



HANDLING GUIDELINES FOR ESD PROTECTION OF GaAs MMICs

Electro Static Discharge (ESD) is the leading cause of electronic component failure during and after the manufacturing process. High frequency and highly miniaturized active components are especially prone to damage by ESD. GaAs MMICs are not immune and deserve every possible ESD precaution.

GaAs MMIC designs rarely include built-in protection circuitry due to reactive parasitics that negatively effect RF performance. Circuitry on GaAs MMICs can be damaged by electrostatic discharge levels at or above 250 volts. Levels between 250 volts and < 500 volts rank these devices as Class 1A (Human Body Model Per ESD STM5.1-1998) meaning stringent levels of ESD protection must be observed.

Electrostatic charges are created by contact and separation of two objects. The magnitude of this charge buildup may vary within different materials. Conductive and static dissipative materials release this charge quite easily to a grounded surface. Insulators, however, retain the charge for a longer period of time.

To protect static sensitive devices from an ESD event, the part(s) must be completely enclosed within protective conductive packaging. This shielding protects the part(s) inside while allowing built up static charges to follow the shortest conductive path to ground. Prior to opening the protective packaging, the packaging must be placed on a conductive workbench to dissipate any built up charges. Once the part(s) is removed from its protective package, it must be handled only at a grounded workstation by an operator grounded through a conductive wrist strap.

Equipment used in the manufacture, assembly and test of GaAs MMIC devices must also be properly grounded. Antistatic or dissipative tubes and pink poly bags provide No ESD Protection to the device. The antistatic or dissipative name only implies that it will not create an ESD hazard. The only proper protection is to completely enclose the device in a conductive "Static Shield". This is typically a silver colored bag, black conductive tote box and/or conductive carrier tape.

Endwave maintains proper ESD handling and packaging throughout our facilities, as well as with our subcontractors. We are in full compliance to the ESD/EOS Association guidelines and specifications. We maintain documented procedures, a comprehensive ESD training program and frequent internal audits in compliance with our AS9100 / ISO9001 Quality Management System. For additional information on proper ESD handling, please consult the ESD Association advisory ESD-ADV-2.0-1994 or MIL-STD-1686.

Please visit www.endwave.com for application notes and data sheets.
For price, delivery and to place orders, please call 877-Endwave.