

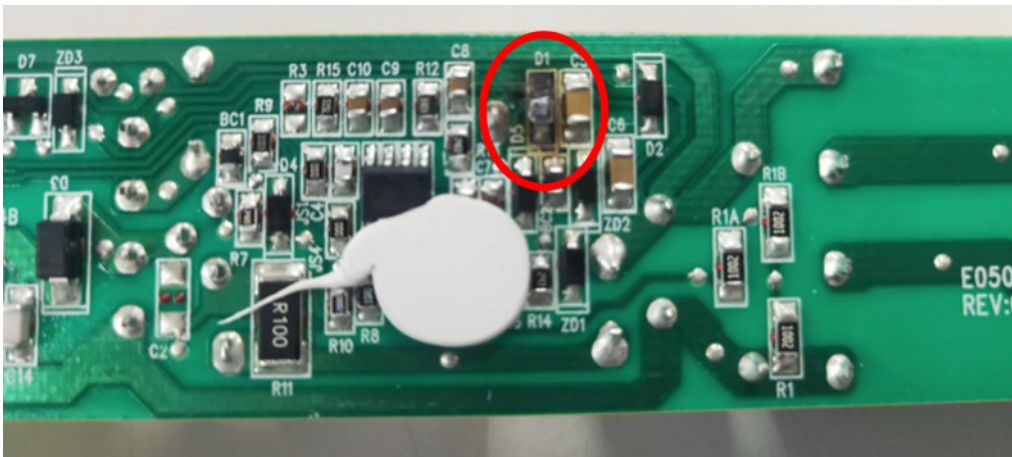
Eight Discipline Report (8D Report)

To:	8D report No.:
From: :	RMA claim No.:
CC :	Chicony Power P/N: E050S040P-AZ01
	Customer P/N:
Submit date: 2022/07/29	Product description:
Receive date: 2022/07/29	
Subject : aux diode damage (輕載切換頻率上升加上 trr 較慢造成 diode 溫度異常升高損壞) [diode]	
D1.) 問題解決成員:Use Team Approach	
主持者 (Team Leader) : 內部成員 (Internal Team Members): 外部成員 (External Team Member):	
D2.)問題說明:Problem Description:	
(Note: Use who, what, when, where, why, how, how many to specify the Customer's problem.)	
50W LED driver no output Issue 1. Installation new build with new power systems and new lighting in customer. 2. Installed 600 1x4 EPANL (EPANL 1X4 4800LM80CRI 40K). 3. Approx. 30 days after install 250/600 luminaires are not functional. 4. Luminaires where Chicony drivers have been replaced with other Chicony (same model) drivers have failed again.	
D3.)內部或客戶的暫時解決辦法及實施日期:Implement and Verify Containment Action:	
(Note: Internal / external containment action effectiveness and date.)	
1. FAE of CPT got this PSU from customer for further analysis. 2. CPT send PSU to customer for exchange.	
D4.)不良原因確認: Define and Verify Root Causes:	
(Note: Identify and verify all suspect causes, which needs explain why the problem occurred.)	

- All Chicony drivers which have failed exhibit the same brown spot on the top side of the PCBA.



- There are burn marks on D1 and D1 is broken.



- Measured D1 with an electric meter and replaced it with a new component, the driver works normally after replacement.
- burn-in test and check the application of load and dimming. According to the information provided by the customer, the input voltage is 277Vac.
- When dimming is switched to any state at high temperature, the driver will no output and D1 damage by analysis.
- Measure frequency with dimming:
For AC 277Vac input and 100% DIM, the test waveform of Fsw is 108KHz.
For AC 277Vac input and 20% DIM, the test waveform of Fsw is **247KHz**.

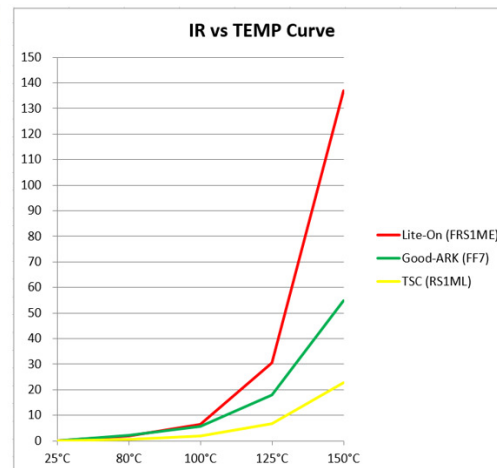
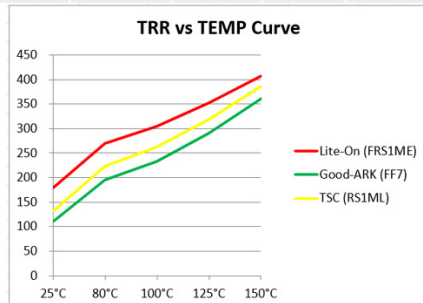
- The reverse recovery time(Trr) of the diode is too slow or the reverse leakage current(Ir) is too high, and the switching frequency of the 20% current is too fast, causing temperature to rise rapidly, and finally causing D1 to be damaged.

D5.)改善措施:Corrective Action Verification:

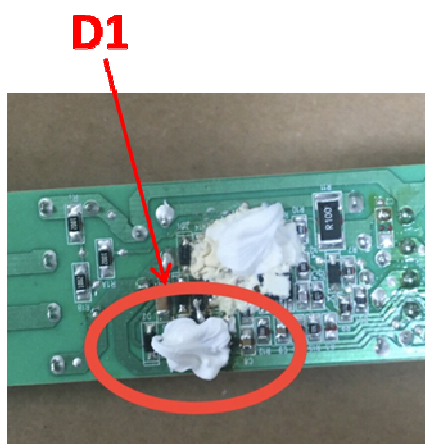
(Note: Be make sure the corrective actions is effective in process as well as able to fix the customer complaint problem)

- Trr and Ir CPK distributions(30pcs AVG.). The TSC component perform best.

Diode	Lite-On (FRS1ME)		Good-ARK (FF7)		TSC (RS1ML)	
Temp.	TRR(nS)	IR(uA)	TRR(nS)	IR(uA)	TRR(nS)	IR(uA)
25°C	179.3	0.073	110.5	0.114	132.1	0.040
80°C	269.4	1.879	194.5	2.039	223.3	0.634
100°C	304.5	6.500	233.2	5.503	262.9	1.857
125°C	352.5	30.371	289.9	18.020	318.9	6.663
150°C	406.9	136.920	360.3	54.862	385.5	22.693



1. Because the TSC component perform best, we will replace the TSC component (RS1ML).
2. In order to prevent Ir and Trr tolerance of the diode from causing the temperature to become higher, we will add thermal glue on D1 location.
3. After D1 replace to the TSC component and add thermal glue, the D1 component will not cause damage.



D6.)改善措施實施日期:Implement Permanent Corrective Actions:

(Note: Be provide the phase-in date or lot# of corrective actions **implementation** in process)

immediately

D7.)預防再發生措施:Prevent Recurrence:

(Note: Modified the management, operating systems, practices, and procedures to prevent recurrence for the problems as well as lessons learned cases.)

- **For diode applications, the following points should be noted :**
 - 1) **Whether the operating frequency is high frequency for various conditions.**
 - 2) **Choose the diode that produce low Ir at the high temperature.**
 - 3) **Use the faster TRR possible.**
 - 4) **Use diodes with slower Trr due to EMI issues, verify component temperature for various conditions.**
 - 5) **In addition to the steady state, the verification conditions need to include dynamic load, low and high temperature.**

D8.)確認並感謝問題解決成員:Check and Congratulate the Team:

(Note: Recognize the collective efforts of the team.)

Thanks to you all ! ! !

Signature	
Team Leader:	
	Name – Title
Signature by Approver:	
	Name-Title