

METHOD OF CONTROLLING THE SWITCHING di/dt
AND dv/dt OF A MOS-GATED POWER TRANSISTOR

ABSTRACT OF THE DISCLOSURE

The switching di/dt and switching dv/dt of a MOS gate controlled ("MOS-gated") power device are controlled by respectively controlling the voltage and current waveforms. Open loop control of the turn-on of the MOS-gated device is provided by coupling a common terminal of a current generator circuit, which provides a current to the gate of the MOS device, to a first resistor for controlling the switching dv/dt . At the detection of a negative dv/dt , the common terminal of the current generator circuit is then coupled to a second resistor for controlling the switching di/dt . The first and second resistors are, in turn, coupled to the source terminal of the MOS-gated device. An analogous operation provides turn-off control of the MOS-gated power device. Closed loop control is also provided by measuring the switching dv/dt and the switching di/dt which are then fed back to the circuit to control the current supplied to the gate of the MOS-gated device. The switching di/dt can be measured by measuring the voltage difference across the length of a calibrated wire bond having a predetermined length and diameter.

Figure 6