

CLAIMS

What is claimed is:

1. A system comprising:
 - a memory device; and
 - a processing device, operatively coupled to the memory device, the processing device to:
 - initialize a block family associated with a memory device;
 - initialize a timeout associated with the block family;
 - responsive to programming a block residing on the memory device, associate the block with the block family; and
 - responsive to detecting expiration of the timeout, close the block family.
2. The system of claim 1, wherein associating the block with the block family further comprises:
 - appending, to block family metadata, a record associating the block with the block family.
3. The system of claim 1, wherein the processing device is further to:
 - initialize a low temperature and a high temperature using a reference temperature at the memory device;
 - responsive to determining that a difference between the high temperature and the low temperature is greater than or equal to a specified threshold temperature value, close the block family.
4. The system of claim 3, wherein the processing device is further to:
 - receive a second reference temperature of the block family;
 - responsive to determining that the second reference temperature is greater than or equal to the high temperature, update the high temperature to store the second reference temperature; and
 - responsive to determining that the second reference temperature falls below the low temperature, update the low temperature to store the second reference temperature.

5. The system of claim 1, wherein the processing device is further to:
responsive to closing the block family, initialize a new block family.
6. The system of claim 1, wherein the processing device is further to:
responsive to creating the block family, associate the block family with a first threshold voltage offset bin.
7. The system of claim 6, wherein the processing device is further to:
responsive to detecting a triggering event, associate the block family with a second threshold voltage offset bin by calibrating an oldest block family associated with the first threshold voltage offset bin.
8. The system of claim 1, wherein the processing device is further to:
determine a threshold voltage offset associated with the block family; and
compute a modified threshold voltage by applying the threshold voltage offset to a base read level voltage associated with the memory device;
read, using the modified threshold voltage, data from a block of the block family.
9. A method, comprising:
receiving, by a processing device, a read command specifying an identifier of a logical block;
translating the identifier of the logical block into a physical address of a physical block stored on a memory device, wherein the physical address comprises an identifier of a memory device die;
identifying, based on block family metadata associated with the memory device, a block family associated with the physical address;
determining a threshold voltage offset associated with the block family and the memory device die;
computing a modified threshold voltage by applying the threshold voltage offset to a base read level voltage associated with the memory device die; and
reading, using the modified threshold voltage, data from the physical block.

10. The method of claim 9, wherein the block family comprises a plurality of blocks that have been programmed within at least one of: a specified time window or a specified temperature window.

11. The method of claim 9, wherein the block family metadata comprises a first table including a plurality of records, wherein a record of the plurality of records associates the physical block with the block family.

12. The method of claim 9, wherein the block family metadata comprises a second table including a plurality of records, wherein a record of the plurality of records associates a plurality of dies of the block family with respective threshold voltage offset bins.

13. The method of claim 9, wherein the block family metadata comprises a third table including a plurality of records, wherein a record of the plurality of records associates a threshold voltage offset bin with one or more threshold voltages to be applied to respective base voltage read levels for performing read operations.

14. A method, comprising:

- initializing, by a processing device, a block family associated with a memory device;

- initializing a timeout associated with the block family;

- initializing a low temperature and a high temperature using a reference temperature at the memory device;

- responsive to programming a block residing on the memory device, associating the block with the block family; and

- responsive to at least one of: detecting expiration of the timeout or determining that a difference between the high temperature and the low temperature is greater than or equal to a specified threshold temperature value, closing the block family.

15. The method of claim 14, wherein associating the block with the block family further comprises:

- appending, to block family metadata, a record associating the block with the block family.

16. The method of claim 14, further comprising:
- receiving a second reference temperature of the block family;
 - responsive to determining that the second reference temperature is greater than or equal to the high temperature, updating the high temperature to store the second reference temperature; and
 - responsive to determining that the second reference temperature falls below the low temperature, updating the low temperature to store the second reference temperature.
17. The method of claim 14, further comprising:
- responsive to closing the block family, initializing a new block family.
18. The method of claim 14, further comprising:
- responsive to creating the block family, associating the block family with a first threshold voltage offset bin.
19. The method of claim 18, further comprising:
- associating the block family with a second threshold voltage offset bin by calibrating an oldest block family associated with the first threshold voltage offset bin.
20. The method of claim 14, wherein the processing device is further to:
- determine a threshold voltage offset associated with the block family; and
 - compute a modified threshold voltage by applying the threshold voltage offset to a base read level voltage associated with the memory device;
 - read, using the modified threshold voltage, data from a block of the block family.