

AND8430/D

Former Catalyst Document Number MD-6003



ON Semiconductor®

<http://onsemi.com>

ON Semiconductor Parallel EEPROMs Feature Software Data Protection

Prepared by:
ON Semiconductor

APPLICATION NOTE

A common concern among E²PROM users is data integrity during power on/off transitions and system glitches that may cause inadvertent writes to the memory array. Hardware data protection schemes have been around for some time to reduce this problem. They include:

1. V_{CC} lockout voltage below which writes are inhibited.
2. Power on delay mechanism where writing is inhibited a fixed time after V_{CC} is stable.
3. Write inhibits by holding \overline{CE} , \overline{OE} or \overline{WE} high.
4. Noise pulses of less than 20 ns on the \overline{WE} or \overline{CE} inputs are ignored.

Despite these hardware protection features, additional protection is being required by industry users. ON Semiconductor has added Software Data Protection (SDP) to its 64 kb and 256 kb E²PROMs. The CAT28C64B/65B/256 and CAT28LV64/65/256 parallel E²PROMs feature software controlled data protection that once enabled, requires a set write sequence to be sent to the device prior to any writes being performed. Figures 1 and 2 provide the software sequence required to activate Software Data Protection for both devices:

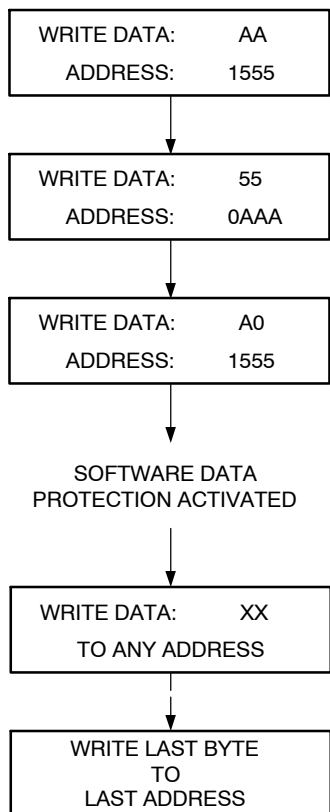


Figure 1. CAT28C64B/65B and CAT28LV64/65 Write Sequence for Activating Software Data Protection

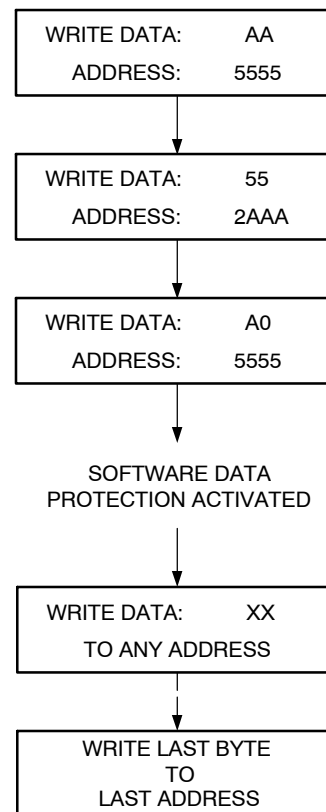


Figure 2. CAT28C256 and CAT28LV256 Write Sequence for Activating Software Data Protection

AND8430/D

Once Software Data Protection has been activated, it remains activated through any power on/off transitions and, prior to any writing, the user must send the device this same algorithm. The addresses used are located on different page boundaries so that the data bytes used in the SDP algorithm are not actually written to the device.

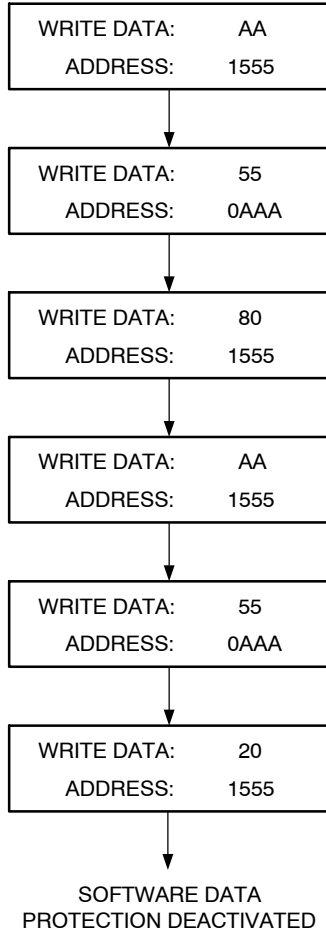


Figure 3. CAT28C64B/65B and CAT28LV64/65 Write Sequence for Deactivating Software Data Protection

In the event the user wishes to deactivate the SDP feature a six step algorithm is provided. Figures 3 and 4 provide this algorithm for both devices.

Once issued the device returns to a normal operating condition and data already written to the device remains unchanged.

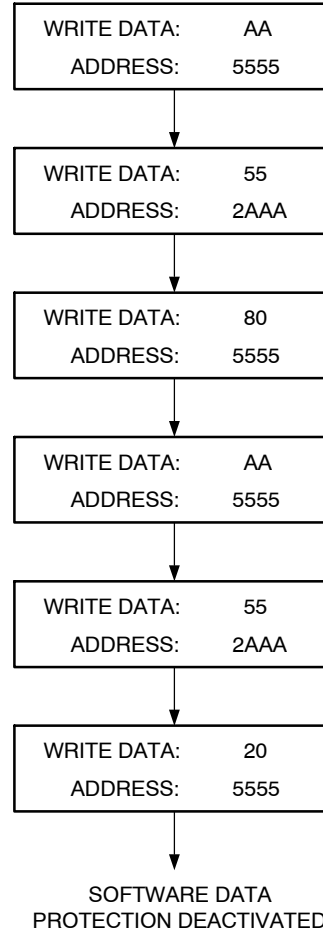


Figure 4. CAT28C256 and CAT28LV256 Write Sequence for Deactivating Software Data Protection

ON Semiconductor and **ON** are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>
For additional information, please contact your local
Sales Representative