micross
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Test & Lab Services

Fine & Gross Leak Testing

Service Overview

Also referred to as Seal or Hermeticity Test, this test verifies that the hermetic seal of a component is intact and typically follows trim and form and/or Robotic Hot Solder Dip of a glass seal device.

KRYPTON-85
Equation is Defined as:

Q_s = Leak Reject Rate (atm cc/sec Kr)

R = Detector Reject Level (cpm)

S = Specific Activity (uCi/atm cc)

K = Counting Efficiency (cpm/uCi)

P = (P_e2 - P_i2)

P_e2 = External Bomb Pressure (atm)

P_i2 = Internal Pressure of Device (atm)

T = Bomb Time (Hours)

t = 3600 (sec/hr.)

HERMETICITY LAB SERVICES

Micross' Fine & Gross leak testing service for hermetically packaged semiconductor devices relies on the use of Krypton–85 Radioisotope, a tracer gas and the Radiflo® process. This highly sensitive method, initially developed in 1955 and benefiting from continuous enhancements and simplification of isotope handling has delivered to the industry a highly accurate, sophisticated method for performing hermeticity validation testing. This method provides the benefit of being extremely fast while providing improved leak rate detection to <10-12 atm cc/sec. Additionally, the Radiflo® process is currently one of very few methods which will perform both Fine & Gross leak while mitigating risk for test escapees associated with Fluorocarbon masking. It therefore is considered a preferred method for components being sourced to critical Aerospace, Military and Medical platforms.

TEST PROCEDURE

Devices to be tested for hermeticity are placed into a specialized test chamber, pressurized with purified dry air and small amounts of the Radioisotope, Kr85 gas. This pressurized, radioisotope tracer condition is specified by the Krypton–85 equation which determines the pressure limit and length of bomb time based on the device's cavity size and desired reject leak rate.

After completion of the pressurization cycle, the devices are removed from the Radiflo® pressurization tank, taken to a counting station which utilizes a scintillation crystal to detect extremely small quantities of Kr85. If detected, the count will be registered and based on the customer desired reject leak rate, a pass/fail criteria registered.

SUPPORTED TEST STANDARDS

	Test Method	Test Conditions
MIL-STD-883	1014	B_1, B_2, & B_2 / B_1 Combination

Testing via Radioflo®
Radioisotope: Krypton-85 (Kr85)

TECHNOLOGY

Krypton–85 is a radioactive inert gas that emits weak gamma rays and beta particles. The detectability of the gas is millions of times greater than the detection of helium in a mass spectrometer leak test, thus much shorter bomb times, greater accuracy with no negative impact issues due to use of fluorocarbon liquids as part of a Gross leak test. Additionally, test accuracies of extremely small cavities is improved for fine leak detection due to the properties of the tracer gas therefore reducing risk that a fine leak device has escaped due to loss of helium contained within the ultra-small cavity prior to detection.

MICROSS SERVICES

We are currently providing our Radiflo® process on many of the standard hermetic semiconductor packaging footprints. Current available lead times are for either a standard one-week turn, or for our customer's convenience, three-day expedited services. We also offers our Radiflo® process on many additional standard package footprints; please contact your sales professional for a lead time quotation. For other packaging footprints including high I/O leaded devices and non-standard footprints please consult the factory.

Hermetic Packages	3	4	6	8	10	12	14	16	18	20	22	24	28	32	36	40	44	48	52	56	64	68	84	100+
Ceramic DIP (300 MIL)				●			●	●	●	●		●												
Ceramic DIP (400 MIL)										●	●	●												
Ceramic DIP (600 MIL)												●	●	●		●								
Ceramic Flat Pack (FP)					●		●	●	●	●		●	●	●										
Ceramic LCC (CLCC)	●	●	●				●	●	●	●	●	●	●	●			●	●	●					
Ceramic PGA (Pin Grid Array)														●	●									
Ceramic Quad Flat Pack (CQFP)												●	●	●										
Ceramic J Quad Flat Pack (CJQFP)													●	●										
Hybrid Packages																								

T0 Metal Packaging	T03	T05	T018	T039	T072	T099	T0100	T0257	T0258	T0259
Metal Can	●	●	●	●	●	●	●			
Metal Tab								●	●	●
Metal Z Tab								●		

- Standard One-Week Turn-Around as well as Expedite Service Available

Consult Factory for Current Lead Times on All Other Packaging Options

About Micross

Micross is the most complete provider of advanced microelectronic services and component, die and wafer solutions. With the broadest authorized access to die & wafer suppliers, an extensive portfolio of hi-rel power, RF, optoelectronics, memory, data bus, logic, and SMD/5962 qualified products, and the most comprehensive advanced packaging, assembly, modification, upscreening, and test capabilities, Micross is uniquely positioned to provide unparalleled high-reliability solutions, from bare die, to fully packaged devices including hermetic ICs/MCMs, PEMs, ASICs, FPGAs, and PCBs, to complete program life-cycle sustainment. For more than 45 years, Micross has been a trusted source for the aerospace, defense, space, medical, energy, communications, and industrial markets.

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