M40Z300
M40Z300W

NVRAM CONTROLLER for up to EIGHT LPSRAM
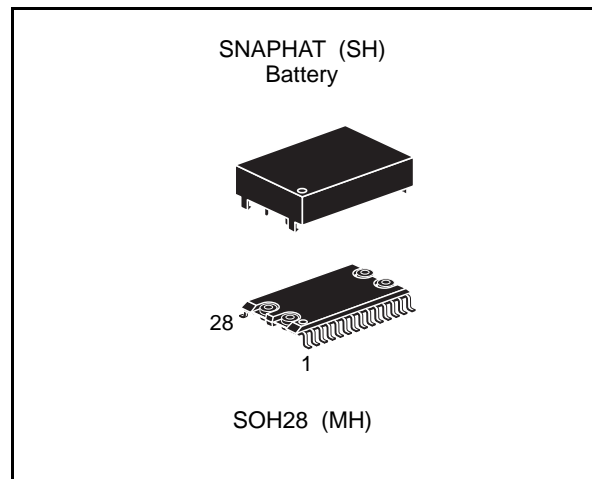
- CONVERT LOW POWER SRAMs into NVRAMs
- PRECISION POWER MONITORING and POWER SWITCHING CIRCUITRY
- AUTOMATIC WRITE-PROTECTION when V_{CC} is OUT-OF-TOLERANCE
- TWO INPUT DECODER ALLOWS CONTROL for up to 8 SRAMs (with 2 devices active in parallel)
- CHOICE of SUPPLY VOLTAGES and POWER-FAIL DESELECT VOLTAGES:
  - M40Z300:
    V_{CC} = 4.5V to 5.5V
    THS = V_{SS} $4.5V \leq V_{PFD} \leq 4.75V$
    THS = V_{OUT} $4.2V \leq V_{PFD} \leq 4.5V$
  - M40Z300W:
    V_{CC} = 3.0V to 3.6V
    THS = V_{SS} $2.8V \leq V_{PFD} \leq 3.0V$
    V_{CC} = 2.7V to 3.3V
    THS = V_{OUT} $2.5 \leq V_{PFD} \leq 2.7V$
- RESET OUTPUT ($\overline{RST}$) for POWER ON RESET
- LESS THAN 12ns CHIP ENABLE ACCESS PROPAGATION DELAY (for 5.0V device)
- PACKAGING INCLUDES a 28-LEAD SOIC and SNAPHAT® TOP (to be Ordered Separately)
- SOIC PACKAGE PROVIDES DIRECT CONNECTION for a SNAPHAT TOP which CONTAINS the BATTERY
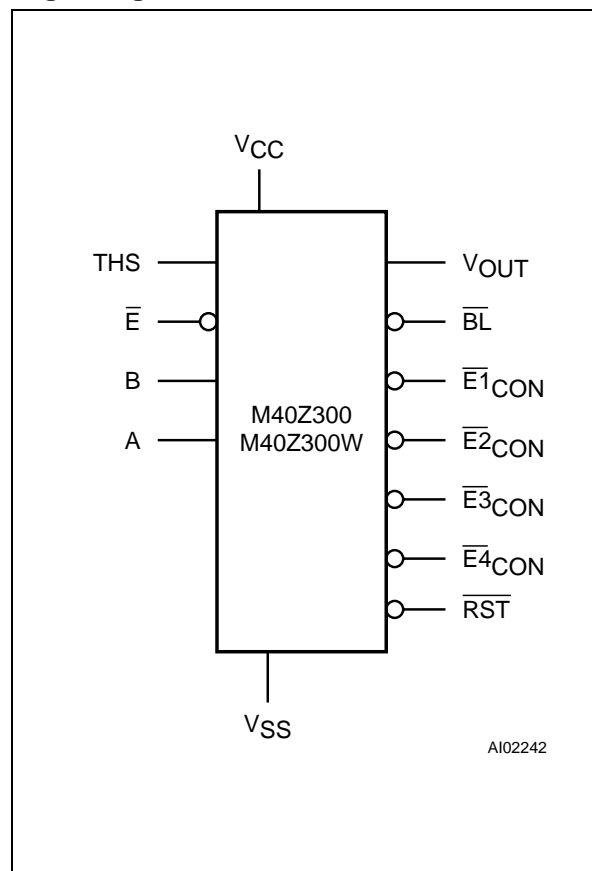- BATTERY LOW PIN ($\overline{BL}$)

DESCRIPTION

The M40Z300/W NVRAM Controller is a self-contained device which converts a standard low-power SRAM into a non-volatile memory. A precision voltage reference and comparator monitors the V_{CC} input for an out-of-tolerance condition.
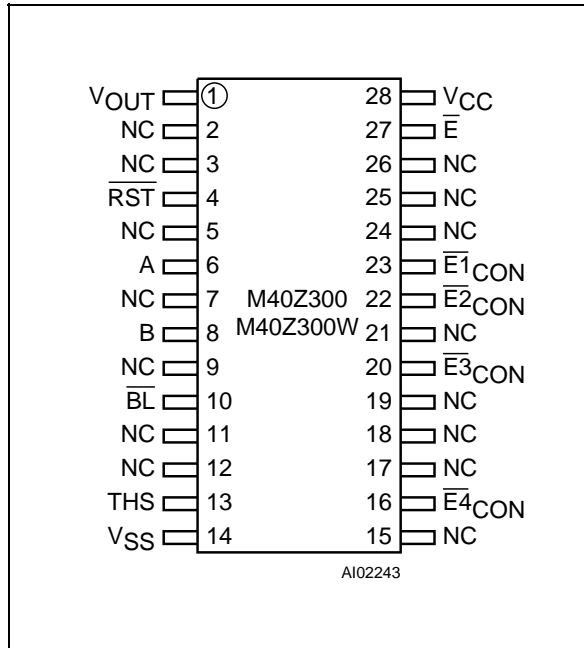
When an invalid V_{CC} condition occurs, the conditioned chip enable outputs ($\overline{E1}_{CON}$ to $\overline{E4}_{CON}$) are forced inactive to write-protect the stored data in the SRAM. During a power failure, the SRAM is switched from the V_{CC} pin to the lithium cell within the SNAPHAT to provide the energy required for data retention. On a subsequent power-up, the SRAM remains write protected until a valid power condition returns.

SNAPHAT (SH)
Battery

28

1

SOH28 (MH)

Logic Diagram

AI02242

Complete data available on *DATA-on-DISC CD-ROM* or at *www.st.com*

SOIC Pin Connections

V_{OUT}	①	28	V_{CC}
NC	2	27	$\overline{E}$
NC	3	26	NC
$\overline{RST}$	4	25	NC
NC	5	24	NC
A	6	23	$\overline{E1}_{CON}$
NC	7	22	$\overline{E2}_{CON}$
B	8	21	NC
NC	9	20	$\overline{E3}_{CON}$
$\overline{BL}$	10	19	NC
NC	11	18	NC
NC	12	17	NC
THS	13	16	$\overline{E4}_{CON}$
V_{SS}	14	15	NC

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Warning: NC = Not Connected.

Signal Names

THS	Threshold Select Input
$\overline{E}$	Chip Enable Input
$\overline{E1}_{CON}$-$\overline{E4}_{CON}$	Conditioned Chip Enable Output
A, B	Decoder Inputs
$\overline{RST}$	Reset Output
$\overline{BL}$	Battery Low Output
V_{OUT}	Supply Voltage Output
V_{CC}	Supply Voltage
V_{SS}	Ground

Ordering Information Scheme
For a list of available options or for further information on any aspect of this device, please contact the STMicroelectronics Sales Office nearest to you.

Example: M40Z300W MH 1 TR

Supply Voltage and Write Protect Voltage

300 V_{CC} = 4.5V to 5.5V
THS = V_{SS} $4.5V \leq V_{PFD} \leq 4.75V$
THS = V_{OUT} $4.2V \leq V_{PFD} \leq 4.5V$

300W V_{CC} = 3.0V to 3.6V
THS = V_{SS} $2.8V \leq V_{PFD} \leq 3.0V$
V_{CC} = 2.7V to 3.3V
THS = V_{OUT} $2.5 \leq V_{PFD} \leq 2.7V$

Package

MH [1] SOH28

Temperature Range

1 0 to 70 °C

Shipping Method for SOIC

blank Tubes

TR Tape & Reel

Note: 1. The SOIC package (SOH28) requires the battery package (SNAPHAT) which is ordered separately under the part number "M4Zxx-BR00SH1" in plastic tube or "M4Zxx-BR00SH1TR" in Tape & Reel form.

Caution: Do not place the SNAPHAT battery package "M4Zxx-BR00SH1" in conductive foam since will drain the lithium button-cell battery.