

# Soft Pad Opportunities

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# Thermal Pads

- Thermal pads are soft, compliant materials based on a gel-like polymer system
- They fill air gaps between components and a housing or chassis
- Thermal films and elastomeric pads cure into a hard-rubber type of material
- They also function as dielectric barrier, a thermal interface, and cushion
- Usually for bond line  $\geq 0.2\text{mm}$



# What Are Soft Pads?

- There is no specific definition of “soft”; typically it is defined as  $\leq$ ShoreOO40, compression  $>35\%$
- Compression rates vary due to variable pad thickness
- Soft pads with  $>2W/MK$  are difficult to develop because of the higher ratio of filler

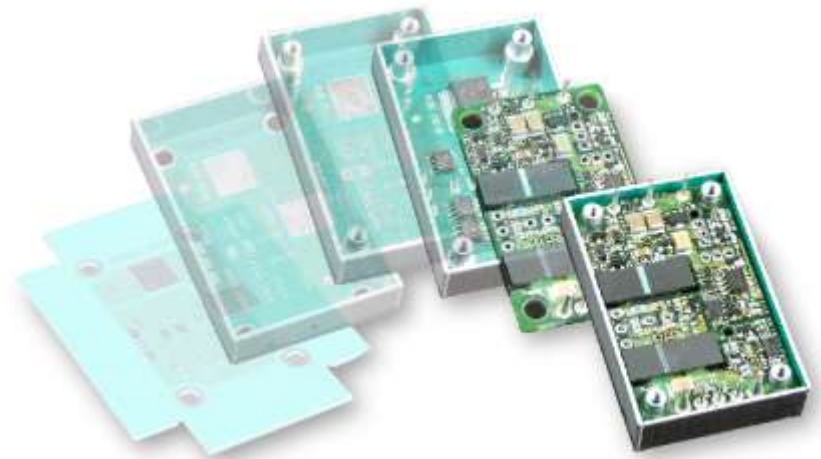
## Soft Pad Benefits:

- Protection of stress-sensitive chipsets (surface stress limits are usually stated in the manual.)
- Covers chipsets with variable heights
- PCB protection



# Why Use Soft Pads?

- Lower interface contact resistance results in better thermal performance
- Since the pads can receive more pressure, the bond line is thinner; this generates better thermal performance
- Better shock cushioning

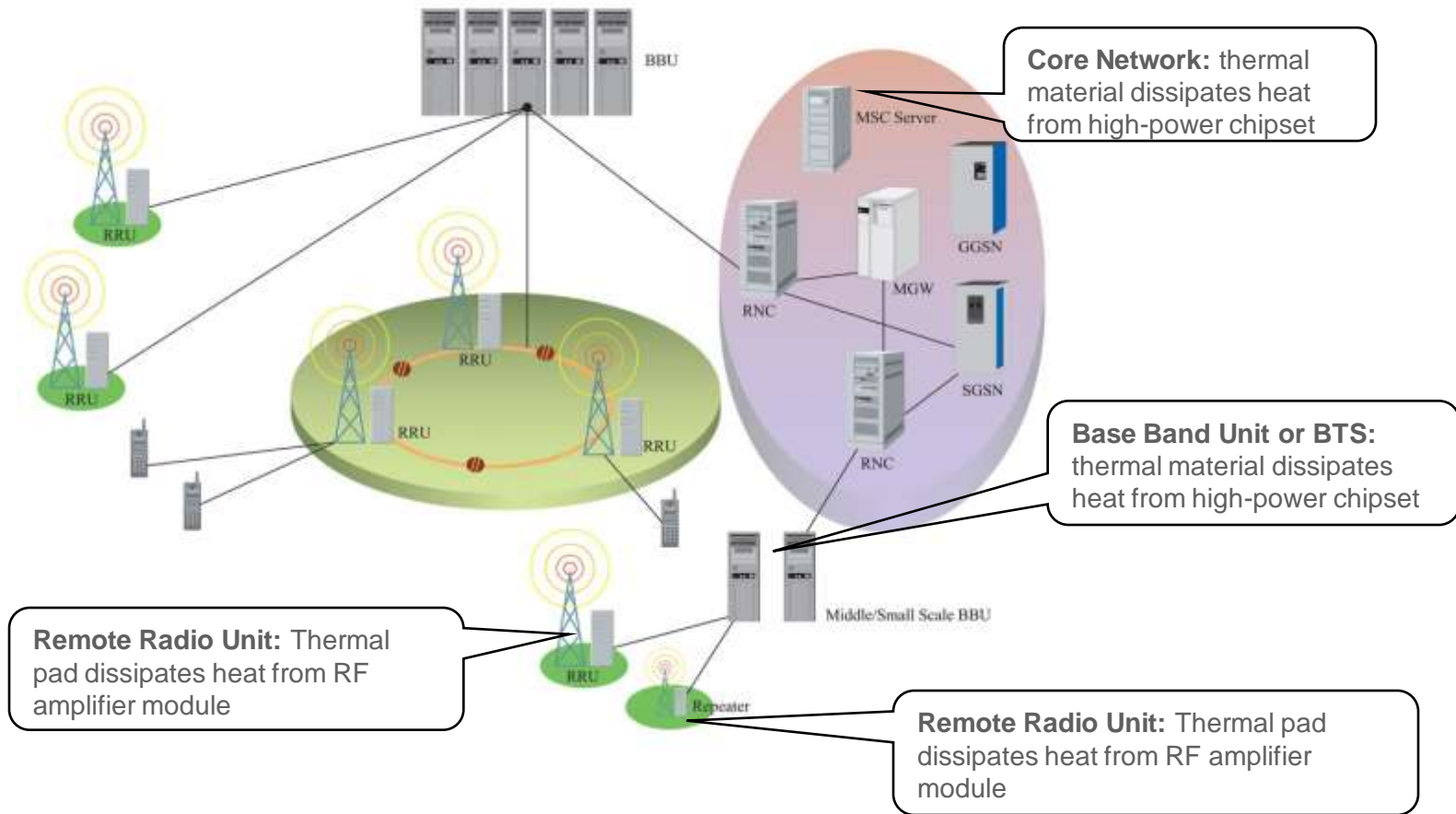


# Multiple Application Suitability

- Telecom amplifier modules, power modules
- Wireless network card
- Notebook chipsets
- General PCB board protection
- .....



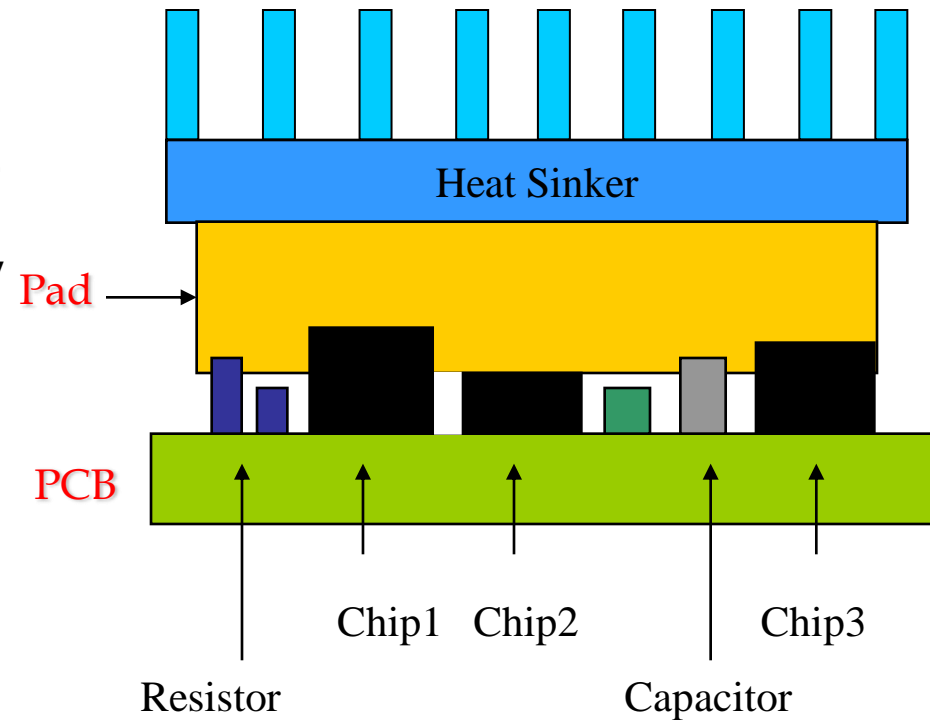
# Case Study: Typical Telecom Applications



# Case Study – Telecom Power Module

Since power modules generate a lot of heat, this customer uses a large pad to protect the whole module from overheating.

- The chipsets have different heights, so the taller one receives more stress. The pad should be soft enough to protect chipsets and have a high enough compression rate to cover both tall and short chipsets.
- Other components, such as a capacitor, may be as tall as the chipset; they are even more stress sensitive.
- The stress will pass through the chipsets to the PCB. If the PCB receives too much differential stress, the board will become uneven. This might cause pins from other components to dislodge.



# Discussion: Soft Pad Opportunities



- Have you discovered any other applications that require soft pads?
- What are your customers requesting?  
(e.g. hardness, compression, conductivity, etc.)

## Dow Corning Soft Pad Roadmap:

- Soft Pad  $\geq 3\text{W/MK}$  (Prototype ready now)
- Planning Stages  $\geq 2.5\text{W/MK}$  soft pad
- Planning Stages  $\geq 1.6\text{W/MK}$  soft pad



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