

1 Megabit SRAM - Radiation Hardened

32C108RP

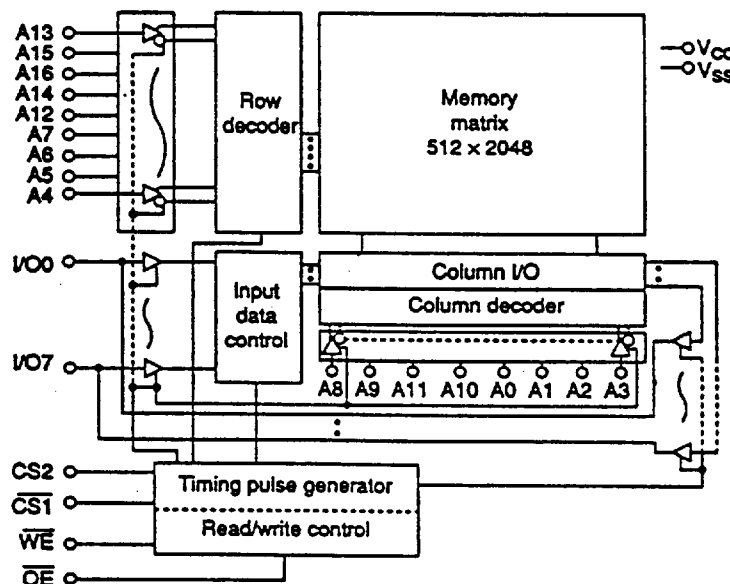
CMOS 128 kword x 8 bit
Static RAM

SEI 32C108RP RADHARD 128k x 8 SRAM MICROCIRCUIT

For Space Applications

SEI's 32C108RP (RP for RAD-PAK®) high density 1 megabit SRAM microcircuit features a minimum 100 kilorad (Si) total dose tolerance. Using SEI's radiation hardened RAD-

PAK® packaging technology, the 32C108RP is fully equivalent to the commercial Hitachi HM628128 which is a 128k x 8 SRAM. It realizes higher density, higher performance and low power consumption by employing 0.8 micron Hi-CMOS process technology. The 32C108RP is fully suitable for battery back-up systems since it offers low power standby power dissipation. Capable of surviving space environments, the 32C108RP is ideal for satellite, spacecraft, and space probe missions. The patented radiation hardened RAD-PAK® technology incorporates radiation shielding in the microcircuit package. It eliminates box shielding while providing lifetime in orbit. The 32C108RP features the same advanced 128k x 8 SRAM, high speed, and low power demand as the commercial counterpart. This product is available in Class S packaging and screening.



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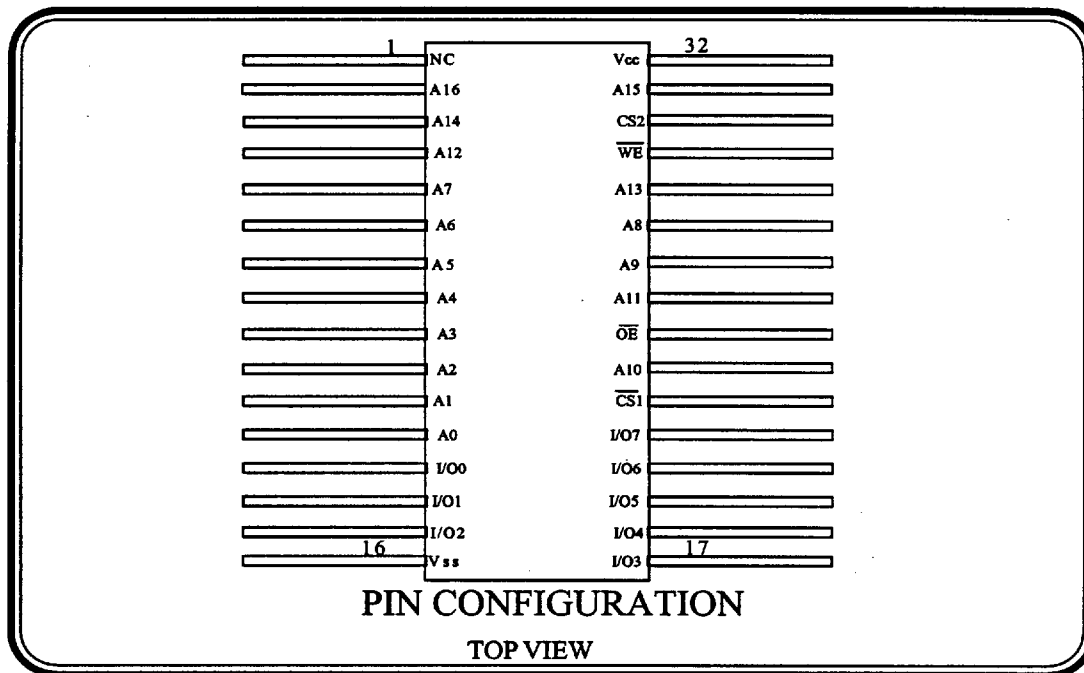
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56

Radiation Hardened 32C108RP

CMOS 32 Pin
1 Megabit Static RAM



Features:

- 131072 word x 8 bit Organization
- Pin Compatible with Hitachi HM628128
- RAD-PAK® Radiation Hardened Against Natural Space Radiation
- Total Dose Hardness >100 krad (Si)
- Package:
 - 32 Pin RAD-PAK® flat pack (410 mils x 820 mils)
 - Weight – 11.4 grams
- Fast Propagation Time:
 - 85 ns Maximum Access Time Standard
- Completely Static Memory
 - No clock or timing strobe required
- High Speed 0.8 micron CMOS Technology
 - Single 5 Volt power supply
 - Equal access and cycle times
 - All inputs and outputs are directly TTL Compatible
 - Low power:
 - standby: 10 uW typical,
 - operation: 75 mW/MHz typical
 - Capability of battery backup operation
- Screening per TM 5004
- QCI per TM5005

Specifications and design are subject to change without notice.



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For Further Information Contact:

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32C108RP ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage	V_{CC}	4.5	5.5	V
Voltage on Any Pin, Relative to V_{SS}	V_T	-0.5	7.0	V
Power Dissipation	P_D		1.0	W
Storage Temperature	T_s	-65	+150	°C
Operating Temperature	T_A	-55	+125	°C

32C108RP RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage, Positive	V_{CC}	4.5	5.5	V
Supply Voltage, Negative	V_{SS}	0	0	V
Input High Voltage	V_{IH}	2.2	6.0	V
Input Low Voltage	V_{IL}	-0.3	0.8	V



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58

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32C108RP DC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Input Leakage Current $V_{IN}=V_{SS}$ to V_{CC}	I_{LI}		2	μA
Output Leakage Current $CS1=V_{IH}$ or $CS2=V_{IL}$ or $OE=V_{IH}$ OR $WE=V_{IL}$, $V_{IO}=V_{SS}$ to V_{CC}	I_{LO}		2	μA
Operating Power Supply Current:DC $CS1=V_{IL}$, $CS2=V_{IH}$, others= V_{IH}/V_{IL} , $I_{IO}=0mA$	I_{CC}		35	mA
Operating Power Supply Current Min. cycle, duty=100%, $CS1=V_{IL}$, $CS2=V_{IH}$, others= V_{IH}/V_{IL} , $I_{IO}=0mA$. Cycle time=1 μs , duty=100%, $I_{IO}=0mA$, $CS1 \leq 0.2V$, $CS2 > V_{CC}-0.2V$, $V_{IL} \leq 0.2V$	I_{CC1} I_{CC2}		70 30	mA mA
Standby Power Supply Current:DC $CS1=V_{IH}$, $CS2=V_{IH}$ or $CS2=V_{IL}$	I_{SB}		3	mA
Standby Power Supply Current(1):DC $V_{IN} \geq 0V$	I_{SB1}		2	mA
Output Low Voltage $I_{OL}=2.1mA$	V_{OL}		0.4	V
Output High Voltage $I_{OH}=-1.0mA$	V_{OH}	2.4		V
Input Capacitance $V_{IN}=0V$	C_{in}		8	pF
Input/Output Capacitance $V_{IO}=0V$	C_{IO}		10	pF



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32C108RP AC ELECTRICAL CHARACTERISTICS - READ CYCLE

PARAMETER	SYMBOL	MIN	MAX	UNIT
Read Cycle Time	t_{RC}	85		ns
Address Access Time	t_{AA}		85	ns
Chip Selection (CS1) to Output Valid	t_{CO1}		85	ns
Chip Selection (CS2) to Output Valid	t_{CO2}		85	ns
Output Enable (OE) to Output Valid	t_{OE}		25	ns
Chip Selection (CS1) to Output in Low-Z ^{1,2,3}	t_{LZ1}	10		ns
Chip Selection (CS2) to Output in Low-Z ^{1,2,3}	t_{LZ2}	10		ns
Output Enable (OE) to Output in Low-Z ^{1,2,3}	t_{OLZ}	5		ns
Chip Deselection (CS1) to Output in High-Z ^{1,2,3}	t_{HZ1}	0	20	ns
Chip Deselection (CS2) to Output in High-Z ^{1,2,3}	t_{HZ2}	0	20	ns
Output Disable (OE) to Output in High-Z ^{1,2,3}	t_{OHZ}	0	20	ns
Output Hold From Address Change	t_{OH}	10		ns

Notes:

1. t_{HZ} and t_{OHZ} are defined as the time at which the outputs achieve the open circuit conditions and are not referred to output voltage levels.
2. At any given temperature and voltage condition, t_{HZ} max is less than t_{LZ} min both for a given device and from device to device.
3. Guaranteed by design.



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32C108RP AC ELECTRICAL CHARACTERISTICS - WRITE CYCLE

PARAMETER	SYMBOL	MIN	MAX	UNIT
Write Cycle Time	t_{WC}	85		ns
Chip Selection to End of Write	t_{CW}	50		ns
Address Setup Time	t_{AS}	0		ns
Address Valid to End of Write	t_{AW}	50		ns
Write Pulse Width	t_{WP}	40		ns
Write Recovery Time ¹	t_{WR}	5 10		ns ns ¹
Write to Output in High-Z ²	t_{WHZ}	0	15	ns
Data to Write Time Overlap	t_{DW}	25		ns
Write Hold from Write Time	t_{DH}	0		ns
Output Active from End of Write ¹	t_{OW}	5		ns

Notes:

1. This value is measured from CS2 going low to the end of write cycle.
2. Guaranteed by design.

32C108RP Package Ordering Guide

Package Style	Case Outline	1/	Description
F	F-32		32 Pin Flat Package

Note:

- 1/ For outline information, see Appendix A (Package Information - Outline Dimension)



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