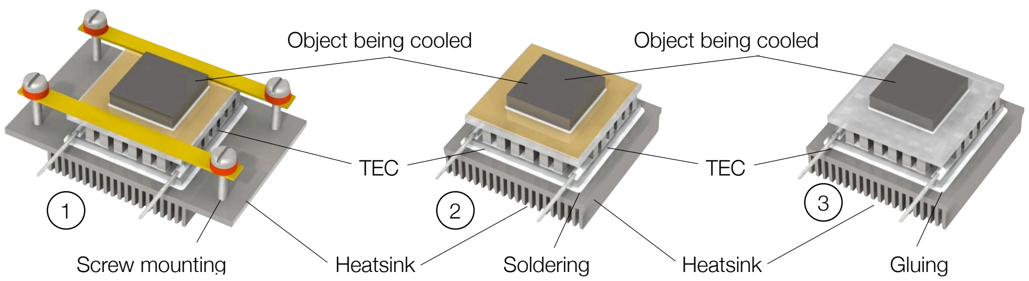
Application Tips

1. Never heat TE module more than 200°C (TEC assembled at 230°C).
2. Never use TE module without an attached heat sink at hot (bottom) side.

1. Connect TE module to DC power supply according to polarity.
2. Do not apply DC current higher than Imax.

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 30x30mm and larger). Miniature types require other assembling methods in most cases.
1. Soldering. This method is suitable for a TE module with metallized outside surfaces. RMT provides this option and also makes pre-tinning for TE modules.
2. Glueing. It is an up-to-date method that is used by many customers due to availability of glues with good thermoconductive properties. 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.



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