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Abstract
List of packages selected for measurements and modelling

Keyword list
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1. Introduction

The criterion adopted to select the first series of devices to measure was defined in order to get a fast start up of the project. Availability of thermal test dice and ease of access to assembly lines were mainly considered.

Particularly, power packages or signal packages with thermally enhanced features have been preferred.

The test dice used are large resistors with sensing diodes. They are well-known and very simple to use. Power levels up to 100 W can be supplied to those devices.

2. Package list

In the following table the package selected by each partner involved:

Infineon	**So20(Power)**	**Qfp 80**
Philips Semic.	**Qfp 208**	**Viper Bga 352**
ST Microelec.	**So28**	**Flexiwatt25**

Table 4.1.1.1

Herewith a short description of each selected package.

So20 (Power) : it is an SMD power package for automotive and industrial application. With a thick and massive internal copper slug, it is capable to dissipate up to 3 to 5 W in steady state. It is used also in transients with very high current spikes caused by re-circulation from external inductive loads. The soft solder die attach technology and its sensitivity to internal voids make it the best candidate to test transient thermal analysis as assembly quality inspection tool.

Qfp 80 : this is a typical quad flat pack structure with glue die attach for medium-low power application (1 to 1.5 W). Glue die attach has a much lower thermal diffusivity than soft solder: detecting voids here could represent an extreme benchmark of thermal transient techniques.

Qfp208: this was the “golden part” in previous EC projects (Delphi, Seed). No way to skip it also in Profit. Additionally, as thermally enhanced versions could be made available within the project, a good reason to select it is also the possible comparison: effect of internal heat spreader and exposed slug can be investigated.

Viper Bga352: this is an enhanced version of standard plastic bga with an internal heat slug. Other similar structures can be tested later on in the project. The composition of the different materials (BT, copper, and resin) makes it interesting by itself.

So28: this is a standard small outline package usually adopted for low power dissipation (0.5 to 1 W). Today a new version of the same package with the exposed pad is offered on the market for higher power dissipation (up to 2-3 W) once the exposed pad is soldered to PCB. For this reason transient thermal analysis of die attach and eventually of pcb solder joint becomes much more relevant.

Flexiwatt25 : this is a relatively new design of an old style insertion package for power audio application (car radio and hi-fi amplifiers). It has a thick plastic body with a massive internal heat sink. Used with external heat sink is capable to dissipate up to 40 W. Soft solder die attach with large power transistor makes it the ideal benchmark for any transient analysis.