RAM FAMILY

EXPRESS

- **Standard Temperature Range**
- **Extended Temperature Range −40°C– +85°C Available**
- **168 (±8) Hour Burn-In Available**
- **Inspected to 0.1% AQL**

The Intel EXPRESS RAM family is a series of random-access memories which have received additional processing to enhance product operating temperature range and infant mortality. EXPRESS processing is available for several densities of RAM, allowing the choice of appropriate memory size to match system applications.

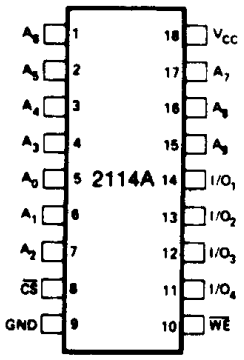
EXPRESS RAM product is available with 168 (±8) hour, 125°C dynamic burn-in using Intel's standard bias configuration. This process exceeds or meets most industry specifications of burn-in.

The standard EXPRESS RAM operating temperature range is 0°C to 70 or 75°C. Extended operating temperature range (−40°C to +85°) EXPRESS product is available. EXPRESS products plus military grade RAMs (−55°C to +125°C) provide the most complete choice of standard and extended temperature range RAMs available.

Like all Intel RAMs, the EXPRESS RAM family is inspected to 0.1% electrical AQL. This may allow the user to reduce or eliminate incoming inspection testing.

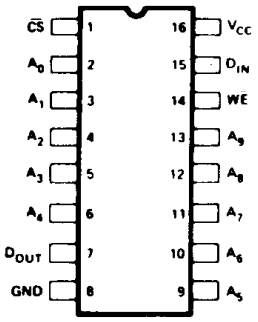
Detailed individual product electrical specifications are available separately in Intel's respective commercial and industrial grade product data sheets.

2114A



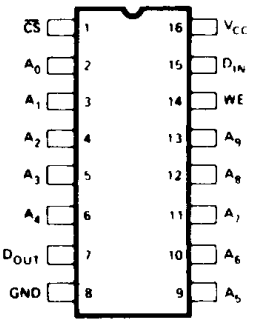
210347-1

2115A, 2125A



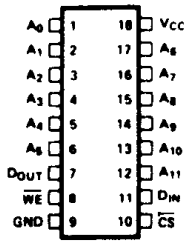
210347-2

2125H



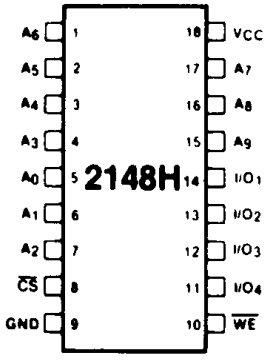
210347-3

2147H



210347-4

2148H, 2149H



210347-5

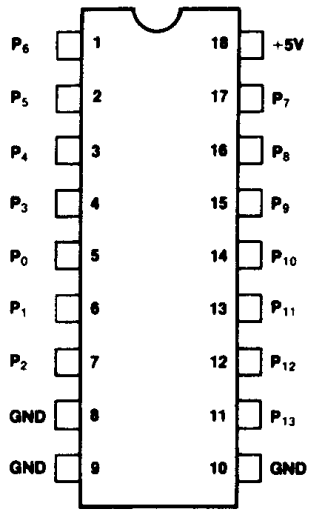
Pin Configuration

September 1987
Order Number: 210347-002

Table 1. RAM Product Family

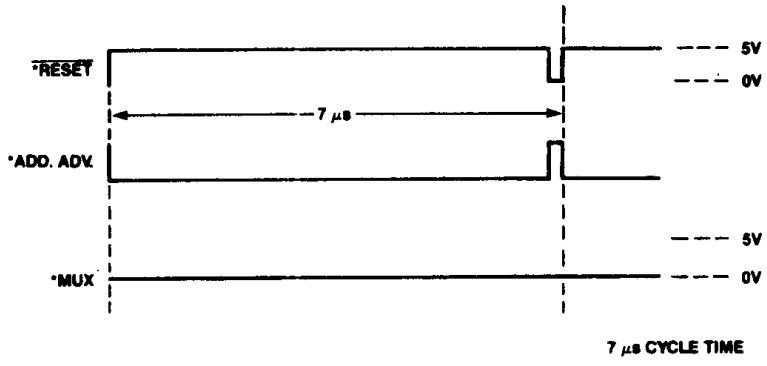
EXPRESS

Type	Organization	Maximum Access (ns)	Power Supply	Operating Temperature (°C)	Burn-In 125°C (±8 hours)
QD 2114A-4	1K x 4	200	5V ±10%	0 to 70	168
QP 2114A-4	1K x 4	200	5V ±10%	0 to 70	168
QD 2114A-5	1K x 4	250	5V ±10%	0 to 70	168
QP 2114A-5	1K x 4	250	5V ±10%	0 to 70	168
QD 2114AL-1	1K x 4	100	5V ±10%	0 to 70	168
QP 2114AL-1	1K x 4	100	5V ±10%	0 to 70	168
QD 2114AL-2	1K x 4	120	5V ±10%	0 to 70	168
QP 2114AL-2	1K x 4	120	5V ±10%	0 to 70	168
QD 2114AL-3	1K x 4	150	5V ±10%	0 to 70	168
QP 2114AL-3	1K x 4	150	5V ±10%	0 to 70	168
QD 2114AL-4	1K x 4	200	5V ±10%	0 to 70	168
QP 2114AL-4	1K x 4	200	5V ±10%	0 to 70	168
LD 2114A-4	1K x 4	200	5V ±10%	−40 to 85	168
LD 2114A-5	1K x 4	250	5V ±10%	−40 to 85	168
LD 2114AL-3	1K x 4	150	5V ±10%	−40 to 85	168
LD 2114AL-4	1K x 4	200	5V ±10%	−40 to 85	168
TD 2114A-4	1K x 4	200	5V ±10%	−40 to 85	None
TD 2114A-5	1K x 4	250	5V ±10%	−40 to 85	None
TD 2114AL-3	1K x 4	150	5V ±10%	−40 to 85	None
QD 2115A	1K x 1	45	5V ±5%	0 to 75	168
QD 2115A-2	1K x 1	70	5V ±5%	0 to 75	168
QD 2115AL	1K x 1	45	5V ±5%	0 to 75	168
QD 2115AL-2	1K x 1	70	5V ±5%	0 to 75	168
QD 2125A	1K x 1	45	5V ±5%	0 to 75	168
QD 2125A-2	1K x 1	70	5V ±5%	0 to 75	168
QD 2125AL	1K x 1	45	5V ±5%	0 to 75	168
QD 2125AL-2	1K x 1	70	5V ±5%	0 to 75	168
QD 2125H-2	1K x 1	25	5V ±5%	0 to 75	168
QD 2147H	4K x 1	70	5V ±10%	0 to 70	168
QD 2147H-1	4K x 1	35	5V ±10%	0 to 70	168
QD 2147H-2	4K x 1	45	5V ±10%	0 to 70	168
QD 2147H-3	4K x 1	55	5V ±10%	0 to 70	168
QD 2148H	1K x 4	70	5V ±10%	0 to 70	168
QD 2148H-3	1K x 4	55	5V ±10%	0 to 70	168
QD 2148HL	1K x 4	70	5V ±10%	0 to 70	168
QD2149H	1K x 4	70	5V ±10%	0 to 70	168
QD2149H-2	1K x 4	45	5V ±10%	0 to 70	168
QD2149H-3	1K x 4	55	5V ±10%	0 to 70	168
QD2149HL	1K x 4	70	5V ±10%	0 to 70	168



210347-6

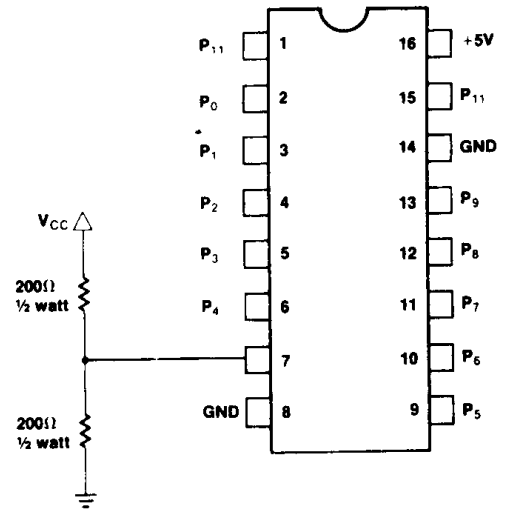
Supply	Voltages	Toler-ances	Pwr-Up Seq.	Current Device	Noise Levels
V_{CC}	+5V	±0.25V	1	70 mA	±0.25V
V_{IL}	0.0V	±0.5V			
V_{IH}	5.0V	±1.0V			



210347-7

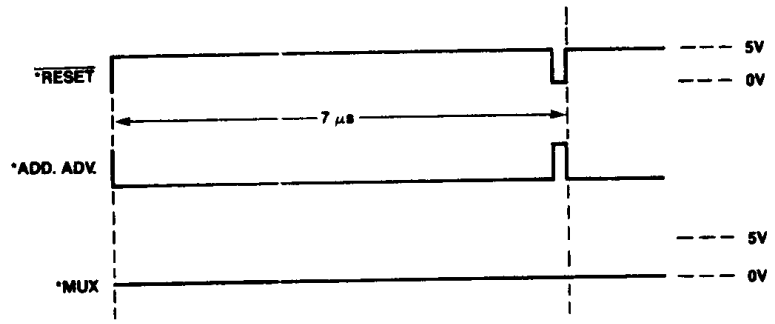
2114/2148/2149
TIMING DIAGRAM

Figure 1. 2114A, 2148H, 2149H Burn-In Configuration



210347-8

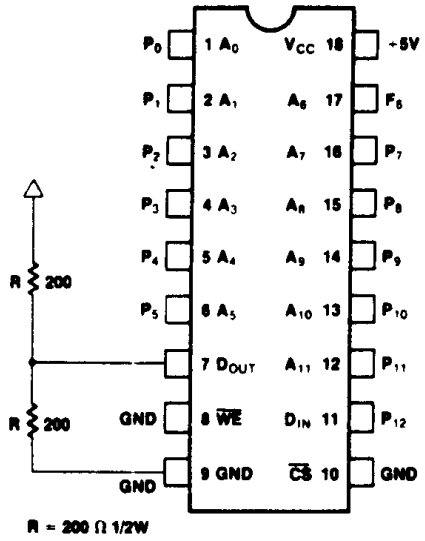
Supply	Voltages	Toler-ances	Pwr-Up Seq.	Current Device	Noise Levels
V_{CC}	+5V	±0.25V	1st	75 mA	±0.25V
V_{IL}	0.0V	±0.5V			
V_{IH}	5.0V	±1.0V			



210347-9

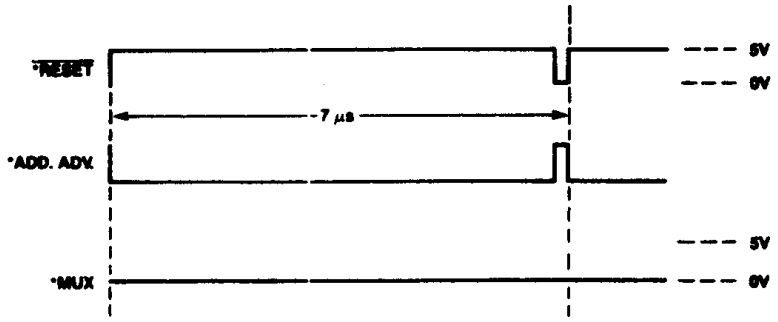
2115/2125 TIMING DIAGRAM
7 μs CYCLE TIME

Figure 2. 2115, 2125 Burn-in Configuration



210347-10

Supply	Voltages	Toler-ances	Pwr-Up Seq.	Current Device	Noise Levels
V_{CC}	+5V	±0.25V	1	125 mA	±0.25V
V_{IL}	0.0V	± 0.5V			
V_{IH}	5.0V	± 1.0V			



210347-11

2147H
TIMING DIAGRAM
7 μs CYCLE TIME

Figure 3. 2147H Burn-In Configuration