Part Qualification/Lot Screening:

As part of screening a large quantity of military-grade devices, x-ray inspection to MIL-STD-883 Method 2012 was required.

Package: 8-pin ceramic DIP

Solution:
Film x-ray was performed and the films were evaluated using a stereo microscope capable of up to 40X magnification. The following defects that do not meet the MIL-STD-883 Method 2012 criteria were identified: Die attach voiding that exceeds 50% of the intended attach area, extraneous material within the device cavity resulting from expulsion of the lid seal material, and foreign particles within the cavity sufficient to bridge nonconnected conducting elements of the semiconductor device.

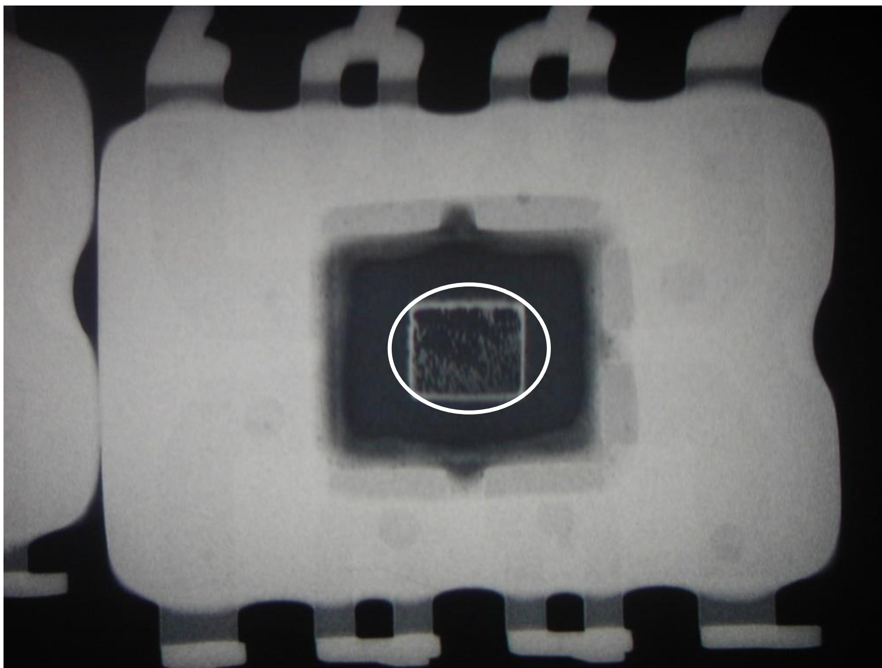

Figure 1

X-ray image showing die attach voiding that exceeds 50% of the intended attach region. Dark areas within the die attach region (circled in the image) represent voids. This condition does not meet MIL-STD-883 Method 2012.

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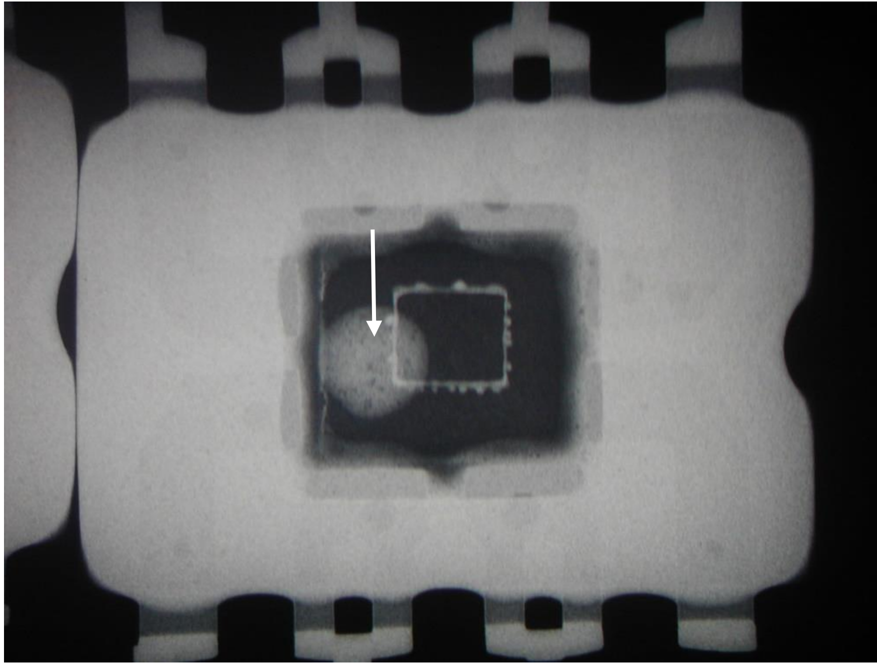

Figure 2

X-ray image showing excess lid seal material present within the cavity (see arrow). This condition does not meet MIL-STD-883 Method 2012 since the expelled material is not attached to the parent material.

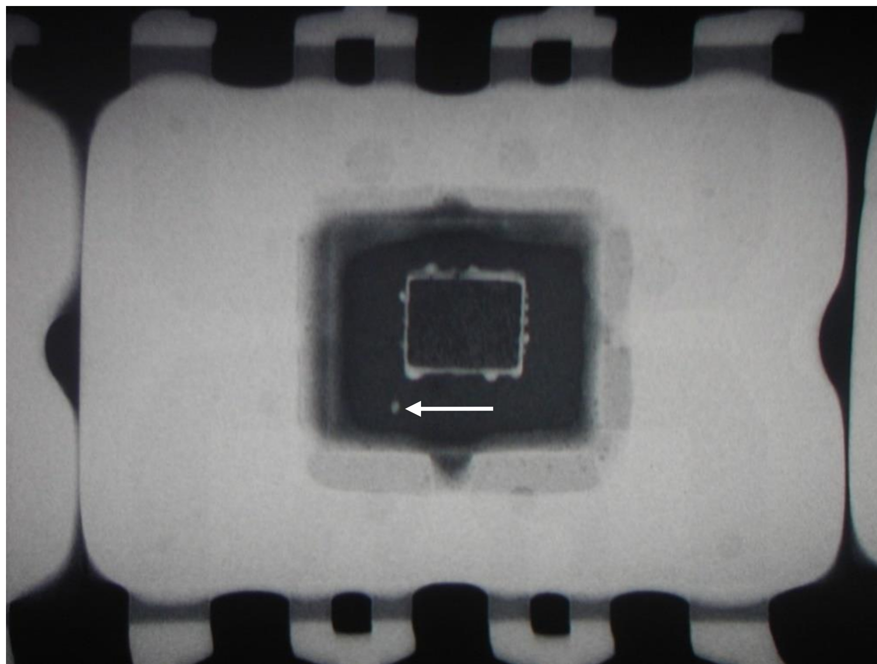

Figure 3

X-ray image showing evidence of a foreign particle within the cavity (see arrow). This condition does not meet MIL-STD-883 Method 2012.