

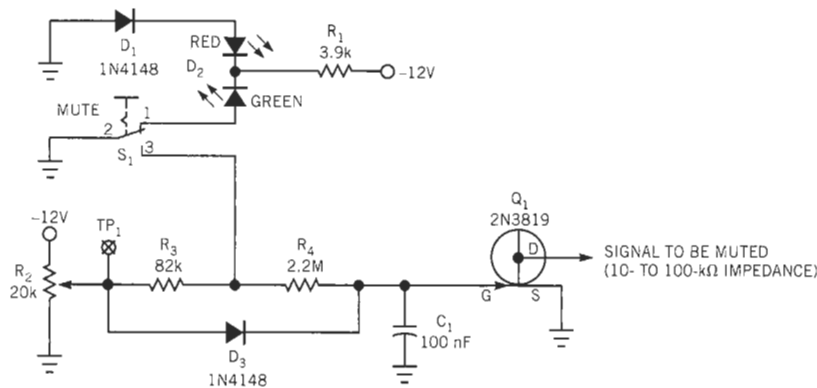
Build a simple, soft-action muting switch

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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. R_3 , C_1 , and JFET Q_1 quietly ground a signal in 100 to 200 msec when you close S_1 or release it when you open S_1 . Potentiometer R_2 , set to twice Q_1 's cut-

off voltage, makes the on/off transition times roughly equal. R_2 and D_3 quickly discharge C_1 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 $\pm 4V$ in this ex-

ample. Q_1 can then finish muting. Making Q_1 a more tightly defined PN4392 can soften this requirement and allow muting of lower impedance signals. R_3 unloads S_1 from R_2 , so that D_3 does not shorten the earlier transition times. S_1 's normally closed contact, resistor R_1 , and dual-LED D_2 add an indicator light. D_1 raises the red LED's on-state threshold to indicate green when muting is off. Replacing D_1 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 S_1 switches, and reduces the LED-current change for less noise (**references 1 and 2**). □



NOTE:
SET VOLTAGE AT TP₁ TO TWICE Q_1 'S $V_{GS(OFF)}$,
SO THAT $0.50V_{GS(OFF)} = 0.7RC = 150$ mSEC.

Figure 1

This simple circuit provides soft muting for line-level audio circuits.

REFERENCES

1. Linkwitz, SJ, "Loudspeaker System Design," *Wireless World*, Volume 84, June 1978, pg 67.
2. Self, D, "Inside Mixers," *Wireless World*, Volume 97, April 1991, pg 280, www.dself.dsl.pipex.com/ampins/mixer/mixerdes.htm.