

Decapsulation of Ceramic DIP Package



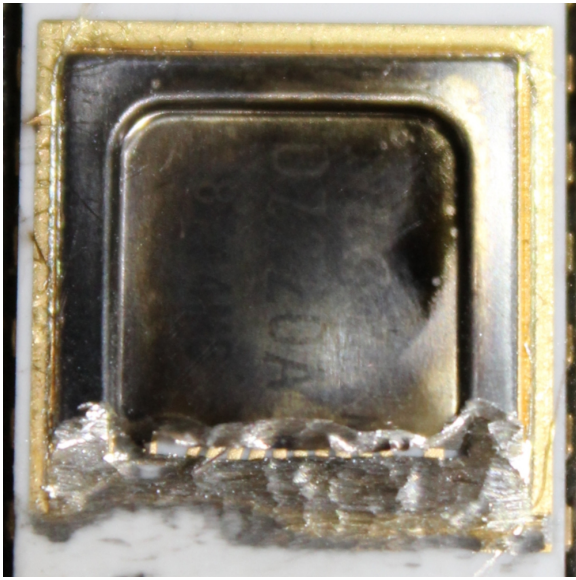
μ PD7220A (manufactured in 1987 44th week) Encapsulated in Ceramic DIP Package before Decapsulation (μ PD7220A was still under mass production even after I designed and resigned from NEC in August, 1987)



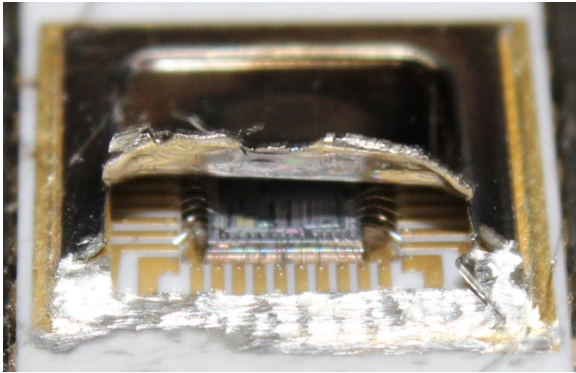
Decapsulation Trial by Torch Failed



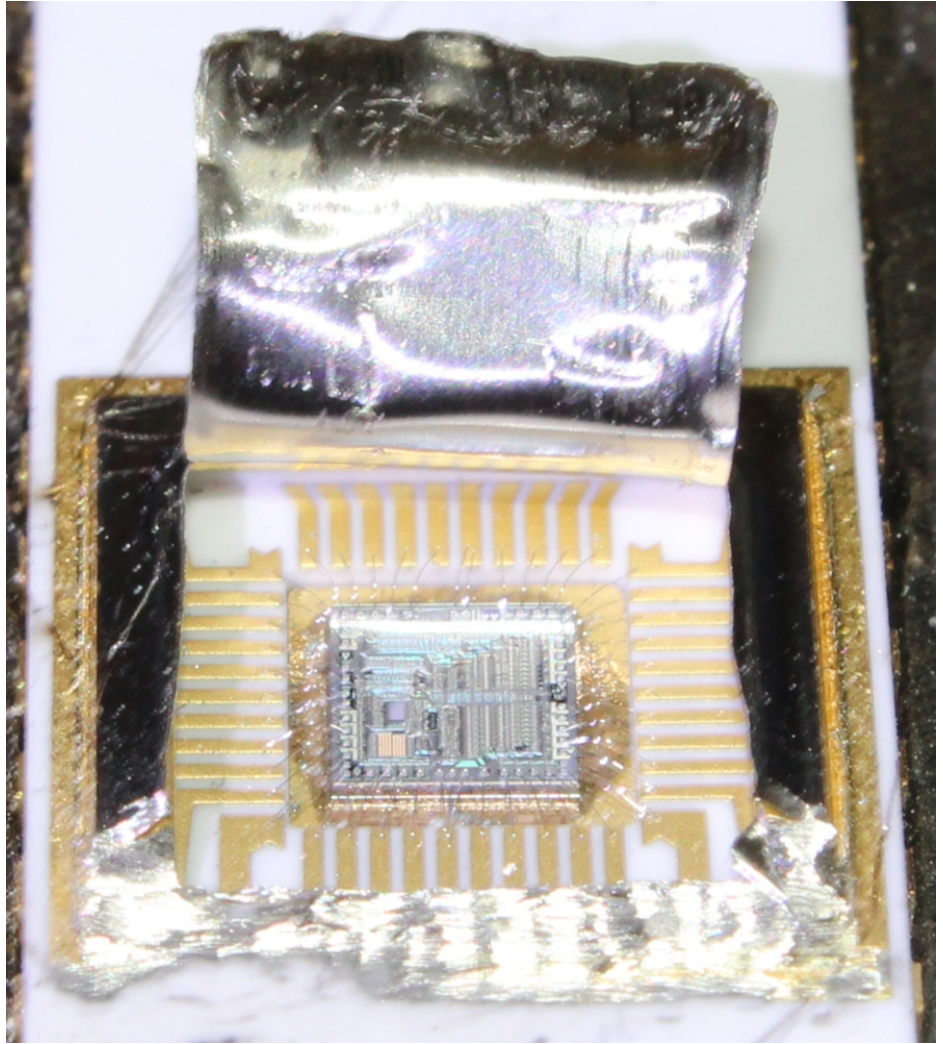
Decapsulation by Rotary Tool & Flat Head Precision Screw Driver Succeeded



Slit Made by Rotary Tool
(Scorched Cap Due to Torch Trial Failed)



Broaden Slit by Flat Head Screw Driver



Succeeded (Die & Bonding Wires are all Intact)

Die Photo

Magnification	Images	Resolution (Pixels)	File Size	Resolution* (Pixels)	File Size
20x	60 (6 x 10)	22888 x 23312 (534 MP)	109.7 MB	15709 x 16000 (251 MP)	60.4 MB

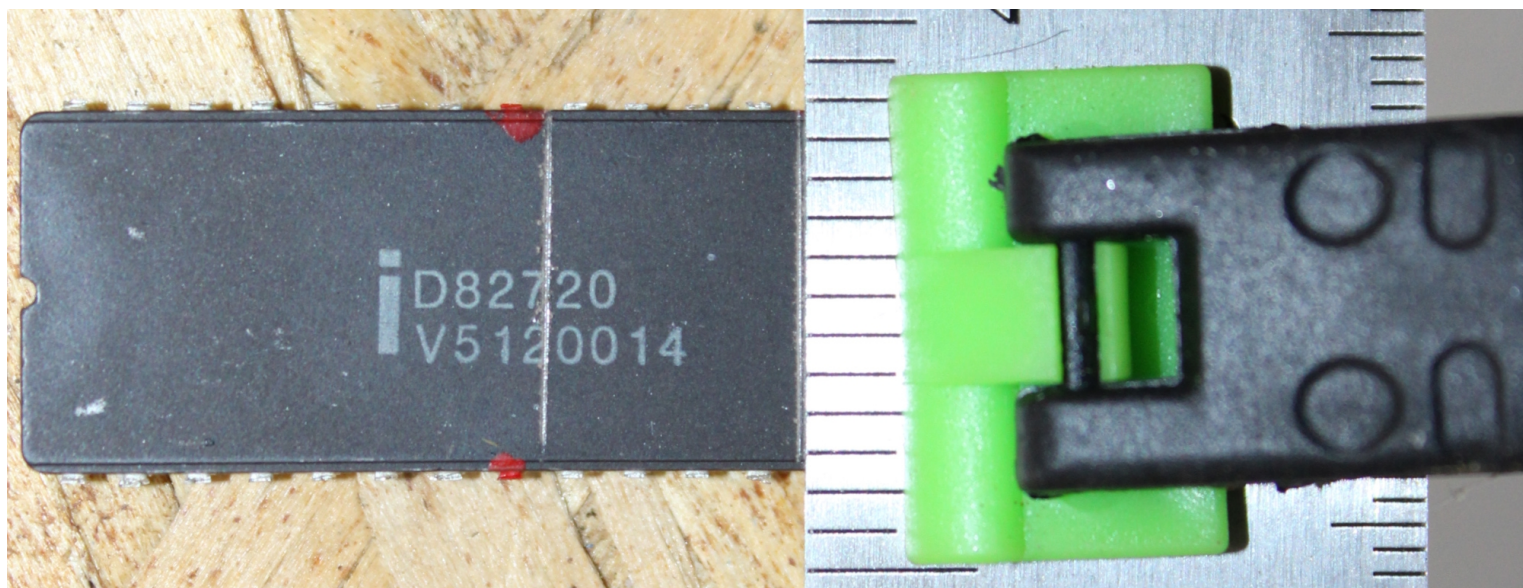
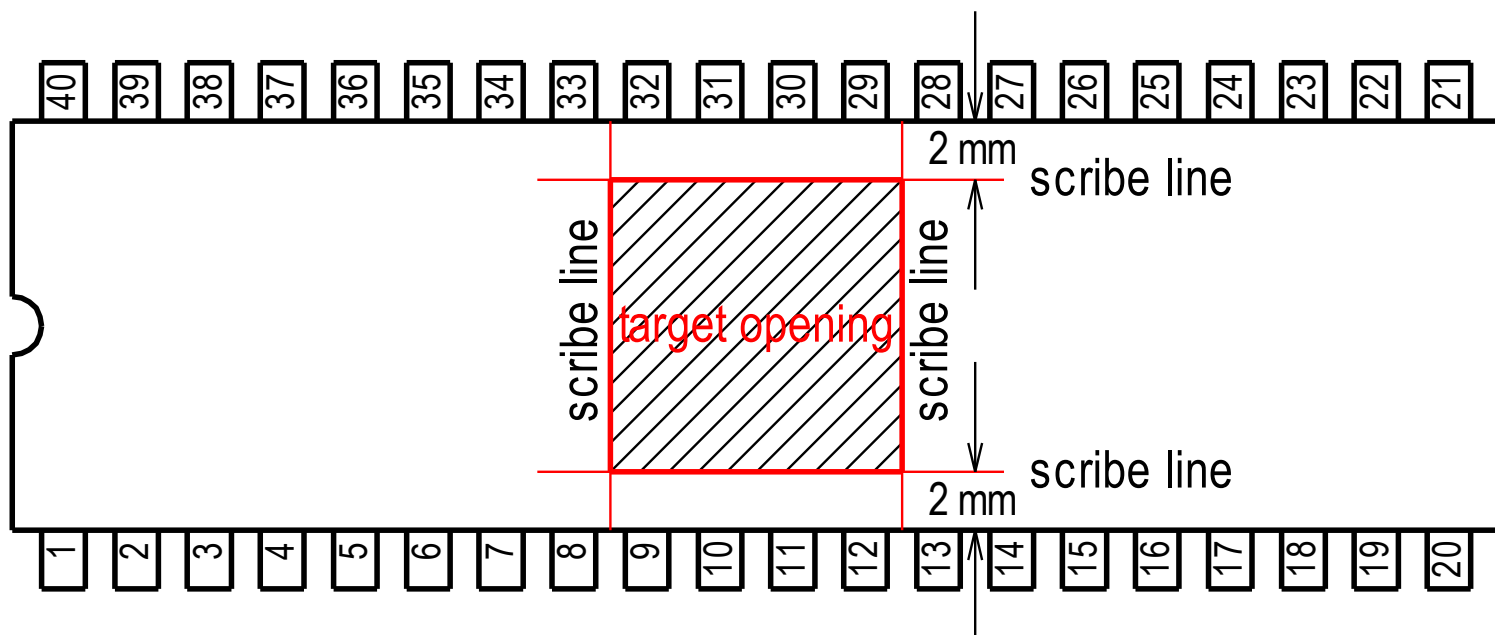
* : After reduction due to PDF file limitation.

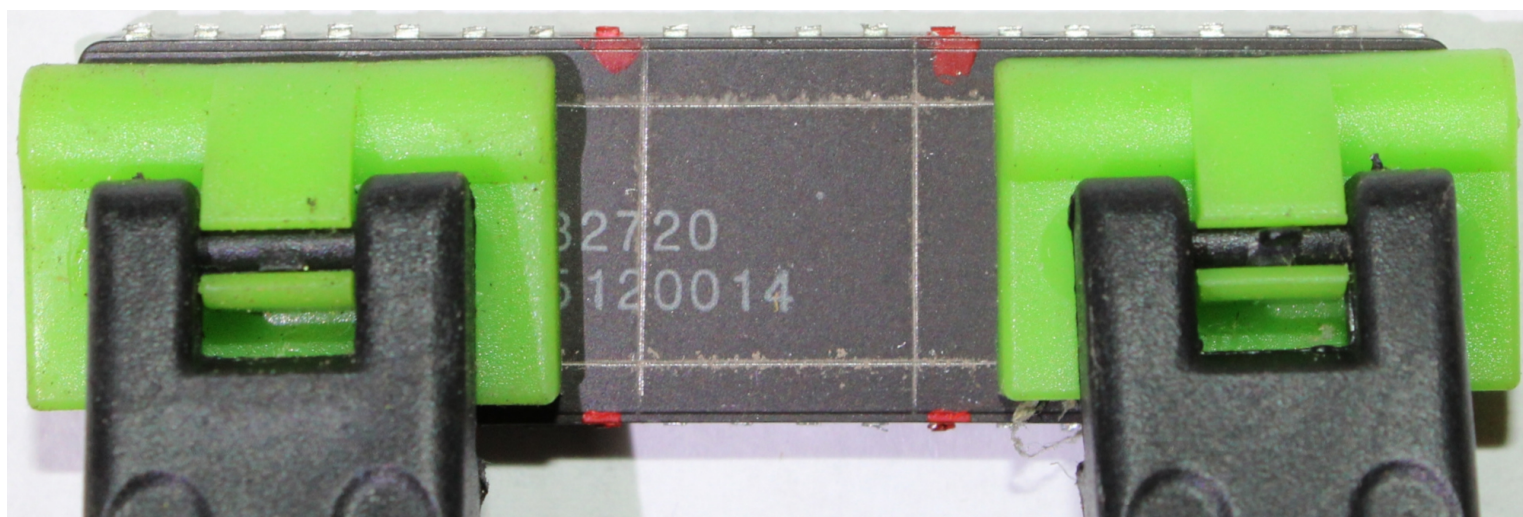
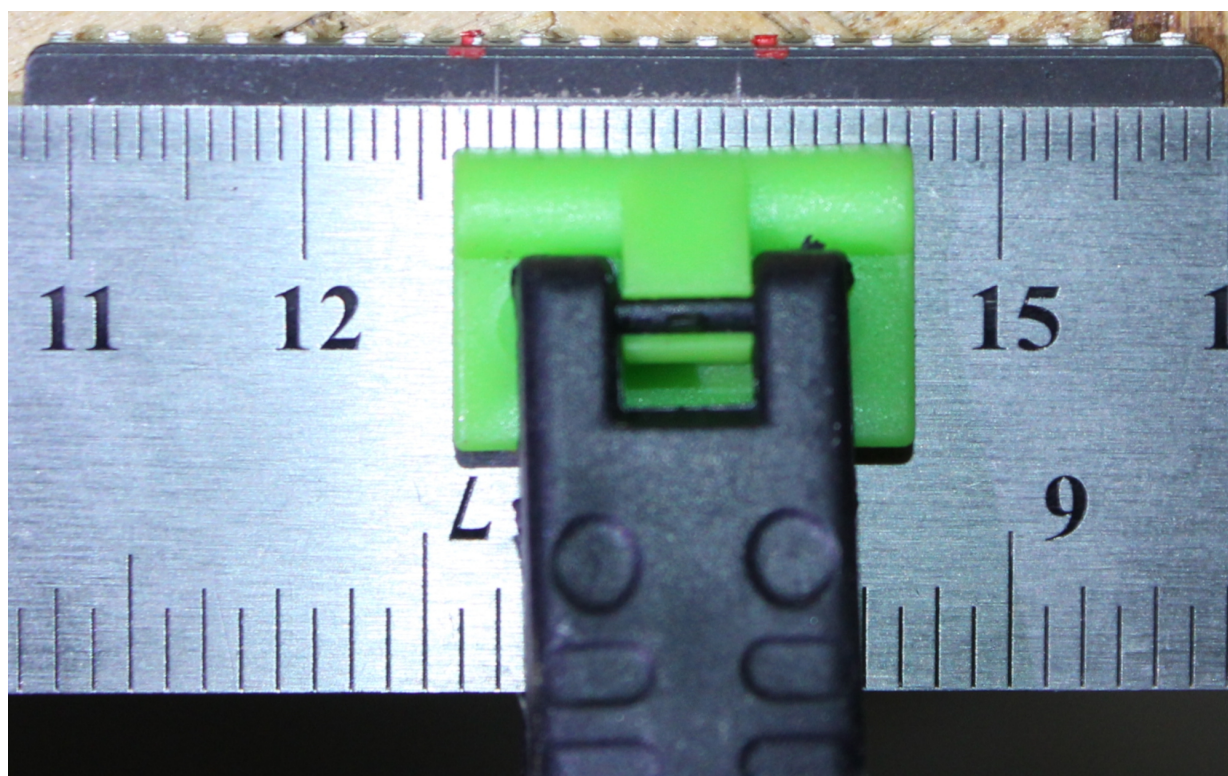
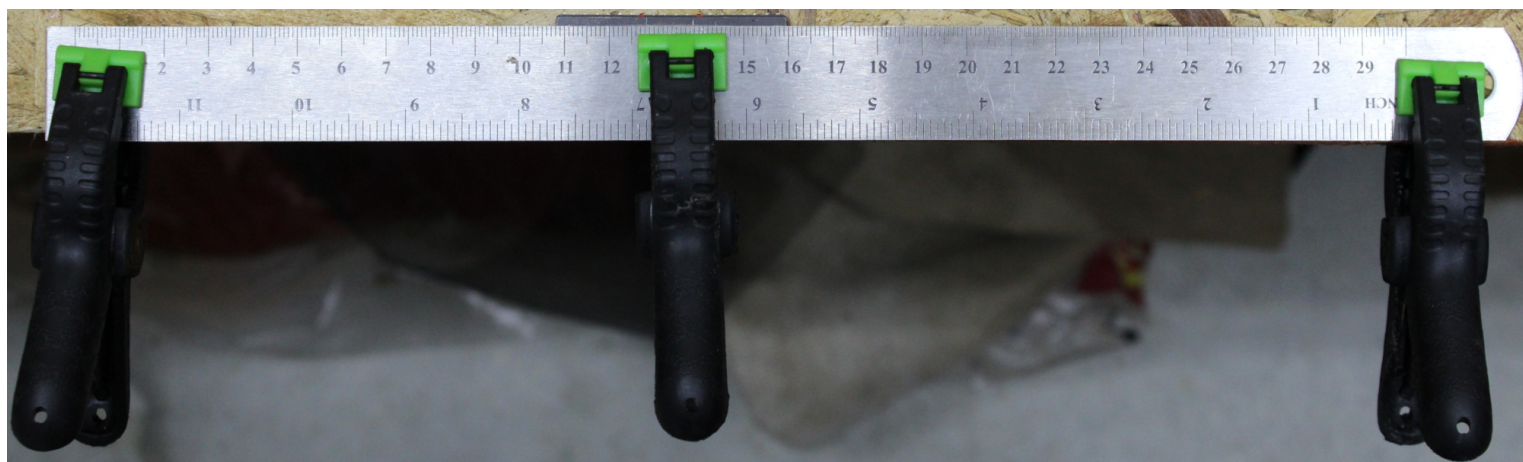
Tools Utilized

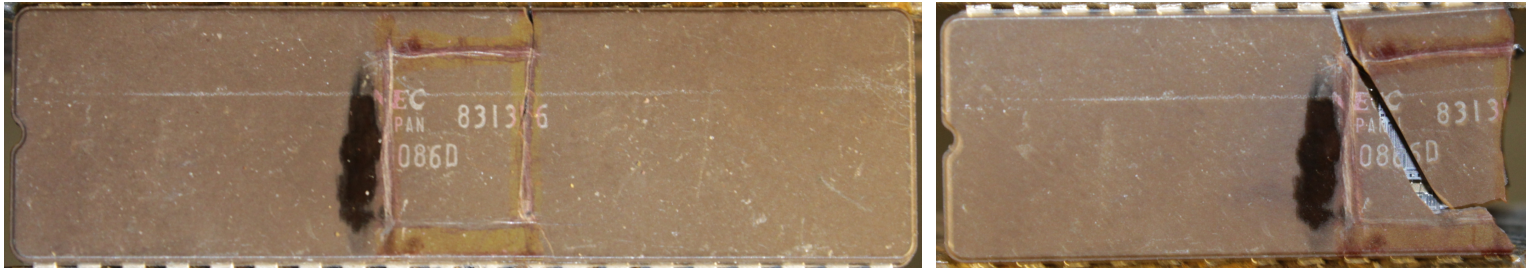
- (A) 18 MP (Mega Pixels) DSLR (Digital Single-Lens Reflex; TTL (Through The Lens)) camera (Image size : 5184 (W) x 3456 (H), 3:2) with mini HDMI interface and remote shutter release transceiver
- (B) HDMI monitor TV (FHD (Full High Definition) 1920 x 1080)
- (C) Metallurgical microscope (Object lens used; 5x, 10x) and camera adapter (Ocular lens; 2x)
- (D) Hugin "Panorama photo stitcher"
- (E) Gimp "GNU Image Manipulation Program"
- (F) Intel i7 3.6 GHz Windows 10 Pro PC system with M.2 (PCIe 4 channels) SSD (Solid State Drive (Flash memory)) and 16 GB DDR4 (Double Data Rate fourth generation) 2400 (MT/s (Megatransfers per second)) synchronous DRAM

Final stage of Hugin stitch processing for making the 20x die micrograph took one hour and 10 minutes.

In details, Refer to "[Making Die Photo by Hugin](#)"

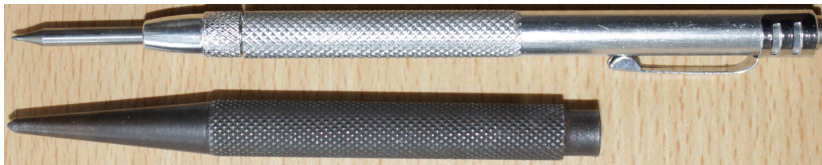






Made Scribe on Four Sides, then Hit Center Punch at Lower Right Corner (Was not exact corner...)

Because center punch position was made at a bit upper of lower right corner, right side got cracked properly but other sides were not. But, the partially failed decapsulation did not affect taking die photos. I was lucky.



Old-fashioned Center Punch & Tangsten Carbide Scriber (Left), New Generation Auto Center Punch (Right)

Old-fashioned center punch needs hammer to hit and loses accuracy but in-spring auto center punch is accurate.