文件编号 №			
版本 Edition		发布日期 Date	

产品规格书
Product specification

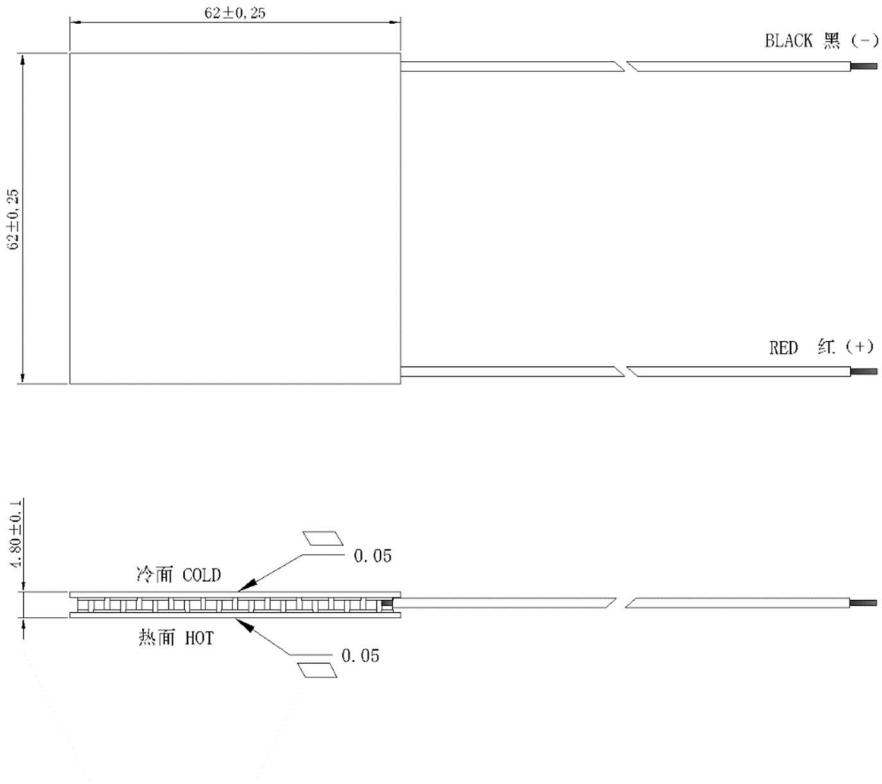
名称：半导体致冷器
Product：Thermo-module

型号：TEC1-12715
Type：TEC1-12715

顾客印栏**Approvedby**

批准 Approver	审核 Checker	编制 Maker

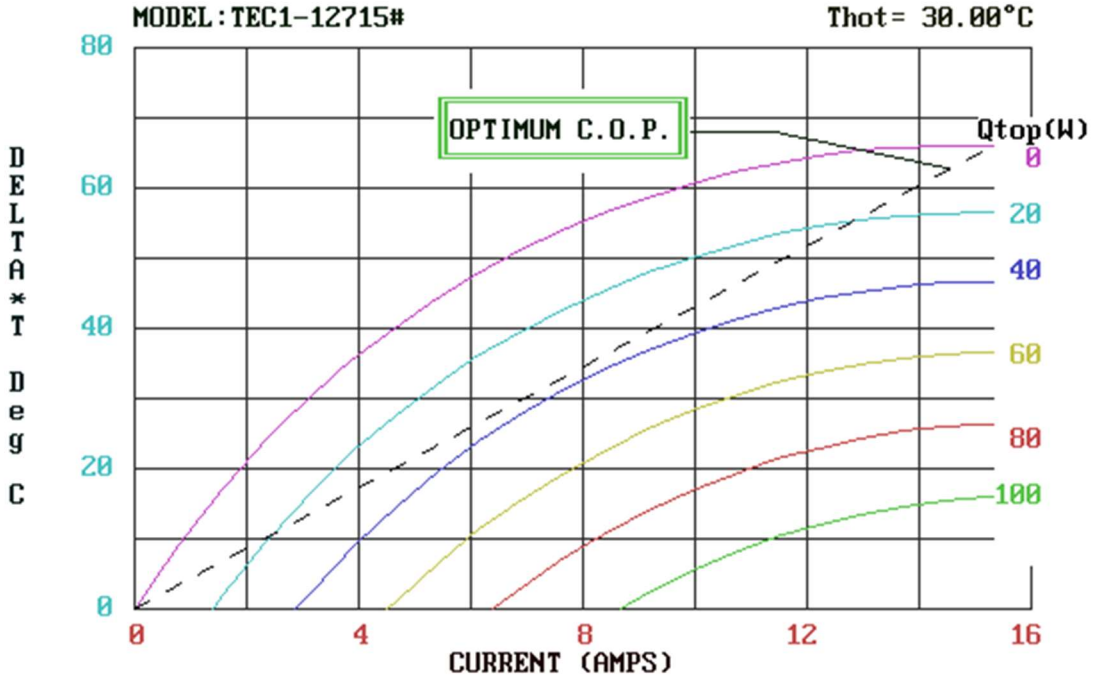
1、组件尺寸（mm）TE Module Drawing:

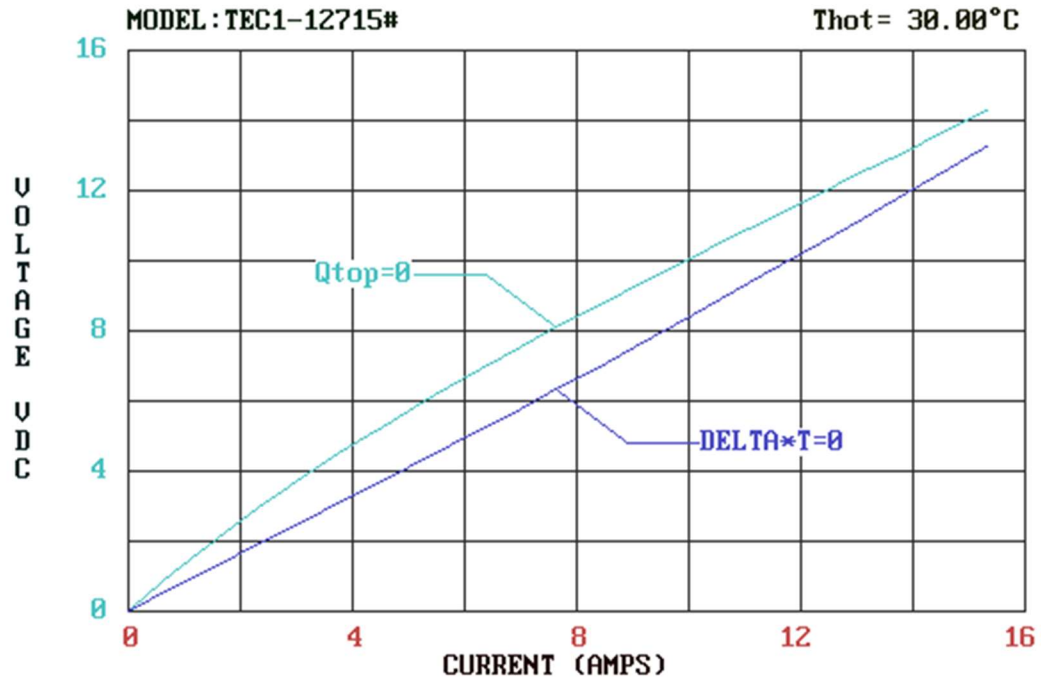


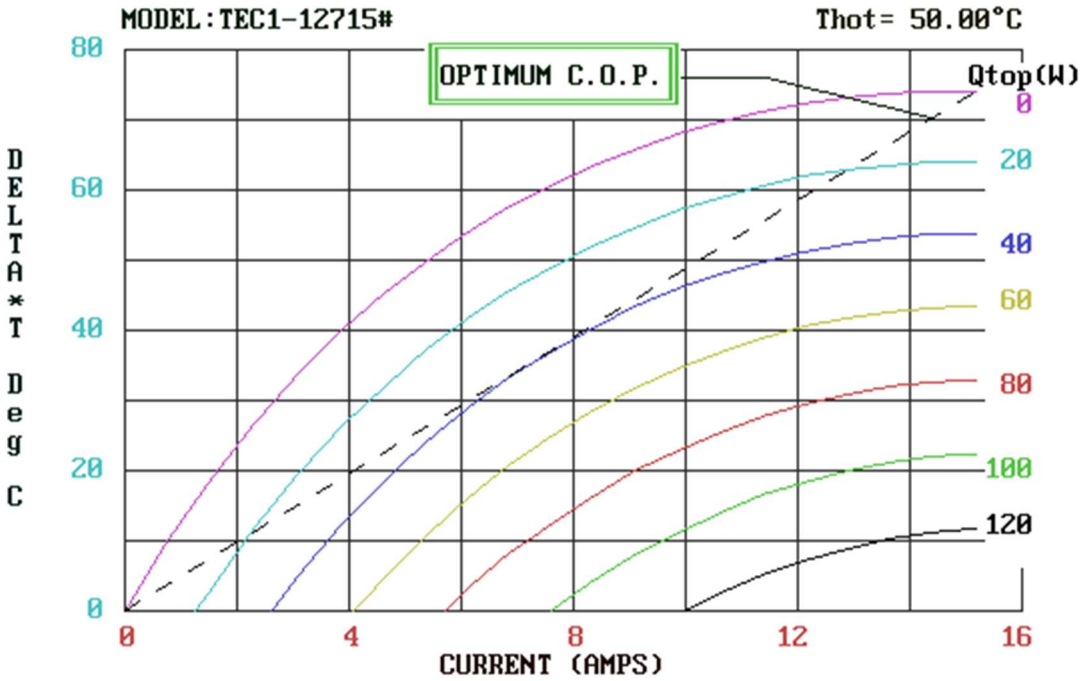
2、性能参数 TE Module Specifications

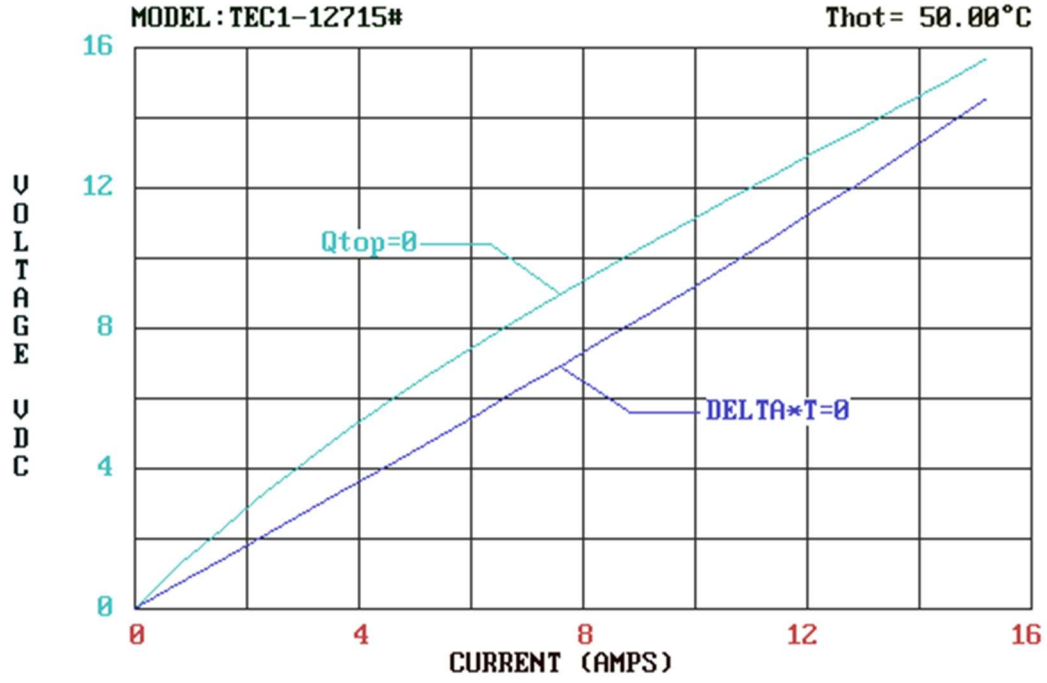
项目 Item	特性值 Specification		条件 Note
交流电阻 AC resistance	ACRes	0.8±10%	Ta=23℃
最大温差电流 Max Current	Imax	15 A	Th=30℃
最大温差电压 Max Voltage	Vmax	15 V	Th=30℃
最大温差 Max Deta T	ΔTmax	≥67℃	Qc=0 Th=30℃
最大致冷功率 Max cooling Power	Qcmax	133.3W	ΔT=0 Th=30℃
工作温度范围 Working Temp	TR	-50～80℃	

3、特性曲线 Performance Graph






MODEL:TEC1-12715#
Thot= 50.00°C
OPTIMUM C.O.P.
Qtop(W)
0
20
40
60
80
100
120
DELTA*T Deg C
0
20
40
60
80
0
4
8
12
16
CURRENT (AMPS)


MODEL:TEC1-12715#
Thot= 50.00°C
VOLTAGE VDC
0
4
8
12
16
Qtop=0
DELTA*T=0
0
4
8
12
16
CURRENT (AMPS)

4、材料构成 Materials

- 陶瓷基板：96%Al2O3 白色
- Ceramic plate： 96%Al2O3 white color
- 密封硅胶：704 RTV
- Silica gel: Sealed with 704 RTV
- 半导体材料：碲化铋
- Thermoelectric material: Bismuth Telluride
- 电源导线：AWG#18 或相当品、镀锡、耐温 80℃
- Power Wire：AWG#18 or equal Sn-plated on the surface, hightemperature resistance80℃

5、注意事项 Notes

- ◆ 用作致冷时，红线接电源正极，黑线接负极，焊有导线的瓷板是热面；用作加热时，黑线接正极、红线接负极，焊有导线的瓷板是冷面，安装时请勿装错。
- ◆ When used for refrigeration, the red line isconnect tothe anode of power, black lineconnect to the cathode, the porcelain plate welded with wire is hot side; When used for heating, the black wire is connected to the anode, and the red line connect to the cathode. The porcelain plate with wires is cold side. Do not install it in a wrong waywhen installing.
- ◆ 散热片和集冷块与致冷组件相接触的表面必须精细加工，装配时在接触面上必须均匀涂抹适量的导热硅脂，以尽量减少热阻。热面未装散热片时切勿接上电源。
- ◆ The surface that heat sinks and cold block contact with refrigeration components must beelaborate processing.During installation, the contact surface must be evenly coated with an appropriate amount of heat-conducting silicone greaseto minimize thermal resistance. Do not connect to the power when a heat sink is not installed on the hot surface.
- ◆ 若致冷组件的热面散热不良，热面温度过高，不但会影响致冷效果，也可能烧毁组件，热面瓷板的最高温度不要超过 90℃，热面温度越低，致冷效果越好。

- If the hot side of refrigeration components is cooling bad, result in the hot side temperature is too high. In this case, not only affect the cooling effect, but also may causecomponentsburned, the temperature of the hot side cannotexceed 90℃,the temperature ofthehot side is lower, the better cooling effect will be in the system.
- 装配时，将致冷组件夹到散热片和集冷块之间后，对准上下螺孔，在散热片位于致冷组件的中心位置加上适当的压力，以避免拧紧螺钉时压偏，造成压力不匀，压碎瓷板。据统计，由于安装不当造成致冷组件失效的约占失效总数的 70%以上，螺钉要加弹簧垫圈和塑料隔热套管。
- When installing, put the refrigeration components between the heat sinks and cold block, give an appropriate pressure to the heat sink at the center of the refrigeration components, in order to avoid pressure deviation when tighten the screws, pressure unevenness, cause crush the porcelain plate.According to statistics, the failure of refrigeration components due to improper installation accounts for more than 70% of the total failure, screw need to add spring washer and plastic insulation sleeve.
- 主要性能参数表中最大△Tmax、最大温差电压 Vmax、最大温差电流 Imax 和最大致冷功率 Qcmax 都是按 SJ/T10135-10136-2010 标准的极限值，供选型时参考。实际应用中一般电压可控制在极限值的 60%～80%；工作中组件的平均温度升高，所以电流会下降。
- In the table of main performance parameters, the maximum △Tmax, the maximum temperature difference voltage Vmax, the maximum temperature difference current Imax and the maximum cooling power Qcmax are all based on the limit values of SJ/T10135-10136-2010 standard for reference in the selection process.In practical application, the general voltage can be controlled within 60% ~ 80% of the limit value. The average temperature of the components at work increases, so the current decreases.
- 直流电源的纹波系数要小于 10%。
- The DC power supply ripple coefficient is less than 10%.
- 温差电致冷组件是由陶瓷板和半导体材料组合而成的，强度都不高，是易碎材料，使用中须轻拿轻放，切勿磕碰，避免瓷板破裂造成损失。

- Thermoelectric cooling module is made up by the ceramic plate and the semiconductor material,strength is not high, belong tofragile material, handle with care during use, do not knock against, avoid losses caused by broken porcelain plate.