

## Thermal conductivity of RTV

In order to find out if you can use RTV silicone as a thermal glue, an experiment was conducted:

A TO220-package FET was set up to run hot by driving a 100W load of car headlamp bulbs with PWM signal provided by an arduino (via a BJT transistor driver swinging 10V to ensure positive FET switching) The load was run at 14V about 9A, chopping frequency nominally 100Hz. Thermal photos were taken after 5 minutes of operation.



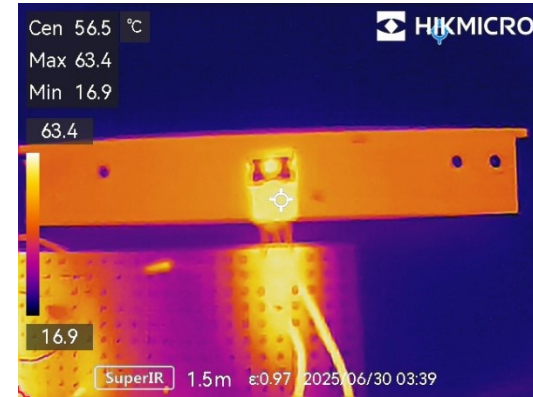
Control: bolted-on with heatsink compo.



Expt1: glued-on with Thermal Glue\*



Expt2: glued-on with RTV\*\*



- Control: colour of the TO220 and the surrounding heatsink are practically indistinguishable, indicating negligible thermal gradient between the TO220 & the heatsink. The TO220 is measured at 37°C: an acceptable operating temperature for a power FET.
- Expt1: the FET can be delineated in the thermal image, indicating presence of a thermal gradient between it and the heatsink. However, it is able to transfer its excess heat efficiently as shown by its operating temperature, 34°C.
- Expt2: FET shows up as a well-delineated hotspot, indicating significant thermal gradient between it & heatsink, furthermore it is running hot at 57°C.

**Conclusion: RTV is NOT an efficient medium to transfer heat from a TO220 to a heatsink.**

Heatsink compo in use was Dowsil 340

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Thermal glue = amethermaol TCG200

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RTV = ThreeBond 5211

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FET=IRF3205