

Passive Power Device

Power Device SMD

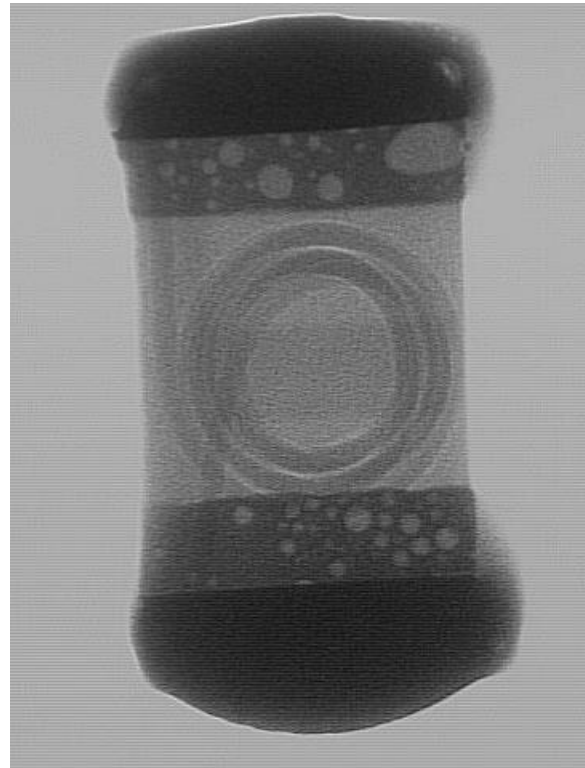
Vacuum Parameters

- Pump Rate: 200torr/sec
- Dwell: 10 sec @ 10 torr

Void Rate

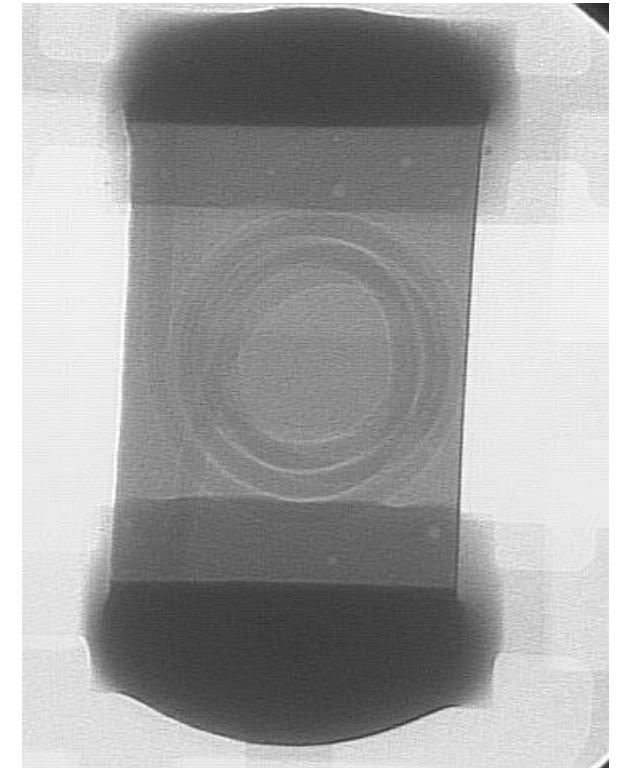
- No Vacuum: 33.1%
- With Vacuum: **1%**

Normal Reflow



33% Voids

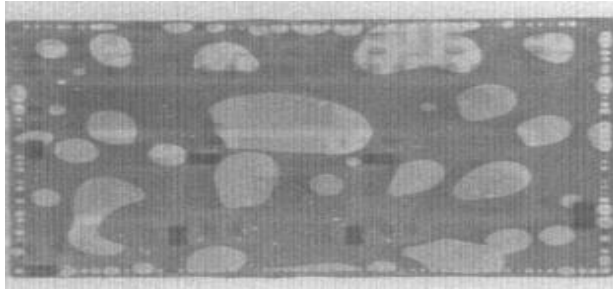
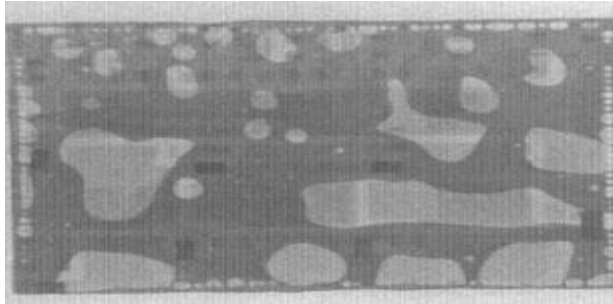
Vacuum Reflow



Low Void (1%)

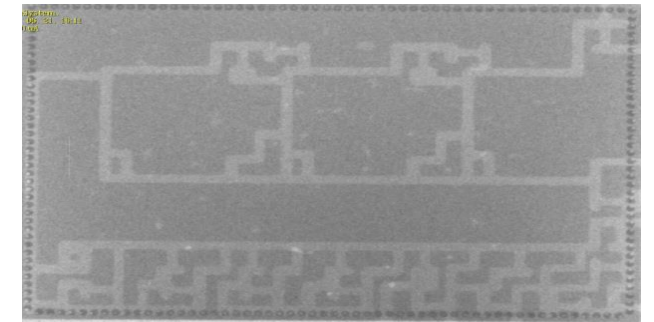
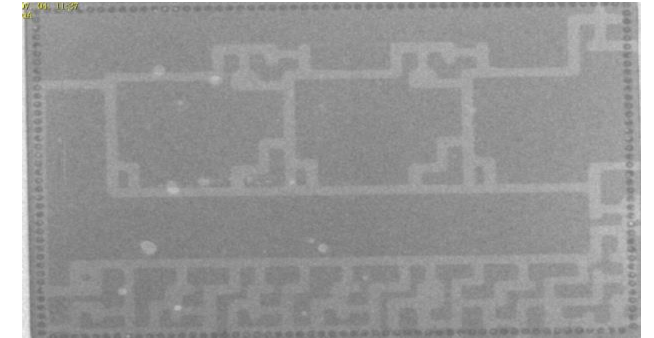
Heller Vacuum Data - DBC on Power Device

Normal Reflow



40% Voids

Vacuum Reflow



Low Void (<1%)

DBC at Heat Sink

Vacuum Parameters

- Pump Rate: 250 torr/sec and 250 torr/sec (double vacuum cycle)
- Dwell: 5 sec and 15 sec @ 10 torr (double vacuum cycle)

Void Rate

- No Vacuum: 30-40%
- With Vacuum: <1%



Heller Vacuum Data - Automotive QFN

Automotive SMT – QFN

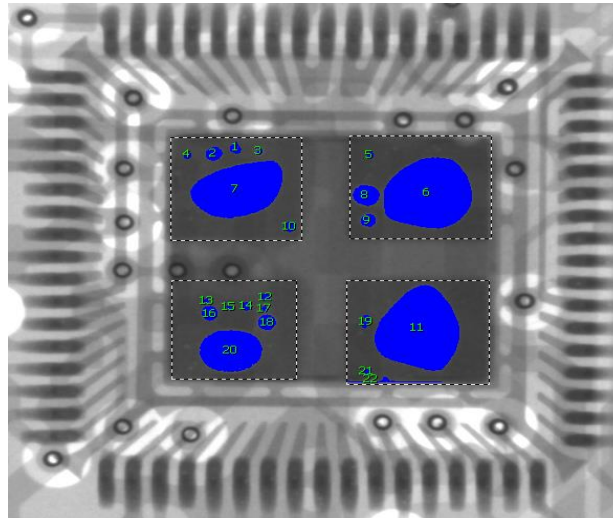
Vacuum Parameters

- Pump Rate: 300torr/sec
- Dwell: 15 sec @ 10 torr

Void Rate

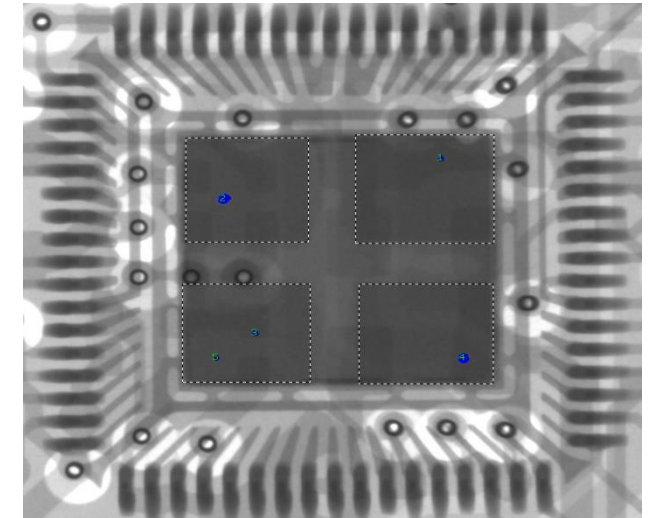
- No Vacuum: 20-40%
- With Vacuum: **<1%**

Normal Reflow



40% Voids

Vacuum Reflow



Low Void (<1%)



Heller Vacuum Data - Semiconductor Die Attach

Die Attach with Clip at Lead Frame

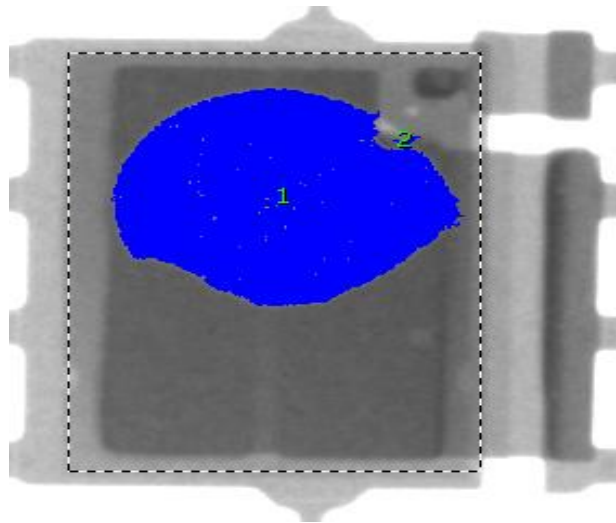
Vacuum Parameters

- Pump Rate: 20torr/sec
- Dwell: 20 sec @ 10 torr

Void Rate

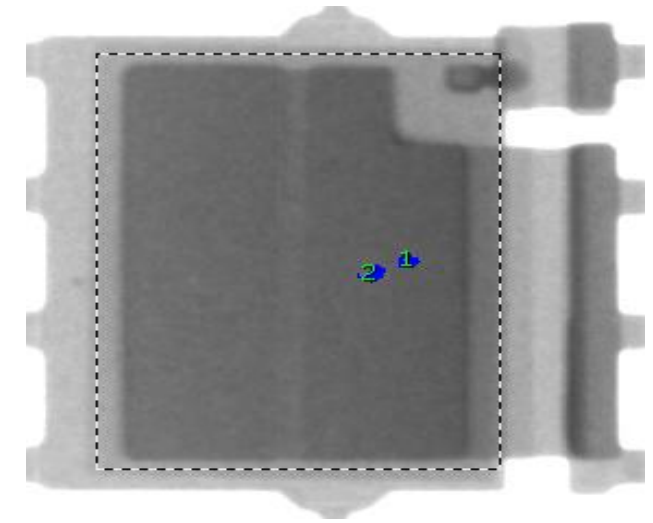
- No Vacuum: 30.65%
- With Vacuum: **0.34%**

Normal Reflow



30% Voids

Vacuum Reflow



Low Void (<1%)

Heller Vacuum Data - Semiconductor Bumping

Semiconductor Bumping

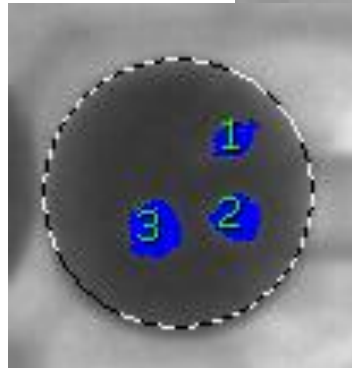
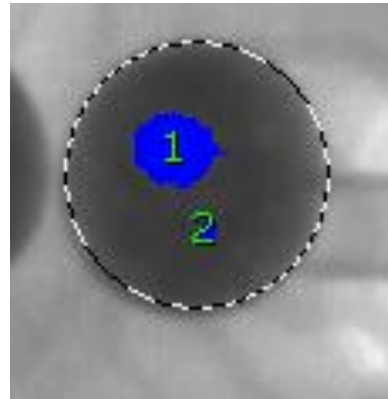
Vacuum Parameters

- Pump Rate: 200torr/sec
- Dwell: 20 sec @ 10 torr

Void Rate

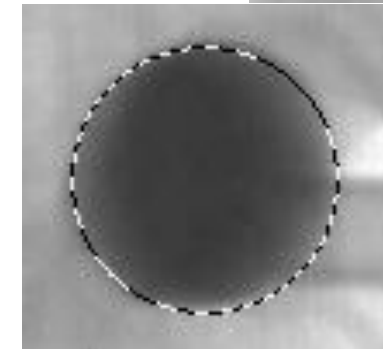
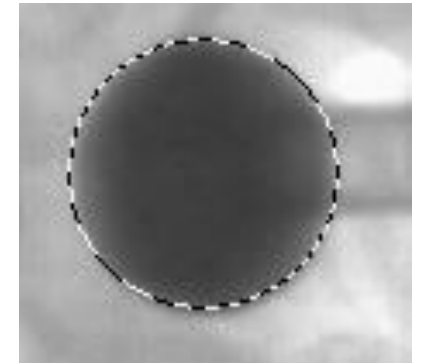
- No Vacuum: 9-10%
- With Vacuum: **<1%**

Normal Reflow



10% Voids

Vacuum Reflow



Low Void (<1%)