Build a simple, soft-action muting switch

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The circuit in Figure 1 adds a soft muting switch with power-up/power-down muting to a line-level audio circuit. R₄, C₁, and JFET Q₁ quietly ground a signal in 100 to 200 msec when you close S₁ or release it when you open S₁. Potentiometer R₂, set to twice Q₁'s cutoff voltage, makes the on/off transition times roughly equal. R₃ and D₃ quickly discharge C₁ and mute the signal during power-down. For this process to work, the signal path should remain stable to below roughly one-third the normal supply voltages—below ±4V in this example. Q₁ can then finish muting. Making Q₁ a more tightly defined PN4392 can soften this requirement and allow muting of lower impedance signals. R₃ unloads S₁ from R₂, so that D₃ does not shorten the earlier transition times. S₁'s normally closed contact, resistor R₄, and dual-LED D₂ add an indicator light. D₁ raises the red LED's on-state threshold to indicate green when muting is off. Replacing D₁ with a short circuit causes the red LED to light. This scheme makes a more expensive DPDT (double-pole, double-throw) switch unnecessary, provides uninterrupted light as S₁ switches, and reduces the LED-current change for less noise (references 1 and 2).

References

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