

# OKI Semiconductor Memory Cross Reference

## 16-Meg DRAMs

| OKI Part Number | Configuration | Voltage | Refresh | Toshiba    | NEC          | Hitachi   | Samsung    | Micron      | Mitsubishi |
|-----------------|---------------|---------|---------|------------|--------------|-----------|------------|-------------|------------|
| MSM5116160      | 1 Meg x 16    | 5       | 4K      | TC5116160A | μPD4216160   | -         | -          | -           | -          |
| MSM5116400      | 4 Meg x 4     | 5       | 4K      | TC5116400  | μPD4216400   | HM5116400 | KM44C4000  | MT4C4M4A1   | M5M16400   |
| MSM5117100      | 16 Meg x 1    | 5       | 2K      | -          | μPD4217100   | -         | KM41C16100 | -           | -          |
| MSM5117400      | 4 Meg x 4     | 5       | 2K      | TC5117400  | μPD4217400   | HM5117400 | KM44C4100  | MT4C4M4B1   | M5M17400   |
| MSM5117800      | 2 Meg x 8     | 5       | 2K      | TC5117800A | μPD4217800   | -         | -          | MT4C2M8B1   | -          |
| MSM51V16100     | 16 Meg x 1    | 3.3     | 4K      | -          | μPED4216100L | -         | -          | MT4LC16M1A1 | -          |
| MSM51V16160     | 1 Meg x 16    | 3.3     | 4K      | -          | μPD4216160L  | -         | -          | -           | -          |
| MSM51V16400     | 4 Meg x 4     | 3.3     | 4K      | -          | μPD4216400L  | HM51V6400 | -          | MT4LC4M4A1  | -          |
| MSM51V17100     | 16 Meg x 1    | 3.3     | 2K      | -          | μPD4217100L  | -         | -          | -           | -          |
| MSM51V17400     | 4 Meg x 4     | 3.3     | 2K      | -          | μPD4217400L  | -         | -          | MT4LC4M4B1  | -          |
| MSM51V18160     | 1 Meg x 16    | 3.3     | 1K      | -          | μPD4218160L  | -         | -          | MT4LC1M16C3 | -          |

## DRAM Memory Modules

| OKI Part Number        | Configuration | Toshiba              | NEC                  | Hitachi         | Samsung            |
|------------------------|---------------|----------------------|----------------------|-----------------|--------------------|
| MSC23108C/CL-xxDS2     | 1 Meg x 8     | THM8107AS/AL-xx      | -                    | HB56A18B/BF-xx  | KMM5/481000/20A-xx |
| MSC23408C/CL-xxDS8     | 4 Meg x 8     | THM64000AS/ASG/AL-xx | MC-424100A8-xx       | HB56A48A/AT-xx  | KMM584000A-xx      |
| MSC23109C/CL-xxDS3     | 1 Meg x 9     | THM9107AS/AL-xx      | -                    | HB56G19B/BF-xx  | KMM5/491000AN-xx   |
| MSC23409C/CL-xxDS9     | 4 Meg x 9     | THM94000AS/ASG/AL-xx | -                    | HB56A49A/AT-xx  | KMM594000/20A-xx   |
| MSC23B132A-xxBS2/DS2   | 1 Meg x 32    | THM321000AS/ASG-xx   | -                    | HBD132B/BF-xx   | KMM5321000A-xx     |
| MSC23B2322A-xxBS4/DS4  | 2 Meg x 32    | THM322000AS/ASG-xx   | -                    | HB56D232B/BF-xx | KMM5322000A/xx     |
| MSC23432A-xxBS8/DS8    | 4 Meg x 32    | THM324080AS/ASG-xx   | -                    | HB56A32B-xx     | KMM5324000A-xx     |
| MSC23832AA-xxDS16/BS16 | 8 Meg x 32    | THM328080AS/ASG-xx   | -                    | HB56A832        | KMM532800          |
| MSC23B136A-xxBS3/DS4   | 1 Meg x 36    | THM361020AS/ASG-xx   | MC-421000A36-xx      | HB56D136B-xx    | KMM5361000AV-xx    |
| MSC23B236A-xxBS8/DS8   | 2 Meg x 36    | THM362020AS/ASG-xx   | MC-422000A36BH/FH-xx | HB56D236B-xx    | KMM5362000A-xx     |
| MSC23436A-xxBS10/DS10  | 4 Meg x 36    | THM364080AS/ASG-xx   | -                    | HB56A436SB-xx   | KMM534000H-xx      |
| MSC23836AA-xxBS20/DS20 | 8 Meg x 36    | THM368080AS/ASG-xx   | -                    | HB56A836        | KMM536800          |

## 4-Meg VRAMs

| OKI Part Number | Description                    | IBM       | TI | NEC       |
|-----------------|--------------------------------|-----------|----|-----------|
| MSM5416273      | EDO, 2 CAS, 8 COL, block write | IBM025161 | -  | -         |
| MSM5416283      | EDO, 2 WE, 8 COL block write   | IBM025171 | -  | μPD482445 |

## MASK ROMs

| OKI Part Number | Density | Configuration           | Voltage | Hitachi   | Toshiba   | Mitsubishi | Sharp     |
|-----------------|---------|-------------------------|---------|-----------|-----------|------------|-----------|
| MSM538022C      | 8 Meg   | 1 Meg x 8 or 512K x 16  | 5 V     | HN62418   | TC538200  | M5M23800   | LH538000  |
| MSM538032C      | 8 Meg   | 1 Meg x 8 or 512K x 16  | 3 V     | HN62418L  | -         | -          | LH53V8000 |
| MSM531622D      | 16 Meg  | 2 Meg x 8 or 1 Meg x 16 | 5 V     | HN624116  | TC5316200 | M5M23160   | LH5316000 |
| MSM531632D      | 16 Meg  | 2 Meg x 8 or 1 Meg x 16 | 3 V     | HN624116L | -         | -          | -         |

# OKI Semiconductor DRAM Memory Modules

## 30 Pin Modules (5 V)

| Part Number <sup>[1]</sup> | Description | Organization | Package Information |               | Number of Banks | Row/Column Addressing | Access Time (ns) |
|----------------------------|-------------|--------------|---------------------|---------------|-----------------|-----------------------|------------------|
|                            |             |              | Plating             | Configuration |                 |                       |                  |
| MSC23108C/CL-xxDS2         | Fast page   | 1 Meg x 8    | Tin                 | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC23408C/CL-xxDS8         | Fast page   | 4 Meg x 8    | Tin                 | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC23109C/CL-xxDS3         | Fast page   | 1 Meg x 9    | Tin                 | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC23409C/CL-xxDS3         | Fast page   | 4 Meg x 9    | Tin                 | Single-sided  | 1               | 11R/11C               | 60, 70           |

1. L = low power.

## 72 Pin Modules (5 V)

| Part Number             | Description | Organization | Package Information    |               | Number of Banks | Row/Column Addressing | Access Time (ns) |
|-------------------------|-------------|--------------|------------------------|---------------|-----------------|-----------------------|------------------|
|                         |             |              | Plating <sup>[1]</sup> | Configuration |                 |                       |                  |
| MSC23B132A-xxBS2/DS2    | Fast page   | 1 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC2313258A-xxBS2/DS2   | EDO         | 1 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC23B2321A-xxBS4/DS4   | Fast page   | 2 Meg x 32   | Gold/Tin               | Double-sided  | 2               | 10R/10C               | 60, 70           |
| MSC23B2322A-xxBS4/DS4   | Fast page   | 2 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 11R/10C               | 60, 70           |
| MSC2323258A-xxBS4/DS4   | EDO         | 2 Meg x 32   | Gold/Tin               | Double-sided  | 2               | 10R/10C               | 60, 70           |
| MSC2323267A-xxBS4/DS4   | EDO         | 2 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 11R/10C               | 60, 70           |
| MSC23432A-xxBS8/DS8     | Fast page   | 4 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 11R/11C               | 60, 70           |
| MSC2343257A-xxBS8/DS8   | EDO         | 4 Meg x 32   | Gold/Tin               | Single-sided  | 1               | 11R/11C               | 60, 70           |
| MSC23832AA-xxBS16/DS16  | Fast page   | 8 Meg x 32   | Gold/Tin               | Double-sided  | 2               | 11R/11C               | 60, 70           |
| MSC2383257A-xxBS16/DS16 | EDO         | 8 Meg x 32   | Gold/Tin               | Double-sided  | 2               | 11R/11C               | 60, 70           |
| MSC23B136A-xxBS3/DS4    | Fast page   | 1 Meg x 36   | Gold/Tin               | Single-sided  | 1               | 10R/10C               | 60, 70           |
| MSC23B236A-xxBS8/DS8    | Fast page   | 2 Meg x 36   | Gold/Tin               | Double-sided  | 2               | 10R/10C               | 60, 70           |
| MSC23436A-xxBS10/DS10   | Fast page   | 4 Meg x 36   | Gold/Tin               | Single-sided  | 1               | 11R/11C               | 60, 70           |
| MSC23836AA-xxBS20/DS20  | Fast page   | 8 Meg x 36   | Gold/Tin               | Double-sided  | 2               | 11R/11C               | 60, 70           |

1. BS = Gold, DS = Tin.

## 168 Pin DIMM Modules (3 V)

| Part Number <sup>[1]</sup> | Description | Organization | Package Information |               | Number of Banks | Row/Column Addressing | Access Time (ns) |
|----------------------------|-------------|--------------|---------------------|---------------|-----------------|-----------------------|------------------|
|                            |             |              | Plating             | Configuration |                 |                       |                  |
| MSC23V16458SA-xxBS4        | EDO         | 1 Meg x 64   | Gold                | Single-sided  | 1               | 10R/10C               | 60               |
| MSC23V16408SA-xxBS4        | Fast page   | 1 Meg x 64   | Gold                | Single-sided  | 1               | 10R/10C               | 60               |
| MSC23V26457SA-xxBS8        | EDO         | 2 Meg x 64   | Gold                | Single-sided  | 1               | 11R/10C               | 60               |
| MSC23V26458SA-xxBS8        | EDO         | 2 Meg x 64   | Gold                | Single-sided  | 2               | 10R/10C               | 60               |
| MSC23V26407SA-xxBS8        | Fast page   | 2 Meg x 64   | Gold                | Single-sided  | 1               | 11R/10C               | 60               |
| MSC23V26408SA-xxBS8        | Fast page   | 2 Meg x 64   | Gold                | Single-sided  | 2               | 10R/10C               | 60               |
| MSC23V46407SA-xxBS8        | Fast page   | 4 Meg x 64   | Gold                | Double-sided  | 1               | 11R/11C               | 60               |
| MSC23V46457SA-xxBS8        | EDO         | 4 Meg x 64   | Gold                | Double-sided  | 1               | 11R/11C               | 60               |
| MSC23V27257SA-xxBS9        | EDO         | 2 Meg x 72   | Gold                | Single-sided  | 1               | 11R/10C               | 60               |
| MSC23V47257SA-xxBS18       | EDO         | 4 Meg x 72   | Gold                | Double-sided  | 1               | 11R/11C               | 60               |

1. Contact factory for buffered and TSOP versions.

## 168 Pin DIMM Modules (5 V)

| Part Number <sup>[1]</sup> | Description | Organization | Package Information |               | Number of Banks | Row/Column Addressing | Access Time (ns) |
|----------------------------|-------------|--------------|---------------------|---------------|-----------------|-----------------------|------------------|
|                            |             |              | Plating             | Configuration |                 |                       |                  |
| MSC2316408SA-xxBS4         | Fast page   | 1 Meg x 64   | Gold                | Single-sided  | 1               | 10R/10C               | 60               |
| MSC2316458SA-xxBS4         | EDO         | 1 Meg x 64   | Gold                | Single-sided  | 1               | 10R/10C               | 60               |
| MSC2326408SA-xxBS8         | Fast page   | 2 Meg x 64   | Gold                | Single-sided  | 2               | 11R/10C               | 60               |
| MSC2326457SA-xxBS8         | EDO         | 2 Meg x 64   | Gold                | Single-sided  | 1               | 11R/10C               | 60               |
| MSC2326458SA-xxBS8         | EDO         | 2 Meg x 64   | Gold                | Single-sided  | 2               | 10R/10C               | 60               |
| MSC2326407SA-xxBS8         | Fast page   | 4 Meg x 64   | Gold                | Single-sided  | 1               | 11R/11C               | 60               |
| MSC2346407SA-xxBS8         | Fast page   | 4 Meg x 64   | Gold                | Double-sided  | 1               | 10R/10C               | 60               |
| MSC2346457SA-xxBS8         | EDO         | 4 Meg x 64   | Gold                | Double-sided  | 1               | 11R/11C               | 60               |

1. Contact factory for buffered and TSOP versions.