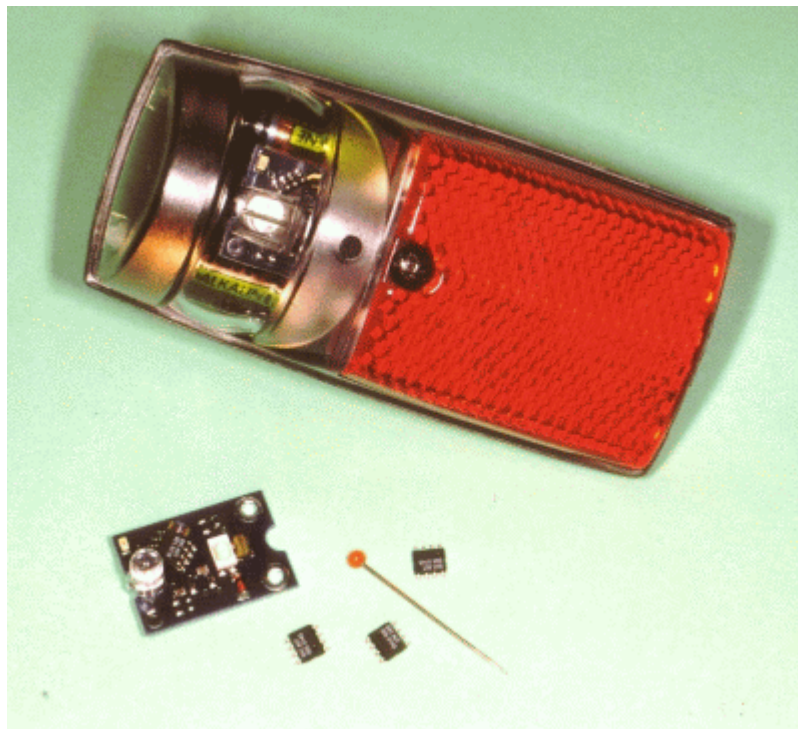


## Mixed-Signal ASIC for Battery Cycle Rear Light



PREMA Semiconductor developed and produced a new ASIC in cooperation with Bodenstedt Elektronik, a German supplier of the European bicycle industry. The ASIC GA1.0 controls the automatic switching of a diode battery rear light designed for bicycles.

It was essential for a successful development to have a semiconductor process that allows supply voltages of less than 3.2V and a low standby current of below 1  $\mu\text{A}$ . PREMA's ModuS U6 process offers the appropriate technology for the production of such an ASIC.



This intelligent cycle rear light includes a vibration sensor that observes if the bicycle is moved. At the same time a photosensor detects the daylight. If darkness and movement is recognized by the sensors the rear light, a red LED will be switched on. The LED is switched off after a delay time if one of these conditions is no longer fulfilled. The light will be switched off for example when the bicycle stands in a dark garage as well as when it is moved during the day.

The complete controlling is performed by the ASIC GA1.0 produced by PREMA. Several ICs and components have been economized, additional functions are integrated now like the new three-position switch offering only on-off position before. Compared to the discrete solution the ASIC circuit consumes a standby current of only 0.7 $\mu\text{A}$ . The supply current in automatic mode could be reduced from 20  $\mu\text{A}$  to 7 $\mu\text{A}$ . The accuracy of the LED current was improved to  $\pm 5\%$  (before  $\pm 20\%$ ). This results in a longer battery life time and a more stable intensity of the LED light.

You will find further information about ASICs on our web site [www.prema.com](http://www.prema.com) .

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