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Goodson

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(54) **PROTECTED CAPACITOR SYSTEM AND METHOD**

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CPC **H01G 4/002** (2013.01); **H01C 7/12** (2013.01); **H01G 4/224** (2013.01); **H01G 4/228** (2013.01); **H02K 11/20** (2016.01); **H02P 29/032** (2016.02)
(58) **Field of Classification Search**
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See application file for complete search history.

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(57) **ABSTRACT**

A protected capacitor system/method implementing enhanced transient over-voltage suppression is disclosed. The system/method incorporates one or more surge suppression devices (SSDs) proximally located and in parallel with a capacitor structure to produce an overall protected capacitor structure having enhanced reliability and simultaneous ability to resist transient overvoltage conditions. The SSDs are formed from series combinations of transient voltage surge suppressors (TVSs) (metal oxide varistor (MOV), diode for alternating current (DIAC), and/or silicon diode for alternating current (SIDAC)) and corresponding shunt diode rectifiers (SDRs) and placed in parallel across a capacitor structure to locally suppress voltage transients across the capacitor structure in excess of the voltage rating of the capacitor structure. The parallel shunting TVS/SDR pairs may be integrated into a printed circuit board (PCB) assembly that is externally attached to the capacitor structure or encapsulated in an enclosure incorporating the capacitor structure.

20 Claims, 64 Drawing Sheets

