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Notes on Application of JEDEC 51-14 for Measurement of Rjc

Commonly Asked Questions and Operational Issues

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This Application Note covers some common operational issues and questions associated with the measurement of Rjc using the JEDEC 51-14 method.

1) The heating power used should be as high as possible for each of the two tests used in the comparative Rjc determination. The limitation on the heating power or heating current would be embodied as either a Tj limitation or internal current capacity of the device. (JEDEC 51-14, section 4.1.2)

2) The reference temperature for the measurements is the inlet cooling liquid temperature (JEDEC 51-14, section 4.2.2)

3) The minimum difference between the steady state thermal resistances of the two tests used for comparison is 0.5 °C/W (JEDEC 51-14, section 4.2.5)

4) On the choice of heating curve comparison (HCC) versus structure function comparison (SFC) (JEDEC 51-14, section 5.1) :
   a. Use HCC for high thermal conductivity die attach
   b. Use HCC where Rjc <1°C/W .
   c. Use SFC for glue die attach
   d. If in doubt, use the higher Rjc of the HCC and SFC comparisons

5) With regard to application of the Analysis Tech Rjc Liquid Fixture, this fixture is capable of satisfying the JEDEC 51-14 requirements up to approximately 200 watts of device power dissipation when used in conjunction with a recirculating chiller capable of handling a minimum of 600 watts heat-load at 8 liters/min with a set point stability of +/- 0.5°C or better.

For additional technical questions, contact Analysis Tech support staff.