

PowerPC™

Application Note

MPC8260 60x Bus Timing Diagram

Freescale NetComm, Austin

0.0 Introduction

All the timing diagrams are generated based on the simulations.

The timing diagrams are organized as followings:

1. External 60x Master Transactions
2. External 60x Slave Transactions.

1. External 60x Master Transaction

1.1 External 60x Master Writes to Memory (GPCM) on 60x Bus

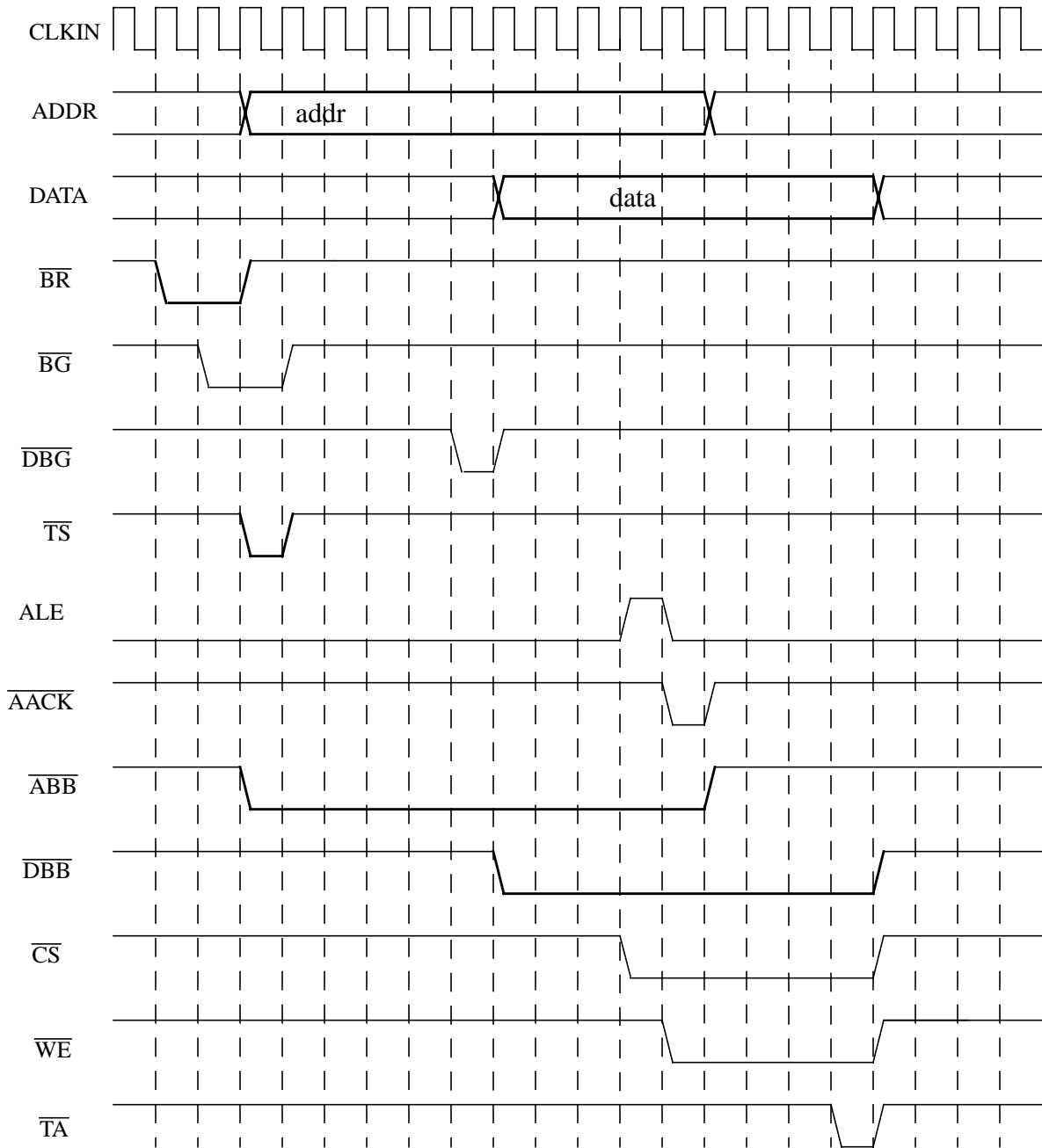


Figure 1 60x bus write to 60x memory

Notes: All the thick-lined signals are driven by external 60x master.

1.2 External 60x Master 60x Reads from Memory(GPCM) on 60x Bus

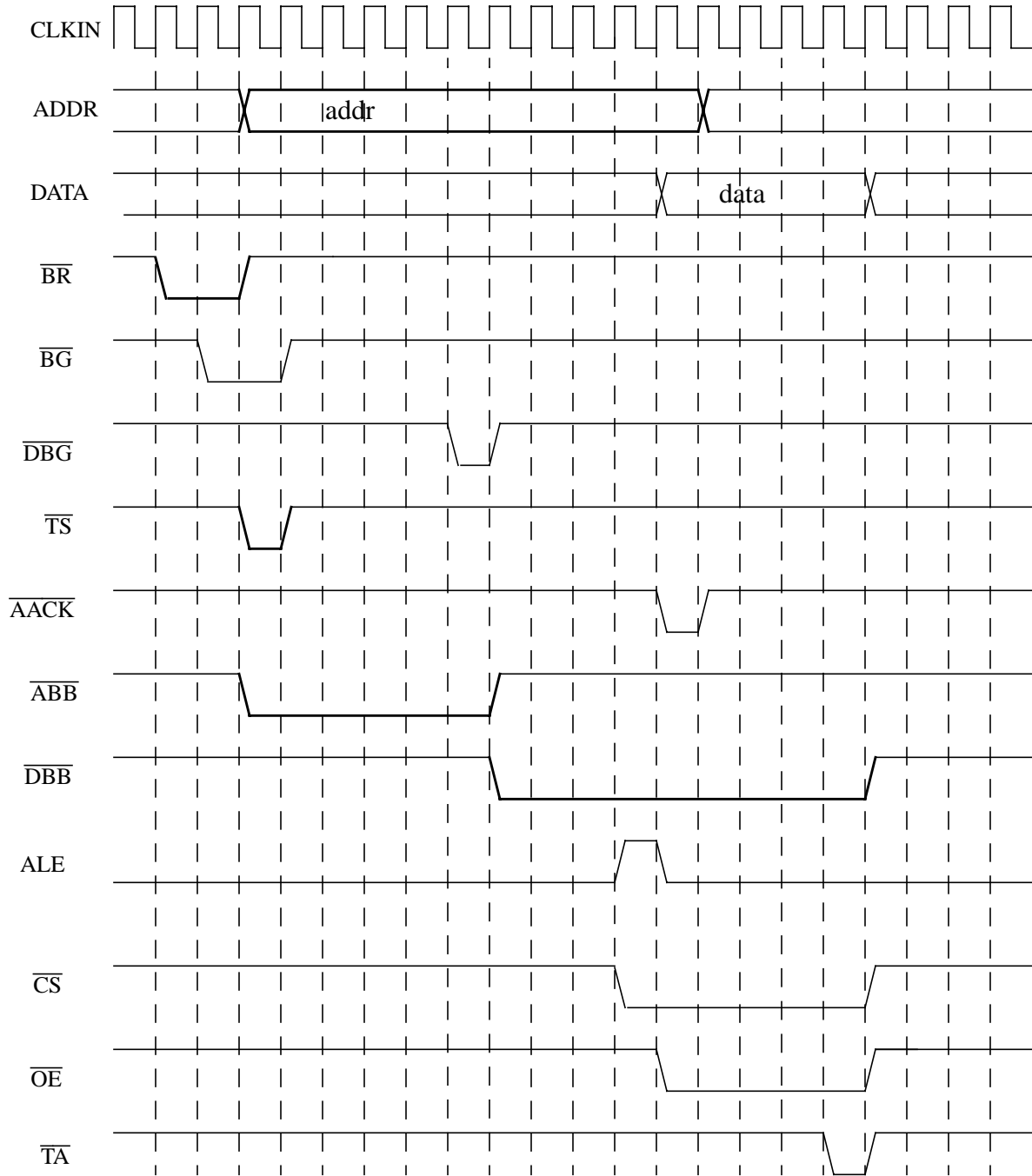


Figure 2 60x bus read from 60x memory (GPCM)

Notes: All the thick-lined signals are driven by external 60x master.

1.3 External 60x Master Reads from Internal dual-port RAM

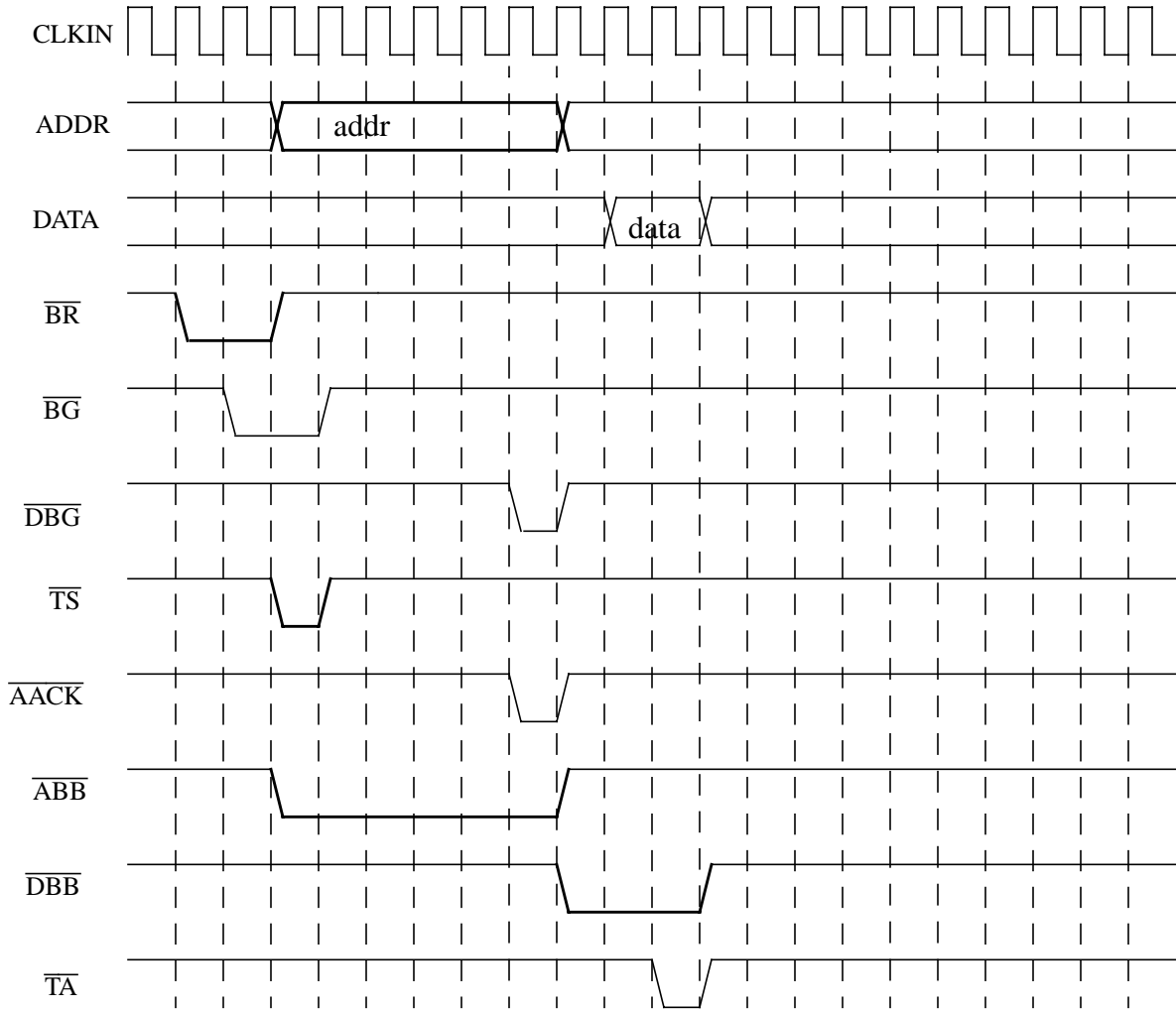


Figure 3 60x bus read from internal dual-port RAM

Notes: All the thick-lined signals are driven by external 60x master.

1.4 External 60x Master writes to internal dual-port RAM

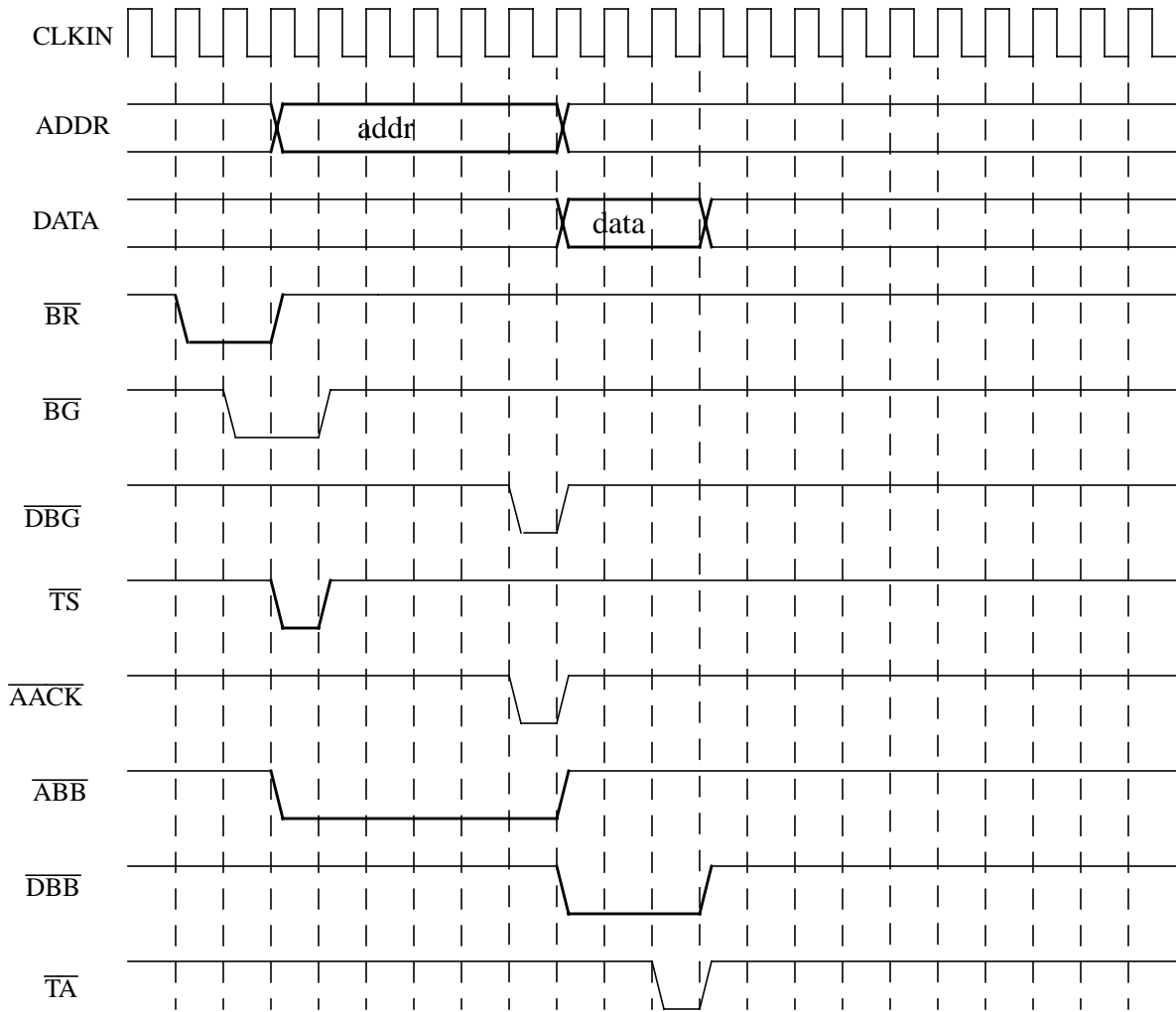


Figure 4 60x bus write to internal dual-port RAM

Notes: All the thick-lined signals are driven by external 60x master.

1.5 External 60x Master Writes to Memory (GPCM) on Local Bus

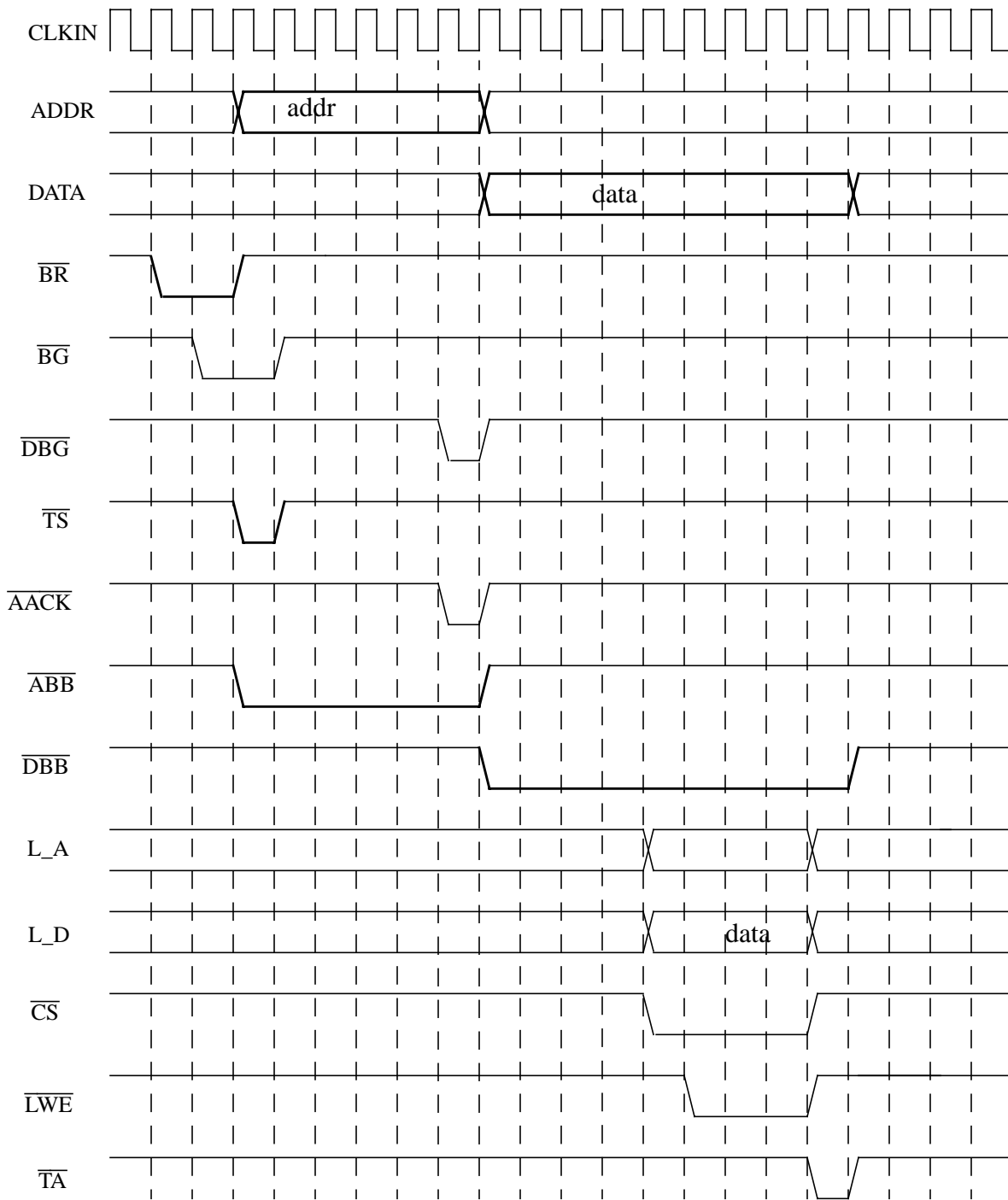


Figure 5 60x bus write to local bus

Notes: All the thick-lined signals are driven by external 60x master.

1.6 External 60x Master Reads from Memory(GPCM) on Local Bus

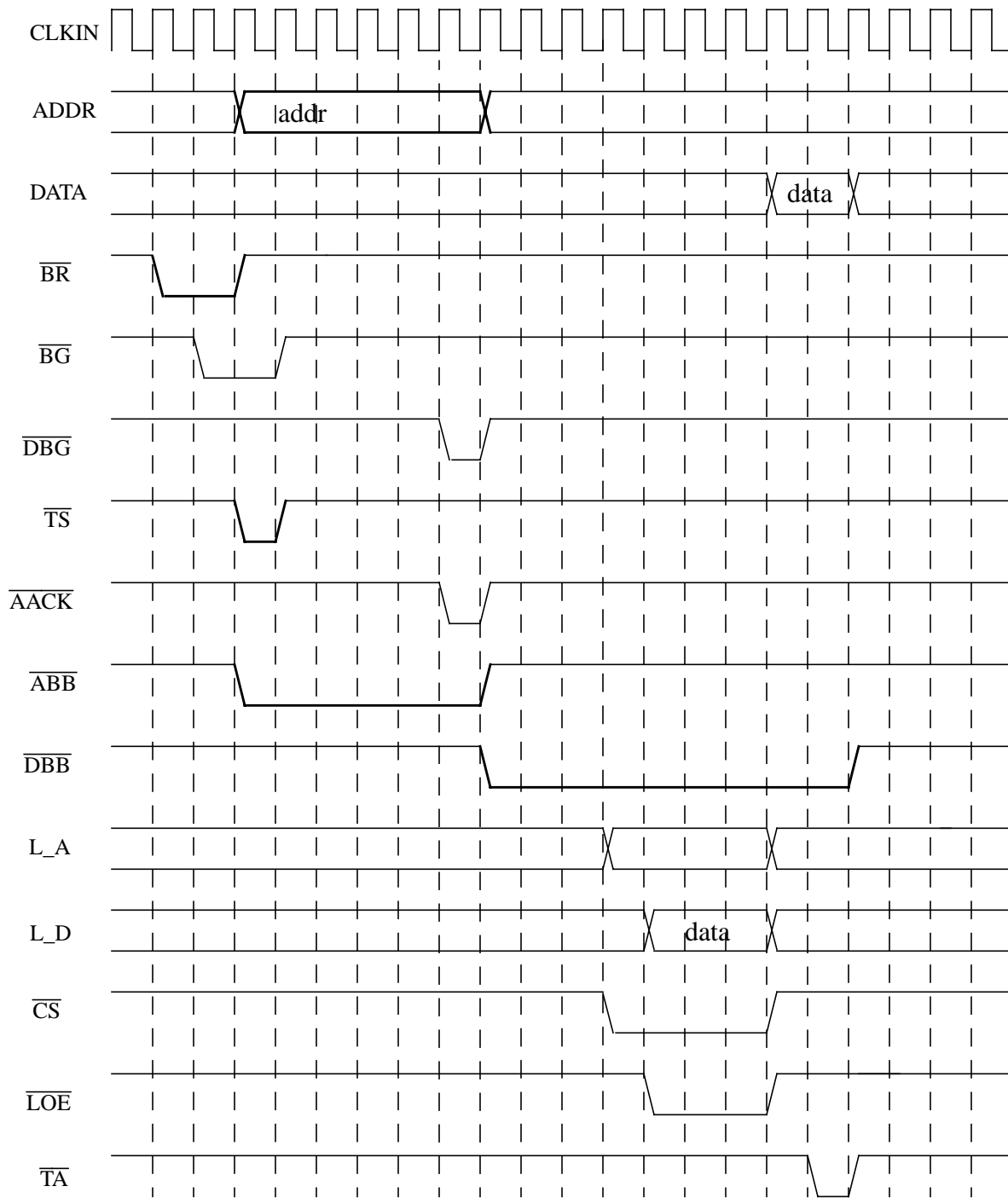


Figure 6 60x bus read from local bus

Notes: All the thick-lined signals are driven by external 60x master.

1.7 External 60x Master Writes to 60x Memory (GPCM) with Read-Modify-Write Cycle

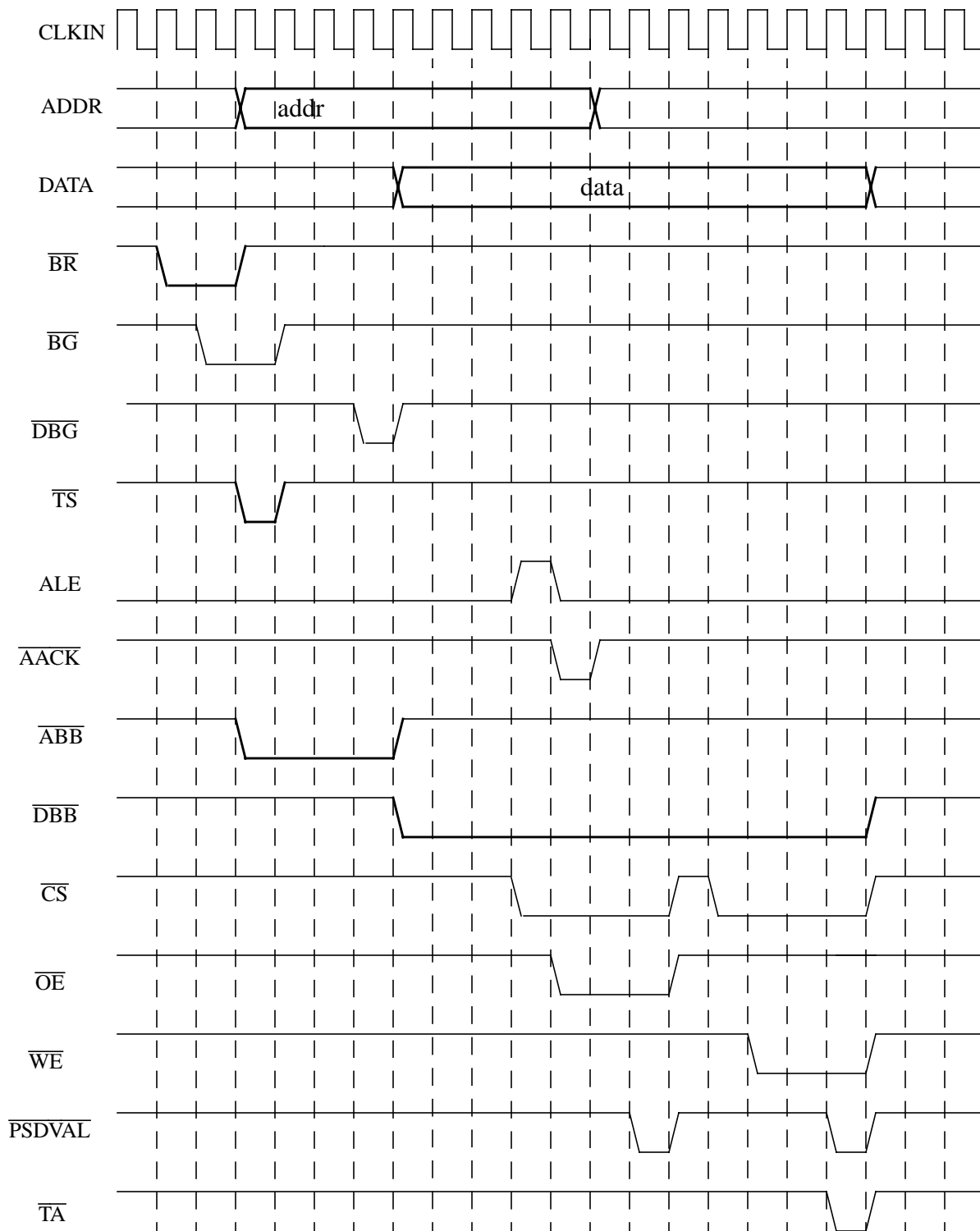


Figure 7 60x bus master write to 60x memory with Read-Modify-Write Cycle

Notes: All the thick-lined signals are driven by external 60x master.

1.8 External 60x Master Writes to Local Memory (GPCM) with Read-Modify-Write Cycle

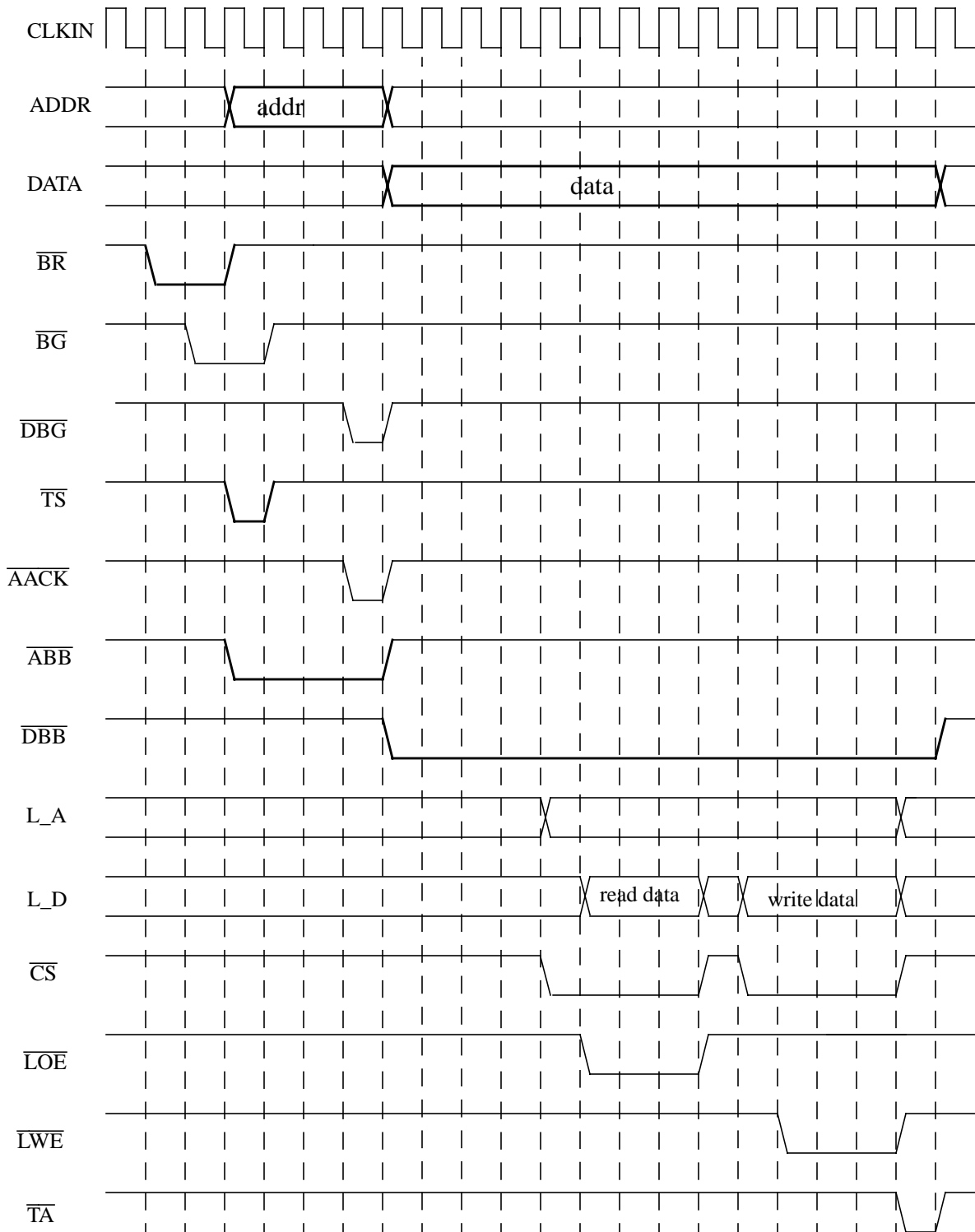


Figure 8 60x bus write to local bus with Read-Modify-Write Cycle

Notes: All the thick-lined signals are driven by external 60x master.

1.9 $\overline{\text{ARTRY}}$ Cycle during External 60x Master Access

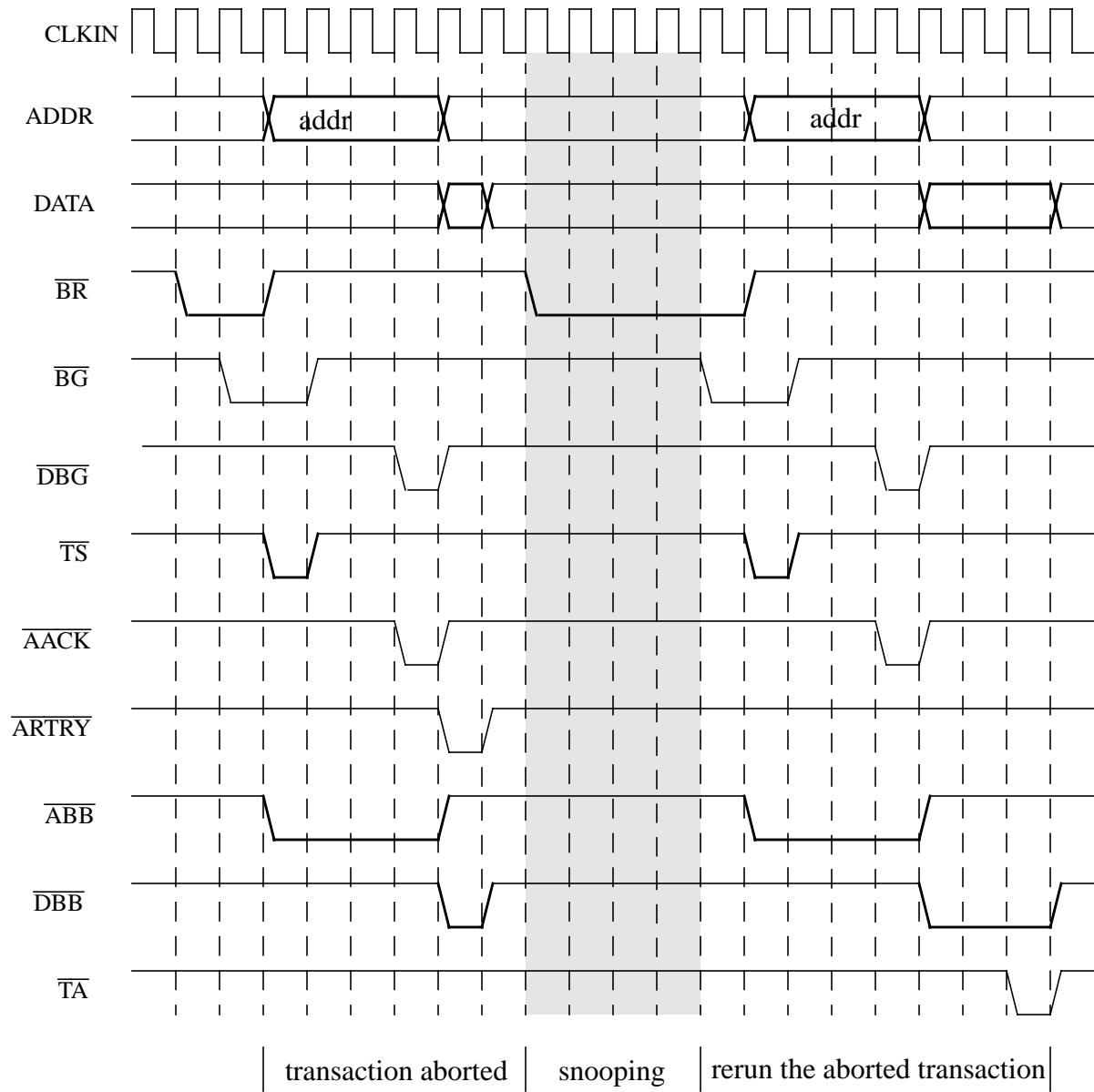


Figure 9 $\overline{\text{ARTRY}}$ cycle during external 60x master access

Notes: All the thick-lined signals are driven by external 60x master.

1.10 \overline{TEA} Termination during External 60x Master Access

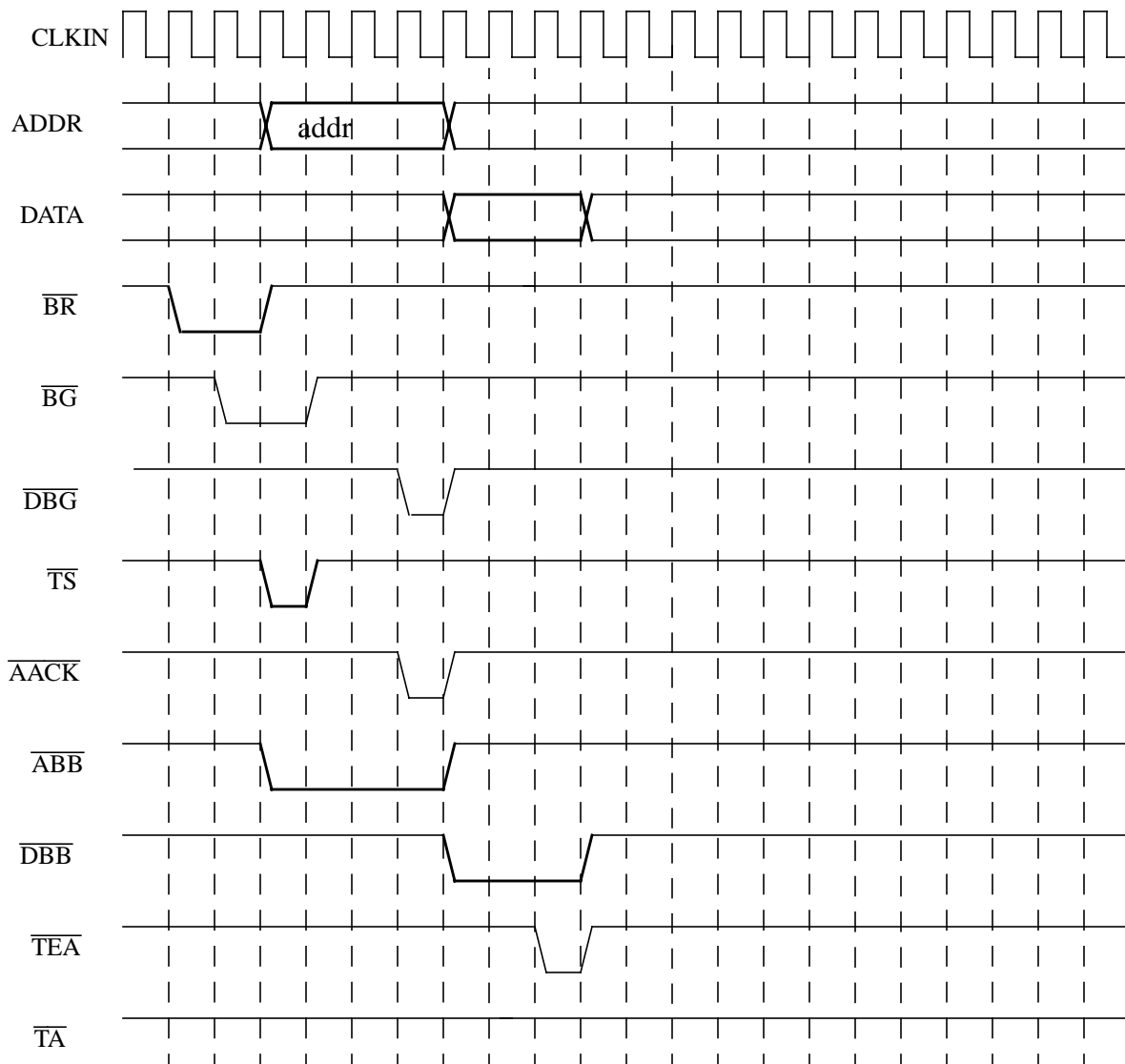


Figure 10 \overline{TEA} termination during external 60x master access

All the thick-lined signals are driven by external 60x master.

Note:

If the external 60x master initiates a transaction not supported by MPC8260, the MPC8260 signals an error by asserting \overline{TEA} .

1.11 Pipeline Control -- Cycle with Pipeline

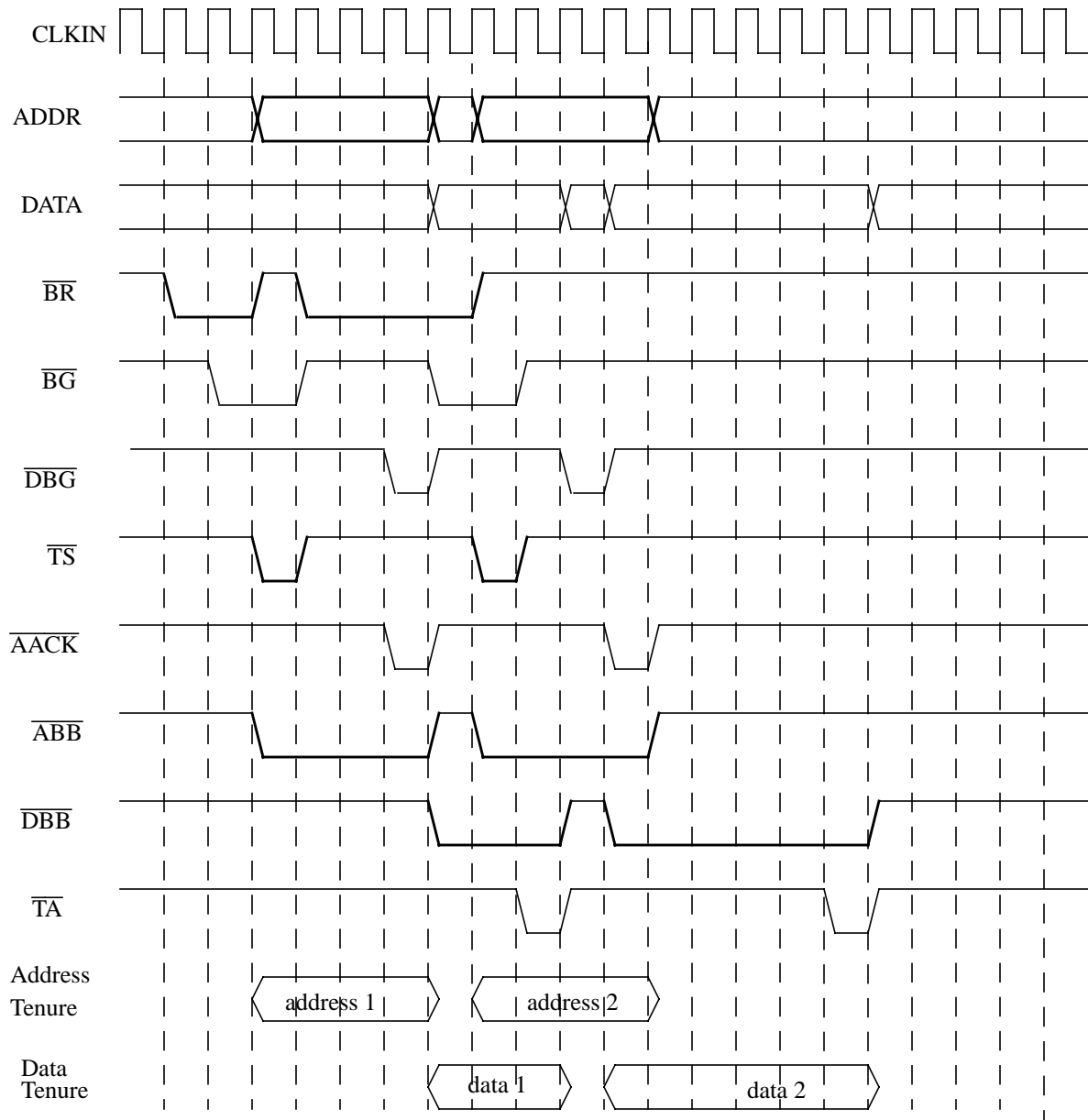


Figure 11. 60x Master Cycle with Pipeline

Note:

- The pipeline depth is controlled by BCR[PLDP]:
 - PLDP = 1: Depth is 0
 - PLDP = 0: Depth is 1
- With the pipeline depth equals to 1, the second address tenure starts before the end of the first data tenure.

1.12 Pipeline Control -- Cycle without Pipeline

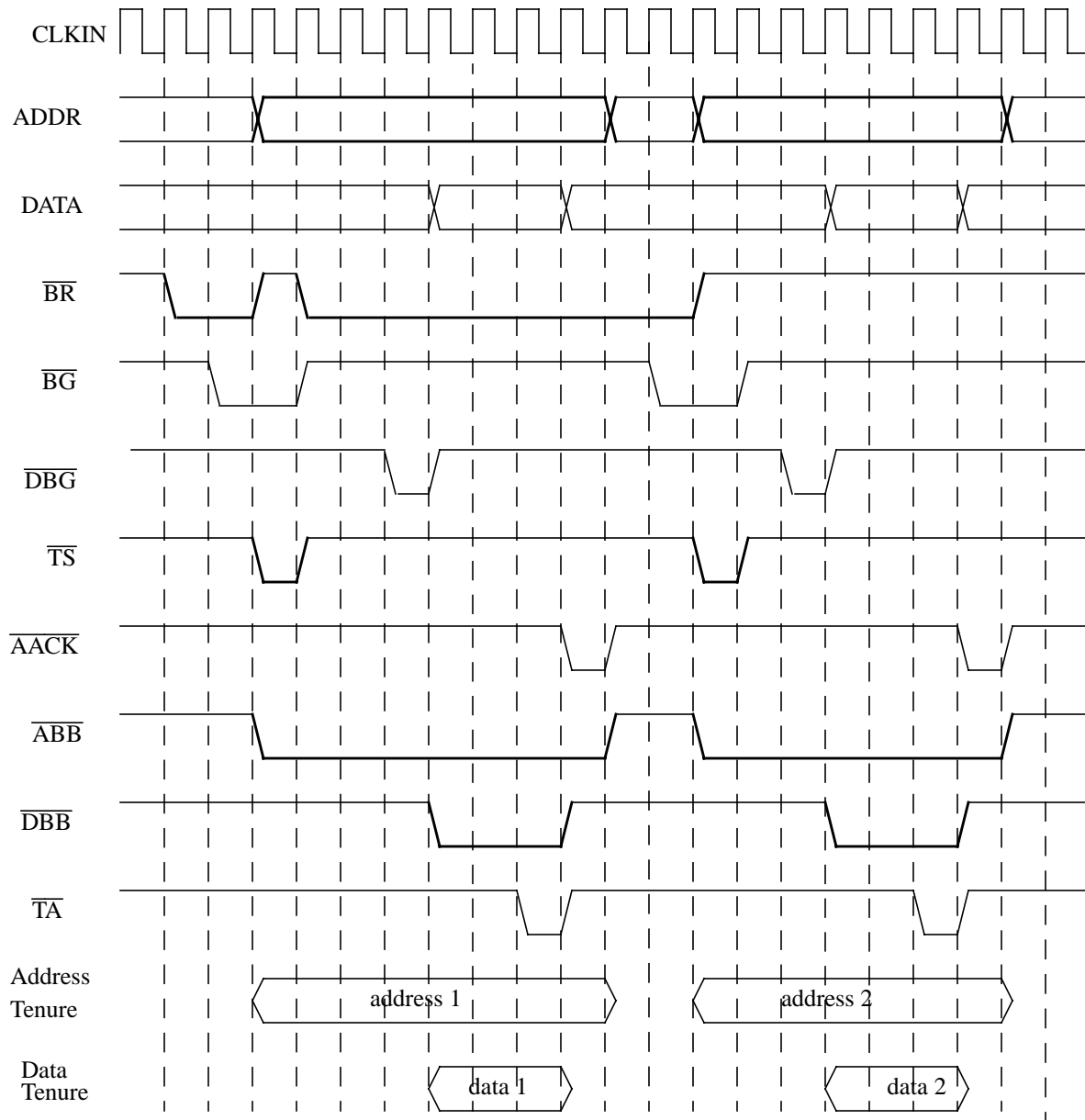


Figure 12. 60x Master Cycle without Pipeline

Note:

1. The pipeline depth is controlled by BCR[PLDP]:
 - PLDP = 1: Depth is 0
 - PLDP = 0: Depth is 1

2. With the pipeline depth equals to 0, the second address tenure starts after the end of the first bus tenure. Also for each bus transaction, the address tenure ends one cycle after its own data tenure finishes.

2. External Slave Transaction

2.1 Simple Read from 60x slave

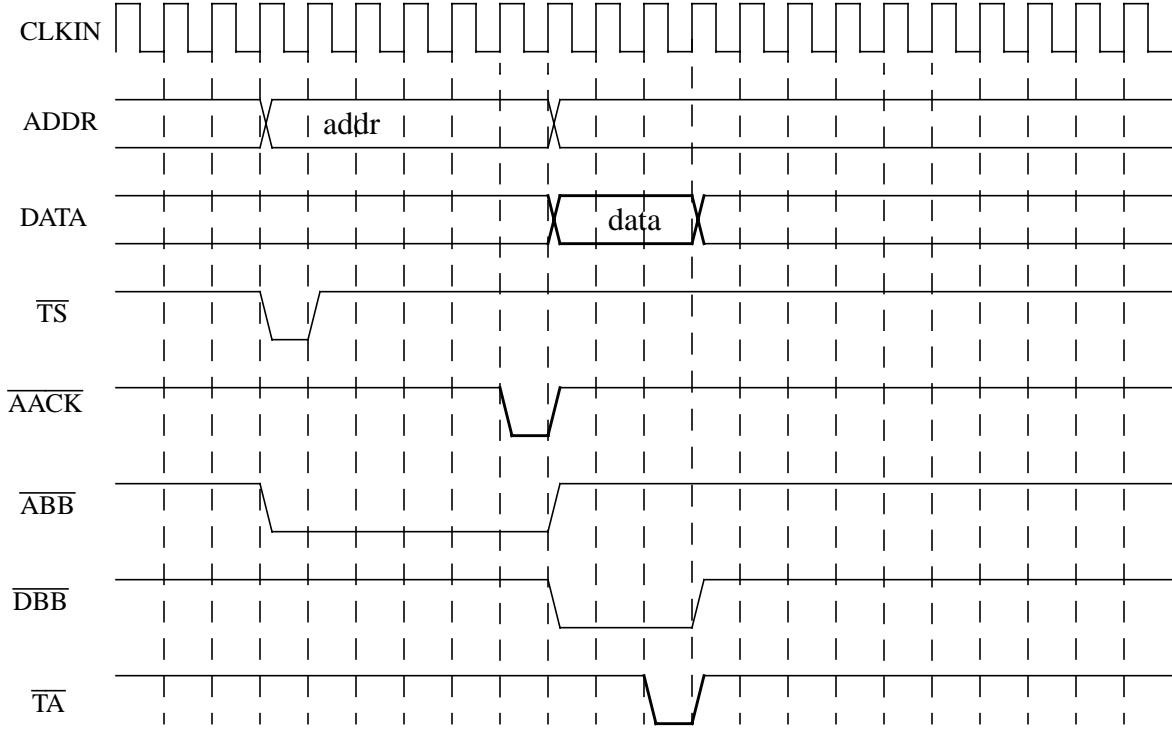


Figure 13 Simple read from 60x slave

Notes: All the thick-lined signals are driven by external 60x slave.

2.2 Simple Write to 60x slave

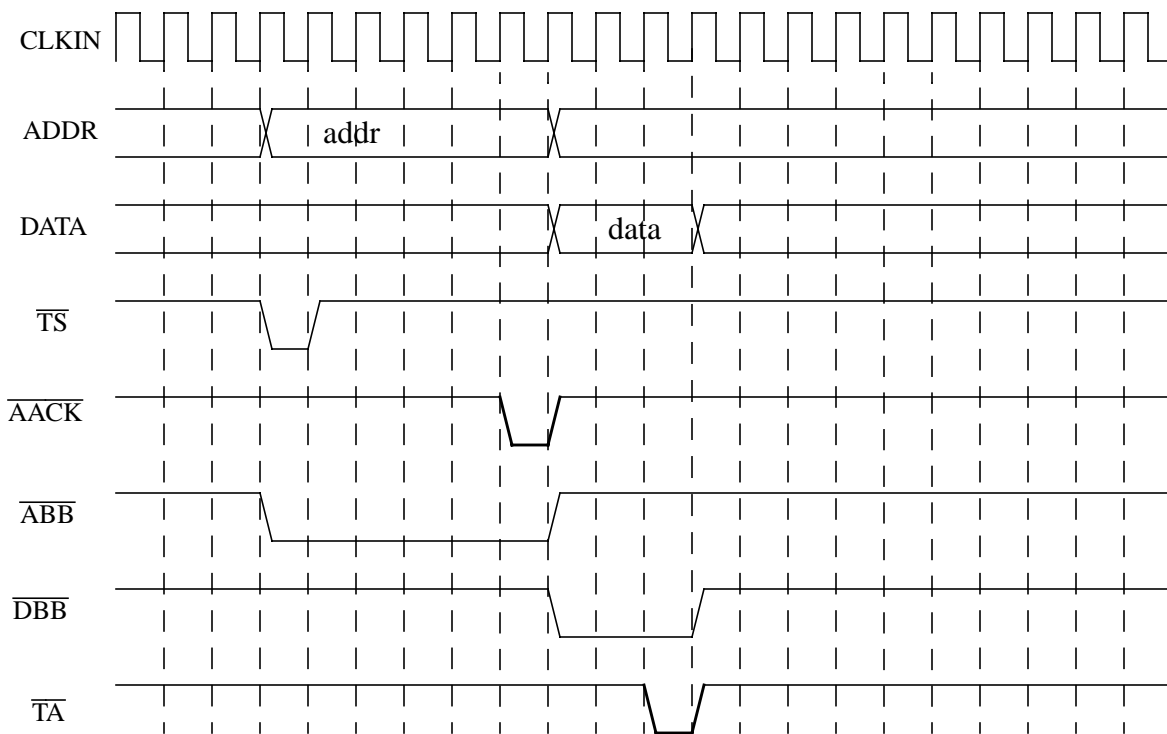


Figure 14 Simple write to 60x slave

Notes: All the thick-lined signals are driven by external 60x slave.

2.3 $\overline{\text{ARTRY}}$ Cycle during 60x Slave Transaction

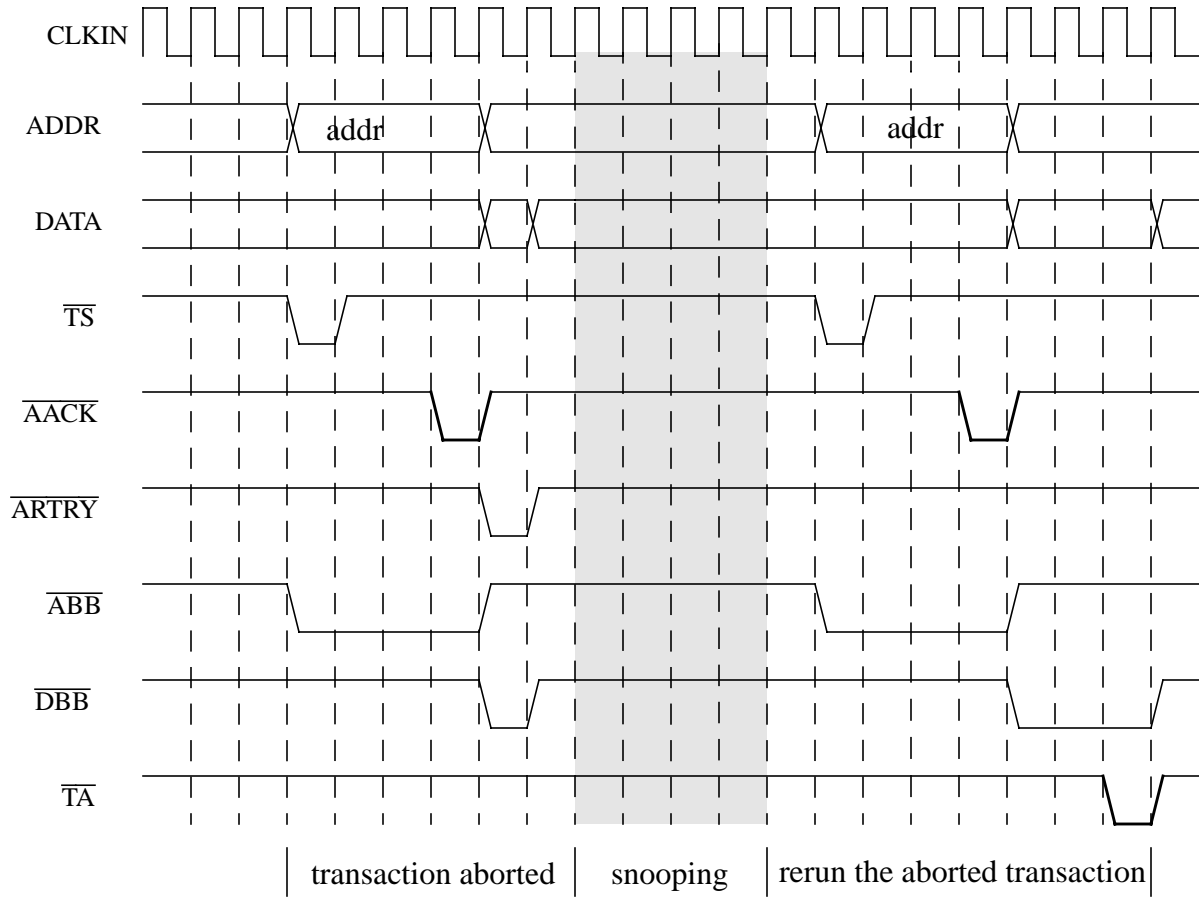


Figure 15 $\overline{\text{ARTRY}}$ cycle during 60x Slave Transaction

Notes: All the thick-lined signals are driven by external 60x slave.

2.4 $\overline{\text{TEA}}$ Termination during External 60x Slave Access

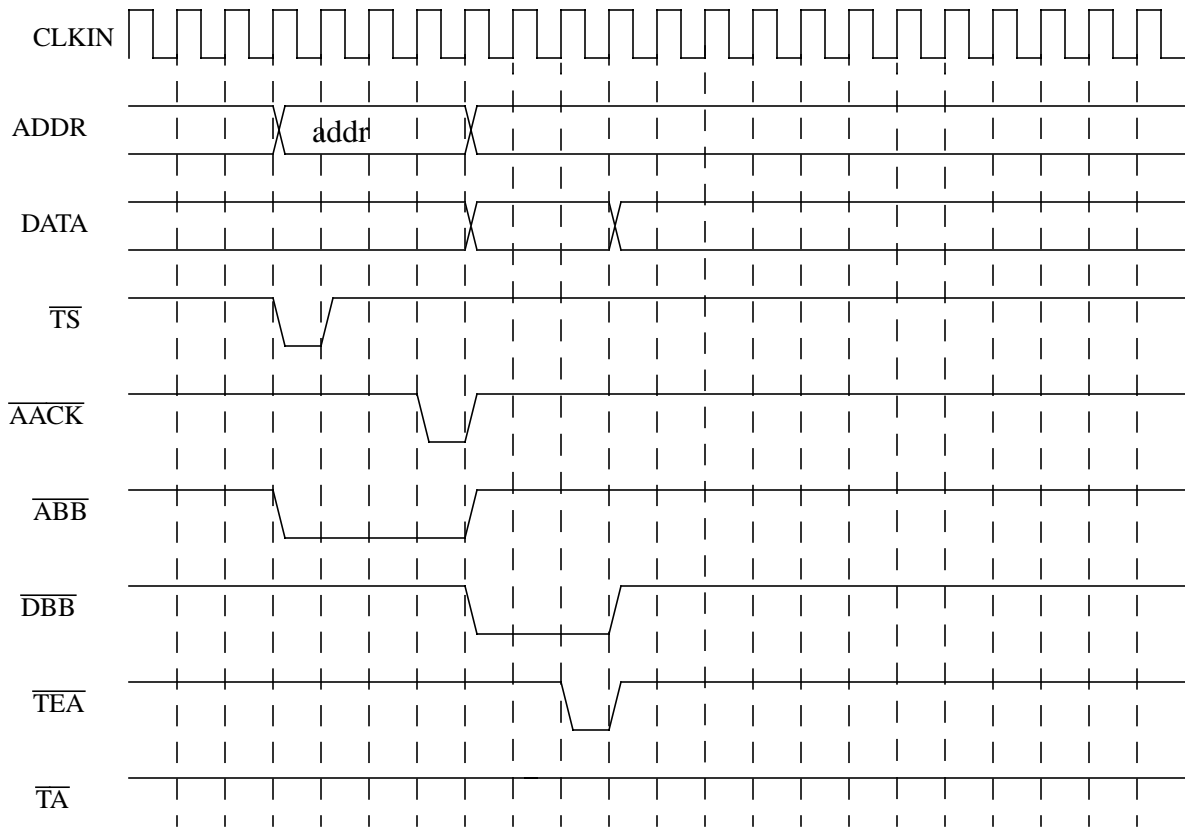


Figure 16 $\overline{\text{TEA}}$ termination during external 60x Slave access

Note:

If the external 60x slave detects a bus error, it may assert $\overline{\text{TEA}}$ to inform MPC8260 during data tenure.

2.5 Pipeline Control -- Cycle with Pipeline

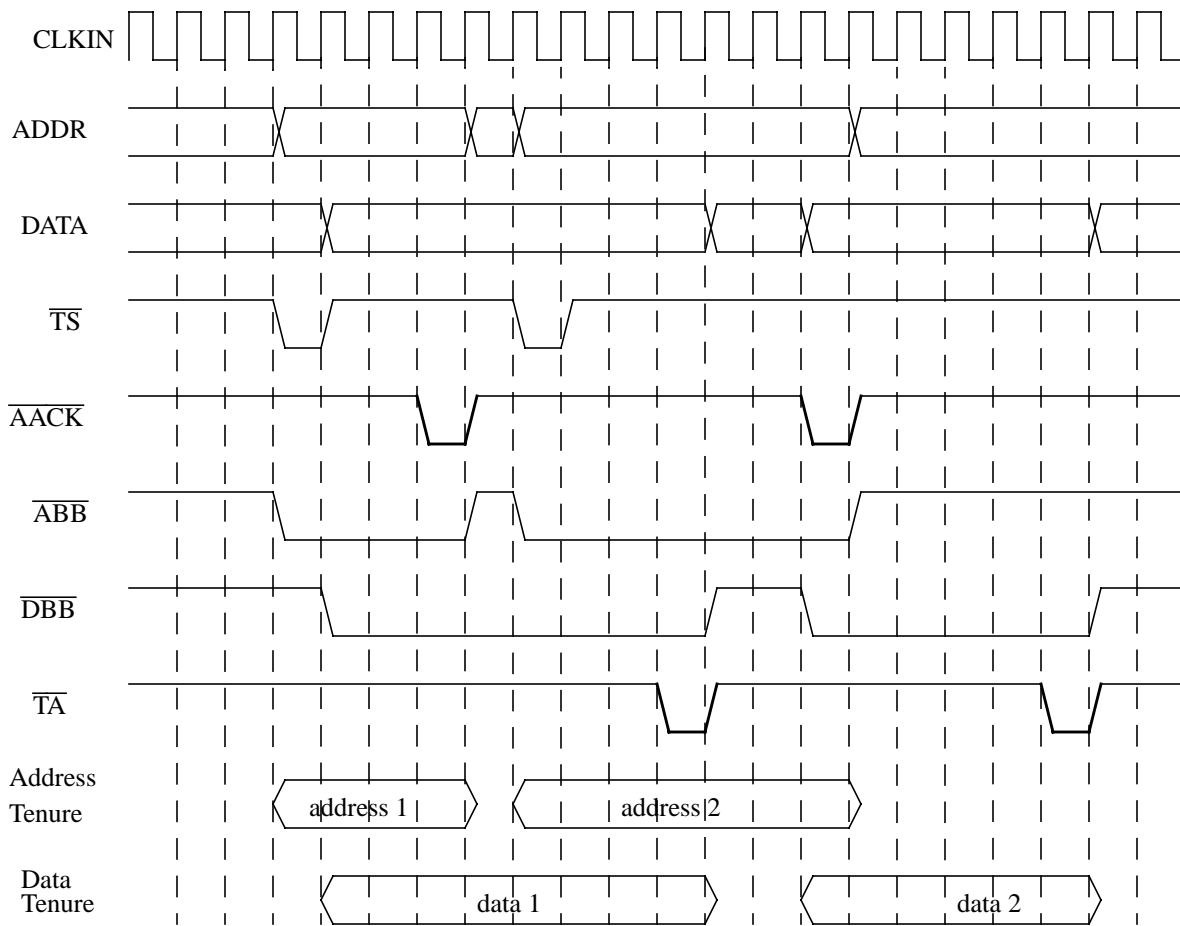


Figure 17 Cycle with Pipeline

Note:

1. The pipeline depth is controlled by BCR[PLDP]:

PLDP = 1: Depth is 0

PLDP = 0: Depth is 1

2. With the pipeline depth equals to 1, the second address tenure starts before the end of the first data tenure.

2.6 Pipeline Control -- Cycle without Pipeline

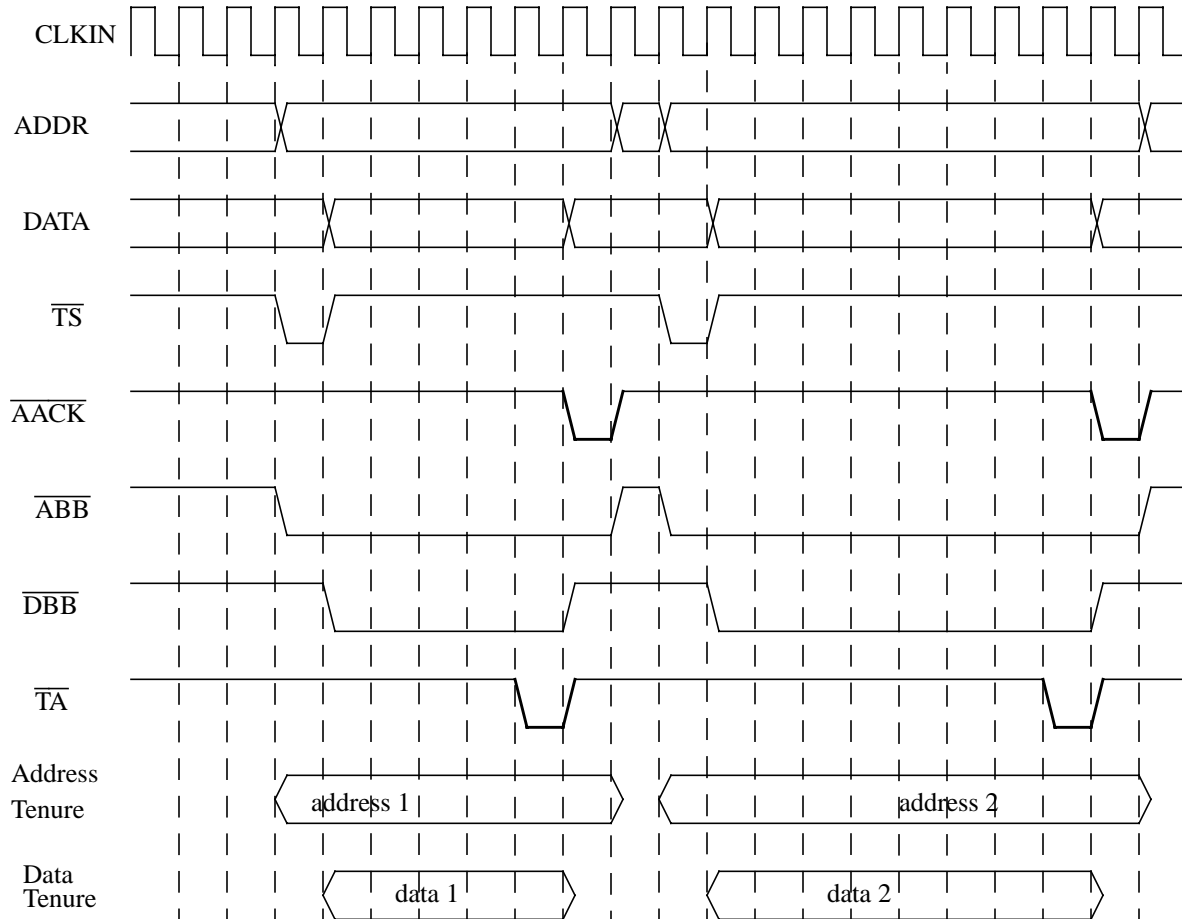


Figure 18 Cycle without Pipeline

Note:

1. The pipeline depth is controlled by BCR[PLDP]:

PLDP = 1: Depth is 0

PLDP = 0: Depth is 1

2. With the pipeline depth equals to 0, the second address tenure starts after the end of the first bus tenure. Also for each bus transaction, the address tenure ends one cycle after its own data tenure finishes.

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