



Mobile Phone Thermoelectric Cooler



Deju311

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Summary

Thermoelectric active mobile phone cooler with a fan. Running on 5V from USB. Portable and awesome :)

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This is a universal mobile phone cooler. Requires at least 5x5 cm of free space on the back of your phone (that is 2x2 inches). Unlike most commercially sold phone coolers, this one uses a Peltier element to enhance its performance further.

The whole body is made of PLA, though any other material is fine, I guess. The cooling is done by a Peltier element with both passive and active cooling. The whole system is running on 5V with power consumption of approximately 1A. This makes it suitable as a USB powered device. Furthermore, it allows using a power bank as a source of energy.

It is held on the phone with a thermally conductive pad on the bottom of the cooler, which not only transfers heat very well, but it is also adhesive

enough to hold the cooler on the phone (it is not glue, it is not sticky and can be easily attached and detached).

The project has proven to be highly effective in cooling my notoriously bad Samsung S20 Exynos. It is very suitable for mobile gaming and computationally intensive work.

Parts used:

Four M2x20mm bolts and nuts

Fan: <https://www.aliexpress.com/item/1005002172893525.html?spm=a2g0s.9042311.0.0.7f754c4dasTgnc>

*basically any 40x40x10mm 5V fan can be used

Heatsink: <https://www.aliexpress.com/item/32950514537.html?spm=a2g0s.9042311.0.0.27424c4dHzteRM>

*basically any 40x40mm heatsink with height up to 12mm can be used

Thermal pad: <https://www.aliexpress.com/item/32988894487.html?spm=a2g0s.9042311.0.0.27424c4dSjS3Rg>

*50x50mm with a width of 1mm used

Peltier:

[https://www.aliexpress.com/item/1005001563728314.html?srcSns=sns_Copy&spreadType=socialShare&bizType=ProductDetail&social_params=20_m3Tsit&tt=MG&fbclid=IwAR1CD-](https://www.aliexpress.com/item/1005001563728314.html?srcSns=sns_Copy&spreadType=socialShare&bizType=ProductDetail&social_params=20_m3Tsit&tt=MG&fbclid=IwAR1CD-LepBmMvdC48fhQECemeJVBB2yjLifLX96JushYddoSpnJ99qpdwIM&aff_fsk=_mr3Tsit&aff_m3Tsit&shareId=20206121458&businessType=ProductDetail&platform=AE&terminal)

[LepBmMvdC48fhQECemeJVBB2yjLifLX96JushYddoSpnJ99qpdwIM&aff_fsk=_mr3Tsit&aff_m3Tsit&shareId=20206121458&businessType=ProductDetail&platform=AE&terminal](https://www.aliexpress.com/item/1005001563728314.html?srcSns=sns_Copy&spreadType=socialShare&bizType=ProductDetail&social_params=20_m3Tsit&tt=MG&fbclid=IwAR1CD-LepBmMvdC48fhQECemeJVBB2yjLifLX96JushYddoSpnJ99qpdwIM&aff_fsk=_mr3Tsit&aff_m3Tsit&shareId=20206121458&businessType=ProductDetail&platform=AE&terminal)

Print settings:

Prusa Mk1

0.2 layer

No supports

22% infill

Black PLA

Notes:

Part 6 is optional and is used to compensate different heights of heatsink. (Provided is for 11mm heatsink, but it can be easily modified)

Post-Printing:

The thermal pad needs to be cut out to fit into the red frame. The dimensions are 50x50mm with 4mm squares cut off in the corners. The thermal pad is then fixed between the yellow and red part.

Next place the peltier element with a passive cooler (orange) attached to it. There are grooves in the parts, that lead the cables to one output point.

The cables of the fan go through the green part (there is a small hole in one of the legs) and exit at the same point, as the peltier device cables. The rest of the assembly is self explanatory.

The device is held together with 4 M2x20 hex nuts and screws.

Part 6 (pink) is a spacer for different heights of used heatsink. And is optional as long as your heatsink is 12mm.

Model files



peltier6.stl

☐ Optional - read the description



peltier5.stl



peltier4.stl



peltier3.stl



peltier2.stl



peltier1.stl

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