

# Frequently asked Questions

## 1. What is AEC-Q100?

The Automotive Electronics Council (AEC) was originally established by Chrysler, Ford, and GM in the mid-1990s. The AEC developed common part-qualification methods and quality-system standards such as AEC-Q100, which is a document that defines critical stress tests conducted for the purpose of qualifying an IC for automotive applications.

## 2. Which quality certifications has Linear earned and maintained?

<http://www.linear.com/designtools/quality/>

The link above contains copies of Linear's TS16949 / ISO9001 and ISO14001 certificates, all of which are updated regularly.

## 3. How long has Linear been an automotive supplier?

Linear has been an automotive supplier for more than 20 years, receiving the Ford Q1 Quality award in 1988. In addition, Linear has served customers in Europe, Japan, Asia and the US and has earned numerous accolades and received outstanding customer feedback.

## 4. How does Linear differentiate itself from competitors?

[http://www.linear.com/designtools/quality/AOQ\\_ELEC.pdf](http://www.linear.com/designtools/quality/AOQ_ELEC.pdf)  
[http://www.linear.com/designtools/quality/AOQ\\_MECH.pdf](http://www.linear.com/designtools/quality/AOQ_MECH.pdf)

As shown in the two charts linked above, Linear has achieved world class quality indices for electrical and visual/mechanical performance. However, in order to meet the stringent demands of automotive customers and to implement a continuous quality improvement program Linear has created special process flows to screen infant mortality failures.

These special flows subject products to additional tests and stresses that are not typically required by our standard test plan. Please contact Linear's sales department for additional information regarding these unique flows and the value that they add: <http://www.linear.com/contact/>.

## 5. Does Linear meet special requirements as dictated by customer specifications?

Although Linear thoroughly qualifies all new products, materials, and processes, we are receptive to additional qualification tests required by the customer that may further affirm a product's quality and reliability. Linear products meet or exceed the most stringent qualification requirements for plastic packages currently practiced in the semiconductor industry.

## 6. What is Linear's failure analysis turnaround time?

We understand that the timely resolution of customer requests is of utmost importance and is beneficial to both parties. In light of this philosophy, Linear has established a comprehensive failure analysis laboratory that is equipped with state of the art failure analysis tools. The location of the lab has been maintained at Linear's headquarters in Milpitas, California, even while many of our competitors relocated their failure analysis functions offshore to cut costs.

We are capable of providing a complete failure analysis report to automotive customers within 2 weeks. Our automotive 8D reports contain complete root cause analysis and corrective/preventive actions against recurrence. With regards to highly critical issues, we can provide initial test results within 24 hours and daily updates on failure analysis progress.

7. How will Linear concentrate future quality and reliability improvement efforts?

Continuous improvement is a key focus at Linear. Between 2007 and 2008 we spent over \$7,000,000 to automate many of our previously manual processes in wafer fabrication and assembly. Investment in these automation tools has resulted in less operator handling of wafers and thus reduces the probability of scratches and other damage on the assembled dice before encapsulation. This automation effort has successfully reduced the infant mortality failure rate at customer board level testing.

Linear has also adopted the work place organizational philosophy known as 5S. We are in the process of implementing 5S methodology throughout our factories to improve housekeeping at work stations which in turn will lead to improved quality and throughput.

8. What awards has Linear received from automotive customers?

[http://www.linear.com/designtools/quality/Quality\\_Awards.pdf](http://www.linear.com/designtools/quality/Quality_Awards.pdf)

The URL above links to an extensive list of quality awards recently earned by Linear as a result of achieving superior quality performance. Linear has been the recipient of awards from automotive customers such as Ford, Harman Becker, Siemens VDO, and Delphi. Additionally, Linear is the highest ranked North American analog IC supplier among major Japanese automotive OEMs.

9. Which Linear products are qualified for automotive applications?

All products available at [www.linear.com](http://www.linear.com) are potential candidates for automotive applications. Please contact the sales office in your area to obtain reliability data relevant to the product of interest: <http://www.linear.com/contact/>.