COTS Trends in DPA Results from 2020

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Presented to: NEPP ETW
June 16
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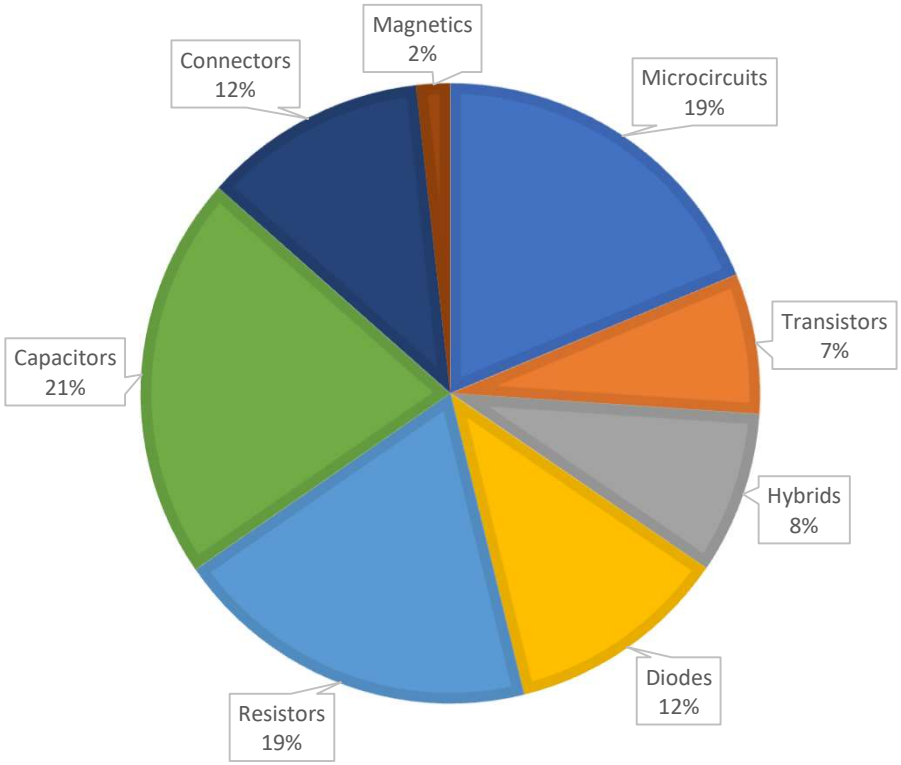
2020 DPA
PART TYPE DISTRIBUTION



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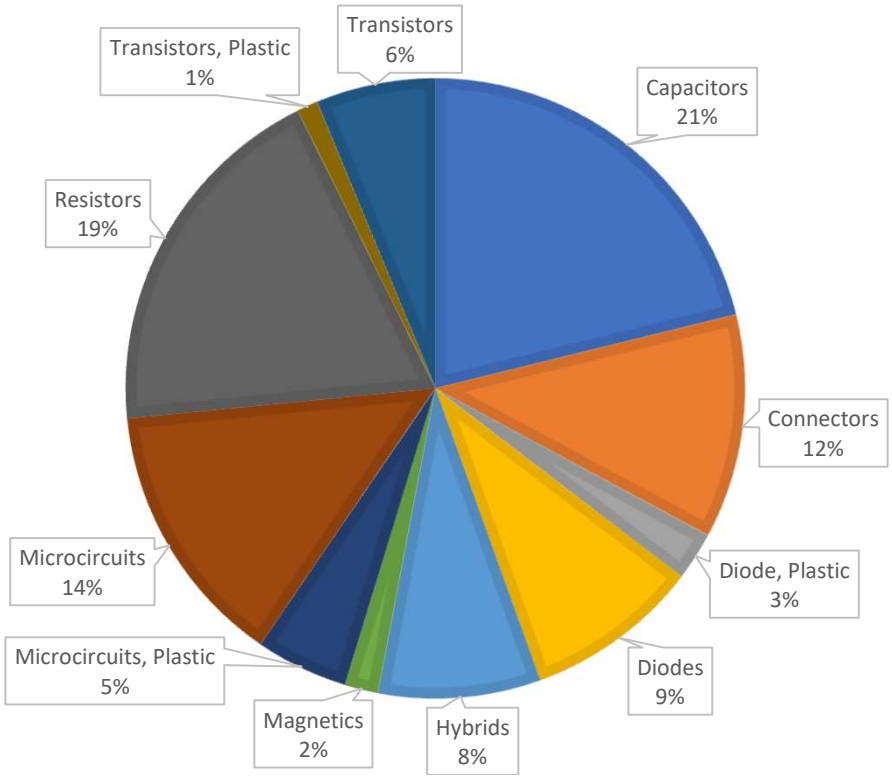
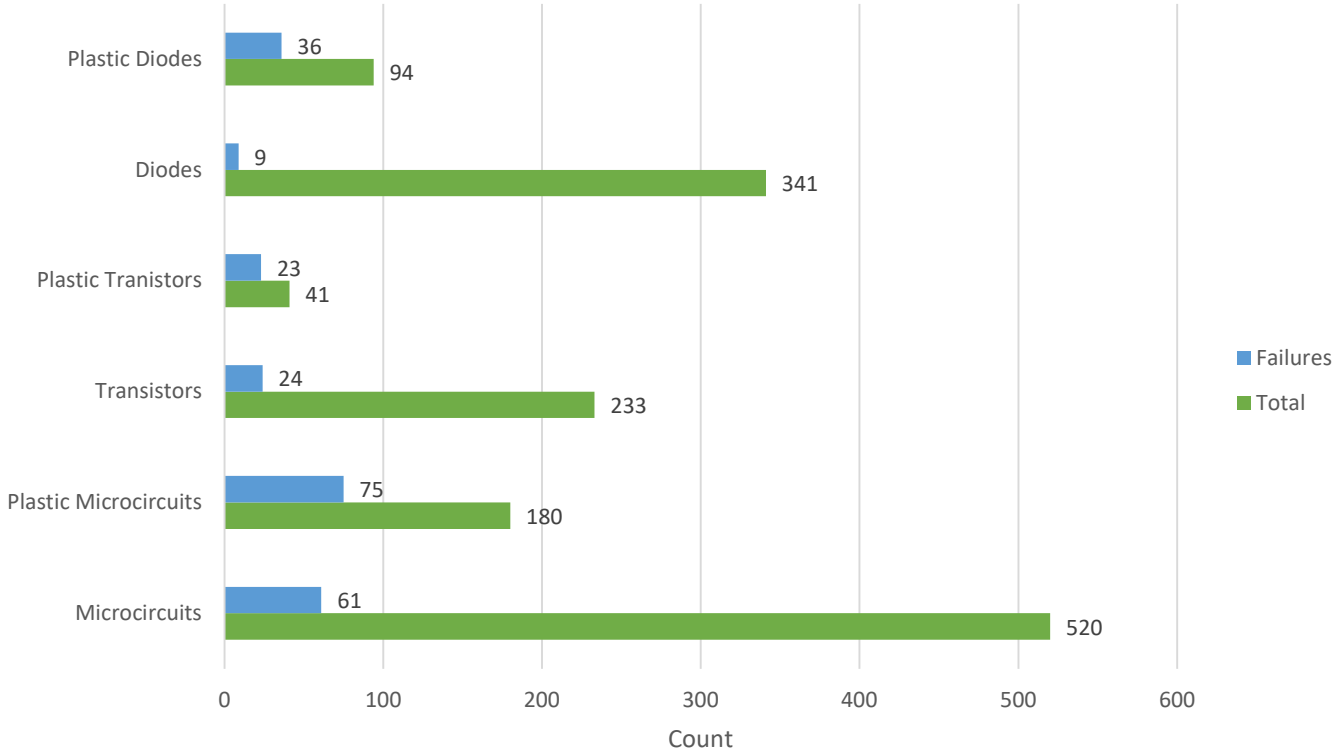
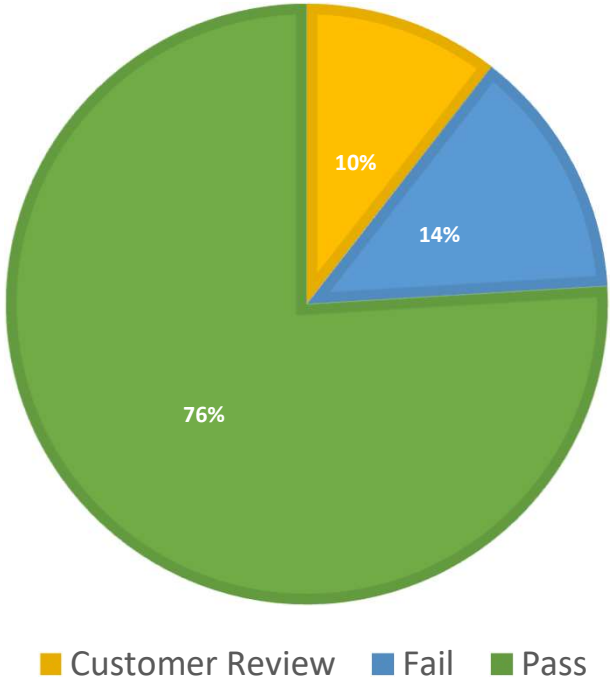


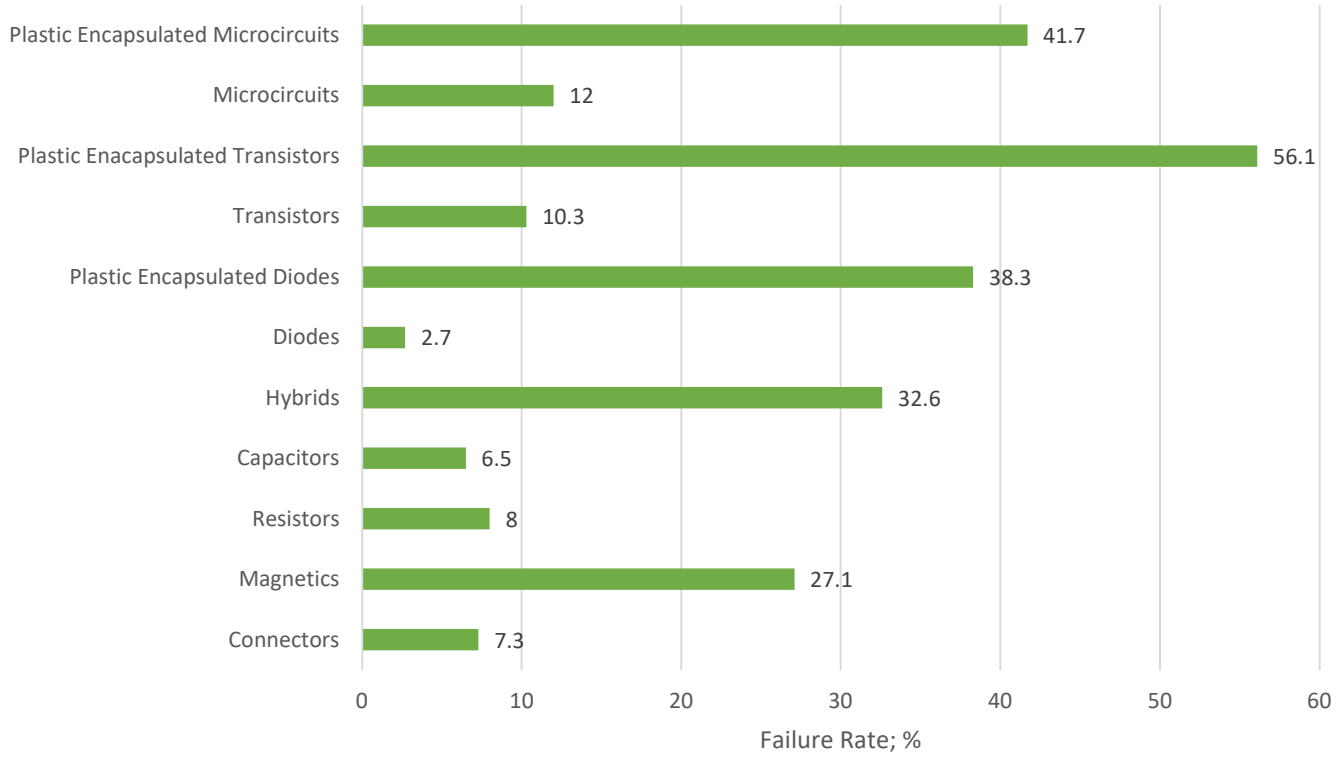
TRADITIONAL VS. PLASTIC COUNTERPARTS



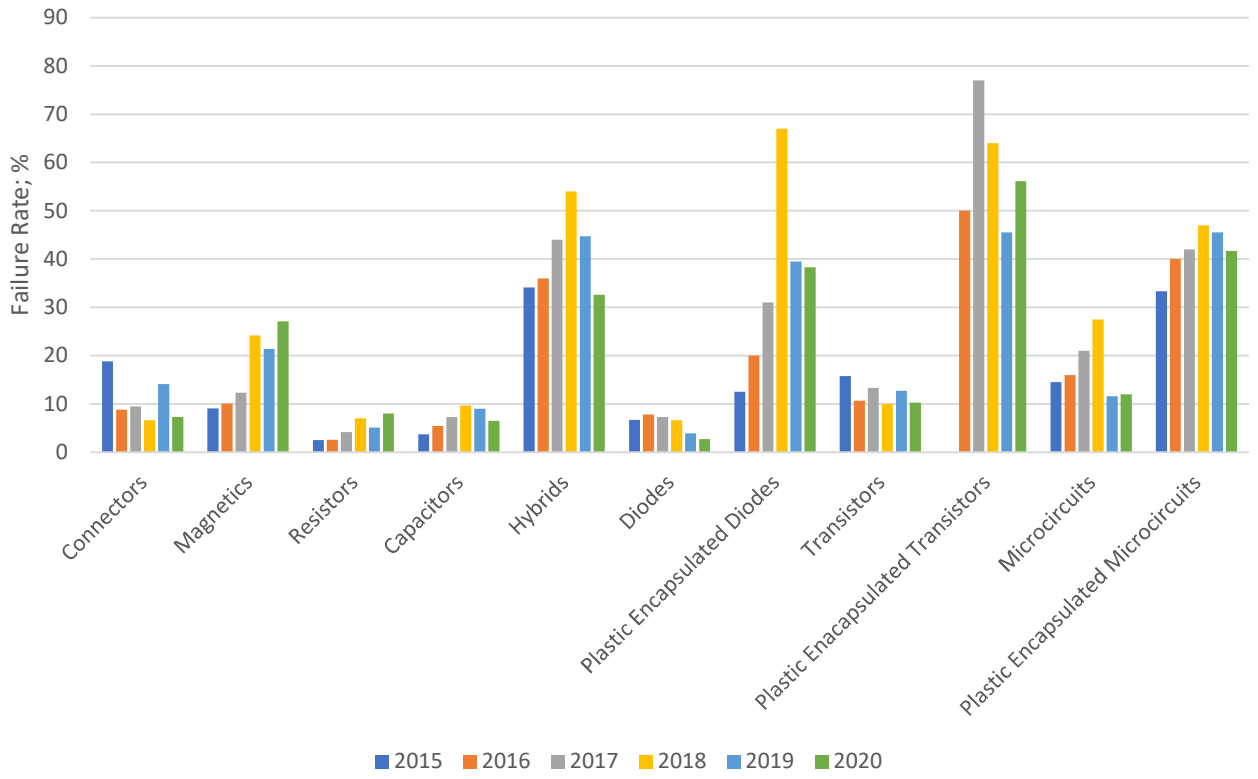
2020 DPA DISPOSITION BREAKOUT
4206 COMPLETED ANALYSES



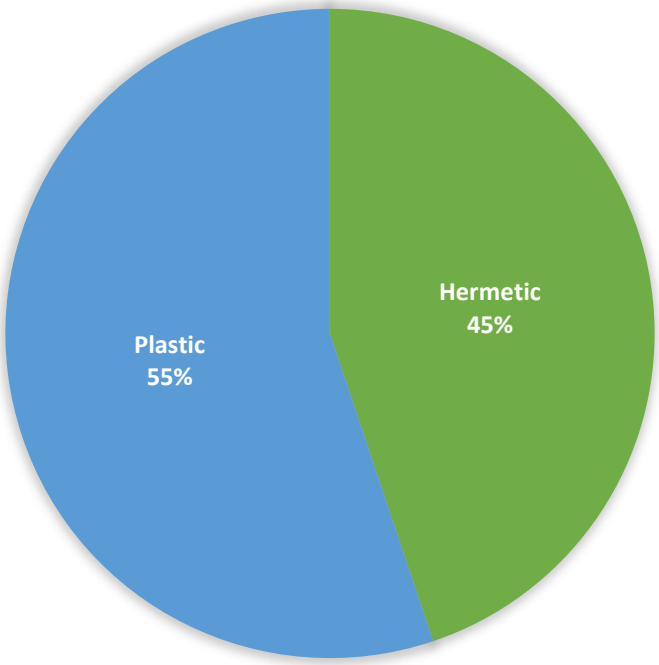
2020 DPA FAILURE RATES PER PART TYPE



HISTORICAL DPA FAILURE RATE COMPARISON



MICROCIRCUITS
FAILURE DISTRIBUTION (136 FAILURES OUT OF 700 DPAS)



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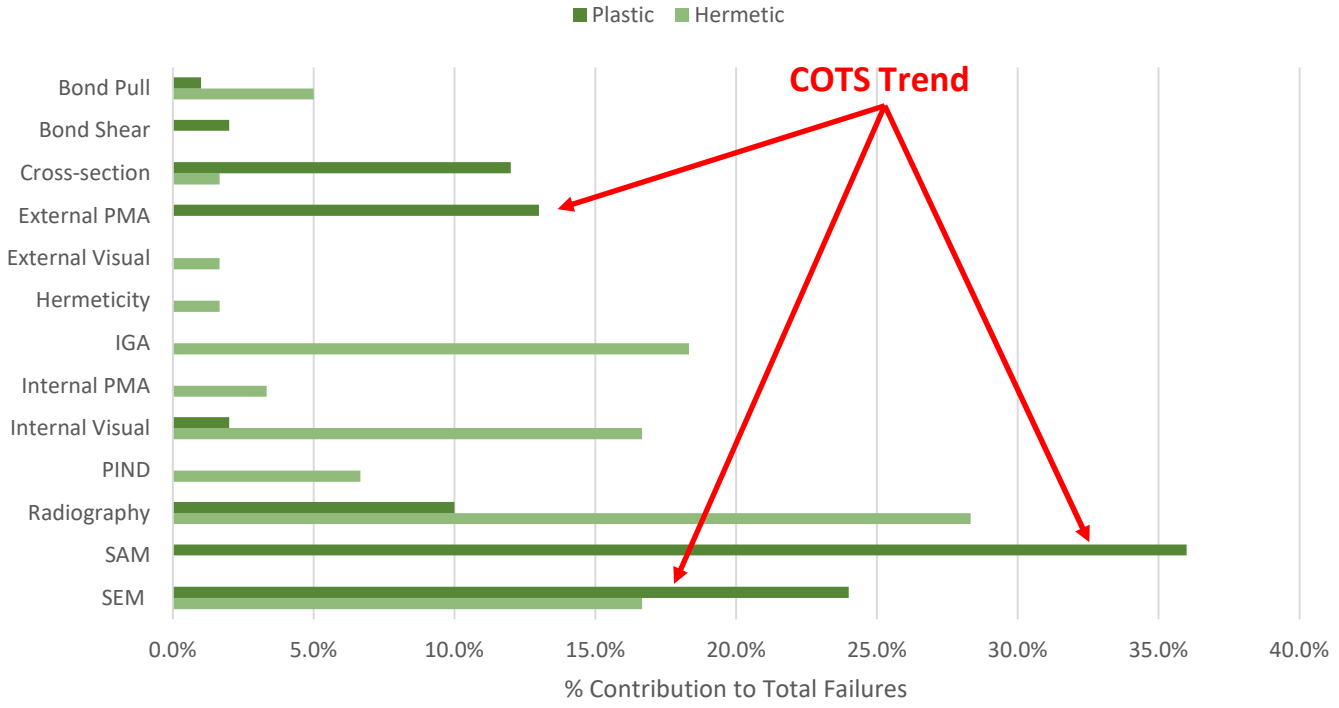
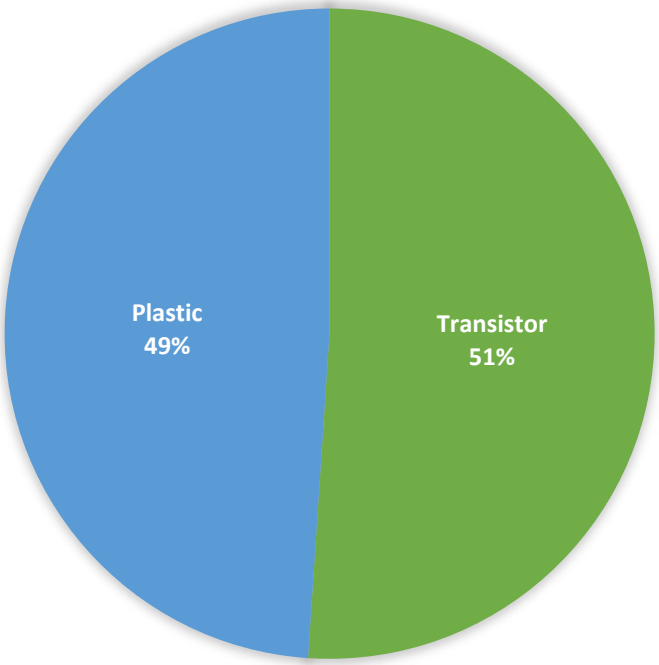
FAILURE TYPE COMPARISON



TRANSISTORS
FAILURE DISTRIBUTION (47 FAILURES OUT OF 274 DPAS)



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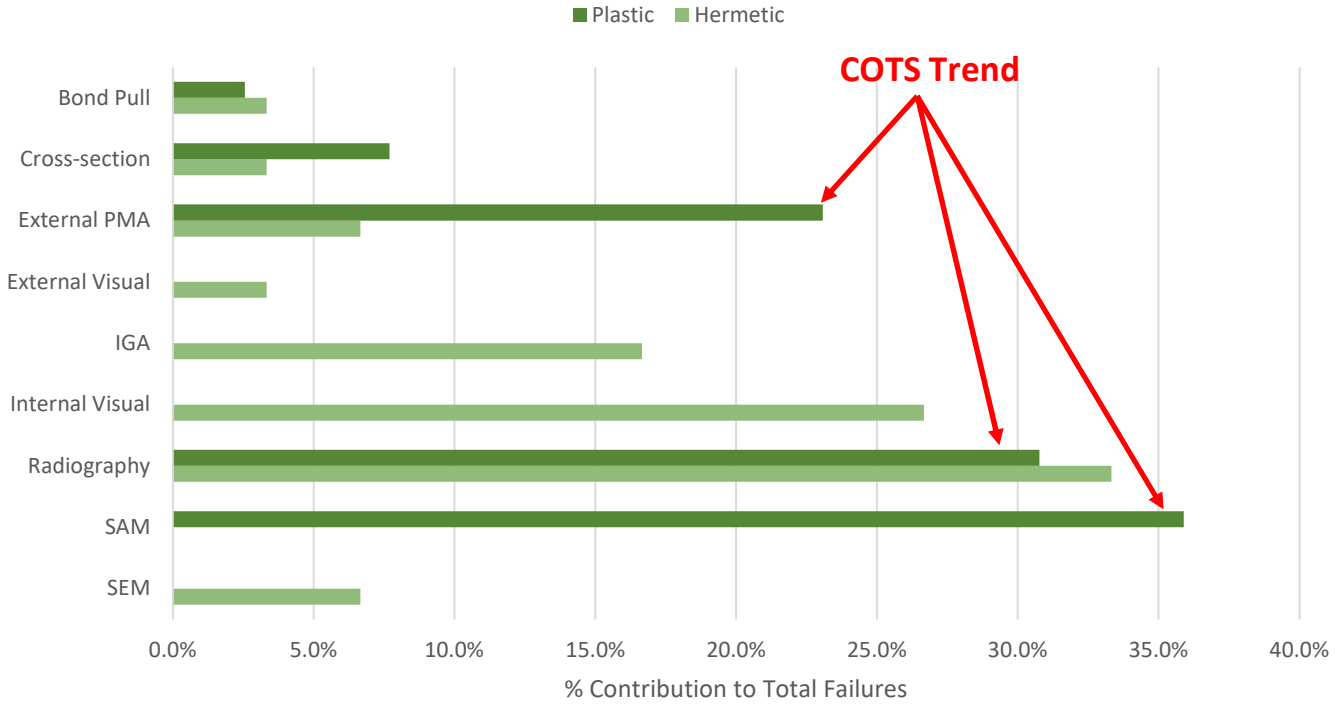
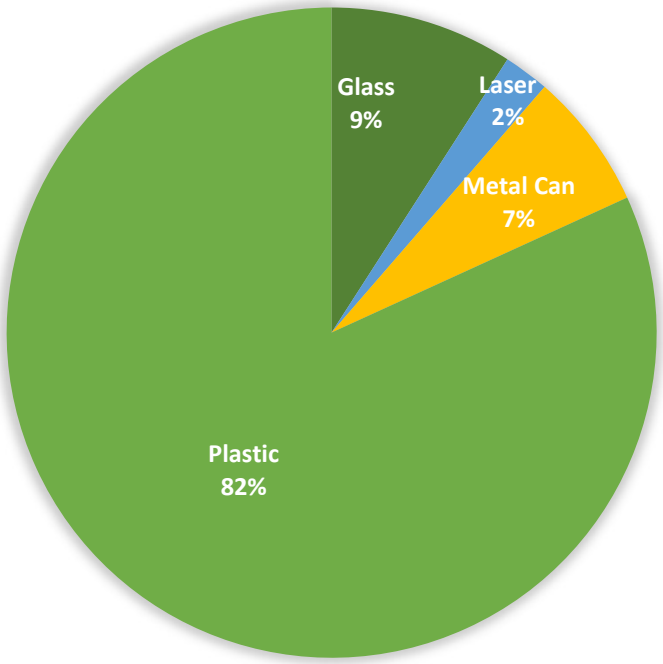


DIODES
FAILURE DISTRIBUTION (45 FAILURES OUT OF 435 DPAS)



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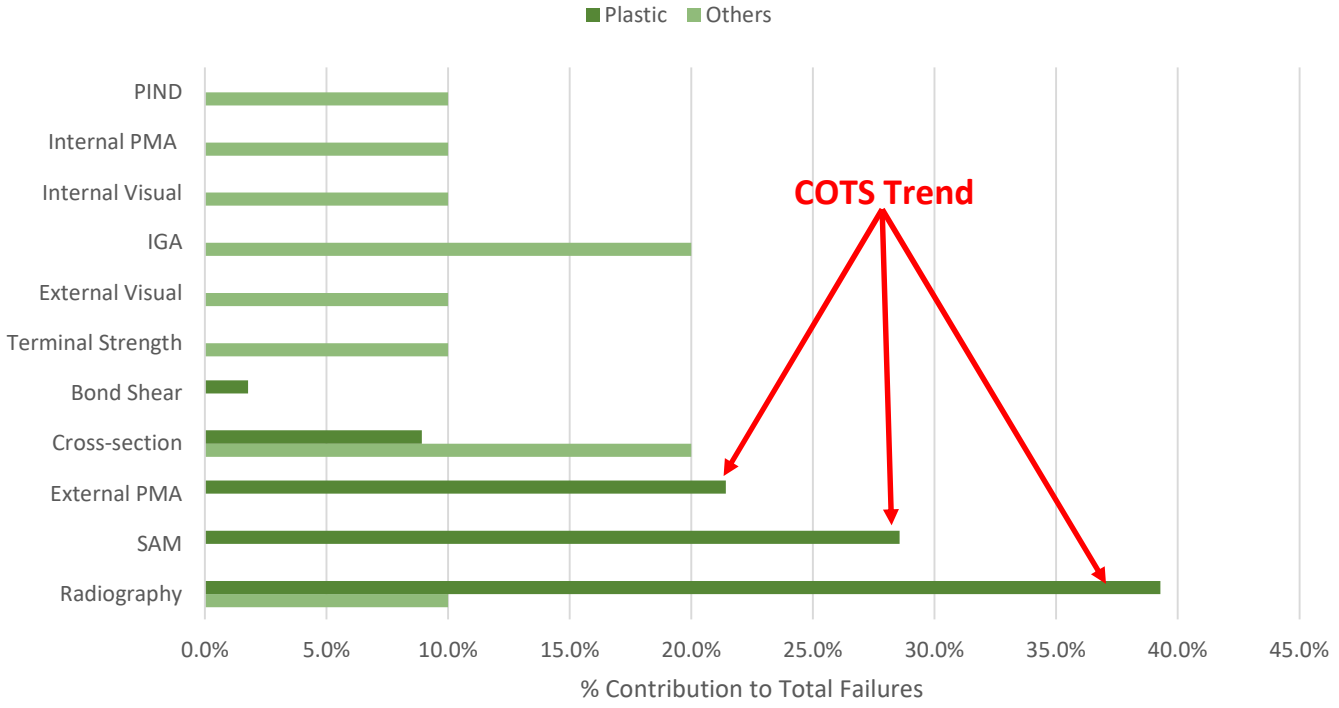
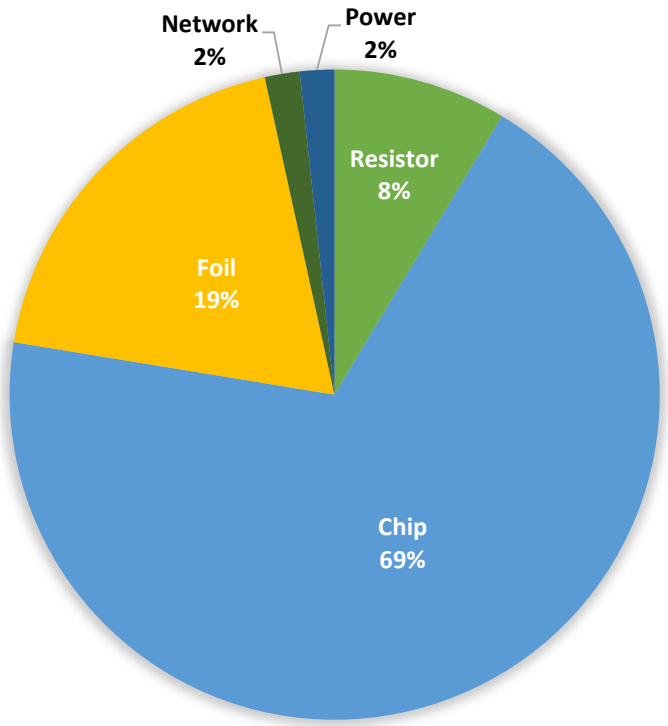
FAILURE TYPE COMPARISON



RESISTORS
FAILURE DISTRIBUTION (58 FAILURES OUT OF 718 DPAS)



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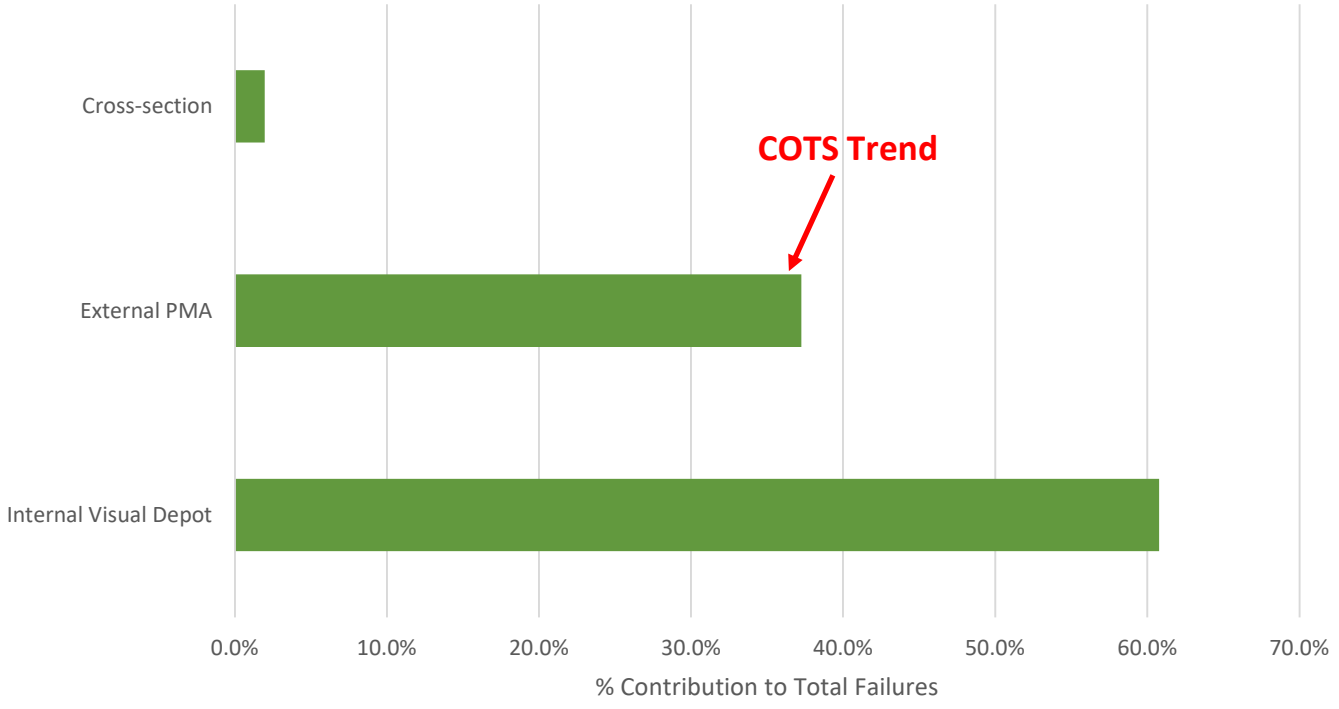
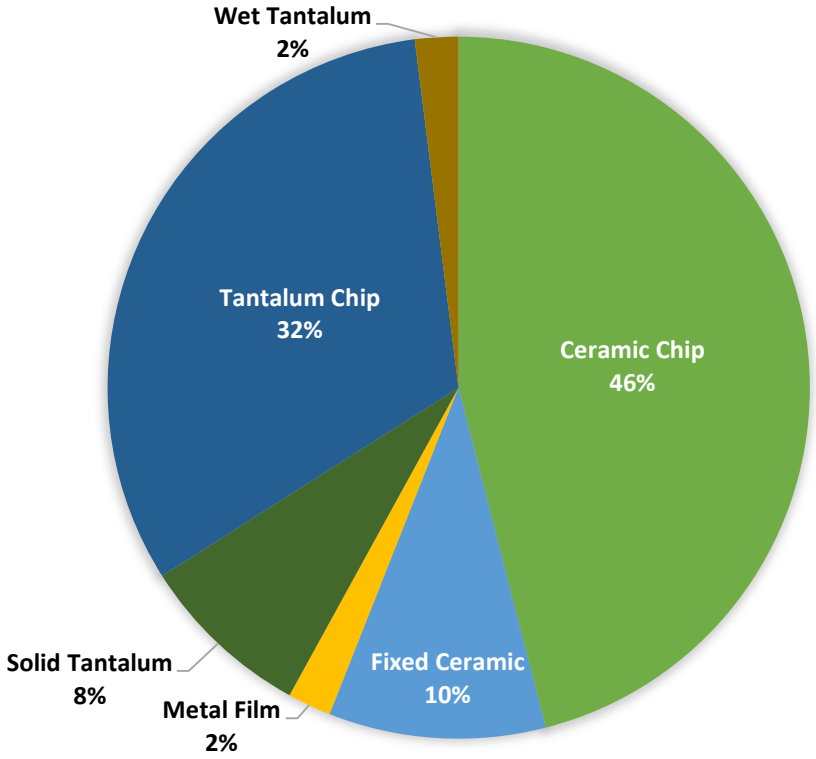


CAPACITORS
FAILURE DISTRIBUTION (52 FAILURES OUT OF 791 DPAS)



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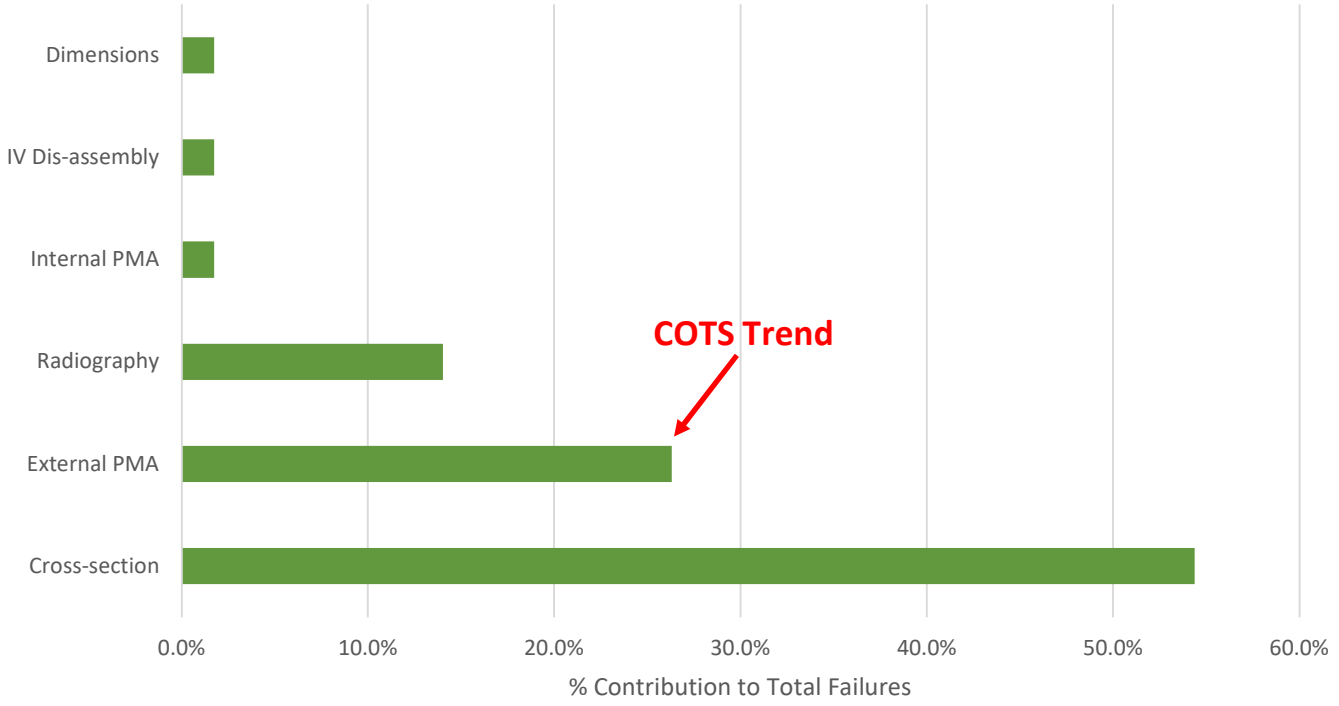
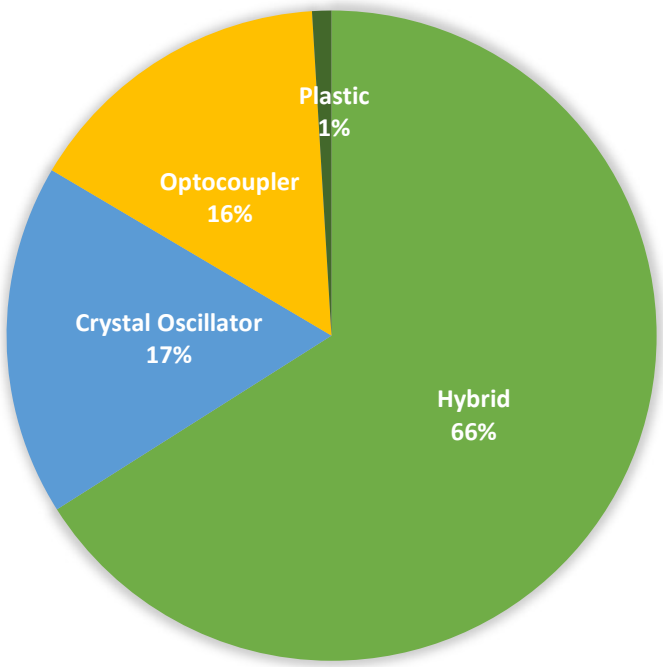


HYBRIDS
FAILURE DISTRIBUTION (103 FAILURES OUT OF 316 DPAS)



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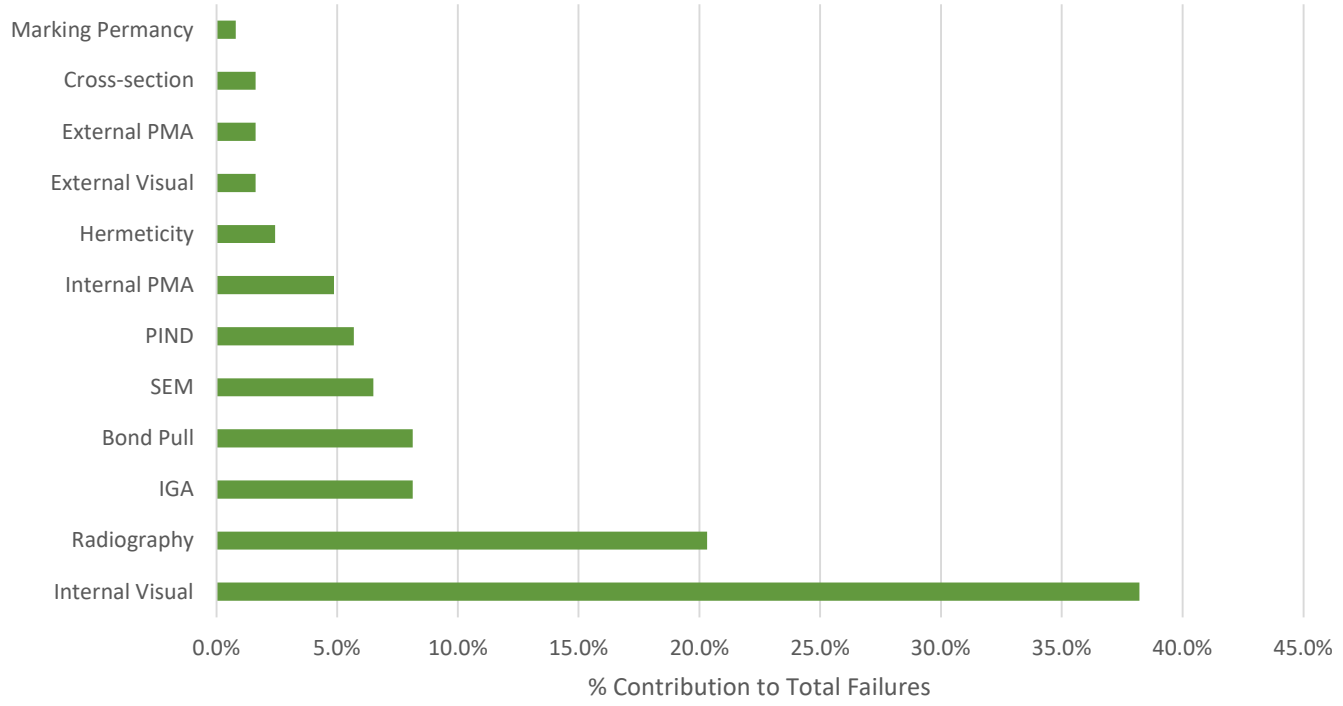
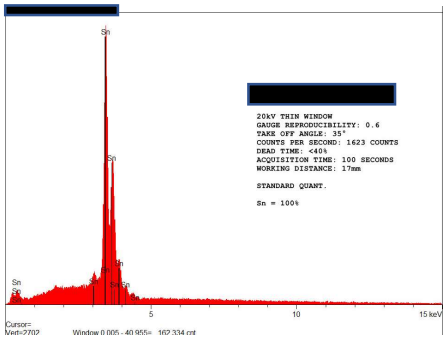
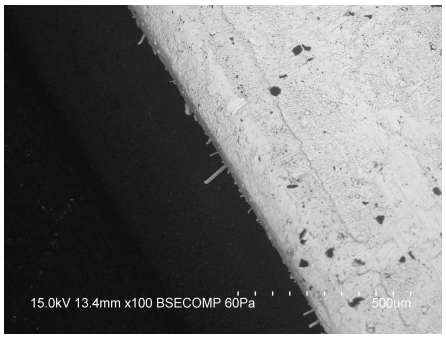
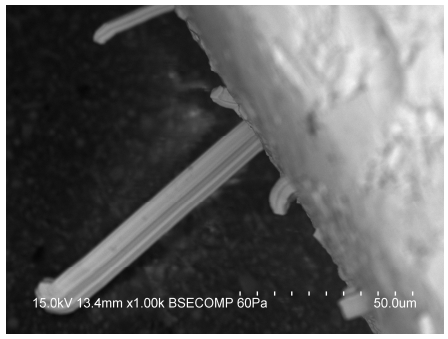
FAILURE TYPE DISTRIBUTION



COTS – External PMA Failures

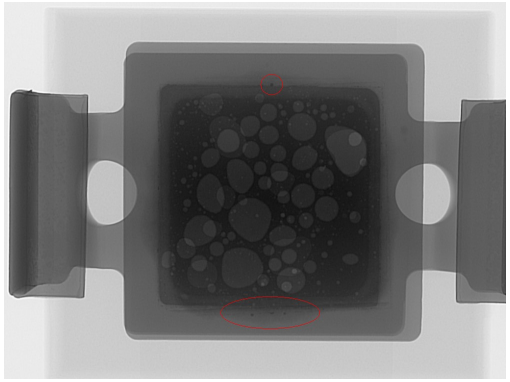


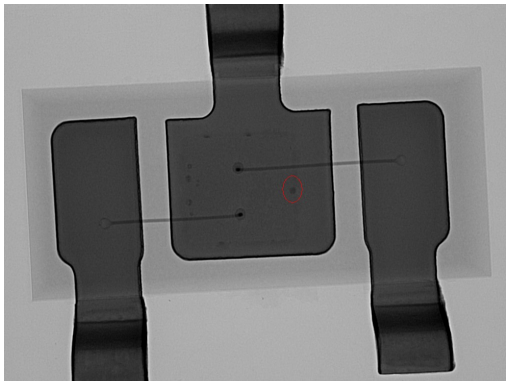


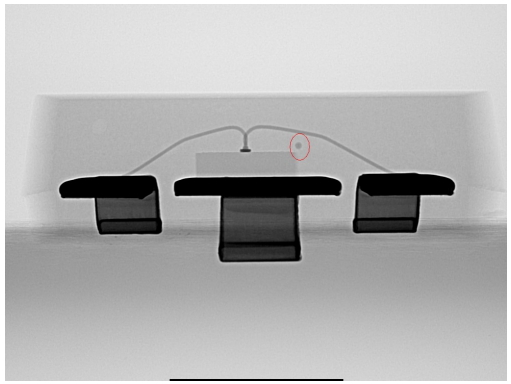


A high tin content surface finish (≥ 97 wt%)was the primary cause of external PMA failures. This surface finish is suspectable to whisker growth.

COTS – Radiography Failures

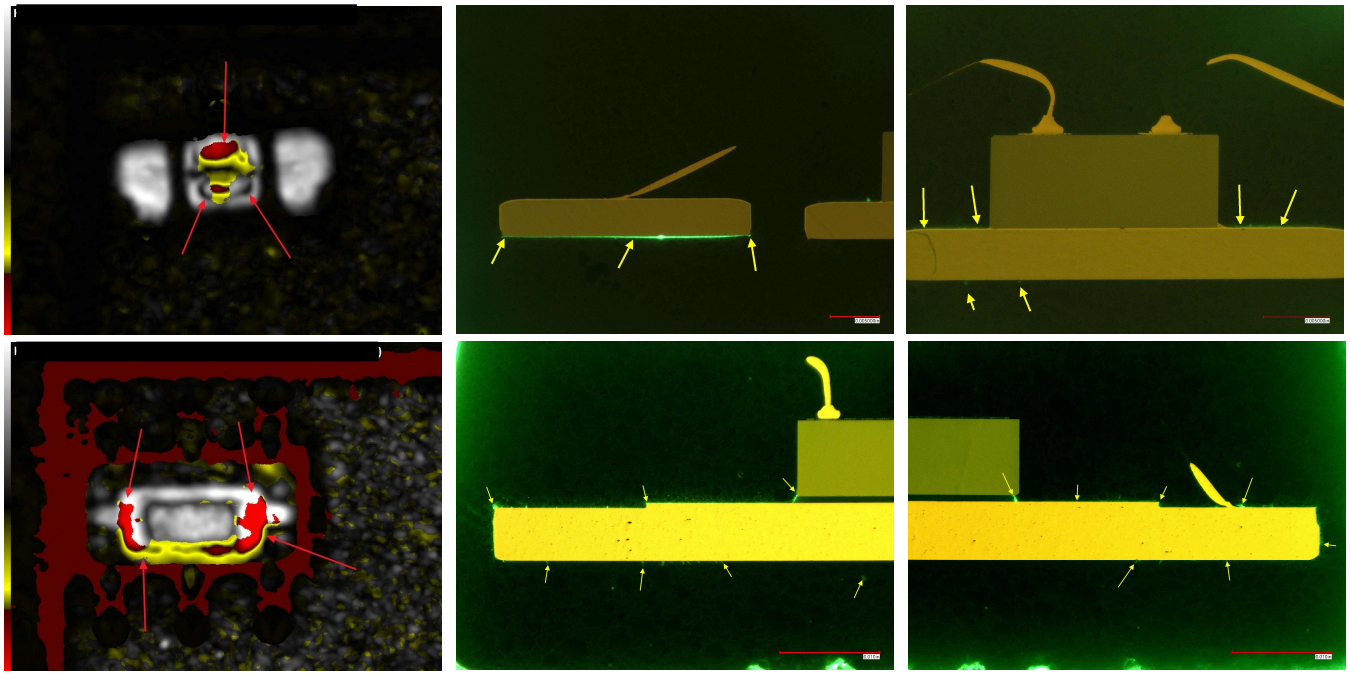






Majority of radiography failures are a result of embedded foreign/extraneous material within the encapsulant. The risk associated with this condition is likely minimal.

COTS – SAM Failures



Majority of SAM failures have an ingress path from the outside world to the internal construction features. These pathways can potentially allow for manufacturing or end-use environmental elements to contact sensitive features within the device resulting in leakage, corrosion, etc. This is a particular concern with copper wire bonded devices.