

applied to the VB+ node to vary the V_{OUT} starting at 12V and thereby the common-mode voltage on the ISENSE pin.

- No SEFI seen at ISENSE = 10V. SEFI was observed at the ISENSE voltage of 12V. To determine the threshold for ISENSE at which no SEFI were seen, we tested a derivative device with the same ISENSE structure. It was found that the no SEFI was observed at ISENSE = 10V.

3.2 Single Event Transients

The SEE Testing for the ISL73847SLH was performed at TAMU. The DUT was configured for a switching frequency of 500kHz and was tested for SETs with Gold (^{197}Au) at a LET of $86\text{MeV}\cdot\text{cm}^2/\text{mg}$ to a fluence of $1\text{E}7\text{particles}/\text{cm}^2$. The board assembly used a L_{OUTx} of $1.0\mu\text{H}$ and C_{OUT} of $880\mu\text{F}$ (4x KEMET T530D227M010ATE006-T with a maximum ESR of $6\text{m}\Omega$ each) The compensation component values were set at $R_{COMP} = 4.22\text{k}$, $C_{COMP} = 10\text{n}$, $C_{POLE} = 330\text{pF}$, $R_{SLOPE} = 37.4\text{k}$, and $R_{DROOP} = 604\Omega$. The DUT VDD was biased at 4.5V and 13.2V, and the PVIN was biased at 5V and 13.2V. The V_{OUT} of 1V was loaded to 5A. The SET trigger capture window was set to $\pm 20\text{mV}$ ($\pm 2\%$) for $V_{OUT} = 1.0\text{V}$. The observation was that no SET was captured at a Fluence of $1\text{E}7\text{ particles}/\text{cm}^2$ on each of the four parts.

The DUT configured for a switching frequency of 1000kHz was tested for SETs with Gold (^{197}Au) at an LET of $86\text{MeV}\cdot\text{cm}^2/\text{mg}$ to a fluence of $1\text{E}7\text{particles}/\text{cm}^2$. The board assembly used a L_{OUTx} of $0.56\mu\text{H}$ and C_{OUT} of $880\mu\text{F}$ (4x KEMET T530D227M010ATE006-T with a maximum ESR of $6\text{m}\Omega$ each) The compensation component values were set the same as the 500kHz case. The DUT VDD was biased at 4.5V and 13.2V, and the PVIN was biased at 5V and 13.2V. The V_{OUT} of 1V was loaded to 5A. The SET trigger capture window was set to $\pm 20\text{mV}$ ($\pm 2\%$) for $V_{OUT} = 1.0\text{V}$. The observation was that a single SET event was captured at a Fluence of $1\text{E}7\text{ particles}/\text{cm}^2$ on run 411. See [Table 5](#) and [Figure 1](#) for more details. The missing pulse was observed on PWM2, while PWM1 was normal. The trigger event was noise spike at the trigger point, the V_{OUT} did not show movement in the $\pm 20\text{mV}$ window. It should be noted that the conditions for run 411 were the same as that of 413 and we did not observe an SET event.

Based on CRÈME simulations for a GEO orbit, statistically speaking, the part would expect to experience a particle with $\text{LET} \geq 86\text{MeV}\cdot\text{cm}^2/\text{mg}$ once about every 58000 years. In a typical LEO, it would be about once every 2 million years.

4. Revision History

Revision	Date	Description
1.00	Dec 16, 2024	Initial release.