

# PRODUCT CHANGE NOTICE

|  |                                      |  |   |
|--|--------------------------------------|--|---|
| 1. TITLE<br>HIGH DENSITY SRAM MCM (MULTI DIE MODULES)<br>32MEGABIT – 160MEGABIT                                |                                      | 2. DOCUMENT NUMBER<br>SPO-2018-PCN-0002                                |   |
|  |                                      | 3. DATE (Year, Month, Date)<br>2018, April, 2                          |   |
| 4. MANUFACTURER NAME AND ADDRESS<br>CAES<br>4350 CENTENNIAL BOULEVARD<br>COLORADO SPRINGS, COLORADO 80907-3486 |                                      | 5. MANUFACTURER POINT OF CONTACT NAME<br>Peter Nelson                  |   |
|  |                                      | 6. MANUFACTURER POINT OF CONTACT TELEPHONE<br>(719) 594-8238           |   |
|  |                                      | 7. MANUFACTURER POINT OF CONTACT EMAIL<br>Peter.b.nelson@cobhamaes.com |   |
| 8. CAGE CODE<br><b>65342</b>   | 9. EFFECTIVE DATE<br>2018, April, 02 | 10. PRODUCT IDENTIFICATION CODE<br><b>QS09-QS17</b>                    | 11. BASE PART                                     |
| 12. BLANK  |                                      | 13. SMD NUMBER<br>Various (see table)                                  | 14. DEVICE TYPE DESIGNATOR<br>Various (see table) |
|  |                                      | 15. RHA LEVELS<br>M, P, D, L, and R                                    | 16. QML LEVEL<br>Q, Q+, V                         |
|  |                                      | 17. NON QML LEVEL  | 18. GIDEP<br><b>GB4-C-19-0002</b>                 |

## 19. PRODUCT CHANGE

Table 1. List of affected products (all products produced with varying numbers of the same single die type in an MCM)

| CAES Catalog Number and (PIC) | SMD Number (device types) | CAES Catalog Number and (PIC) | SMD Number (device types) |
|-------------------------------|---------------------------|-------------------------------|---------------------------|
| UT8ER1M32M (QS16)             | 5962-10202 (01,03)        | UT8R1M39 (QS13)               | 5962-10205 (01,02)        |
| UT8ER1M32S (QS17)             | 5962-10202 (02,04)        | UT8R2M39 (QS14)               | 5962-10206 (01,02)        |
| UT8ER2M32M (QS09)             | 5962-10203 (01,03)        | UT8R4M39 (QS15)               | 5962-10207 (01,02)        |
| UT8ER2M32S (QS10)             | 5962-10203 (02,04)        |                               |                           |
| UT8ER4M32M (QS11)             | 5962-10204 (01,03)        |                               |                           |
| UT8ER4M32S (QS12)             | 5962-10204 (02,04)        |                               |                           |

## Reason for Change:

DC Electrical Characteristics parameters VIH and VIL were not specified for proper LVCMOS 2.5V nominal operations. Add new device types to address new VIH and VIL electrical parameters

WAS: Table 1A. Sheet 5 or 6

| Test                     | Symbol | Test Condition | Group A subgroups | Device type | Limits |     | Unit |
|--------------------------|--------|----------------|-------------------|-------------|--------|-----|------|
|                          |        |                |                   |             | Min    | Max |      |
| High-level input voltage | VIH    |                | 1,2,3             | All         | 2.2    |     | V    |
| Low-level input voltage  | VIL    |                | 1,2,3             | All         |        | 0.8 | V    |

IS: Table 1A. Sheet 5 or 6

| Test                     | Symbol | Test Condition                               | Group A subgroups | Device type | Limits |     | Unit |
|--------------------------|--------|--|-------------------|-------------|--------|-----|------|
|                          |        |  |                   |             | Min    | Max |      |
| High-level input voltage | VIH    |  | 1,2,3             | 1-4         | 2.2    |     | V    |
| Low-level input voltage  | VIL    |  | 1,2,3             | 1-4         |        | 0.8 | V    |
| High-level input voltage | VIH1   | VDD1=2.0V, VDD2=3.6V<br>VDD1=1.7V, VDD2=3.0V | 1,2,3             | 5, 6        | 2.2    |     | V    |
| Low-level input voltage  | VIL1   | VDD1=2.0V, VDD2=3.6V<br>VDD1=1.7V, VDD2=3.0V | 1,2,3             | 5, 6        |        | 0.8 | V    |
| High-level input voltage | VIH2   | VDD1=2.0V, VDD2=2.7V                         | 1,2,3             | 5, 6        | 1.6    |     | V    |
| Low-level input voltage  | VIL2   | VDD1=1.7V, VDD2=2.3V                         | 1,2,3             | 5, 6        |        | 0.7 | V    |

Existing device types have the following changes:

- Increase Absolute max parameters  $V_{DD1}$  and  $V_{DD2}$
- Package dimension correction
- Add address skew timing parameters so that app note information on this subject is not overlooked by the user.

Section 1.3

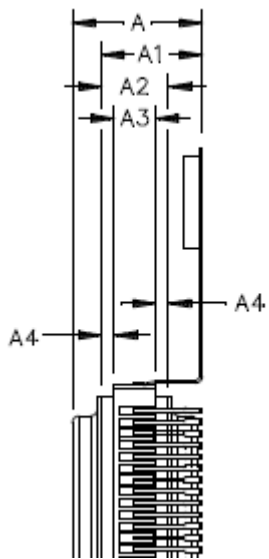
Increase Vdd1 to +2.4V

Increase Vdd2 to +4.5V

Increase Voltage range on any pin to +4.5V

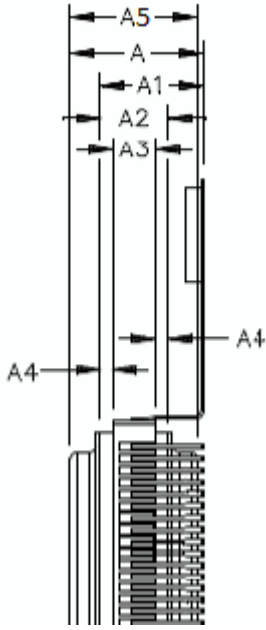
Was (figure 1):

A Max (mm) 7.87 Max (in) .310



Is (figure 1):

A Max (mm) 7.71 Max (in) .304; A5 Max (mm) 7.28 Max (in) .287



Add to Table I:

- Add New Note : Address changes prior to satisfying  $t_{AVAV}$  minimum is an invalid operation.
  - Add this note to Read cycle time ( $t_{AVAV1}$ )
- Add New Note: Guaranteed by design
  - Add this note to new parameters  $t_{AVSK}$  and  $t_{AVET2}$
- Add new parameters
  - Address valid to address valid skew time;  $t_{AVSK}$  ; See figures 4 an 5 as applicable; 9, 10, 11; All; Max 4 ns
  - Address setup time for read (E-controlled);  $t_{AVET2}$ ; See figures 4 and 5 as applicable; 9, 10, 11; All; Min -4 ns

Figure 5 Read cycle 1 Was:

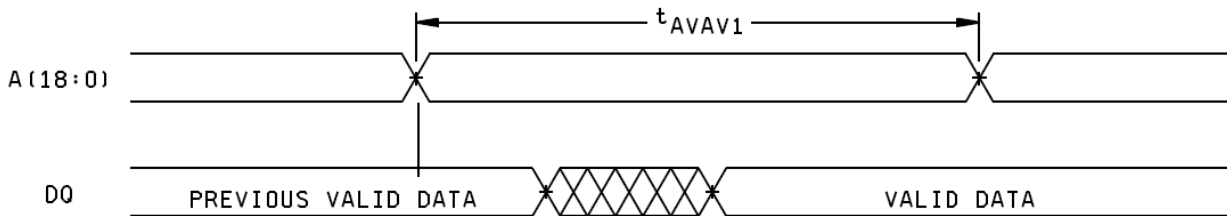


Figure 5 Read cycle 1 Is:

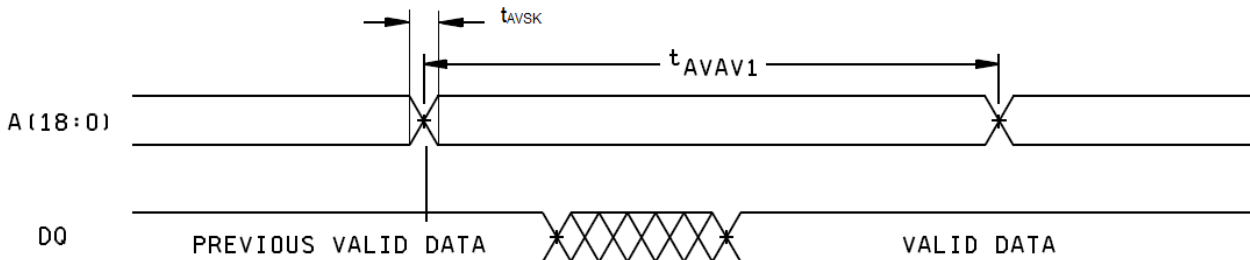


Figure 5 Read cycle 2 Was:

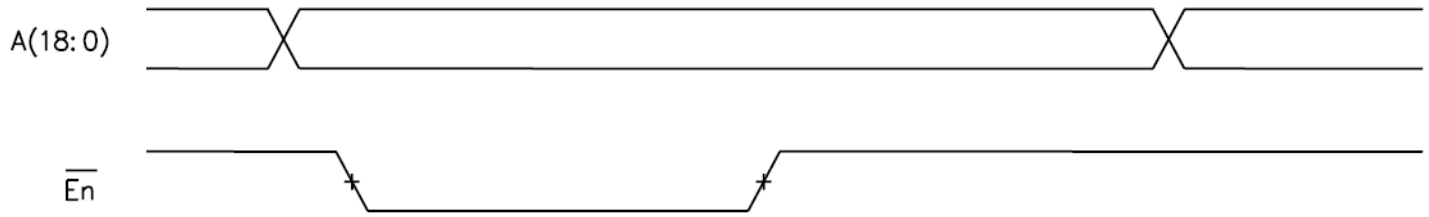
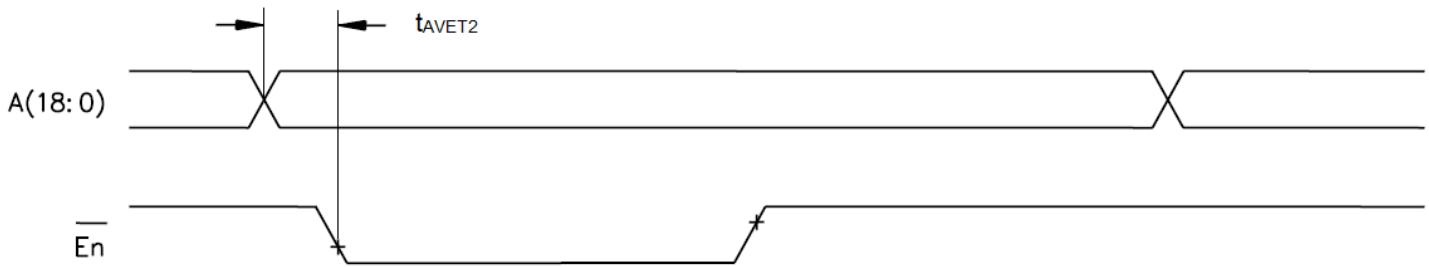



Figure 5 Read cycle 2 Is:



|  |  |  |  |  |
|--|--|--|--|--|
| 20. DISPOSITIONARY RECOMMENDATION:           | CHECK & <input type="checkbox"/><br>USE AS IS  | CONTACT <input type="checkbox"/><br>MANUFACTURER | REMOVE & <input type="checkbox"/><br>REPLACE | CORRECT & <input type="checkbox"/><br>USE AS SPECIFIED |
| 21. ADEPT REPRESENTATIVE<br><b>Tim Meade</b> | 22. SIGNATURE<br> |  |  | 23. DATE<br><b>04/02/18</b>                            |