32/64-Mbit Flash Memory with 1.8 V I/O

< Outline >

In order to meet the needs of low voltage (1.8 V) CPUs and DSPs utilized in next generation mobile wireless phones, we have developed a 1.8 V I/O compliant boot block flash memory.

The use of conventional flash memory within next-generation mobile phone systems results in the need for a voltage level shifter and additional components, due to the usage of 2.7 V I/O.   Our newly-developed 1.8 V I/O flash memory units allow for lowered chip counts in next-generation mobile wireless technology.

Also, further reductions in power consumption can be obtained through the use of our existing Auto Power Save mode. Data overwrite and delete functions can be disabled with the Block Lock and Block Lockdown features.

In addition, the incorporation of a 128-word OTP area allows for the permanent storage of passwords and ID codes.

Our current products include 8Mb and 16Mb flash memories.   These new 32Mb and 64Mb flash memories will substantially enhance our product line.
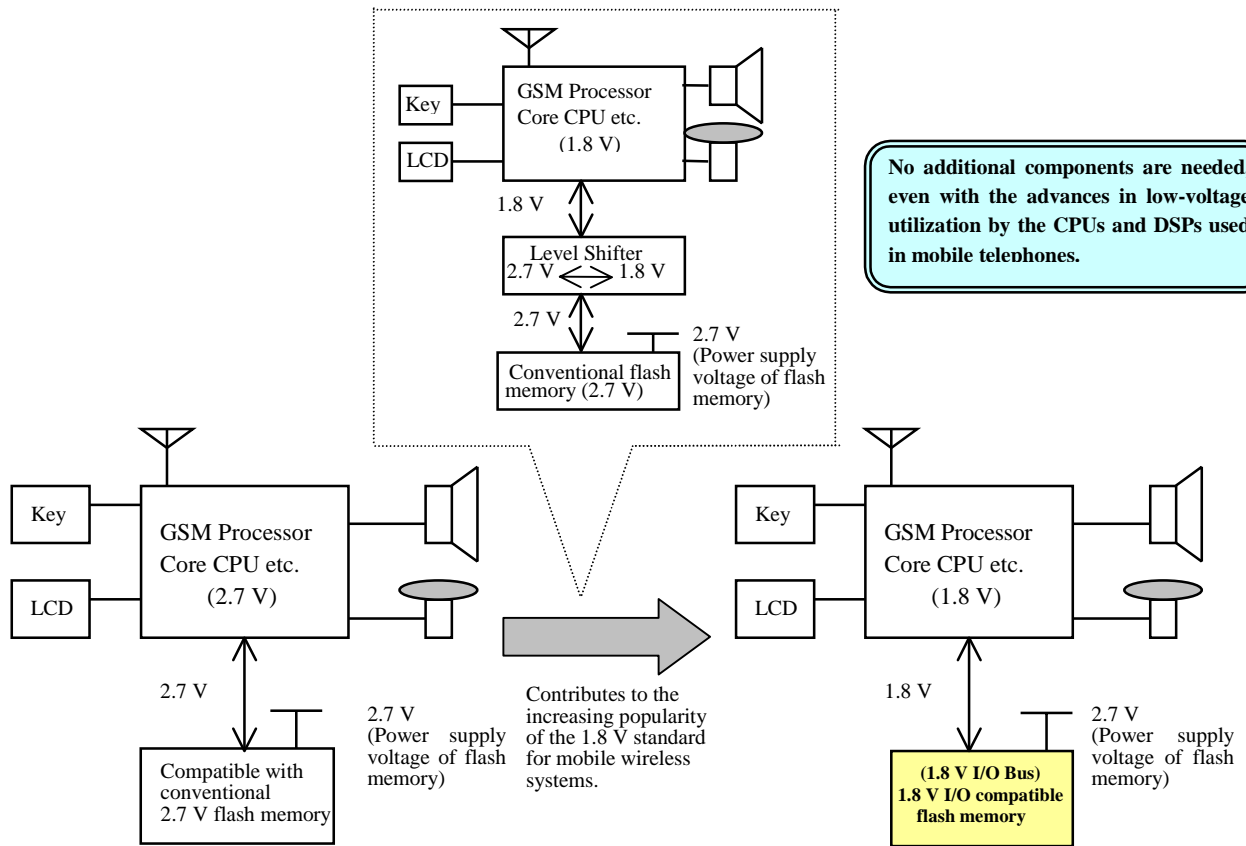
< Main Specifications >

- Power supply voltage : V_{CC} = 2.7 to 3.6 V, V_{PP} = 1.65 to 3.6 V / 11.7 to 12.3 V, V_{CCQ} = 1.65 to 2.5 V / 2.7 to 3.6 V

- Access time (MAX.) :

  <LH28F320BF(H)-PTTLF80/PBTLF80> : 80 ns (V_{CC} = 2.7 to 3.6 V, V_{CCQ} = 1.65 to 2.5 V)

  <LH28F640BF(H)-PTTLF85/PBTLF85> : 85 ns (V_{CC} = 2.7 to 3.6 V, V_{CCQ} = 1.65 to 2.5 V)

- Page mode access time (MAX.) : 25 ns (V_{CCQ} = 2.7 to 3.6 V)

  40 ns (V_{CCQ} = 1.65 to 2.5 V)

- Read current : 15 mA (TYP.), 25 mA (MAX.)

- Standby current : TBD

- Operating temperature range :

  <LH28F320BF-PTTLF80/PBTLF80, LH28F640BF-PTTLF85/PBTLF85> : 0 to 70C

  <LH28F320BFH-PTTLF80/PBTLF80, LH28F640BFH-PTTLF85/PBTLF85> : - 40 to 85C

- Data rewriting : 100 000 times / block

- Package :

  <LH28F320BF(H)E-PTTLF80/PBTLF80> : 48TSOP(1)(P-TSOP048-1220)

  <LH28F320BF(H)B-PTTLF80/PBTLF80>: 48FBGA(CSP)(T(R)-TFBGA048-0808)

  <LH28F640BF(H)E-PTTLF85/PBTLF85> : 48TSOP(1)(P-TSOP048-1220)

  <LH28F640BF(H)B-PTTLF85/PBTLF85> : 60FBGA(CSP)(T(R)-TFBGA060/048-0811)

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∗ Under development

Supply voltage		Smart3		Supply voltage can be selected automatically from the following combinations; V_{CC} = 2.7 to 3.6 V, V_{PP} = 1.65 to 3.6 V / V_{CC} = 2.7 to 3.6 V, V_{PP} = 11.7 to 12.3 V								
Ca-pac-ity	Bit con-fig-ura-tion	Erasable Block size		Model No.	Access time (ns)MAX.		Page mode access time (ns)MAX,		Read current (mA) MAX. f=5 MHz (CMOS)	Standby current (u) MAX. (CMOS)	Oper-ating temp. (C)	Package
					(V_{CCQ}= 2.7 to 3.6 V)	(V_{CCQ}= 1.65 to 2.5 V)	(V_{CCQ}= 2.7 to 3.6 V)	(V_{CCQ}= 1.65 to 2.5 V)				
32M	X16	Para-Meter : 4Kword X8 Main : 32Kword X63	Top boot	∗LH28F320BFE/B -PTTLF80	60	80	25	25	25	TBD	0 to 70	P-TSOP048 -1220 T(R)-TFBGA 048-0808
				∗LH28F320BFHE/B -PTTLF80	60	80	25	25	25	TBD	-40 to 85	P-TSOP048 -1220 T(R)-TFBGA 048-0808
			Bot-tom boot	∗LH28F320BFE/B -PBTLF80	60	80	25	25	25	TBD	0 to 70	P-TSOP048 -1220 T(R)-TFBGA 048-0808
				∗LH28F320BFHE/B -PBTLF80	60	80	25	25	25	TBD	-40 to 85	P-TSOP048 -1220 T(R)-TFBGA 048-0808
64M	X16	Para-Meter : 4Kword X8 Main : 32Kword X127	Top boot	∗LH28F640BFE/B -PTTLF85	65	85	25	25	25	TBD	0 to 70	P-TSOP048 -1220 T(R)-TFBGA 060/048-0811
				∗LH28F640BFHE/B -PTTLF85	65	85	25	25	25	TBD	-40 to 85	P-TSOP048 -1220 T(R)-TFBGA 060/048-0811
			Bot-tom boot	∗LH28F640BFE/B -PBTLF85	65	85	25	25	25	TBD	0 to 70	P-TSOP048 -1220 T(R)-TFBGA 060/048-0811
				∗LH28F640BFHE/B -PBTLF85	65	85	25	25	25	TBD	-40 to 85	P-TSOP048 -1220 T(R)-TFBGA 060/048-0811

< Advantages of Applications >

GSM Processor
Core CPU etc.
(1.8 V)

Key

LCD

1.8 V

Level Shifter
2.7 V ⟷ 1.8 V

2.7 V

Conventional flash
memory (2.7 V)

2.7 V
(Power supply
voltage of flash
memory)

No additional components are needed,
even with the advances in low-voltage
utilization by the CPUs and DSPs used
in mobile telephones.

Key

LCD

GSM Processor
Core CPU etc.
(2.7 V)

2.7 V

Compatible with
conventional
2.7 V flash memory

2.7 V
(Power supply
voltage of flash
memory)

Contributes to the
increasing popularity
of the 1.8 V standard
for mobile wireless
systems.

Key

LCD

GSM Processor
Core CPU etc.
(1.8 V)

1.8 V

(1.8 V I/O Bus)
1.8 V I/O compatible
flash memory

2.7 V
(Power supply
voltage of flash
memory)