

CLAIMS

1. A pulse generating circuit for an electrosurgical generator, the pulse generating circuit comprising:

5 a voltage source connectable to a load via a switching element;

an open circuit coaxial transmission line connected between the switching element and the voltage source to be charged by the voltage source when the switching element is in an OFF state and to be discharged when the switching element is in an ON state,

wherein the switching element comprises:

a plurality of series connected avalanche transistors; and

15 a trigger pulse generator configured to generate a trigger pulse to activate the plurality of series connected avalanche transistors, and

wherein the impedance of the coaxial transmission line is configured to match a sum of (i) the impedance the plurality of series connected avalanche transistors, and (ii) the impedance of the load.

2. A pulse generating circuit according to claim 1, wherein the coaxial transmission line has a length selected to provide a line delay equal to or less than 5 ns.

3. A pulse generating circuit according to claim 1 or 2, wherein the coaxial transmission line is charged by the voltage source through a resistor.

30 4. A pulse generating circuit according to any preceding claim, wherein the trigger pulse generator comprises a TTL device.

5. A pulse generating circuit according to any preceding claim, wherein the trigger pulse has a voltage less than the emitter-base breakdown voltage of each of the plurality of avalanche transistors.

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6. A pulse generating circuit according to any preceding claim, wherein the trigger pulse generator is connected to the plurality of series connected avalanche transistors via a transformer.

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7. A pulse generating circuit according to any preceding claim, wherein the trigger pulse is applied between the collector and emitter of a first transistor of the plurality of series connected avalanche transistors.

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8. A pulse generating circuit according to claim 7, wherein the first transistor is furthest from the coaxial transmission line.

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9. A pulse generating circuit according to any preceding claim, wherein a diode is connected in parallel with each of the plurality of series connected avalanche transistors to clamp the voltage across each transistor to less than its collector-base breakdown voltage.

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10. A pulse generating circuit according to any preceding claim, wherein each transistor in the plurality of series connected avalanche transistors is identical.

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11. A pulse generating circuit according to any preceding claim, wherein the load is an electrosurgical instrument.

12. An electrosurgical generator having a pulse generating circuit according to any preceding claim.

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