


<b>LC3517</b>	c-mos LSI	CIRCUIT DRAWING No.4005
2048 WORDS x 8 BITS CMOS STATIC RAM		 3011A


The LC3517 is an unlocked high-speed static RAM that is organized as 2048 words x 8 bits and operates from a single 5V supply. It has two control inputs:  $\overline{OE}$  input dedicated to output tri-state control facilitating timing control in bus-used systems and  $\overline{CE}$  input for battery applications where the whole circuit on chip enters the standby mode with less current dissipated. By using in conjunction with various CMOS uCPU's, it can be applied to battery-powered portable sets and battery backup operation-required systems.

**Applications**

- Battery-powered portable set.
- Battery backup nonvolatile memory.

**Features**

- Low standby current.
  - LC3517 : 30 $\mu$ A
  - LC3517L : 1 $\mu$ A (Ta=60°C)
- T<sup>2</sup>L compatible at all input/output levels.
- Access time: TAA=250ns max.
- Completely static operation.
- Single 5V supply: V<sub>CC</sub>=5V±10%
- Data hold voltage: V<sub>CC</sub>=2.0 to 5.5V
- Tri-state output
- 24-pin standard package (2716EPROM pin compatible)


<b>LC3517D</b>	c-mos silicon gate LSI	CIRCUIT DRAWING No.4005
2048 WORDS x 8 BITS STATIC RAM		 3011A

**General Description**

The LC3517D is a nonclocked silicon gate CMOS static RAM organized as 2048 words x 8 bits. It has a complete CMOS circuit configuration. With the current dissipation being low at the data hold mode or standby mode and the operating voltage range being wide, it is especially suited for use in CMOS micro-computers, battery-powered portable systems using a CMOS logic IC, and nonvolatile memories at the battery backup mode.

**Features**

- Wide operating voltage range: 2.6 to 5.5V
- Low standby current: 5 $\mu$ A(max) at Ta=60°C
- Low data hold current; 3 $\mu$ A(max) at V<sub>CC</sub>=3.0V, Ta=60°C
- Data hold supply voltage: 2.0 to 5.5V
- No clock required (Complete static memory)
- Common data input and output using 3-state outputs
- 24-pin DIP plastic package
- Pin-out compatible with 2716 EP-ROM
- Two control inputs ( $\overline{OE}$ ,  $\overline{CE}$ )
- 16K Static RAM Family
  - LC3516/LC3516L
  - LC3517/LC3517L
  - LC3516D
  - LC3517D

<b>LC4001B</b>	c-mos IC	CIRCUIT DRAWING No.4006
QUAD 2-INPUT NOR GATE		 3003A

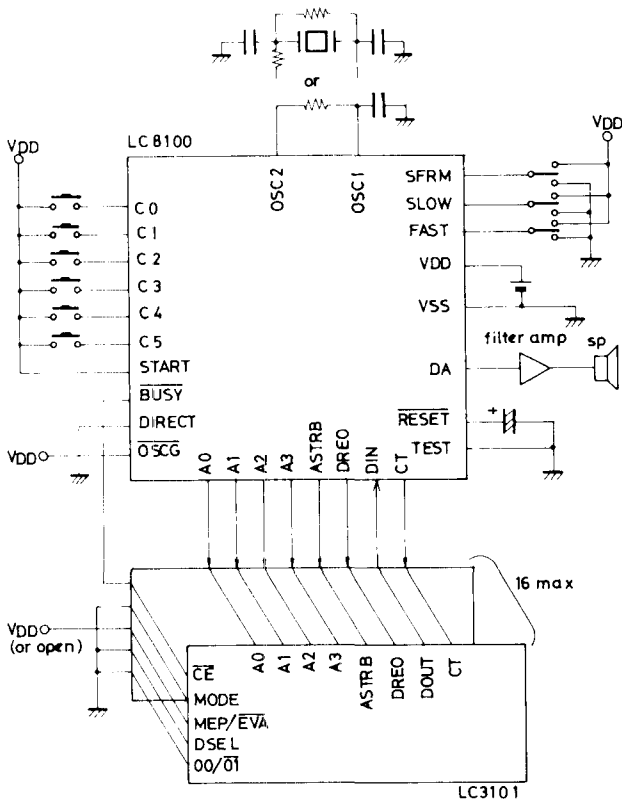
**Features**

- Wide operating voltage range
- High noise margin
- Low power dissipation
- Equivalent to 4000B series of other suppliers

4003:LC3101

SAMPLE APPLICATION CIRCUIT (1)

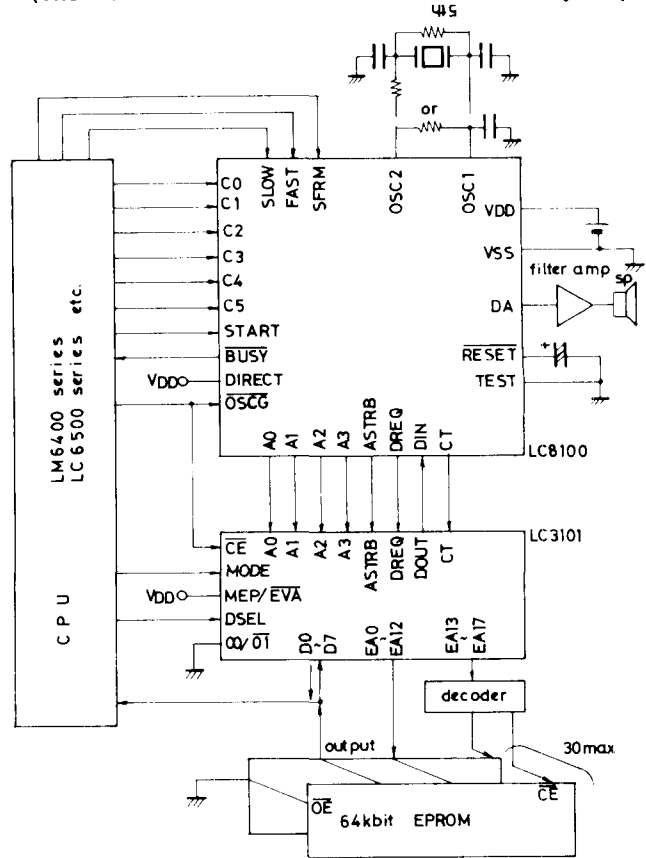
One word to one key correspondence



SAMPLE APPLICATION CIRCUIT (2)

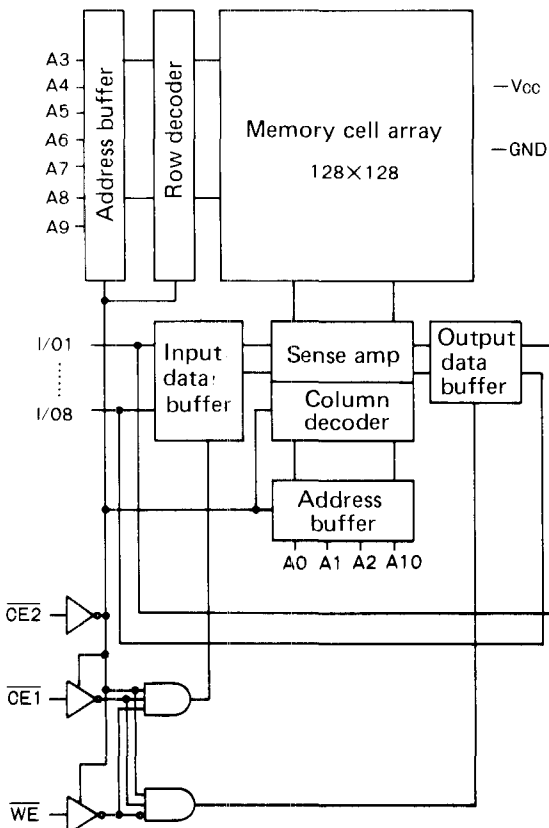
CPU control: Edit and synthesis with CPU

(The mask ROM and a 64k-bit EPROM are used jointly.)



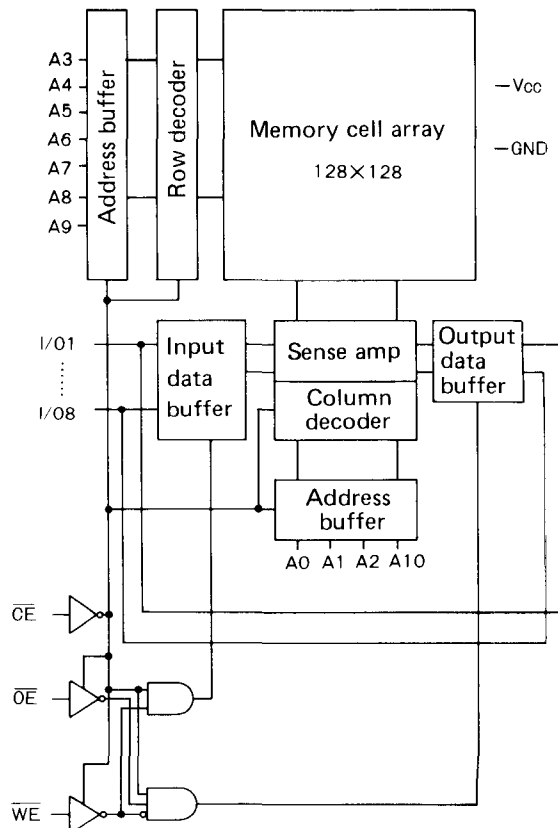
4004:LC3516.D

BLOCK DIAGRAM



4005:LC3517.D

BLOCK DIAGRAM



LC3516D	205	DIP	24	3011A	4004	C-MOS 16K Static RAM (2K×8bits)	Wide operating voltage (2.6~5.5V), low standby current High speed (150, 200, 250ns), low standby current Wide operating voltage (2.6~5.5V), low standby current
LC3517	206	DIP	24	3011A	4005	C-MOS 16K Static RAM (2K×8bits)	
LC3517D	206	DIP	24	3011A	4005	C-MOS 16K Static RAM (2K×8bits)	
◎LM3764	247	DIP	28	3012A	5002	64K Mask ROM (8K×8bits)	Pin-compatible with 2764 (EPROM)

## WATCHES, CLOCKS (monolithic integrated circuit)

Type Number	Page	Case			Circuit Drawing No.	Circuit Functions & Applications	Main Specifications
		Package	Pins	Package No.			
LC5613	214	Chip	-	-	4040	LSI for Watch(with Stopwatch), Static Display	6-digit display, perpetual calendar, 3-function switch, stopwatch 1/100sec
LC5641	215	Chip	-	-	4041	Duplex Display Watch (with Alarm)	4/6-digit display(day-of-week flag), 12/24-hour mode, Ag battery-powered, alarm
LC5643	216	Chip	-	-	4042	Duplex Display Watch	4/6-digit display(day-of-week flag), 12/24-hour mode, Ag battery-powered
LC5645N	217	Chip	-	-	4043	Duplex Display Watch	4-digit display, 12/24-hour mode: bonding-selectable, Ag battery-powered
LC5646	218	Chip	-	-	4044	Duplex Display watch(simple function)	4-digit display, 12-hour mode, 1.5V operation, auto-calender
LC5700N	90	QIP	64	3026B	1004	Microcomputer Type Multifunctional Watch (with Game, etc.) Also available in Chip Form	Various watch functions, game functions available by mask ROM program, Ag/Li battery-powered
LC7600	236	QIP	64	3026B	4091	LCD Digital Clock	4-digit LCD static drive, alarm with snooze, up/down counter for sleep timer, tape counter or, second watch
LM8361	247	DIP	40	3013A	5005	Digital Clock	4-digit LED FLI direct drivable, 12/24-hour mode, alarm with snooze, sleep timer, all digits flashing at power failure
LM8362	248	DIP	40	3013A	5006-8	Digital Clock	Equivalent to LM8360 except 10's hour digit 0 blank, sleep timer fast advance
LM8363	249	DIP	42	3014A	5009	2-Alarm Digital Clock	4-digit red LED/FLI direct drivable, 2 alarms with snooze, calendar, backup circuit
LM8364	249	DIP	42	3014A	5010	2-Output 2-Alarm Digital Clock	4-digit red LED/FLI direct drivable, 2 outputs, 2 alarms with snooze, calendar, backup circuit
LM8365	250	DIP	42	3014A	5012	2-output 2-Alarm Digital Clock	Equivalent to LM8364 (except mirror image pin assignment)
LM8368	250	DIP	40	3013A	5013-5	Digital Clock	Equivalent to LM8362 (except mirror image pin assignment)
LM8460	251	DIP	42S	3025B	5016	Digital Clock(Easy setting system)	LED/FLI display, alarm with snooze, radio control output, backup circuit
LM8560	252	DIP	28	3029A	5021	Duplex Digital Clock	4-digit LED display, duplex display, alarm, sleep timer, directly interchangeable with TMS3450
LC7650	237	DIP	8	3001A	4096	Analog Clock (4MHz)	VDD=1.5V, fosc=4.194304MHz, alarm, output pulse 46.875ms
LC7651	237	DIP	8	3001A	4096	Analog Clock (4MHz)	VDD=1.5V, fosc=4.194304MHz, alarm, output pulse 31.25ms
LC7652	238	DIP	8	3001A	4097	Analog Clock (4MHz)	VDD=1.5V, fosc=4.194304MHz, alarm with snooze, output pulse 46.875ms
LC7653	238	DIP	8	3001A	4097	Analog Clock (4MHz)	VDD=1.5V, fosc=4.194304MHz, alarm with snooze, output pulse 31.25ms
LC7660	239	DIP	8	3001A	4098	Analog Clock (32.768MHz)	VDD=1.5V, fosc=32.768MHz, 4-step alarm, snooze
LC7662	239	DIP	8	3001A	4099	Analog Clock (32.768MHz)	VDD=1.5V, fosc=32.768MHz, 3-step alarm, snooze
LC7665	239	DIP	8	3001A	4100	Analog Clock (32.768MHz)	VDD=1.5V, fosc=32.768MHz, alarm snooze