Comments 1: Please check your font size and symbols carefully. I find some places with the problems.
Response 1: Thank you for your meticulous reminders! We have thoroughly checked and corrected all font sizes and symbol usages in the manuscript. All formatting issues have been resolved to ensure strict compliance with unified specifications throughout the paper. The revised sections have been explicitly highlighted in red for easy identification. We sincerely hope these adjustments fully meet your requirements. Please accept our renewed appreciation for your expert guidance!

Comments 2: Authors use many abbreviations, so you should have an abbreviation section and make sure that the abbreviations are used after they are defined.
Response 2: Thank you for your notification. We have carefully reviewed and revised the use of abbreviations in the manuscript. All abbreviations are clearly defined upon their initial introduction and consistently used throughout the text. The modified sections have been explicitly highlighted in red for clarity, as demonstrated below:
On line 10: Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETs)
On line 13: Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET)
On line 21: Resistor-Inductor-Capacitor (RLC)
On line 79-80: Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET)
On line 84-85: Metal-Oxide-Semiconductor Field-Effect Transistors (MOSFETs)
On line 95: Resistor-Inductor-Capacitor (RLC)

Comments 3: Long sentences with unclear meaning must be shortened.
Response 3: Thank you for your valuable feedback. We sincerely appreciate your identification of the long and unclear sentences in the manuscript. We have carefully reviewed the text to revise and optimize these sentences for enhanced conciseness and readability. The modified sections have been explicitly highlighted in red for clarity, as demonstrated below:
On line 11-15: Firstly, the four operating stages and principles of the second-order circuit were analyzed. Then, the mathematical models of the turn-off time of the current and the voltage stress of the MOSFET were established using the analytical method. Finally, the parameters of the resistor and capacitor were selected by finding the optimal solution for the fixed transmitter coil.
On line 19-22: Simulation and experimental results show that the second-order circuit reduces MOSFET turn-off time to 58μs via Resistor-Inductor-Capacitor (RLC) series resonance, with turn-off duration remaining load-current-independent.
On line 58-59: Rapid turn-off of large emission currents requires excessive clamping voltages, inducing prohibitive circuit stress and implementation constraints.
On line 400-401: The inductive load operates as a second-order discharge circuit through modified circuitry, incorporating two added discharge resistors.

Comments 4: Section 2 and Section 3 must be grouped into one section.
Response 4: Thank you for this valuable suggestion. As per your instructions, we have merged Sections 2 and 3 into a unified section, restructured the content to ensure stronger logical coherence and conciseness. Your patient guidance is sincerely appreciated and has been instrumental in refining the manuscript.

Comments 5: Contributions must be listed using bullet points in the Introduction.

Response 5: Thank you for your valuable feedback. Your suggestions are essential for improving the manuscript and have been highly instructive. As requested, we have clearly listed the research contributions using bullet points in the Introduction section to ensure enhanced clarity and readability. The revised content has been explicitly highlighted in red within the manuscript, as demonstrated below:

On line 71-83:In this paper, a novel second-order rapid discharge circuit topology for TEM transmitters is proposed. During the discharge phase, the load coil and additional capacitor are combined to form a second-order discharge circuit. Compared to conventional topologies, the discharge circuit accelerates the discharge process by introducing second-order circuit characteristics and resistor energy dissipation. This design offers the following three advantages:

1. Shorter turn-off time: The oscillatory characteristics of the second-order circuit enable rapid exponential decay of the load current.
2. Stable turn-off performance: Circuit parameter optimization ensures that the turn-off duration is independent of the initial current amplitude.
3. Lower device stress: The peak voltage borne by the power MOSFET during turn-off is significantly lower than that in conventional solutions.

Thank you for bringing these issues to our attention! We sincerely appreciate your valuable feedback on the manuscript, including English grammar, spelling, and lengthy sentence structures. These issues will be thoroughly checked and corrected to ensure the manuscript adheres to formal standards and achieves enhanced clarity. Your suggestions have been instrumental in refining this work, and we are grateful for your patience in identifying these areas. We will diligently implement all necessary improvements.