

Customer Issue Description:

Customer reported issue at: **Production / Assembly**

Issue type: Electrical | Issue type details: The three-phase voltage has no output due to the poor function of cross-validation IC body. The input is 848, and the defective product is 19PCS, and the defect rate is 2.24%.

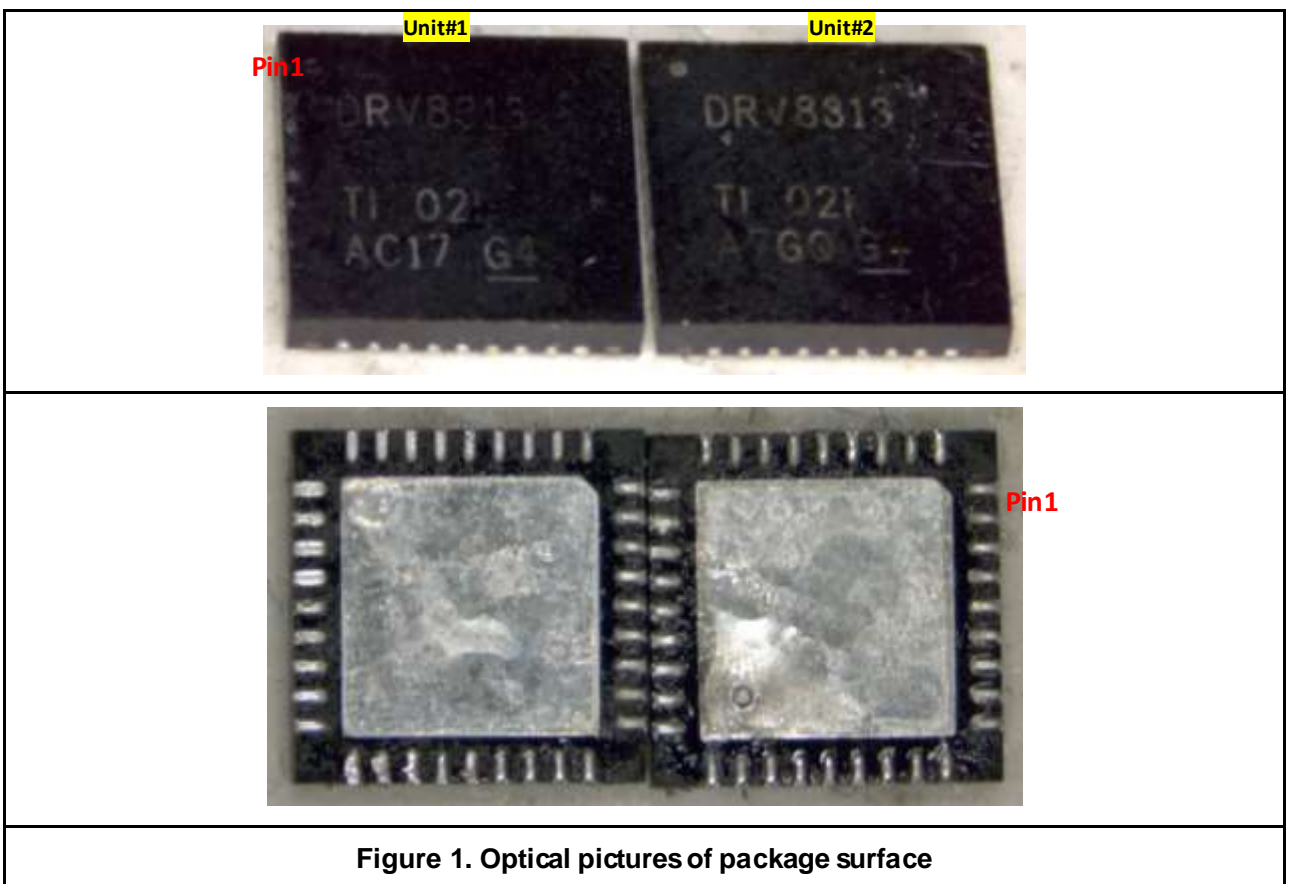
- **Bench Verification Results**

Units	Pass/Fail	Description	Sensitivity
1	Fail	output failure	NA
2	Pass		

- **Package Analysis:**

- **External Package Examination:**

Optical inspection was performed on returned units. No anomaly was observed.



- **X-Ray Analysis:**

X-Ray inspection was performed on returned units. No anomaly was observed.

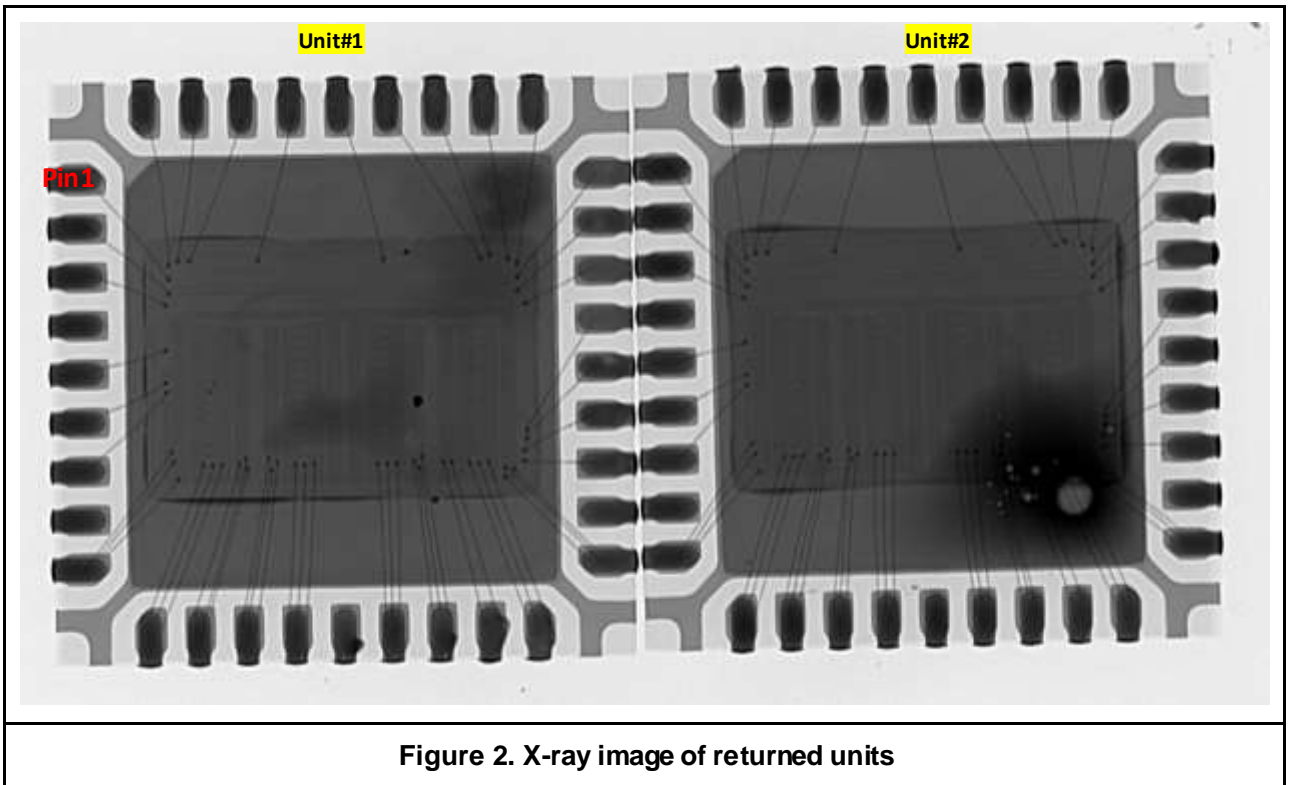


Figure 2. X-ray image of returned units

- **Scanning Acoustic Microscopy (SAM):**

Scanning acoustic microscopy inspection was performed on returned units. No delamination was observed on die surface.

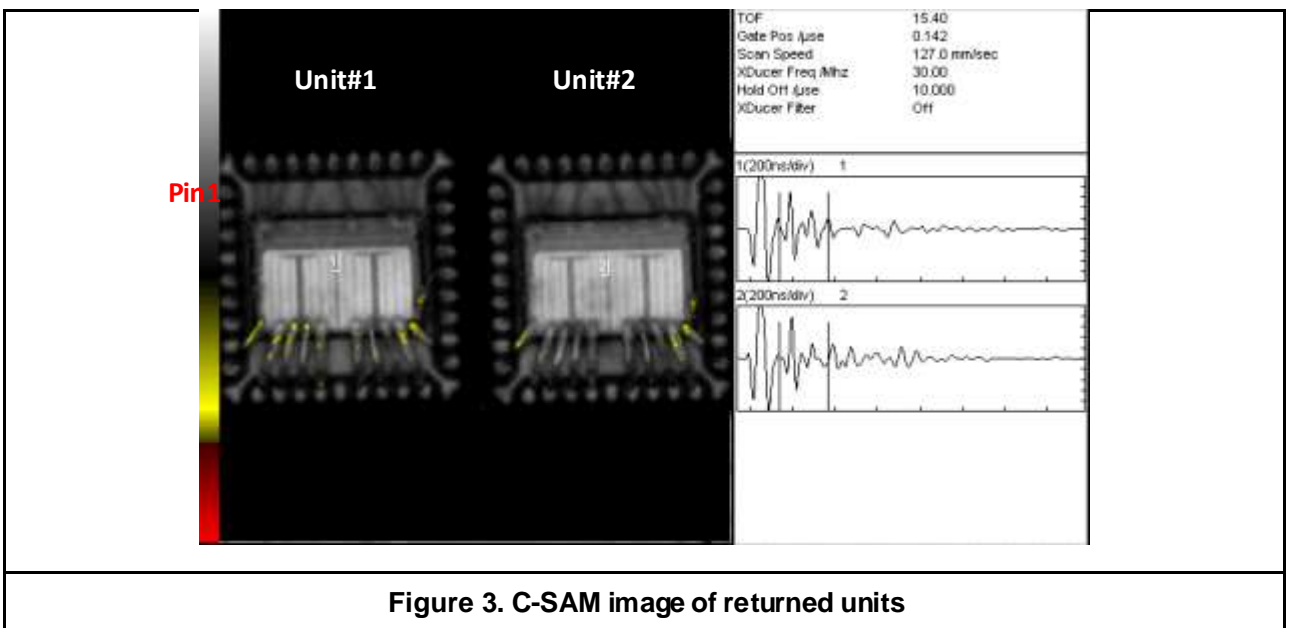
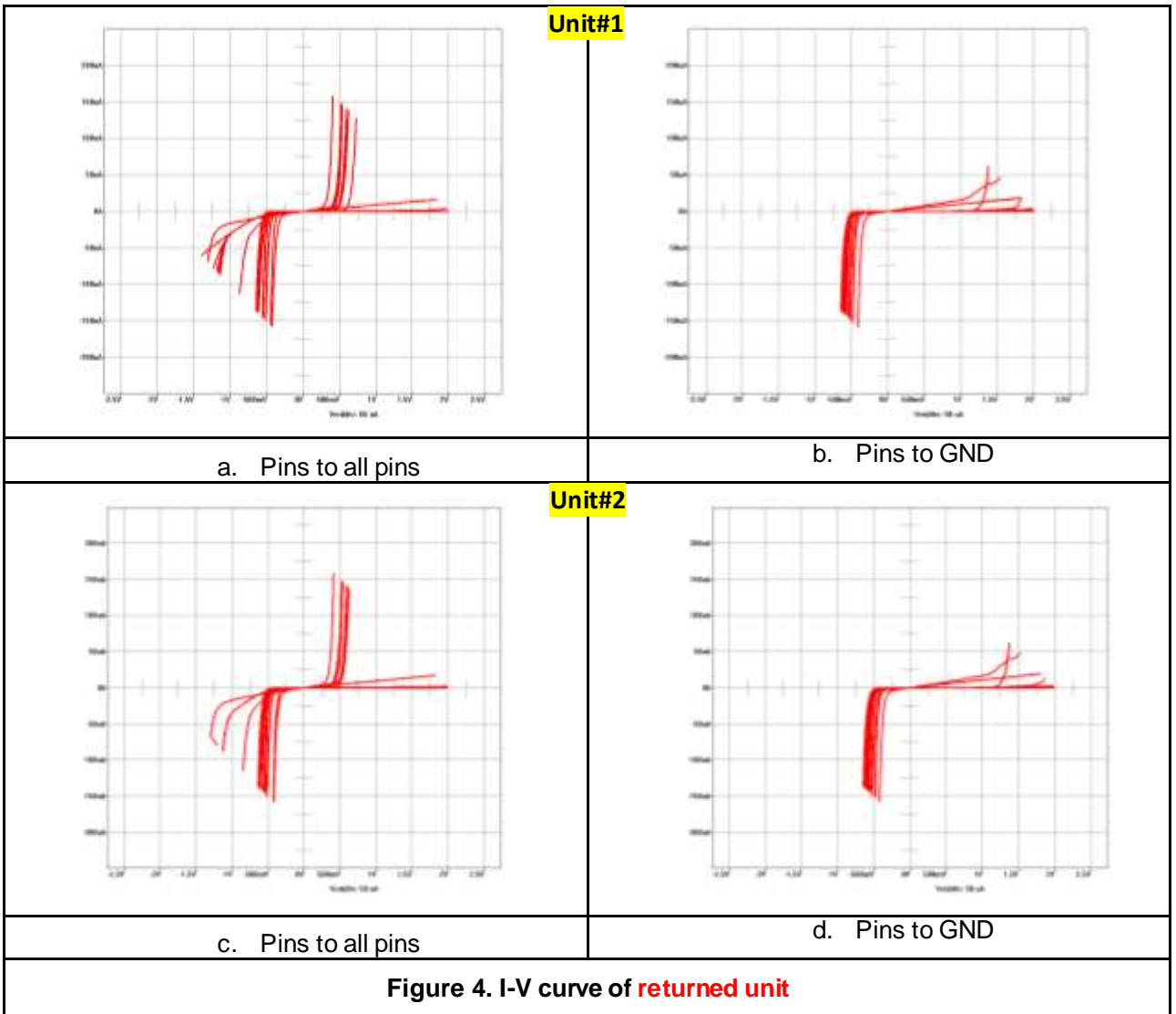


Figure 3. C-SAM image of returned units

- **Electrical Characterization:**

Curve trace analysis was performed on returned units. No open/short was observed.



- Bench test of unit#1:



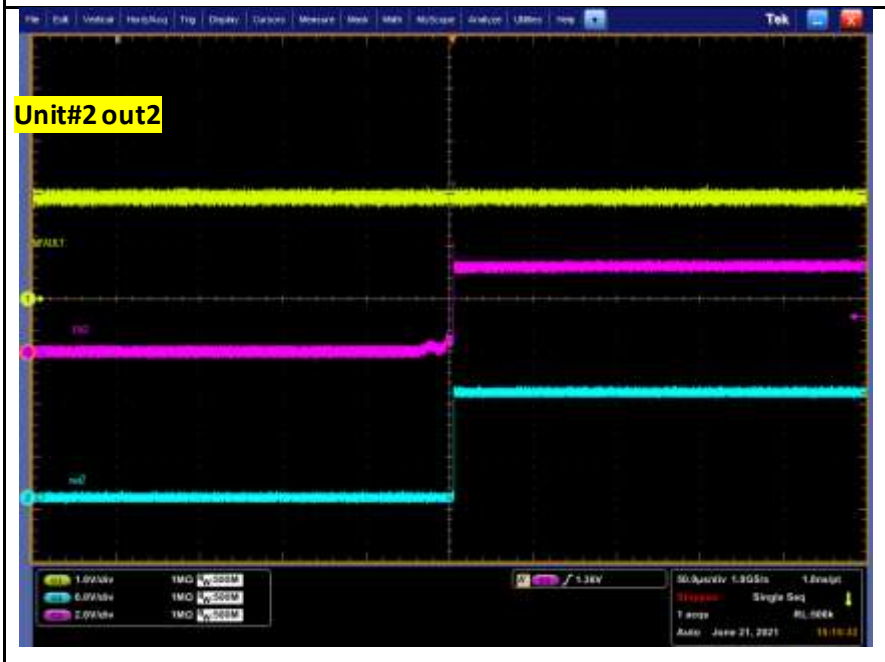
Figure 5. Bench result of returned unit #1

Result:

- Out 1 does not toggle even though IN1 is high. EN1 is pulled high and used as the trigger. We see the same thing for each OUTx on unit 1.
- Each waveform is labeled on the scope plots
- nFAULT is high indicating no fault occurred.

Conclusion: Bench failed, suspect the unit potential damaged.

- Bench test of unit#2:



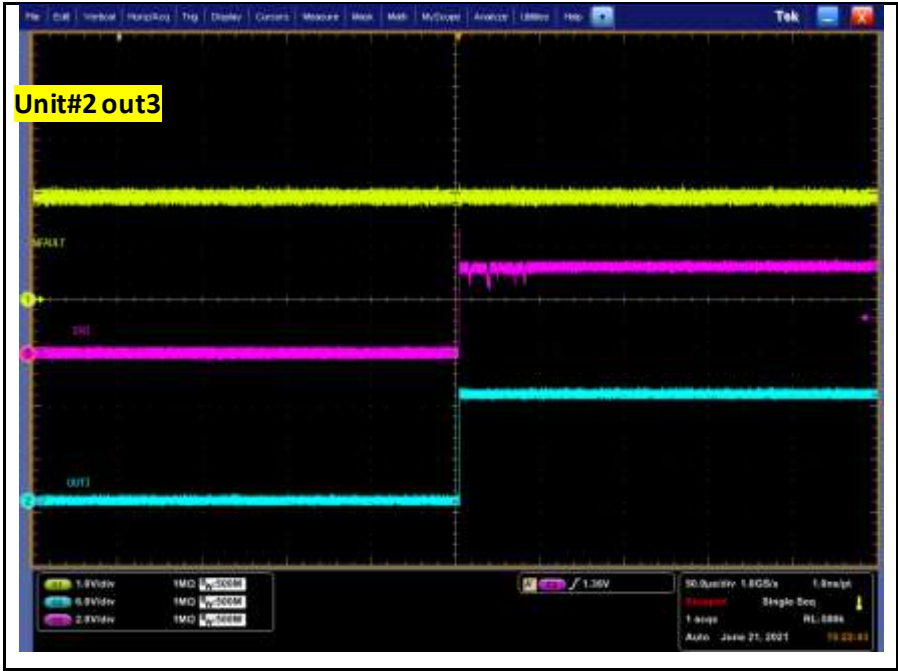


Figure 6. Bench result of returned unit #2

Result:

- Out 1 does toggle, while IN1 is high. EN1 is pulled high and used as the trigger. We see the same thing for each OUTx on unit 2 (next slide).
- Each waveform is labeled on the scope plots
- nFAULT is high indicating no fault occurred.

Conclusion: Bench passed, Functioning unit

• **ATE Verification Results**

Units	Time-0 test program result Pass/Fail	Post return test program result Pass/Fail	Description	Sensitivity
1	Not Tested	Fail	Driver, suspect potential damage	
2	Not Tested	Pass		

Recommendation:

- After reviewing the schematic, TI recommend using a higher rated voltage caps on VM (40V). Since customer is using 17V on VM, we generally recommend using a cap rated for twice the operating voltage.
- Based on customer schematic, pin 18 is grounded. Please consider leaving this pin floating as this is what the datasheet recommends.
- We don't see a voltage rating on C57, please note that this should be at least 6.6V, but it would be best to use a 10V rated cap.

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