	REVISIONS		
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
J	Add device types 42, 43, 44, 45, and 46. Editorial changes to pages 1, 3, 7-15. Update boilerplate. ksr	98-03-03	Raymond Monnin
K	Added provisions to accommodate radiation-hardened devices. Added device type 47 to drawing. glg	00-03-01	Raymond Monnin
L	Corrected case outline 8 Figure 1 to show correct numbering of terminals. Corrected Figure 2 Terminal connections. Corrected the case outline Y Figure 1 to show the proper distance of E and E1. Added note to Case outline Y Figure 1, to allow for bottom brazed package as an alternative style to the side brazed package . Update boilerplate. Editorial changes throughout. ksr	00-12-08	Raymond Monnin
M	Changed the minimum value for the Q dimension on package T from 0.026 to 0.020 and removed footnote 12. Editorial changes throughout.. ksr	02-12-19	Raymond Monnin
N	Added device type 48 to drawing. ksr	03-08-12	Raymond Monnin
P	Corrected typo on Figure 4 (Read Cycle). ksr	05-08-16	Raymond Monnin
R	Vendor requested change in capacitance in Table I for devices 39 and 40 from 5 pF to 8 pF. ksr	06-02-13	Raymond Monnin
T	Vendor added RHA device type 49. Updated and re-sequenced footnotes in Table I. Reformatted Appendixes. Update drawing to current MIL-PRF-38535 requirements. - llb	14-06-25	Charles F. Saffle

REV	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
SHEET	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
REV	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
SHEET	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34

REV STATUS		REV	T	T	T	T	T	T	T	T	T	T	T	T	T	T
OF SHEETS		SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14

PMIC N/A	PREPARED BY Kenneth S. Rice	**DLA LAND AND MARITIME** **COLUMBUS, OHIO 43218-3990** **http://www.landandmaritime.dla.mil**
STANDARD MICROCIRCUIT DRAWING	CHECKED BY Raymond Monnin	
THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE	APPROVED BY Michael A. Frye	MICROCIRCUIT, MEMORY, DIGITAL, CMOS, 128K X 8 STATIC RANDOM ACCESS MEMORY (SRAM) LOW POWER, MONOLITHIC SILICON
	DRAWING APPROVAL DATE 89-04-21	
AMSC N/A	REVISION LEVEL T	SIZE A	CAGE CODE **67268**	**5962-89598**
		SHEET 1 OF 54		

1. SCOPE

1.1 <u>Scope</u>. This drawing documents two product assurance class levels consisting of high reliability (device class Q and M) and space application (device class V). A choice of case outlines and lead finishes are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of Radiation Hardness Assurance (RHA) levels is reflected in the PIN.

1.2 <u>PIN</u>. The PIN is as shown in the following example:

```
   5962          -        89598        01 _           M                X              A
     |           |          |           |             |                |              |
     |           |          |           |             |                |              |
  Federal       RHA                   Device        Device           Case           Lead
stock class  designator              type          class            outline        finish
designator   (see 1.2.1)            (see 1.2.2)   designator       (see 1.2.4)    (see 1.2.5)
     _____/                   (see 1.2.3)
                  V
           Drawing number
```
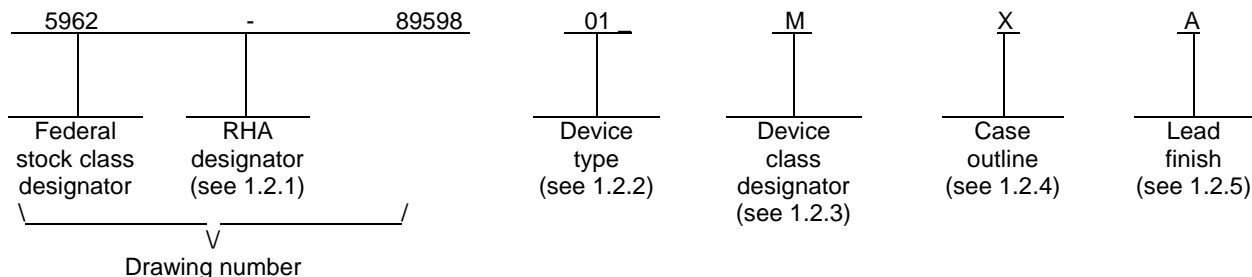
1.2.1 <u>RHA designator</u>. Device classes Q and V RHA marked devices meet the MIL-PRF-38535 specified RHA levels and are marked with the appropriate RHA designator. Device class M RHA marked devices meet the MIL-PRF-38535, appendix A specified RHA levels and are marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

1.2.2 <u>Device type(s)</u>. The device type(s) identify the circuit function as follows:

Device type	Generic number 1/	Circuit function	Access time
01		128K x 8 low power CMOS SRAM	120 ns
02		128K x 8 low power CMOS SRAM	100 ns
03		128K x 8 low power CMOS SRAM	85 ns
04		128K x 8 low power CMOS SRAM	70 ns
05		128K x 8 low power CMOS SRAM	120 ns
06		128K x 8 low power CMOS SRAM	100 ns
07		128K x 8 low power CMOS SRAM	85 ns
08		128K x 8 low power CMOS SRAM	70 ns
09		128K x 8 low power CMOS SRAM	55 ns
10		128K x 8 low power CMOS SRAM	45 ns
11		128K x 8 low power CMOS SRAM	35 ns
12		128K x 8 low power CMOS SRAM	25 ns
13		128K x 8 low power CMOS SRAM dual CE	120 ns
14		128K x 8 low power CMOS SRAM dual CE	100 ns
15		128K x 8 low power CMOS SRAM dual CE	85 ns
16		128K x 8 low power CMOS SRAM dual CE	70 ns
17		128K x 8 low power CMOS SRAM dual CE	55 ns
18		128K x 8 low power CMOS SRAM dual CE	45 ns
19		128K x 8 low power CMOS SRAM dual CE	35 ns
20		128K x 8 low power CMOS SRAM dual CE	25 ns
21		128K x 8 low power CMOS SRAM dual CE	20 ns
22		128K x 8 standard power CMOS SRAM	120 ns
23		128K x 8 standard power CMOS SRAM	100 ns
24		128K x 8 standard power CMOS SRAM	85 ns
25		128K x 8 standard power CMOS SRAM	70 ns
26		128K x 8 standard power CMOS SRAM	55 ns
27		128K x 8 standard power CMOS SRAM	45 ns
28		128K x 8 standard power CMOS SRAM	35 ns
29		128K x 8 standard power CMOS SRAM	25 ns
30		128K x 8 standard power CMOS SRAM dual CE	120 ns
31		128K x 8 standard power CMOS SRAM dual CE	100 ns

1/ Generic numbers are listed on the Standard Microcircuit Drawing Source Approval Bulletin at the end of this document and will also be listed in MIL-HDBK-103.

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Device type	Generic number 1/	Circuit function	Access time
32		128K x 8 standard power CMOS SRAM dual CE	85 ns
33		128K x 8 standard power CMOS SRAM dual CE	70 ns
34		128K x 8 standard power CMOS SRAM dual CE	55 ns
35		128K x 8 standard power CMOS SRAM dual CE	45 ns
36		128K x 8 standard power CMOS SRAM dual CE	35 ns
37		128K x 8 standard power CMOS SRAM dual CE	25 ns
38		128K x 8 standard power CMOS SRAM dual CE	20 ns
39		128K x 8 standard power CMOS SRAM	20 ns
40		128K x 8 low power CMOS SRAM	20 ns
41		128K x 8 standard power CMOS SRAM dual CE	15 ns
42		128K x 8 low power CMOS SRAM	70 ns
43		128K x 8 standard power CMOS SRAM	70 ns
44		128K x 8 standard power CMOS SRAM	15 ns
45		128K x 8 standard power CMOS SRAM dual CE	12 ns
46		128K x 8 standard power CMOS SRAM	12 ns
47		128K x 8 very low power CMOS SRAM	30 ns
48		128K x 8 low power CMOS SRAM	15 ns
49		128K x 8 low power CMOS SRAM	40 ns

1.2.3 Device class designator. The device class designator is a single letter identifying the product assurance level as follows:

Device class	Device requirements documentation
M	Vendor self-certification to the requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A
Q or V	Certification and qualification to MIL-PRF-38535

1.2.4 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
X	GDIP1-T32 or CDIP2-T32	32	dual-in-line
Y 2/	See figure 1	32	SOJ package
Z	See figure 1	32	dual-in-line
U	See figure 1	32	rectangular chip carrier
T	See figure 1	32	flat pack
N	See figure 1	32	rectangular chip carrier
M	CQCC1-N32	32	rectangular chip carrier
9	See figure 1	32	J-leaded rectangular chip carrier
8	See figure 1	32	zig-zag in-line
7	See figure 1	32	SOJ package

1.2.5 Lead finish. The lead finish is as specified in MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

1/ Generic numbers are listed on the Standard Microcircuit Drawing Source Approval Bulletin at the end of this document and will also be listed in MIL-HDBK-103.
2/ A bottom brazed option for this package now exists (See figure 1, case outline Y NOTE). Customers may specify in the purchase order to negate the option as acceptable for their use.

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1.3 <u>Absolute maximum ratings</u>.   <u>3</u>/ <u>4</u>/

Supply voltage range (V_{CC}).. .... -0.5 V dc to +7.0 V dc
DC input voltage range (V_{IN}) .... -0.5 V dc to V_{CC}+0.5 V dc   <u>5</u>/
DC output voltage range (V_{OUT}) .... -0.5 V dc to V_{CC}+0.5 V dc   <u>5</u>/
Storage temperature range............................... .... -65°C to +150°C
Maximum power dissipation (P_D) .... 1.0 W
Lead temperature (soldering, 10 seconds) .... +260°C

Thermal resistance, junction-to-case ($θ_{JC}$):
  Case M .... See MIL-STD-1835
  Cases X, Y, Z, U, and 7 .... 11°C/W   <u>6</u>/
  Cases T, N, and 9... .... 10°C/W   <u>6</u>/
  Case 8 .... 16°C/W   <u>6</u>/
Output voltage applied in high Z state .... -0.5 V dc to V_{CC}+0.5 V dc
Maximum power dissipation, (P_D) .... 1.0 W
Maximum junction temperature (T_J)........................... .... +150°C   <u>7</u>/

1.4 <u>Recommended operating conditions</u>.

Supply voltage range (V_{CC}).. .... 4.5 V dc minimum to 5.5 V dc maximum
Supply voltage range (V_{SS}) .... 0.0 V dc
High level input voltage range (V_{IH}) .... 2.2 V dc to V_{CC} + 0.5 V dc
Low level input voltage range (V_{IL})............................. .... -0.5 V dc to 0.8 V dc
Case operating temperature range (T_C)...................... .... -55°C to +125°C

1.5 <u>Radiation features</u>.

For device type 49:
  Maximum total dose available (dose rate = 1 rad(Si)/s)………….. 100 krads(Si)   <u>8</u>/

<u>3</u>/   Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the
    maximum levels may degrade performance and affect reliability.
<u>4</u>/   All voltages referenced to V_{SS} (V_{SS} = ground) unless otherwise specified.
<u>5</u>/   Negative undershoots to a minimum of -3.0 V are allowed with a maximum of 20 ns pulse width.
<u>6</u>/   When the $θ_{JC}$ for this case is specified in MIL-STD-1835, that value shall supersede the value indicated herein.
<u>7</u>/   Maximum junction temperature may be increased to +175ºC during burn-in and steady-state life.
<u>8</u>/   The device type 49 radiation end point limits for the noted parameters are guaranteed only for the conditions as
    specified in MIL-STD-883, method 1019, condition B to a maximum total dose of 100 Krads(Si).

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2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, and handbooks. The following specification, standards, and handbooks form a part of this drawing to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-38535 - Integrated Circuits, Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883   -   Test Method Standard Microcircuits.
MIL-STD-1835 -   Interface Standard Electronic Component Case Outlines.

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-103 -   List of Standard Microcircuit Drawings.
MIL-HDBK-780 -   Standard Microcircuit Drawings.

 (Copies of these documents are available online at http://quicksearch.dla.mil/ or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents are the issues of the documents cited in the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM Standard F1192   -   Standard Guide for the Measurement of Single Event Phenomena from Heavy Ion Irradiation of Semiconductor Devices.

(Applications for copies of ASTM publications should be addressed to: ASTM International, PO Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; http://www.astm.org.)

JEDEC INTERNATIONAL (JEDEC)

JESD 78   -   IC Latch-Up Test.

(Copies of this document are available online at http://www.jedec.org/ or from JEDEC, 3103 North 10th Street, Suite 240-S, Arlington, VA 22201).

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements for device classes Q and V shall be in accordance with MIL-PRF-38535 as specified herein, or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein. The individual item requirements for device class M shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein.

3.1.1 Microcircuit die. For the requirements of microcircuit die, see appendix C to this document.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein for device classes Q and V or MIL-PRF-38535, appendix A and herein for device class M.

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3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.4 herein and figure 1.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 2.

3.2.3 Truth table. The truth table shall be as specified on figure 3.

3.2.4 Functional tests. Various functional tests used to test this device are contained in appendix A herein. If the test patterns cannot be implemented due to test equipment limitations, alternate test patterns to accomplish the same results shall be allowed. For device class M, alternate test patterns shall be maintained under document revision level control by the manufacturer and shall be made available to the preparing or acquiring activity upon request. For device classes Q and V alternate test patterns shall be under the control of the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the preparing or acquiring activity upon request.

3.2.5 Die overcoat. Polyimide and silicone coatings are allowable as an overcoat on the die for alpha particle protection only. Each coated microcircuit inspection lot (see inspection lot as defined in MIL-PRF-38535) shall be subjected to and pass the internal moisture content test at 5000 ppm (see method 1018 of MIL-STD-883). The frequency of the internal water vapor testing shall not be decreased unless approved by the preparing activity for class M. The TRB will ascertain the requirements as provided by MIL-PRF-38535 for classes Q and V. Samples may be pulled any time after seal.

3.3 Electrical performance characteristics and postirradiation parameter limits. Unless otherwise specified herein, the electrical performance characteristics and postirradiation parameter limits are as specified in table I and shall apply over the full case operating temperature range.

3.4 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table IIA. The electrical tests for each subgroup are defined in table I.

3.5 Marking. The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked. For packages where marking of the entire SMD PIN number is not feasible due to space limitations, the manufacturer has the option of not marking the "5962-" on the device. For RHA product using this option, the RHA designator shall still be marked. Marking for device classes Q and V shall be in accordance with MIL-PRF-38535. Marking for device class M shall be in accordance with MIL-PRF-38535, appendix A.

3.5.1 Certification/compliance mark. The certification mark for device classes Q and V shall be a "QML" or "Q" as required in MIL-PRF-38535. The compliance mark for device class M shall be a "C" as required in MIL-PRF-38535, appendix A.

3.6 Certificate of compliance. For device classes Q and V, a certificate of compliance shall be required from a QML-38535 listed manufacturer in order to supply to the requirements of this drawing (see 6.6.1 herein). For device class M, a certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in MIL-HDBK-103 (see 6.6.2 herein). The certificate of compliance submitted to DLA Land and Maritime-VA prior to listing as an approved source of supply for this drawing shall affirm that the manufacturer's product meets, for device classes Q and V, the requirements of MIL-PRF-38535 and herein or for device class M, the requirements of MIL-PRF-38535, appendix A and herein.

3.7 Certificate of conformance. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 or for device class M in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change for device class M. For device class M, notification to DLA Land and Maritime-VA of change of product (see 6.2 herein) involving devices acquired to this drawing is required for any change that affects this drawing.

3.9 Verification and review for device class M. For device class M, DLA Land and Maritime, DLA Land and Maritime's agent, and the acquiring activity retain the option to review the manufacturer's facility and applicable required documentation. Offshore documentation shall be made available onshore at the option of the reviewer.

3.10 Microcircuit group assignment for device class M. Device class M devices covered by this drawing shall be in microcircuit group number 041 (see MIL-PRF-38535, appendix A).

3.11 Substitution. Substitution data shall be as indicated in appendix B herein.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits		Unit
						Min	Max	
High level input current	I_{IH}	V_{CC} = 5.5 V, V_{IN} = 5.5 V		1, 2, 3	1 - 48		10	μA
					49		3	
			M, D, P	1 1/	1 – 48		2/	
			R	1 1/	49		2/	
Low level input current	I_{IL}	V_{CC} = 5.5 V, V_{IN} = 0.0 V		1, 2, 3	1 - 48	-10		μA
					49	-3		
			M, D, P	1 1/	1 - 48		2/	
			R	1 1/	49		2/	
High impedance output leakage current	I_{OZH}	V_{CC} = 5.5 V, V_O = 5.5 V V_{IL} = 0.0 V, V_{IH} = 5.0 V V_{IH} ≤ $\overline{OE}$ ≤ V_{CC}		1, 2, 3	1 - 48		10	μA
					49		3	
			M, D, P	1 1/	1 - 48		2/	
			R	1 1/	49		2/	
	I_{OZL}	V_{CC} = 5.5 V, V_O = 0.0 V V_{IL} = 0.0 V, V_{IH} = 5.0 V V_{IH} ≤ $\overline{OE}$ ≤ V_{CC}		1, 2, 3	1 - 48	-10		
					49	-3		
			M, D, P	1 1/	1 - 48		2/	
			R	1 1/	49		2/	
Output high voltage	V_{OH}	I_{OH} = -4.0 mA, V_{CC} = 4.5 V V_{IH} = 2.2 V, V_{IL} = 0.8 V		1, 2, 3	01-41, 47 - 49	2.4		V
			M, D, P	1 1/	1 - 48		2/	
			R	1 1/	49		2/	
		I_{OH} = -1.0 mA, V_{CC} = 4.5 V V_{IH} = 2.2 V, V_{IL} = 0.8 V			42- 46	2.4		
			M, D, P	1 1/	42- 46		2/	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits Min	Limits Max	Unit
Output low voltage	V_{OL}	I_{OL} = 8.0 mA, V_{CC} = 4.5 V V_{IH} = 2.2 V, V_{IL} = 0.8 V		1, 2, 3	01 – 41, 47 – 49		0.4	V
			M, D, P	1 1/	All		2/	
			R	1 1/	49		2/	
		I_{OL} = 2.1 mA, V_{CC} = 4.5 V V_{IH} = 2.2 V, V_{IL} = 0.8 V			42- 46		0.4	
			M, D, P	1 1/	42- 46		2/	
Operating supply current	I_{CC1}	V_{CC} = 5.5 V, $\overline{CE}$ = V_{IL} max $\overline{OE}$, $\overline{WE}$, and CE_2 = V_{IH} f = 1/t_{AVAV} min		1, 2, 3	49		50	mA
					01-04, 11,19, 26,27, 34,35, 42		125	
					05, 06, 13, 14		100	
					07, 08, 15, 16, 22, 23, 30, 31		110	
					09, 10, 17, 18		115	
					24, 25, 32, 33, 43		120	
					12,20,47		130	
					28, 36		135	
					21, 29, 37, 39, 40,48		140	
					38		150	
					41		180	
					44-46		250	
			M, D, P	1 1/	1-48		2/	
			R	1 1/	49		115	

See footnotes at end of table.

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TABLE I. <u>Electrical performance characteristics</u> – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits		Unit
						Min	Max	
Standby supply current TTL	I_{CC2}	V_{CC} = 5.5 V, $\overline{CE}$ = V_{IH} CE_2 = V_{IL}, f = 0 Hz		1, 2, 3	47		2	mA
					49		8	
					01-04, 42		10	
					05-40, 43,48		25	
					41		40	
					44-46		60	
			M, D, P	1 <u>1/</u>	1 – 48		<u>2/</u>	
			R	1 <u>1/</u>	49		70	
Standby supply current CMOS	I_{CC3}	V_{CC} = 5.5 V, $\overline{CE}$ ≥ V_{CC} -0.2 V Inputs = V_{IH} or V_{IL}, f = 0		1, 2, 3	47		0.3	mA
					42		1	
					01-04, 40,43,48		5	
					49		7	
					05-39, 41		10	
					44-46		15	
			M, D, P	1 <u>1/</u>	1 – 48		<u>2/</u>	
			R	1 <u>1/</u>	49		65	
Data retention current	I_{CC4}	V_{CC} = 2.0 V, f = 0 $\overline{CE}$ ≥ V_{CC} - 0.2 V, all other inputs = 0.2 V or V_{CC} - 0.2 V		1, 2, 3	01-04		2	mA
					05 - 21, 49		1	
					40,48		750	μA
					42		400	
					47		150	
			M, D, P	1 <u>1/</u>	1 – 48		<u>2/</u>	
			R	1 <u>1/</u>	49		40	
Input capacitance <u>3/</u> (A0 - A16)	C_{IN}	V_{IN} = 0 V, f = 1.0 MHz T_C = +25°C, see 4.4.1e		4	01-38, 41-47		12	pF
					39, 40, 49		8	
					48		5	
Input capacitance <u>3/</u> ($\overline{CE}$, $\overline{WE}$, $\overline{OE}$)	C_{CLK}	V_{OUT} = 0 V, f = 1.0 MHz T_C = +25°C, see 4.4.1e		4	01-38, 41-47		20	pF
					39, 40, 49		8	
					48		5	
Output capacitance <u>3/</u>	C_{OUT}	V_{OUT} = 0 V, f = 1.0 MHz T_C = +25°C, see 4.4.1e		4	01-38, 41-47		14	pF
					39, 40, 49		8	
					48		5	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits		Unit
						Min	Max	
Functional tests 4/		See 4.4.1c		7, 8A, 8B	All			
			M, D, P	7 1/	1 – 48		2/	
			R	7 1/	49			
Read cycle time	t_{AVAV}	See figure 4, as applicable 5/ 6/		9, 10, 11	01,05, 13,22,30	120		ns
					02,06, 14,23,31	100		
					03,07,15, 24,32	85		ns
					04,08,16, 25,33,42, 43	70		
					09,17, 26,34	55		
					10,18, 27,35	45		
					49	40		
					11,19, 28,36	35		
					47	30		
					12,20, 29,37	25		
					21,38-40	20		
					41,44,48	15		
					45,46	12		
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			

See footnotes at end of table.

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TABLE I. <u>Electrical performance characteristics</u> – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Address access time	t_{AVQV}	See figure 4, as applicable	9, 10, 11	01,05, 13,22, 30		120	ns
				02,06, 14,23, 31		100	
				03,07, 15,24, 32		85	
				04,08, 16,25, 33,42, 43		70	
				09,17, 26,34		55	
				10,18, 27,35		45	
				49		40	
				11,19, 28,36		35	
				47		30	
				12,20, 29,37		25	
				21, 38-40		20	
				41,44,48		15	
				45,46		12	
		M, D, P	9 <u>1</u>/	1 – 48		<u>2</u>/	
		R	9 <u>1</u>/	49			

See footnotes at end of table.

TABLE I. <u>Electrical performance characteristics</u> – Continued.

Test	Symbol	Conditions -55°C $\leq T_C \leq$ +125°C V_{SS} = 0 V; 4.5 V $\leq V_{CC} \leq$ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits Min	Limits Max	Unit
Chip enable ($\overline{CS}_X$) access time	t_{ELQV}	See figure 4, as applicable	9, 10, 11	01,05, 13,22,30		120	ns
				02,06, 14,23,31		100	
				03,07, 15,24,32		85	
				04,08, 16,25, 33,42,43		70	
				09,17, 26,34		55	
				10,18, 27,35		45	
				49		40	
				11,19, 28,36		35	
				47		30	
				12,20, 29,37		25	
				21,38-40		20	
				41,44,48		15	
				45,46		12	
		M, D, P	9 <u>1</u>/	1 – 48		<u>2</u>/	
		R	9 <u>1</u>/	49			

See footnotes at end of table.

TABLE I. <u>Electrical performance characteristics</u> – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits Min	Limits Max	Unit
Output enable ($\overline{OE}$) to output valid	t_{OLQV}	See figure 4, as applicable	9, 10, 11	01,02, 05,06, 13,14, 22,23, 30,31		50	ns
				42, 43		35	
				03,07, 15,24,32		30	
				04,08, 16,25,33		25	
				09,10, 17,18, 26,27, 34,35		20	
				11,19, 28,36		15	
				47		12	
				12, 20, 29, 37, 49		10	
				21,38, 41,44, 45,46		7	
				39,40,48		6	
		M, D, P	9 <u>1</u>/	1 – 48		<u>2</u>/	
		R	9 <u>1</u>/	49			

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-89598
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TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits Min	Limits Max	Unit
Output hold after address change	t_{AVQX}	See figure 4, as applicable		9, 10, 11	All	3		ns
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Chip enable to 3/ 7/ output in low Z	t_{ELQX}			9, 10, 11	All	3		ns
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Chip disable to output in high Z 3/ 7/	t_{EHQZ}			9, 10, 11	01 - 08, 13 - 16, 22 - 25, 30 - 33, 42, 43		30	ns
					09,10, 17,18, 26,27, 34,35		20	
					11,19, 28,36,47		15	
					49		12	
					12,20, 29,37		10	
					21,38-40,48		8	
					41,44, 45,46		7	
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Output enable 3/ 7/ to output in low Z	t_{OLQX}			9, 10, 11	All	0		ns
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-89598
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TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits Min	Limits Max	Unit
Output disable to output in high Z 3/ 7/	t_{OHQZ}	See figure 4, as applicable	9, 10, 11	01 - 08, 13 - 16, 22 - 25, 30 - 33, 42, 43		30	ns
				09,10, 17,18, 26,27, 34,35		20	
				11,19, 28,36		15	
				12,20, 29,37, 49		10	
				21,38,4 7		8	
				41,44, 45,46		7	
				39,40,4 8		6	
		M, D, P	9 1/	1 – 48		2/	
		R	9 1/	49			

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING

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SIZE **A**

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits Min	Limits Max	Unit
Write cycle time	t_{AVAV}	See figure 4, as applicable	9, 10, 11	01,05, 13,22, 30	120		ns
				02,06, 14,23, 31	100		
				03,07, 15,24, 32	85		
				04,08, 16,25, 33,42, 43	70		
				09,17, 26,34	55		
				10,18, 27,35	45		
				11,19, 28,36	35		
				47, 49	30		
				12,20, 29,37	25		
				21, 38-40	20		
				41,44,48	15		
				45,46	12		
		M, D, P	9 1/	01 – 48		2/	
		R	9 1/	49			
Address setup to beginning of write	t_{AVWL} t_{AVEL}		9, 10, 11	All	0		ns
		M, D, P	9 1/	01 – 48		2/	
		R	9 1/	49			
Data hold after end of write	t_{WHDX} t_{EHDX}		9, 10, 11	01 - 04	5		ns
				05 - 48, 49	0		
		M, D, P	9 1/	1 – 48		2/	
		R	9 1/	49			

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-89598
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TABLE I. <u>Electrical performance characteristics</u> - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits Min	Limits Max	Unit
Write pulse width	t_{WLWH}	See figure 4, as applicable	9, 10, 11	05,13,22,30	100		ns
				06,14,23,31	80		
				07,15, 24,32	70		
				42, 43	65		
				01	50		
				10,18, 27,35 02,03	40		
				04,08, 09,16, 17,25, 26,33, 34	35		
				11,19, 28,36	30		
				49	26		
				12,20, 29,37	20		
				47	22		
				21, 38-40,48	15		
				41,44	12		
				45,46	11		
		M, D, P	9 1/	1 – 48		2/	
		R	9 1/	49			
Address setup to end of write	t_{AVWH}		9, 10, 11	01,05, 13,22, 30	100		
				02,06, 14,23, 31	85		
Chip select to end of write	t_{ELWH}			03,07, 15,24, 32	75		
				42, 43	65		
				04,08, 16,25, 33	60		
				09,17, 26,34	45		
				10,18, 27,35	35		
				49	28		
				11,19, 28,36	25		
				47	22		
				12,20, 29,37	20		
				21,38	15		
				39-41,44,48	12		
				45, 46	11		
		M, D, P	9 1/	1 – 48		2/	
		R	9 1/	49			

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits Min	Limits Max	Unit
Address hold after end of write	t_{WHAX} t_{EHAX}	See figure 4, as applicable		9, 10, 11	01-10, 13-18, 22-27, 30-35, 44-46	5		ns
					49	3		
					11,12,19-21, 28,29,36-43, 47,48	0		
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Data setup to end of write	t_{DVWH} t_{DVEH}			9, 10, 11	01,02,05, 06, 13,14, 22,23, 30,31	40		ns
					03,07, 15,24,32	35		
					04,08, 16,25, 33,42,43	30		
					09,17, 26,34	25		
					10,11,18, 19, 27,28, 35,36	20		
					47	18		
					12,20, 29,37, 49	15		
					21,38-40,48	10		
					41,44, 45,46	8		
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Write enable to output disable 3/ 7/	t_{WLQZ}			9, 10, 11	01 – 08, 13 – 16, 22 – 25, 30 – 33, 42, 43		35	ns
					09,10, 17,18, 26,27, 34,35		20	
					11,19, 28,36		15	
					12,20, 29,37		10	
					21,38-40,48		9	
					47, 49		8	
					41, 44-46		7	
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Output active after end of write 3/	t_{WHQX}	See figure 4, as applicable		9, 10, 11	1 – 49	5		ns
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C V_{SS} = 0 V; 4.5 V ≤ V_{CC} ≤ 5.5 V unless otherwise specified		Group A subgroups	Device types	Limits Min	Limits Max	Unit
Retention time 3/	t_{CDR}	See figure 4, as applicable		9, 10, 11	All	0		ns
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			
Operation recovery time 3/	t_R			9, 10, 11	01,05, 13,22, 30	120		ns
					02,06, 14,23, 31	100		
					03,07, 15,24, 32	85		
					04,08, 16,25, 33,42, 43	70		
					09,17, 26,34	55		
					10,18, 27,35	45		
					49	40		
					11,19, 28,36	35		
					47	30		
					12,20, 29,37	25		
					21, 38- 40	20		
					41,44, 48	15		
					45,46	12		
			M, D, P	9 1/	1 – 48		2/	
			R	9 1/	49			

See footnotes at end of table.

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TABLE I. <u>Electrical performance characteristics</u> - Continued.

<u>1</u>/   Device type 49 RHA parts supplied to this drawing have been characterized through all levels M, D, P, L and R of irradiation. However, device type 49 is only tested at the "R" level. Device type 49 is irradiated at dose rate = 1 rad (Si)/s in accordance with MIL-STD-883, method 1019, condition B, and is guaranteed to a maximum total dose specified herein section 1.5.

Pre and post irradiation values are identical unless otherwise specified in table I. When performing post irradiation electrical measurements for any RHA level, T_A = +25°C.

<u>2</u>/   This parameter is tested initially and after any design or process change which could affect this parameter, and therefore shall be guaranteed to the limits specified in table I.

<u>3</u>/   Functional tests shall include the test table and other test patterns used for fault detection as approved by the qualifying activity. Outputs are measured at V_{OL} < 1.5 V, V_{OH} > 1.5 V.

<u>4</u>/   For timing waveforms see figure 4 and for output load circuits, see figure 5.

<u>5</u>/   AC measurements assume transition time ≤ 5 ns, input levels are from ground to 3.0 V, and output load C_L ≥ 30 pF except as noted on figure 5. Timing reference levels are 1.5 V.

<u>6</u>/   Transition is measured ±500 mV from steady state voltage.

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Case Y
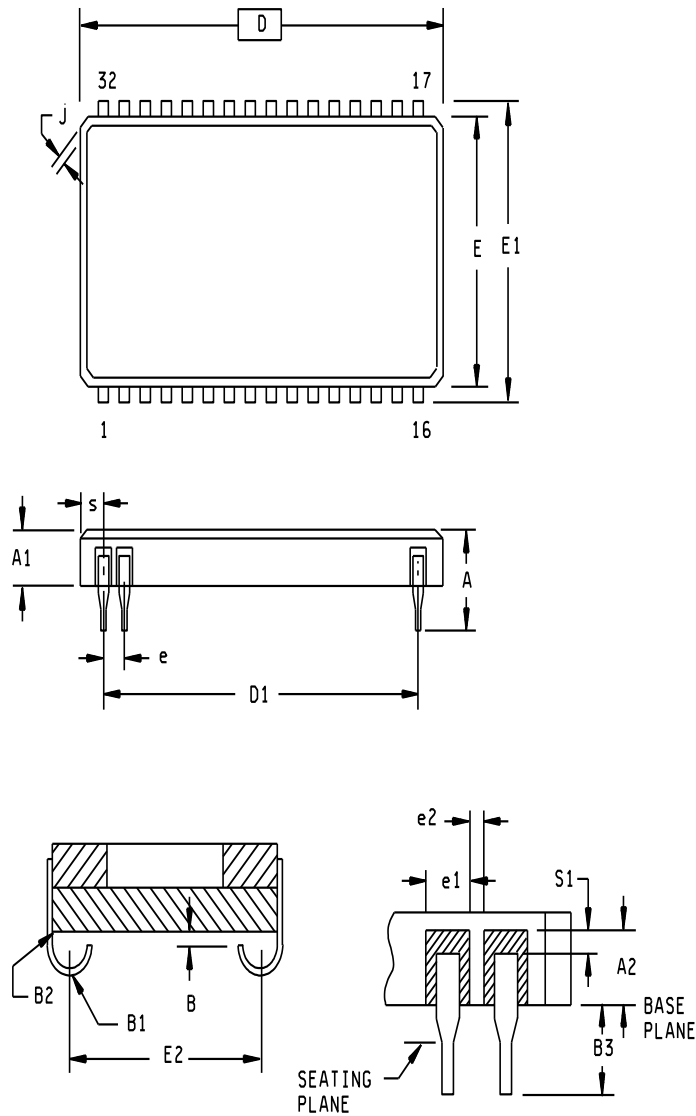
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	.120	.165	3.05	4.19
A1	.088	.120	2.24	3.05
A2	.070	Ref.	1.78	---
B	.010	Ref.	0.25	---
B1	.030R	Typ.	0.76	---
B2	.020	Ref.	0.51	---
B3	.025	.045	0.64	1.14
D	.816	.838	20.73	21.29
D1	.750	Ref.	19.05	---
E	.419	.431	10.64	10.95
E1	.430	.445	10.42	11.30
E2	.360	.380	9.14	9.65
e	.050 BSC		1.27 BSC	
e1	.038	Typ.	0.97	---
e2	.005		0.13	---
j	.005	Typ.	0.13	---
S	.030	.040	0.76	1.02
S1	.020	Typ.	0.51	---

NOTE: A bottom brazed package may be shipped as an alternative package style, provided the vendor makes the receiving customer aware of the intent to ship the part as a bottom brazed package rather than the one shown on this figure.

FIGURE 1. Case outlines.

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Case Z
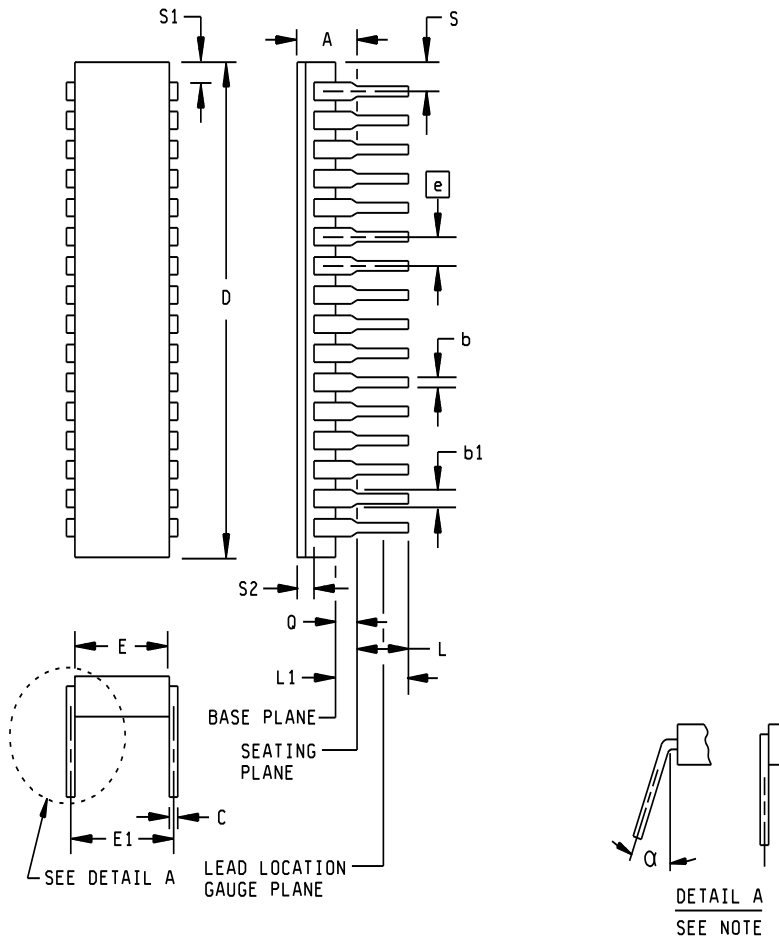
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	---	.232	---	5.89
b	.014	.023	0.36	0.58
b1	.038	.065	0.97	1.65
c	.008	.015	0.20	0.38
D	---	1.700	---	41.05
E	.350	.405	9.78	10.29
E1	.390	.420	9.91	10.67
e	.100 BSC		2.54 BSC	
L	.125	.200	3.18	5.08
L1	.150	---	3.81	---
Q	.015	.060	0.38	1.52
S	---	.100	---	2.54
S1	.005	---	0.13	---
S2	.005	---	0.13	---
α	0°	15°	---	---
N	32			

DETAIL A
SEE NOTE

Note: Either configuration in detail A is allowed.

FIGURE 1. Case outlines - Continued.

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Case U
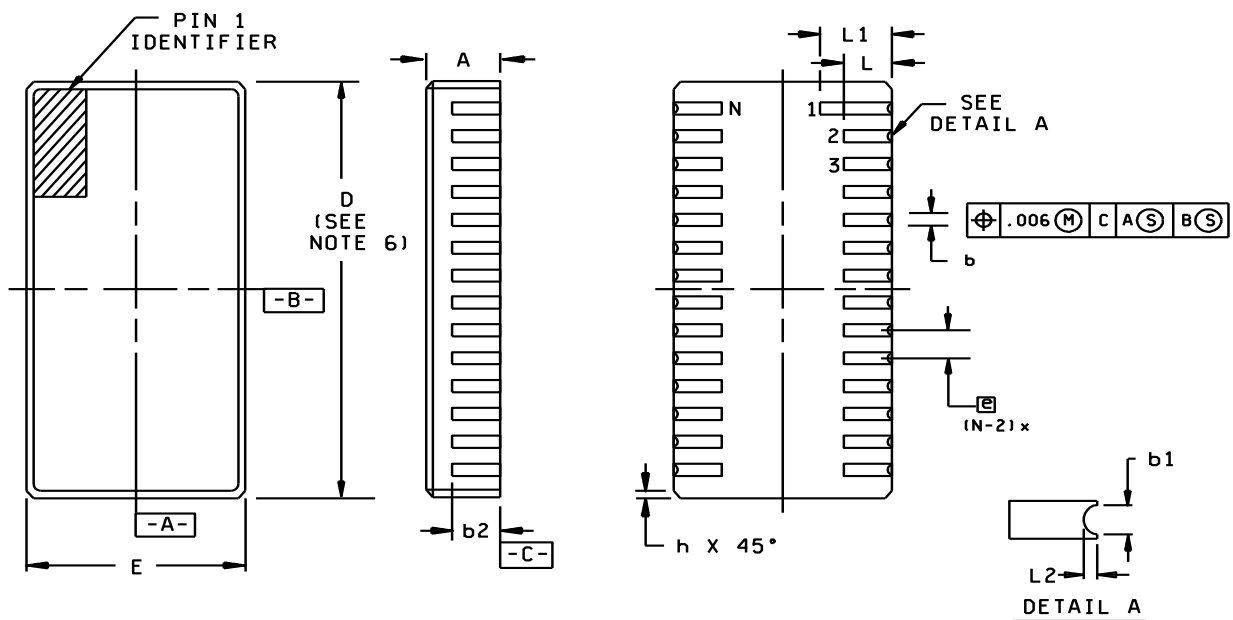
Symbol	Inches			Millimeters			
	Min	Nom	Max	Min	Nom	Max	Notes
A	.080	.090	.100	2.03	2.29	2.54	
b	.022	.025	.028	0.56	0.64	0.71	
b1	.006	.014	.022	0.15	0.36	0.56	4
b2	.040	---	---	1.02	---	---	
D	.800	.820	.840	20.32	20.83	21.34	
E	.392	.400	.408	9.96	10.16	10.36	
e	.050 BSC			1.27 BSC			
h	.012 REF			0.30 REF			7
L	.070	.075	.080	1.78	1.90	2.03	
L1	.090	.100	.110	2.29	2.54	2.79	5
L2	.003	.009	.015	0.08	0.23	0.38	4
N	32			---			8

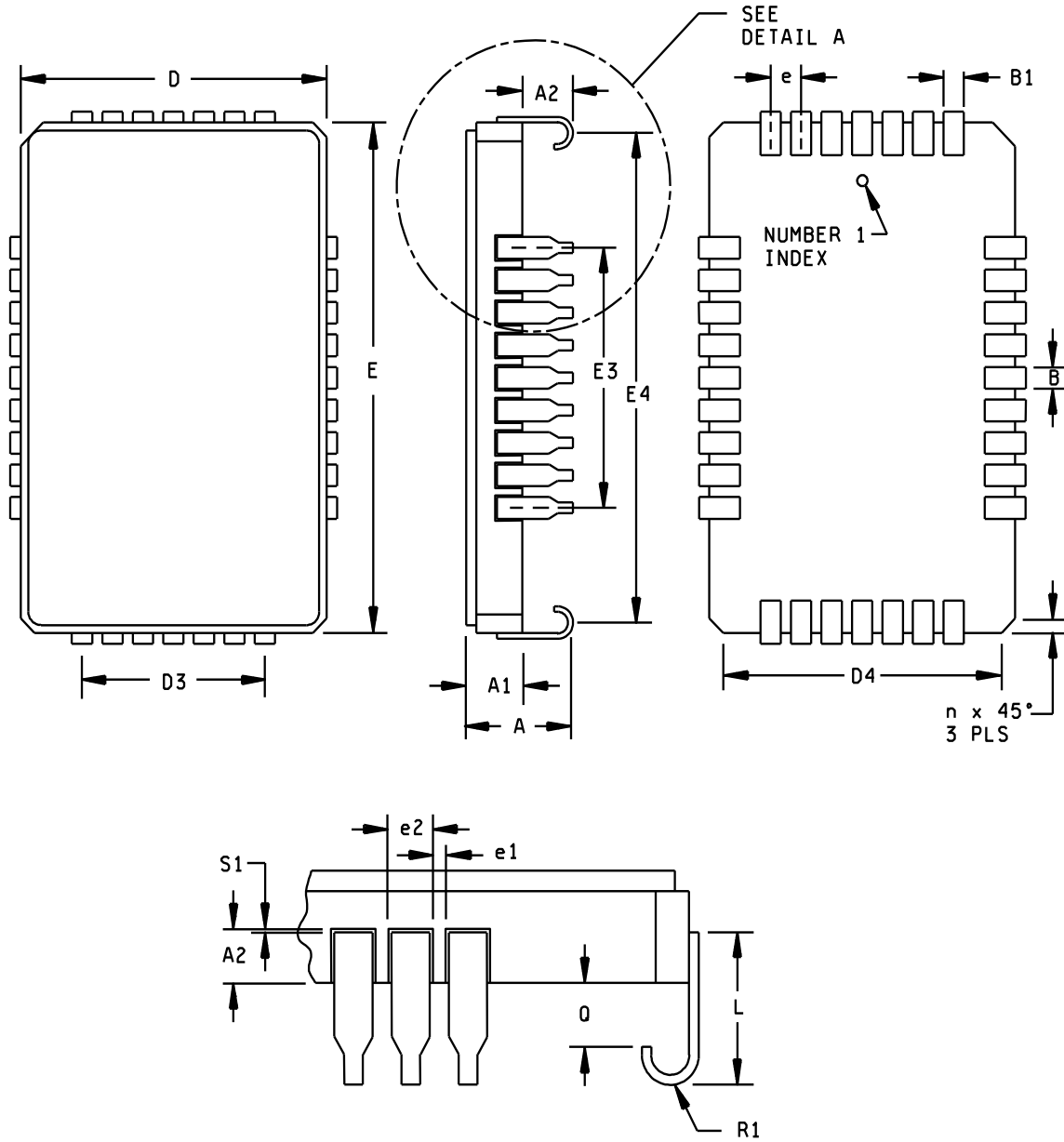FIGURE 1. Case outlines – Continued.

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COLUMBUS, OHIO 43218-3990

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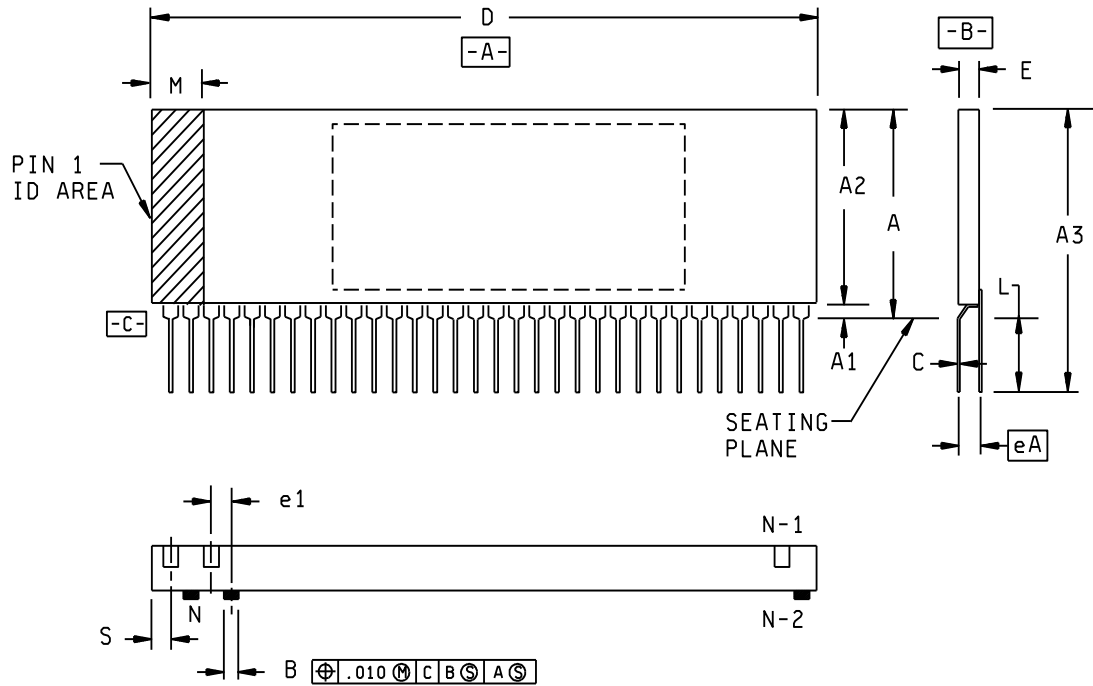APR 97

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. All dimensions and tolerances conform to ANSI Y14.5M-1982.
4. Metallized castellations shall be connected to plane 1 terminals.
5. Index area: A pin identification mark shall be located adjacent to pin one within the shaded area shown. Plane 1 terminal identification may be an extension of the length of the metallized terminal which shall not be wider than the b dimension.
6. The cover shall not extend beyond the edges of the body.
7. The corner shape (square, notch, radius, etc.) may vary at the manufacturer's option.
8. N indicates the number of terminals.
9. Unless otherwise specified, a minimum clearance of .015 inch (.381 mm) shall be maintained between all metallized features (e.g., lid, castellation, terminals, thermal pads, etc.).
10. Solder finish is optional with a maximum allowable thickness of .007 inch. Measurement of dimensions A, b1, and L2 may be made prior to solder application.

FIGURE 1. Case outlines – Continued.

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Case T
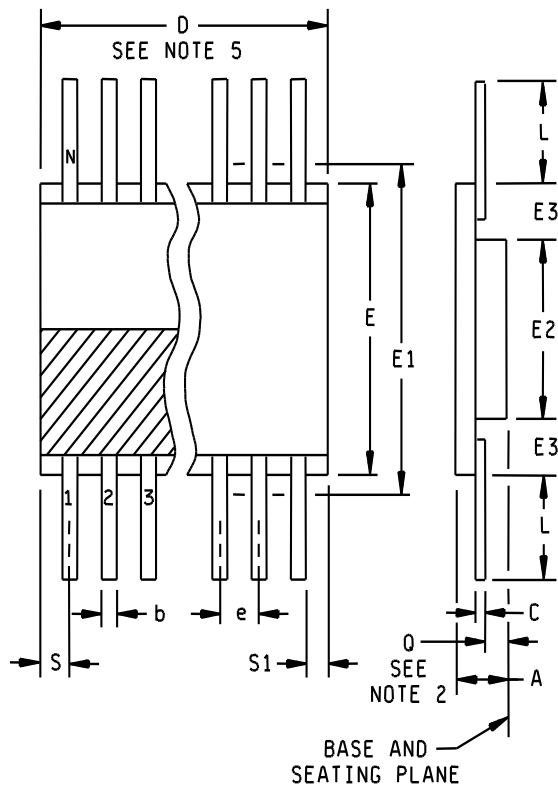
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.097	.125	2.46	3.18	
b	.015	.019	0.38	0.48	5
c	.003	.009	0.08	0.23	5
D	---	.830	---	21.08	3
E	.400	.420	10.16	10.67	
E1	---	.450	---	11.43	3
E2	.180	---	4.57	---	
E3	.030	---	0.76	---	9
e	.050 BSC		1.27 BSC		4,6
L	.250	.370	6.35	9.40	
Q	.020	.045	0.51	1.14	
S	---	.045	---	1.14	7
S1	.000	---	0.00	---	7,8
N	32				6

NOTES:
1. Index area; a notch or a pin one identification mark shall be located adjacent to pin one and shall be located within the shaded area shown. The manufacturer's identification shall not be used as a pin one identification mark.
2. Dimension Q shall be measured at the point of exit of the lead from the body. Dimension Q minimum shall be reduced by .0015 inch (0.038 mm) maximum when lead finish A is applied.
3. This dimension allows for off-center lid, meniscus, and glass overrun.
4. The basic lead spacing is .050 (1.27 mm) between centerlines. Each lead centerline shall be located within ±.005 (0.13 mm) of its exact longitudinal position relative to lead 1 and the highest numbered (N) lead.
5. All leads - Increase maximum limit by .003 (0.08 mm) measured at the center of the flat, when lead finish A or B is applied.
6. Total number of spaces = (N-2). Symbol "N" is the maximum number of leads.
7. Measure all four corner leads.
8. Dimension S1 (see 5.2.2 of MIL-STD-1835) may be .000 (0.00 mm) if the corner leads, upon entering the body of the package, and within one lead's width, bend toward the die cavity. See 5.2.2 of MIL-STD-1835 for measurement of S1 on bottom-brazed flat packs.
9. Bottom brazed lead configuration. If this configuration is used, no organic or polymeric materials shall be molded to the bottom of the package to cover the leads.
10. Dimensions are in inches.
11. Metric equivalents are given for general information only.

FIGURE 1. Case outlines – Continued.

STANDARD MICROCIRCUIT DRAWING DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990	SIZE **A**		**5962-89598**
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Case N
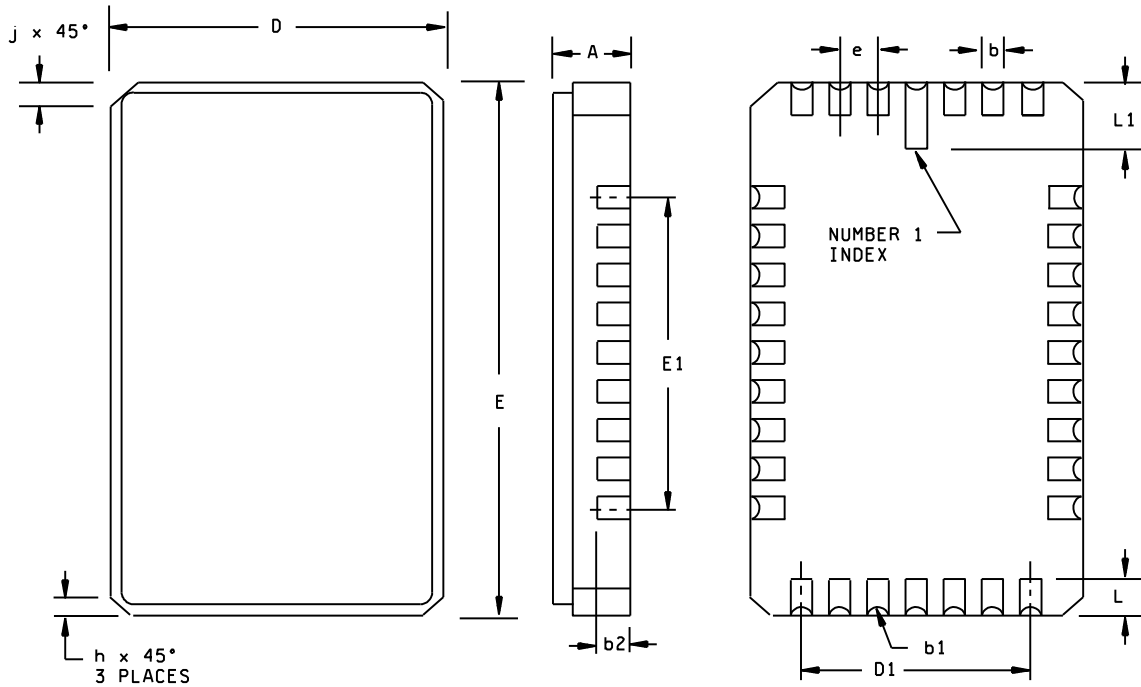
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	.070	.100	1.78	2.54
b	.022	.028	0.56	0.71
b1	.009 R		.23 R	
b2	.038	.042	.97	1.07
D	.445	.460	11.30	11.68
D1	.295	.305	7.49	7.75
E	.695	.715	17.65	18.16
E1	.395	.405	10.03	10.29
e	.050 TYP		1.27 TYP	
h	.020 REF		.51 REF	
J	.035 REF		.89 REF	
L	.045	.055	1.14	1.40
L1	.077	.093	1.96	2.36

FIGURE 1. Case outlines – Continued.

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Case 9

FIGURE 1. Case outlines – Continued.

Case 9 – Continued.

Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	.141	.177	3.58	4.50
A1	.073	.089	1.85	2.26
A2	.078 REF		1.98 REF	
A3	.033	.065	.84	1.65
B	.017 REF		.43 REF	
B1	.028 REF		.71 REF	
D	.445	.458	11.30	11.63
D3	.290	.310	7.37	7.87
D4	.400	.440	10.16	11.18
E	.695	.710	17.65	18.03
E3	.390	.410	9.91	10.41
E4	.650	.690	16.51	17.53
e	.050 TYP		1.27 TYP	
e1	.007 REF		.18 REF	
h	.020 REF		.51 REF	
L	.075	.115	1.91	2.92
Q	.040 MIN		1.02 MIN	
R1	.023 R REF TYP		.58 R REF TYP	
S1	.003	.035	.08	.89

FIGURE 1. Case outlines - Continued.

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Case 8

Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.460	.500	11.68	12.70	3
A1	.020	.040	0.51	1.02	
A2	.440	.460	11.18	11.68	
A3	.565	.645	14.35	16.38	
B	.016	.020	0.41	0.51	
C	.008	.012	0.20	0.30	
D	1.630	1.670	41.40	42.42	6
E	.090	.130	2.29	3.30	
e1	.050 BSC		1.27 BSC		
eA	.100 BSC		2.54 BSC		
L	.125	.155	3.18	3.95	
M	.055	.105	1.40	2.67	
N	32				1
S	.030	.070	0.76	1.78	

NOTES:
1. N is the number of leads.
2. The chamfer on the body is optional. If is not present, a visual index feature must be located within the cross hatched area.
3. Lead configuration in this area is optional.
4. Controlling dimension: Inches.
5. Solder finish is optional. However, if leads are solder dipped or plated, increase maximum limit of all leads by 0.003" from center of flat.
6. The cover shall not extend beyond the edges of the ceramic body.

FIGURE 1. Case outlines - Continued.

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Case 7

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	3.35	3.66	.132	.144
A2	0.66	0.91	.026	.036
b	0.38	0.48	.015	.019
B1	0.76	1.02	.030	.040
D	20.62	21.03	.812	.828
D1	18.80	19.30	.740	.760
E	10.29	10.54	.405	.415
E1	11.05	11.30	.435	.445
E2	9.14	9.85	.360	.380
e	1.27 BSC		.050 BSC	
N	32			

FIGURE 1. Case outlines - continued.

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Device types	01 through 12, 22 through 29,39, 40,42 through 46, 48	13 through 21, 30 through 38, 41,47, 49	01 through 12, 22 through 29, 39
Case outlines	X, Y, Z, U, T, N, M, 9, and 7		8
Terminal number	Terminal symbol		
1	NC	NC	NC
2	A_{16}	A_{16}	V_{CC}
3	A_{14}	A_{14}	A_{16}
4	A_{12}	A_{12}	A_{15}
5	A_7	A_7	A_{14}
6	A_6	A_6	NC
7	A_5	A_5	A_{12}
8	A_4	A_4	$\overline{WE}$
9	A_3	A_3	A_7
10	A_2	A_2	A_{13}
11	A_1	A_1	A_6
12	A_0	A_0	A_8
13	I/O_0	I/O_0	A_5
14	I/O_1	I/O_1	A_9
15	I/O_2	I/O_2	A_4
16	V_{SS}	V_{SS}	A_{11}
17	I/O_3	I/O_3	A_3
18	I/O_4	I/O_4	$\overline{OE}$
19	I/O_5	I/O_5	A_2
20	I/O_6	I/O_6	A_{10}
21	I/O_7	I/O_7	A_1
22	$\overline{CE}$	$\overline{CE}_1$	$\overline{CS}$
23	A_{10}	A_{10}	A_0
24	$\overline{OE}$	$\overline{OE}$	I/O_7
25	A_{11}	A_{11}	I/O_0
26	A_9	A_9	I/O_6
27	A_8	A_8	I/O_1
28	A_{13}	A_{13}	I/O_5
29	$\overline{WE}$	$\overline{WE}$	I/O_2
30	NC	CE_2	I/O_4
31	A_{15}	A_{15}	V_{SS}
32	V_{CC}	V_{CC}	I/O_3

NC = No connection

FIGURE 2. Terminal connections.

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Mode	$\overline{CE}$	*CE2	$\overline{WE}$	$\overline{OE}$	I/O
Standby	H	X	X	X	High Z
Standby	X	L	X	X	High Z
Read	L	H	H	L	D_{OUT}
Write	L	H	L	X	D_{IN}
Read	L	H	H	H	High Z

H = logic "1" state, L = logic "0" state.
X = logic "don't care" state, and Z = high impedance state.

* = only applies to devices with dual $\overline{CE}$.

FIGURE 3. Truth table.

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Read Cycle (see notes 1 and 2)
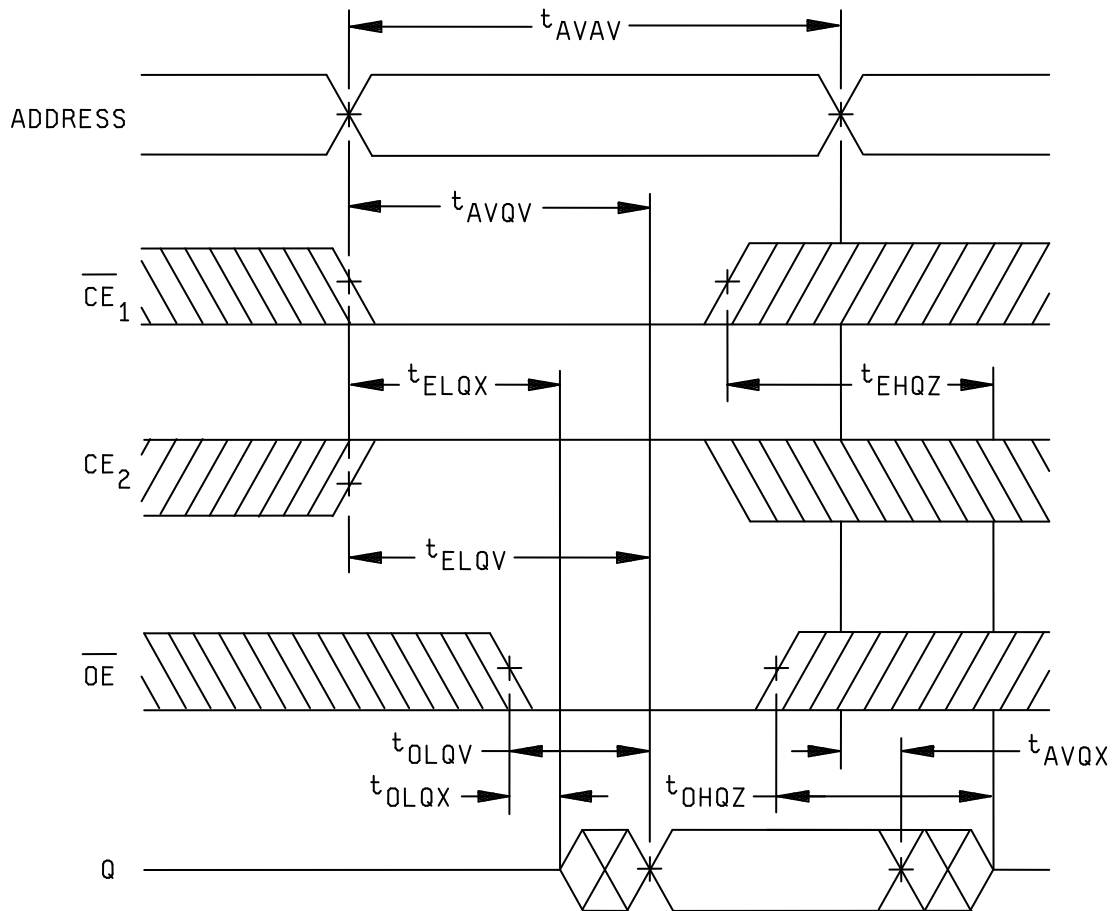
NOTES:
1. $\overline{WE}$ is held high during the read cycle.
2. Timing measurement reference level is 1.5 V.

FIGURE 4. Timing waveform diagrams.

	SIZE		
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Write cycle 1 (see notes 1, 2, and 3)
($\overline{CE}_1$ or CE_2 controlled)
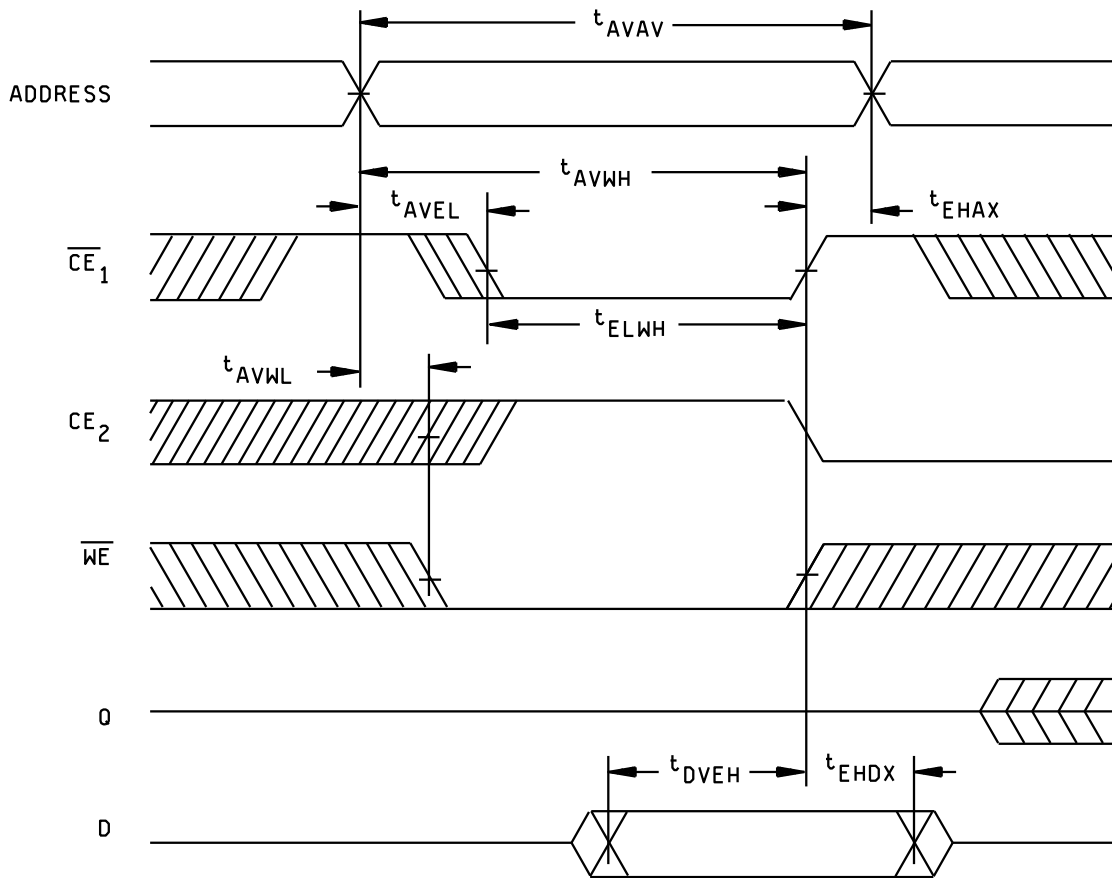
NOTES:
1. Either $\overline{CE}_1$ or CE_2 may be used to control the write cycle. If $\overline{CE}_1$ is used, CE_2 should be high when $\overline{WE}$ is low. If CE_2 is used, $\overline{CE}_1$ should be low when $\overline{WE}$ is low.
2. In a $\overline{CE}_1$ or CE_2 controlled write cycle, the outputs assume a high impedance state, whether $\overline{OE}$ is high or low, as long as $\overline{WE}$ is low.
3. Timing measurement reference is 1.5 V.

FIGURE 4. Timing waveform diagrams - Continued.

Write cycle 2 (see notes 1 and 2)
($\overline{WE}$ controlled)
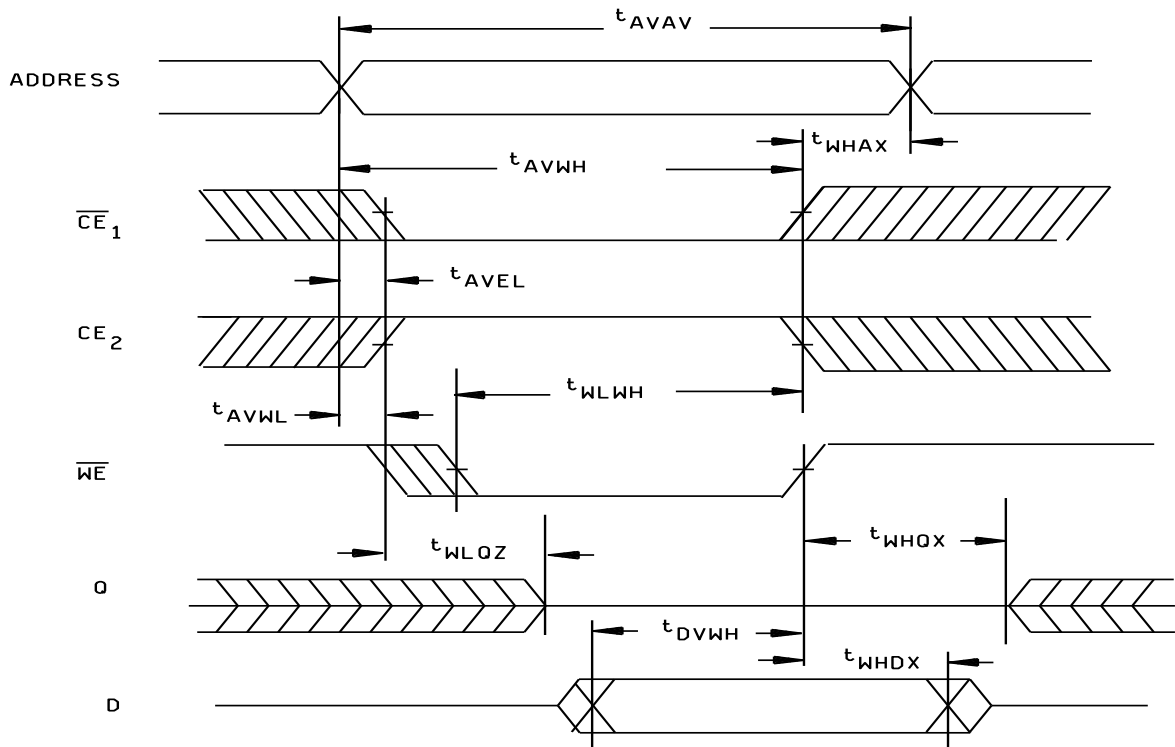
NOTES:
1. In the $\overline{WE}$ controlled write cycle, while $\overline{WE}$ is low, it will force the outputs into a high impedance state, whether $\overline{OE}$ is high or low.
2. Timing measurement reference level is 1.5 V.

FIGURE 4. Timing waveform diagrams - Continued.

Data retention Waveform (see notes 1 and 2)
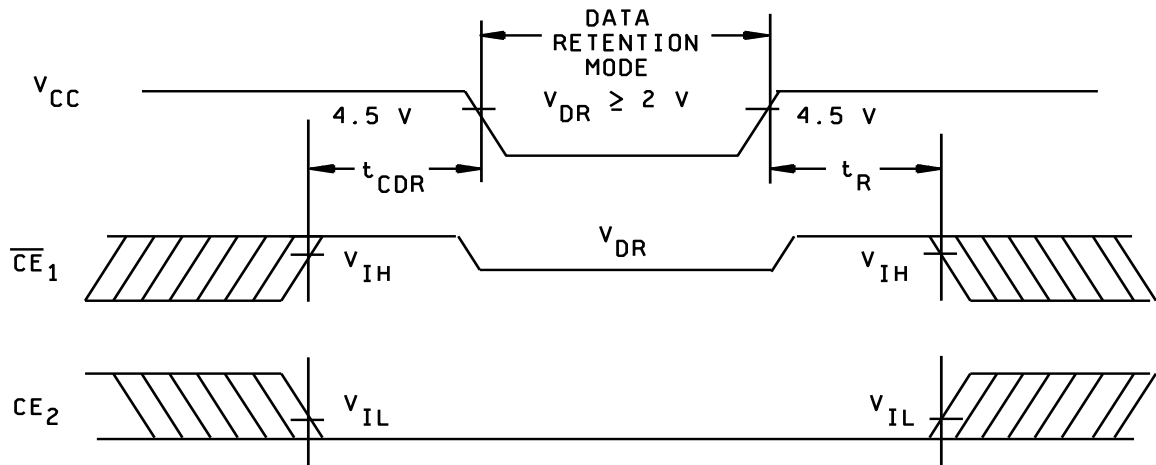
NOTES:
1. Either $\overline{CE}_1$ or CE_2 may be used to begin data retention mode.
2. For t_{CDR} and t_R: $\overline{CE}_1 \geq V_{CC}$ -0.2 V or $CE_2 \leq 0.2$ V, $V_{IN} \geq V_{CC}$ -2.0 V or $V_{IN} \leq 0.2$ V.

FIGURE 4. Timing waveform diagrams - Continued.

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+5 V

480Ω

D_{OUT}

255Ω

30 pF (MIN
(SEE NOTES 2
AND 3)
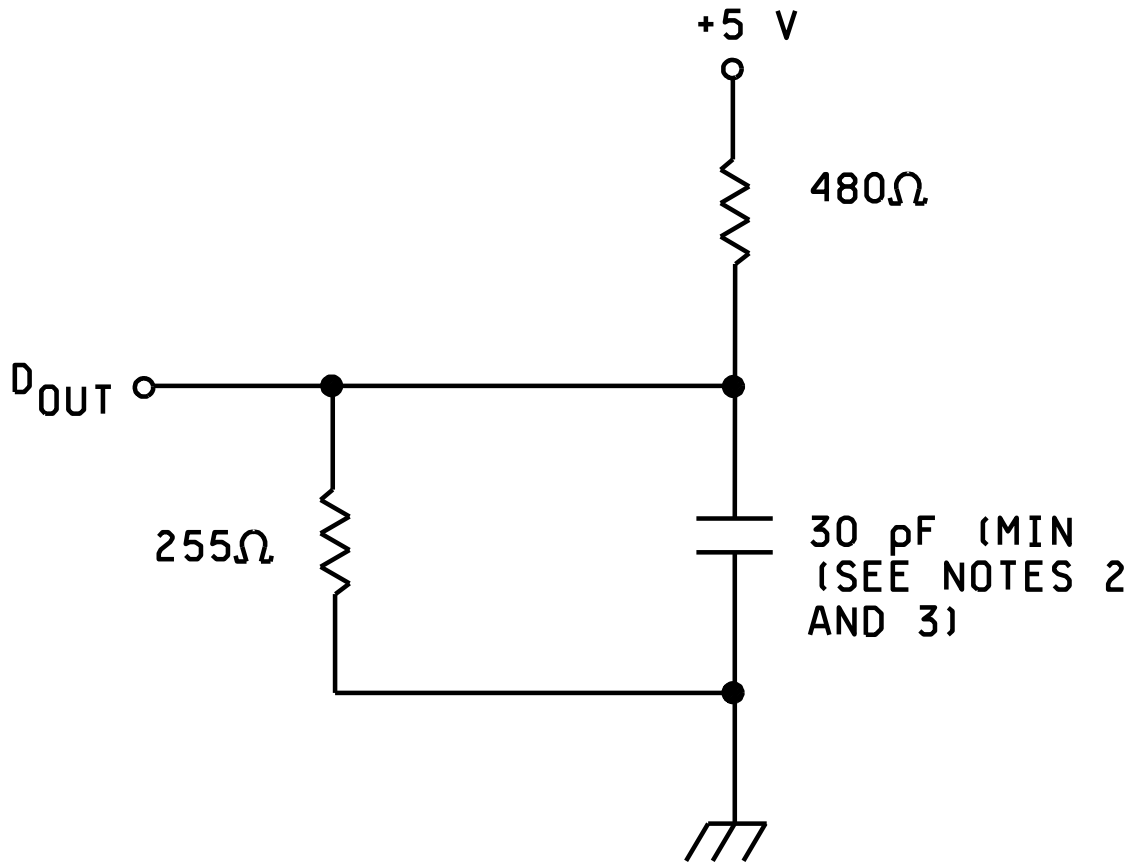
NOTES:
1. Use these output load circuits or equivalent for testing.
2. Including scope and jig.
3. Minimum of 5 pF for t_{EHQZ}, t_{OHQZ}, t_{ELQX}, t_{OLQX}, and t_{WHQX}.

FIGURE 5. Output load circuits.

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5.0 ±0.1 V

○

NC	1	32	
	2	31	
	3	30	
	4	29	
	5	28	
	6	27	
	7	26	
	8	25	
	9	24	
	10	23	
	11	22	
	12	21	NC
NC	13	20	NC
NC	14	19	NC
NC	15	18	NC
	16	17	NC
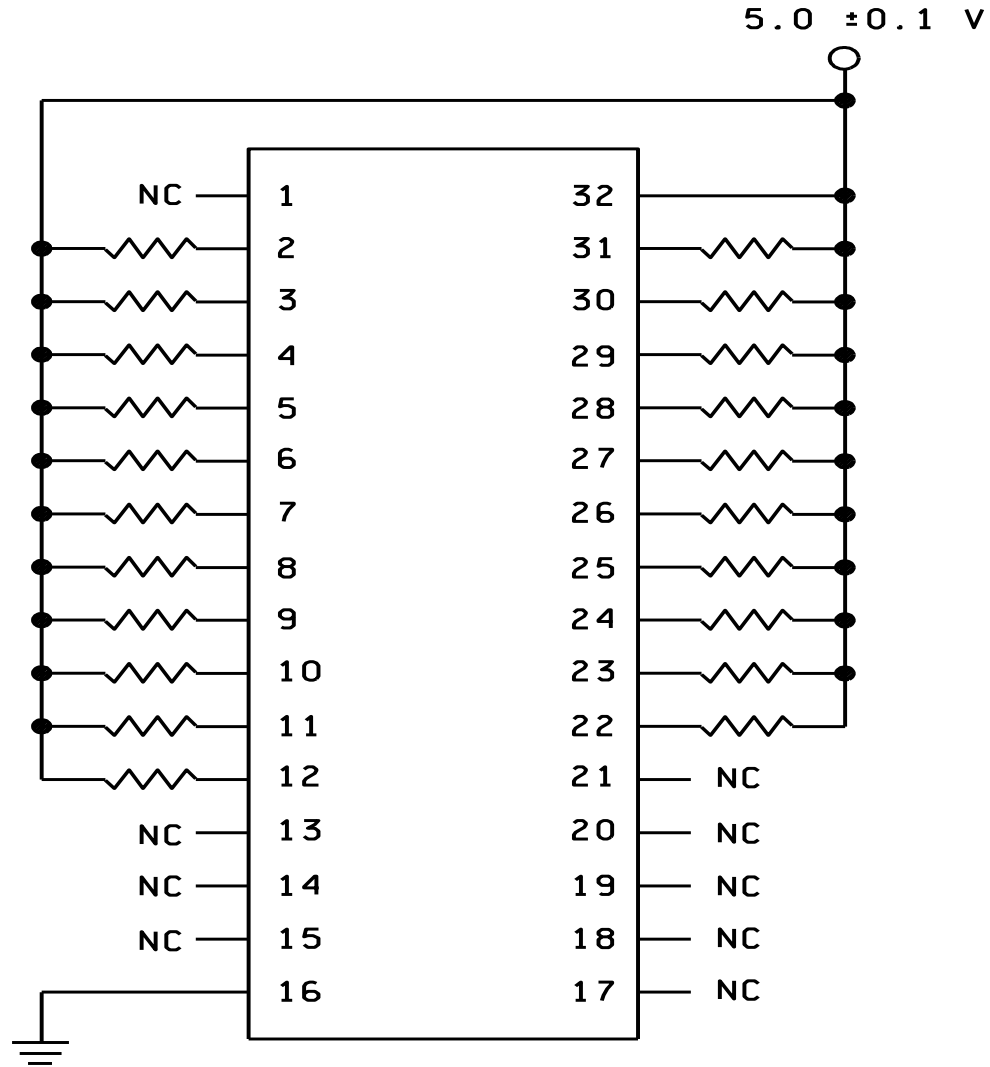
NOTE: Input protection resistors = 1 kΩ.

FIGURE 6. Bias conditions for irradiation testing.

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4. VERIFICATION

4.1 <u>Sampling and inspection</u>. For device classes Q and V, sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein. For device class M, sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 <u>Screening</u>. For device classes Q and V, screening shall be in accordance with MIL-PRF-38535, and shall be conducted on all devices prior to qualification and technology conformance inspection. For device class M, screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection.

4.2.1 <u>Additional criteria for device class M</u>.

a. Delete the sequence specified as initial (preburn-in) electrical parameters through interim (postburn-in) electrical parameters of method 5004 and substitute lines 1 through 6 of table IIA herein.

b. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1015.

(1) Dynamic burn-in (method 1015 of MIL-STD-883, test condition D; for circuit, see 4.2.1b herein).

c. Interim and final electrical parameters shall be as specified in table IIA herein.

4.2.2 <u>Additional criteria for device classes Q and V</u>.

a. The burn-in test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document revision level control of the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1015 of MIL-STD-883.

b. Interim and final electrical test parameters shall be as specified in table IIA herein.

c. Additional screening for device class V beyond the requirements of device class Q shall be as specified in MIL-PRF-38535, appendix B.

4.3 <u>Qualification inspection for device classes Q and V</u>. Qualification inspection for device classes Q and V shall be in accordance with MIL-PRF-38535. Inspections to be performed shall be those specified in MIL-PRF-38535 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

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TABLE IIA. Electrical test requirements. 1/ 2/ 3/ 4/ 5/ 6/ 7/

Line no.	Test requirements	Subgroups (in accordance with MIL-STD-883, TM 5005, table I)	Subgroups (in accordance with MIL-PRF-38535, table III)	
		Device class M	Device class Q	Device class V
1	Interim electrical parameters (see 4.2)			1, 7, 9
2	Static burn-in (method 1015)	Not required	Not required	Required
3	Same as line 1			1*, 7* Δ
4	Dynamic burn-in (method 1015)	Required	Required	Required
5	Same as line 1			1*, 7* Δ
6	Final electrical parameters (see 4.2)	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11
7	Group A test requirements (see 4.4)	1, 2, 3, 4**, 7, 8A, 8B, 9, 10, 11	1, 2, 3, 4**, 7, 8A, 8B, 9, 10, 11	1, 2, 3, 4**, 7, 8A, 8B, 9, 10, 11
8	Group C end-point electrical parameters (see 4.4)	2, 3, 7, 8A, 8B	1, 2, 3, 7, 8A, 8B	1, 2, 3, 7, 8A, 8B, 9, 10, 11 Δ
9	Group D end-point electrical parameters (see 4.4)	2, 3, 8A, 8B	2, 3, 8A, 8B	2, 3, 8A, 8B
10	Group E end-point electrical parameters (see 4.4)	1, 7, 9	1, 7, 9	1, 7, 9

1/ Blank spaces indicate tests are not applicable.
2/ Any or all subgroups may be combined when using high-speed testers.
3/ Subgroups 7 and 8 functional tests shall verify the truth table.
4/ * indicates PDA applies to subgroup 1 and 7.
5/ ** see 4.4.1e.
6/ Δ indicates delta limit (see table IIB) shall be required where specified, and the delta values shall be computed with reference to the previous interim electrical parameters (see line 1).
7/ See 4.4.1d.

TABLE IIB. Delta limits at +25°C.

Parameter 1/	Device types (All)
I_{CC3} standby	±10% of measured value
I_{IH}, I_{IL}	±10% of measured value
I_{OHZ}, I_{OLZ}	±10% of measured value

1/ The above parameter shall be recorded before and after the required burn-in and life tests to determine delta (Δ) limits.

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4.4 Conformance inspection. Technology conformance inspection for classes Q and V shall be in accordance with MIL-PRF-38535 including groups A, B, C, D, and E inspections, and as specified herein. Quality conformance inspection for device class M shall be in accordance with MIL-PRF-38535, appendix A and as specified herein. Inspections to be performed for device class M shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection.

   a. Tests shall be as specified in table IIA herein.

   b. Subgroups 5 and 6 of table I of method 5005 of MIL-STD-883 shall be omitted.

   c. For device class M, subgroups 7 and 8 tests shall be sufficient to verify the truth table. For device classes Q and V, subgroups 7 and 8 shall include verifying the functionality of the device.

   d. O/V (latch-up) tests shall be measured only for initial qualification and after any design or process changes which may affect the performance of the device. For device class M, procedures and circuits shall be maintained under document revision level control by the manufacturer and shall be made available to the preparing activity or acquiring activity upon request. For device classes Q and V, the procedures and circuits shall be under the control of the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the preparing activity or acquiring activity upon request. Testing shall be on all pins, on five devices with zero failures. Latch-up test shall be considered destructive. Information contained in JEDEC JESD 78 may be used for reference.

   e. Subgroup 4 (C_{IN} and C_{OUT} measurements) shall be measured only for initial qualification and after any process or design changes which may affect input or output capacitance. Capacitance shall be measured between the designated terminal and GND at a frequency of 1 MHz. Sample size is 15 devices with no failures, and all input and output terminals tested.

4.4.2 Group C inspection. The group C inspection end-point electrical parameters shall be as specified in table IIA herein.

4.4.2.1 Additional criteria for device class M. Steady-state life test conditions, method 1005 of MIL-STD-883:

   a. Test condition D. The test circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing or acquiring activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

   b. T_A = +125°C, minimum.

   c. Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

4.4.2.2 Additional criteria for device classes Q and V. The steady-state life test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The test circuit shall be maintained under document revision level control by the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in method 1005 of MIL-STD-883.

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4.4.3 Group D inspection. The group D inspection end-point electrical parameters shall be as specified in table II herein.

4.4.4 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.5 herein).

    a. End-point electrical parameters shall be as specified in table IIA herein.

    b. For device classes Q and V, the devices or test vehicle shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535 for the RHA level being tested. For device class M, the devices shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535, appendix A for the RHA level being tested. All device classes must meet the postirradiation end-point electrical parameter limits as defined in table I at T_A = +25°C ±5°C, after exposure, to the subgroups specified in table IIA herein.

4.4.4.1 Total dose irradiation testing. Total dose irradiation testing shall be performed in accordance with MIL-STD-883 method 1019 condition B, and as specified herein section 1.5.

4.4.4.1.1 Accelerated annealing test. Accelerated annealing tests shall be performed on all devices requiring a RHA level greater than 5k rads(Si). The post-anneal end-point electrical parameter limits shall be as specified in table I herein and shall be the pre-irradiation end-point electrical parameter limit at 25°C ±5°C. Testing shall be performed at initial qualification and after any design or process changes which may affect the RHA response of the device.

4.5 Delta measurements for device class V. Delta measurements, as specified in table IIA, shall be made and recorded before and after the required burn-in screens and steady-state life tests to determine delta compliance. The electrical parameters to be measured, with associated delta limits are listed in table IIB. The device manufacturer may, at his option, either perform delta measurements or within 24 hours after life test perform final electrical parameter tests, subgroups 1, 7, and 9.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use for Government microcircuit applications (original equipment), design applications, and logistics purposes.

6.1.1 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor prepared specification or drawing.

6.1.2 Substitutability. Device class Q devices will replace device class M devices.

6.2 Configuration control of SMD's. All proposed changes to existing SMD's will be coordinated with the users of record for the individual documents. This coordination will be accomplished using DD Form 1692, Engineering Change Proposal.

6.3 Record of users. Military and industrial users should inform DLA Land and Maritime when a system application requires configuration control and which SMD's are applicable to that system. DLA Land and Maritime will maintain a record of users and this list will be used for coordination and distribution of changes to the drawings. Users of drawings covering microelectronic devices (FSC 5962) should contact DLA Land and Maritime-VA, telephone (614) 692-8108.

6.4 Comments. Comments on this drawing should be directed to DLA Land and Maritime-VA, Columbus, Ohio 43218-3990, or telephone (614) 692-0540.

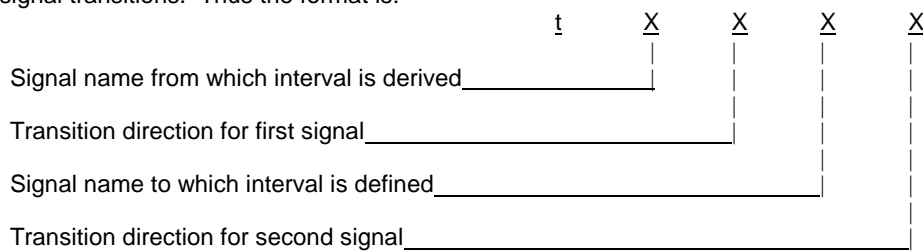| STANDARD MICROCIRCUIT DRAWING	SIZE A		5962-89598
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6.5 <u>Abbreviations, symbols, and definitions</u>. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535 and MIL-HDBK-1331, and as follows:

C_{IN}, C_{OUT} .... Input and bi-directional output, terminal-to-GND capacitance.
GND .... Ground zero voltage potential.
I_{CC} .... Supply current.
I_{IL} .... Input current low.
I_{IH} .... Input current high.
T_C .... Case temperature.
T_A .... Ambient temperature.
V_{CC} .... Positive supply voltage.
V_{IC} .... Positive input clamp voltage.
O/V .... Latch-up over-voltage.

6.5.1 <u>Timing parameter abbreviations</u>. All timing abbreviations use lower case characters with upper case character subscripts. The initial character is always "t" and is followed by four descriptors. These characters specify two signal points arranged in a "from-to" sequence that define a timing interval. The two descriptors for each signal specify the signal name and the signal transitions. Thus the format is:

<div align="center">

<u>t</u>   <u>X</u>   <u>X</u>   <u>X</u>   <u>X</u>

</div>

Signal name from which interval is derived

Transition direction for first signal

Signal name to which interval is defined

Transition direction for second signal

   a. Signal definitions:

      A = Address
      D = Data in
      Q = Data out
      W = Write enable
      E = Chip enable
      O = Output enable
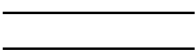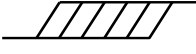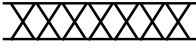
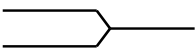   b. Transition definitions:

      H = Transition to high
      L = Transition to low
      V = Transition to valid
      X = Transition to invalid or don't care
      Z = Transition to off (high impedance)

6.5.2 <u>Timing limits</u>. The table of timing values shows either a minimum or a maximum limit for each parameter. Input requirements are specified from the external system point of view. Thus, address setup time is shown as a minimum since the system must supply at least that much time (even though most devices do not require it). On the other hand, responses from the memory are specified from the device point of view. Thus, the access time is shown as a maximum since the device never provides data later than that time.

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6.5.3 Waveforms.

WAVEFORM SYMBOL	INPUT	OUTPUT
	MUST BE VALID	WILL BE VALID
	CHANGE FROM H TO L	WILL CHANGE FROM H TO L
	CHANGE FROM L TO H	WILL CHANGE FROM L TO H
	DON'T CARE ANY CHANGE PERMITTED	CHANGING STATE UNKNOWN
		HIGH IMPEDANCE

6.6 Sources of supply.

6.6.1 Sources of supply for device classes Q and V. Sources of supply for device classes Q and V are listed in MIL-HDBK-103 and QML-38535. The vendors listed in QML-38535 have submitted a certificate of compliance (see 3.6 herein) to DLA Land and Maritime-VA and have agreed to this drawing.

6.6.2 Approved sources of supply for device class M. Approved sources of supply for class M are listed in MIL-HDBK-103. The vendors listed in MIL-HDBK-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DLA Land and Maritime-VA.

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APPENDIX A

Appendix A forms a part of SMD 5962-89598

FUNCTIONAL ALGORITHMS

A.1 SCOPE

A.1.1 Scope. Functional algorithms are test patterns which define the exact sequence of events used to verify proper operation of a random access memory (RAM). Each algorithm serves a specific purpose for the testing of the device. It is understood that all manufacturers do not have the same test equipment; therefore, it becomes the responsibility of each manufacturer to guarantee that the test patterns described herein are followed as closely as possible, or equivalent patterns be used that serve the same purpose. Each manufacturer should demonstrate that this condition will be met. Algorithms shall be applied to the device in a topologically pure fashion. This appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

A.2 APPLICABLE DOCUMENTS. This section is not applicable to this appendix.

A.3 ALGORITHMS

A.3.1 Algorithm A (pattern 1).

A.3.1.1 Checkerboard, checkerboard-bar.

Step 1. Load memory with a checkerboard data pattern by incrementing from location 0 to maximum.
Step 2. Read memory, verifying the output checkerboard pattern by incrementing from location 0 to maximum.
Step 3. Load memory with a checkerboard-bar pattern by incrementing from location 0 to maximum.
Step 4. Read memory, verifying the output checkerboard-bar pattern by incrementing from location 0 to maximum.

A.3.2 Algorithm B (pattern 2).

A.3.2.1 March.

Step 1. Load memory with background data, incrementing from minimum to maximum address locations (All "0's").
Step 2. Read data in location 0.
Step 3. Write complement data to location 0.
Step 4. Read complement data in location 0.
Step 5. Repeat steps 2 through 4 incrementing X-fast sequentially, for each location in the array.
Step 6. Read complement data in maximum address location.
Step 7. Write data to maximum address location.
Step 8. Read data in maximum address location.
Step 9. Repeat steps 6 through 8 decrementing X-fast sequentially for, each location in the array.
Step 10. Read data in location 0.
Step 11. Write complement data to location 0.
Step 12. Read complement data in location 0.
Step 13. Repeat steps 10 through 12 decrementing X-fast sequentially for each location in the array.
Step 14. Read complement data in maximum address location.
Step 15. Write data to maximum address location.
Step 16. Read data in maximum address location.
Step 17. Repeat steps 14 through 16 incrementing X-fast sequentially for each location in the array.
Step 18. Read background data from memory, decrementing X-fast from maximum to minimum address locations.

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FUNCTIONAL ALGORITHMS

A.3.3 <u>Algorithm C (pattern 3)</u>.

A.3.3 <u>XY March</u>.

Step 1.   Load memory with background data, incrementing from minimum to maximum address locations (All "0's").
Step 2.   Read data in location 0.
Step 3.   Write complement data to location 0.
Step 4.   Read complement data in location 0.
Step 5.   Repeat steps 2 through 4 incrementing Y-fast sequentially, for each location in the array.
Step 6.   Read complement data in maximum address location.
Step 7.   Write data to maximum address location.
Step 8.   Read data in maximum address location.
Step 9.   Repeat steps 6 through 8 decrementing X-fast sequentially for each location in the array.
Step 10. Read data in location 0.
Step 11. Write complement data to location 0.
Step 12. Read complement data in location 0.
Step 13. Repeat steps 10 through 12 decrementing Y-fast sequentially for each location in the array.
Step 14. Read complement data in maximum address location.
Step 15. Write data to maximum address location.
Step 16. Read data in maximum address location.
Step 17. Repeat steps 14 through 16 incrementing X-fast sequentially for each location in the array.
Step 18. Read background data from memory, decrementing Y-fast from maximum to minimum address locations.

A.3.4 <u>Algorithm D (pattern 4)</u>.

A.3.4.1 <u>CEDES</u> - CE deselect checkerboard, checkerboard-bar.

Step 1.   Load memory with a checkerboard data pattern by incrementing from location 0 to maximum.
Step 2.   Deselect device, attempt to load memory with checkerboard-bar data pattern by incrementing from location 0 to maximum.
Step 3.   Read memory, verifying the output checkerboard pattern by incrementing from location 0 to maximum.
Step 4.   Load memory with a checkerboard-bar pattern by incrementing from location 0 to maximum.
Step 5.   Deselect device, attempt to load memory with checkerboard data pattern by incrementing from location 0 to maximum.
Step 6.   Read memory, verifying the output checkerboard-bar pattern by incrementing from location 0 to maximum.

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APPENDIX B

Appendix B forms a part of SMD 5962-89598

SUBSTITUTION DATA

B.1 SCOPE

B.1.1 Scope. This appendix contains the PIN substitution information to support the one part-one part number system. For new designs, after the date of this document the NEW PIN shall be used in lieu of the OLD PIN. For existing designs prior to the date of this document the NEW PIN can be used in lieu of the OLD PIN.   This appendix is a mandatory part of the specification. The information contained herein is intended for compliance. The PIN substitution data shall be as follows:

B.2 APPLICABLE DOCUMENTS

This section is not applicable to this appendix.

B.3 SUBSTITUTION DATA

NEW PIN	OLD PIN
5962-8959801MXX	5962-8959801XX
5962-8959802MXX	5962-8959802XX
5962-8959803MXX	5962-8959803XX
5962-8959804MXX	5962-8959804XX

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APPENDIX C

Appendix C forms a part of SMD 5962-89598

C.1 SCOPE

C.1.1 Scope. This appendix establishes minimum requirements for microcircuit die to be supplied under the Qualified Manufacturers List (QML) Program. QML microcircuit die meeting the requirements of MIL-PRF-38535 and the manufacturers approved QM plan for use in monolithic microcircuits, multi-chip modules (MCMs), hybrids, electronic modules, or devices using chip and wire designs in accordance with MIL-PRF-38534 are specified herein. Two product assurance classes consisting of military high reliability (device class Q) and space application (device class V) are reflected in the Part or Identification Number (PIN). When available, a choice of Radiation Hardness Assurance (RHA) levels are reflected in the PIN.

C.1.2 PIN. The PIN is as shown in the following example:

5962	-	89598	01	V	6	A
Federal stock class designator	RHA designator (see A.1.2.1)		Device type (see A.1.2.2)	Device class designator (see A.1.2.3)	Die code	Die details (see A.1.2.4)

Drawing number
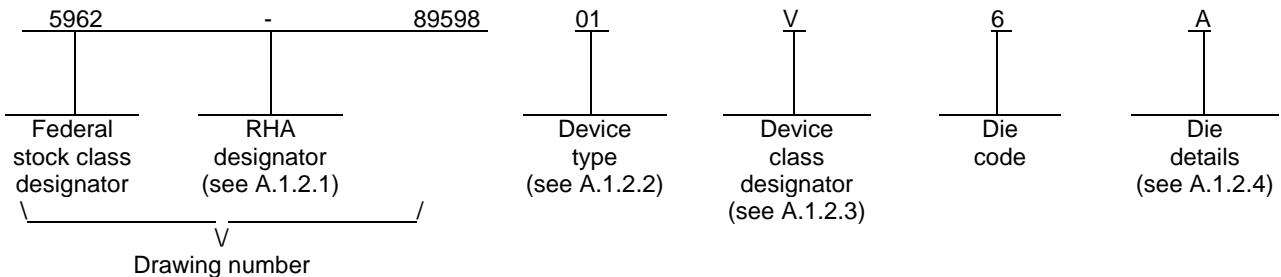
C.1.2.1 RHA designator. Device classes Q and V RHA identified die meet the MIL-PRF-38535 specified RHA levels. A dash (-) indicates a non-RHA die.

C.1.2.2 Device type(s). The device type(s) shall identify the circuit function as follows:

Device type	Generic number	Circuit function	Access time
47	65608EV-30	128K X 8 very low power CMOS SRAM	30ns

C.1.2.3 Device class designator.

Device class	Device requirements documentation
Q or V	Certification and qualification to the die requirements of MIL-PRF-38535

C.1.2.4 Die code. The die code designator shall be a number 6 for all devices supplied as die only with no case outline.

C.1.2.5 Die Details. The die details designation is a unique letter which designates the die's physical dimensions, bonding pad location(s) and related electrical function(s), interface materials, and other assembly related information, for each product and variant supplied to this appendix.

C.1.2.5.1 Die physical dimensions.

Die type	Figure number
01	A-1

C.1.2.5.2 Die bonding pad locations and electrical functions.

Die type	Figure number
01	A-1

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C.1.2.5.3 <u>Interface materials</u>.

Die type	Figure number
01	A-1

C.1.2.5.4 Assembly related information.

Die type	Figure number
01	A-1

C.1.3 <u>Absolute maximum ratings</u>. See paragraph 1.3 within the body of this drawing for details.

C.1.4 <u>Recommended operating conditions</u>. See paragraph 1.4 within the body of this drawing for details.

C.2 APPLICABLE DOCUMENTS.

C.2.1 <u>Government specification, standards, and handbooks</u>. The following specification, standards, and handbooks form a part of this drawing to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-38535 - Integrated Circuits, Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARD

MIL-STD-883 - Test Method Standard Microcircuits.

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-103 - List of Standard Microcircuit Drawings.
MIL-HDBK-780 - Standard Microcircuit Drawings.

(Copies of these documents are available online at http://quicksearch.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

C.2.2 <u>Order of precedence</u>. In the event of a conflict between the text of this drawing and the references cited herein, the text of this drawing takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

C.3 REQUIREMENTS

C.3.1 <u>Item requirements</u>. The individual item requirements for device classes Q and V shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit or function as described herein.

C.3.2 <u>Design, construction and physical dimensions</u>. The design, construction and physical dimensions shall be as specified in MIL-PRF-38535 and the manufacturer's QM plan, for device classes Q and V and herein.

C.3.2.1 <u>Die physical dimensions</u>. The die physical dimensions shall be as specified in C.1.2.5.1 and on figure A-1.

C.3.2.2 <u>Die bonding pad locations and electrical functions</u>. The die bonding pad locations and electrical functions shall be as specified in C.1.2.5.2 and on figure A-1.

C.3.2.3 <u>Interface materials</u>. The interface materials for the die shall be as specified in C.1.2.5.3 and on figure A-1.

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C.3.2.4 <u>Assembly related information</u>. The assembly related information shall be as specified in C.1.2.5.4 and figure A-1.

C.3.2.5 <u>Truth table(s)</u>. The truth table(s) shall be as defined within paragraph 3.2.3 of the body of this document.

C.3.2.6 <u>Radiation exposure circuit</u>. The radiation exposure circuit shall be as defined within paragraph 3.2.4 of the body of this document.

C.3.3 <u>Electrical performance characteristics and post-irradiation parameter limits</u>. Unless otherwise specified herein, the electrical performance characteristics and post-irradiation parameter limits are as specified in table I of the body of this document.

C.3.4 <u>Electrical test requirements</u>. The wafer probe test requirements shall include functional and parametric testing sufficient to make the packaged die capable of meeting the electrical performance requirements in table I.

C.3.5 <u>Marking</u>. As a minimum, each unique lot of die, loaded in single or multiple stacks of carriers, for shipment to a customer, shall be identified with the wafer lot number, the certification mark, the manufacturer's identification and the PIN listed in 10.2 herein. The certification mark shall be a "QML" or "Q" as required by MIL-PRF-38535.

C.3.6 <u>Certification of compliance</u>. For device classes Q and V, a certificate of compliance shall be required from a QML-38535 listed manufacturer in order to supply to the requirements of this drawing (see C.6.4 herein). The certificate of compliance submitted to DLA Land and Maritime-VA prior to listing as an approved source of supply for this appendix shall affirm that the manufacturer's product meets, for device classes Q and V, the requirements of MIL-PRF-38535 and the requirements herein.

C.3.7 <u>Certificate of conformance</u>. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 shall be provided with each lot of microcircuit die delivered to this drawing.

C.4 VERIFICATION

C.4.1 <u>Sampling and inspection</u>. For device classes Q and V, die sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The manufacturer's modifications in the QM plan shall not effect the form, fit or function as described herein.

C.4.2 <u>Screening</u>. For device classes Q and V, screening shall be in accordance with MIL-PRF-38535, and as defined in the manufacturer's QM plan. As a minimum it shall consist of:

  a.   Wafer lot acceptance for Class V product using the criteria defined within MIL-STD-883 test method 5007.

  b.   100% wafer probe (see paragraph C.3.4).

  c.   100% internal visual inspection to the applicable class Q or V criteria defined within MIL-STD-883 test method 2010 or the alternate procedures allowed within MIL-STD-883 test method 5004.

C.4.3 Conformance inspection.

C.4.3.1 <u>Group E inspection</u>. Group E inspection is required only for parts intended to be identified as radiation assured (see C.3.5 herein). RHA levels for device classes Q and V shall be as specified in MIL-PRF-38535. End point electrical testing of packaged die shall be as specified in table IIA herein. Group E tests and conditions are as specified within paragraphs 4.4.4, 4.4.4.1, 4.4.4.1.1., 4.4.4.2, 4.4.4.3 and 4.4.4.4.

C.5 DIE CARRIER

C.5.1 <u>Die carrier requirements</u>. The requirements for the die carrier shall be accordance with the manufacturer's QM plan or as specified in the purchase order by the acquiring activity. The die carrier shall provide adequate physical, mechanical and electrostatic protection.

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C.6 NOTES

C.6.1 <u>Intended use</u>. Microcircuit die conforming to this drawing are intended for use in microcircuits built in accordance with MIL-PRF-38535 or MIL-PRF-38534 for government microcircuit applications (original equipment), design applications and logistics purposes.

C.6.2 <u>Comments</u>. Comments on this appendix should be directed to DLA Land and Maritime-VA, Columbus, Ohio, 43218-3990 or telephone (614)-692-8108.

C.6.3 <u>Abbreviations, symbols and definitions</u>. The abbreviations, symbols, and definitions used herein are defined within MIL-PRF-38535 and MIL-STD-1331.

C.6.4 <u>Sources of supply for device classes Q and V</u>. Sources of supply for device classes Q and V are listed in QML-38535. The vendors listed within QML-38535 have submitted a certificate of compliance (see C.3.6 herein) to DLA Land and Maritime-VA and have agreed to this drawing.

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Pad number Top left corner	Pad reference	Position relative to center of die (dimensions are in millimeters)		Rotation angle In degrees	Manufacturer Pad reference	Signal name
		X	Y			
1	A	-7,706	2,297	0	20	(A3)
2	A	-7,706	2,117	0	21	(A2)
3	A	-7,706	1,937	0	22	(AI)
4	A	-7,706	1,757	0	23	(A0)
5	A	-7,706	1,522	0	24	(1/O0)
6	A	-7,706	1,242	0	25	I/O1
7	A	-7,706	0,992	0	26	Gnd
8	A	-7,706	0,742	0	27	I/O2
9	A	-7,706	0,242	0	28	Gnd
10	B	-7,706	0,042	0	29	Gnd
11	A	-7,706	-0,158	0	30	Gnd
12	A	-7,706	-0,408	0	31	I/O3
13	A	-7,706	-0,688	0	32	I/O4
14	A	-7,706	-0,913	0	33	Gnd
15	A	-7,706	-1,138	0	34	I/O5
16	A	-7,706	-1,418	0	35	(I/O6)
17	A	-7,706	-1,698	0	36	(I/O7)
18	A	-7,706	-1,938	0	37	(CS1/)
19	A	-7,706	-2,118	0	38	(A1O)
20	A	-7,706	-2,298	0	39	(OE/)
21	A	-7,488	-2,504	0	40	I/O6
22	A	-7,227	-2,504	0	41	Gnd
23	A	-6,947	-2,504	0	42	I/O7
24	A	-5,787	-2,504	0	43	CS1/
25	A	-4,787	-2,504	0	44	AI0
26	A	-3,787	-2,504	0	45	OE/
27	A	-0,187	-2,504	0	46	Gnd
28	A	3,813	-2,504	0	47	AII
29	A	4,813	-2,504	0	48	A9

Figure A-1 - MMO-65608EV Bond Pad Locations and Functions

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Pad number Top left corner	Pad reference	Position relative to center of die (dimensions are in millimeters)		Rotation angle In degrees	Manufacturer Pad reference	Signal name
		X	Y			
30	A	5,813	-2,504	0	49	A8
31	A	6,613	-2,504	0	50	A13
32	A	7,213	-2,504	0	51	W/
33	A	7,729	-2,333	0	52	(A11)
34	A	7,729	-2,158	0	53	(A9)
35	A	7,729	-1,983	0	54	(A8)
36	A	7,729	-1,808	0	55	(A13)
37	A	7,729	-1,633	0	56	(W)
38	A	7,729	-1,407	0	57	CS2
39	A	7,729	-1,183	0	58	Gnd
40	A	7,729	-0,983	0	59	A15
41	A	7,729	-0,188	0	60	Vcc
42	B	7,722	0,042	0	61	Vcc
43	A	7,729	0,272	0	62	Vcc
44	A	7,729	0,842	0	1	A16
45	A	7,729	1,067	0	2	Gnd
46	A	7,729	1,267	0	3	A14
47	A	7,729	1,436	0	4	(A12)
48	A	7,729	1,617	0	5	(A7)
49	A	7,729	1,792	0	6	(A6)
50	A	7,729	1,967	0	7	(A5)
51	A	7,729	2,142	0	8	(A4)
52	A	7,729	2,323	0	9	A12
53	A	7,638	2,504	0	10	A7
54	A	6,813	2,504	0	11	A6
55	A	6,613	2,504	0	12	A5
56	A	4,413	2,504	0	13	A4
57	A	0,013	2,504	0	14	Gnd
58	A	-3,787	2,804	0	15	A3
59	A	-4,787	2,504	0	16	A2
60	A	-6,787	2,504	0	17	A1
61	A	-6,387	2,504	0	18	A0
62	A	-7,481	2,504	0	19	I/O0

Figure A-1 - MMO-65608EV Bond Pad Locations and Functions – Continued

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Die physical dimensions.
       Die size: 15 860 X 5 410 microns
       Die thickness: 475 microns

     Interface materials.
      Top metallization: Aluminium + 1% Copper
      Backside metallization: bare silicon

     Glassivation.
      Type: Silicon Oxide + Nitride
      Thickness: 15 000 Angstroms

     Substrate: Single crystal silicon

     Assembly related information.
      Substrate potential: not connected
      Special assembly instructions: None

Figure A-1 - MMO-65608EV Bond Pad Locations and Functions – Continued

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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 14-06-25

Approved sources of supply for SMD 5962-89598 are listed below for immediate acquisition only and shall be added to MIL-HDBK-103 and QML-38535, as applicable, during the next revision. MIL-HDBK-103 and QML-38535 will be revised to include the addition or deletion of sources. The vendors listed below have agreed to this drawing and a certificate of compliance has been submitted to and accepted by DLA Land and Maritime-VA. This information bulletin is superseded by the next dated revisions of MIL-HDBK-103 and QML-38535. DLA Land and Maritime maintains an online database of all current sources of supply at http://www.landandmaritime.dla.mil/Programs/Smcr/.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959801M8A	3/	EDI88128LPS120ZB
5962-8959801M9A	3/	MSM8128JXLMC-12
5962-8959801MNA	3/ 3/ 3/	L7C108-120 (GEN) L7C108KMB25 MSM8128WXLMC-12
5962-8959801MTA	3/ 3/	L7C108-120 (GEN) L7C108MMB25
5962-8959801MUA	3/ 3/	EDI88128LPS120LB S128K8L-120ML
5962-8959801MXA	3/ 3/ 3/	EDI88128LPS120CB MSM8128SXLMC-12 S128K8L-120MC
5962-8959801MYA	3/ 3/ 3/	EDI88128LPS120NB L7C108YMB25 S128K8L-120MS
5962-8959801MZA	3/ 3/ 3/ 3/	EDI88128LPS120TB L7C108CMB25 MSM8128KXLMC-12 S128K8L-120ME
5962-8959802M8A	3/	EDI88128LPS100ZB
5962-8959802M9A	3/	MSM8128JXLMC-10
5962-8959802MNA	3/ 3/	L7C108-100 (GEN) MSM8128WXLMC-10
5962-8959802MTA	3/ 3/ 3/ 3/ 3/	EDI88128LPS100FB L7C108MMB25 L7C108-100 (GEN) MSM8128GXLMC-10 S128K8L-100MF

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959802MUA	3/ 3/	EDI88128LPS100LB S128K8L-100ML
5962-8959802MXA	3/ 3/ 3/	EDI88128LPS100CB MSM8128SXLMC-10 S128K8L-100MC
5962-8959802MYA	3/ 3/ 3/ 3/	EDI88128LPS100NB L7C108-100 (GEN) L7C108YMB25 S128K8L-100MS
5962-8959802MZA	3/ 3/ 3/ 3/ 3/	EDI88128LPS100TB L7C108-100 (GEN) L7C108CMB25 MSM8128KXLMC-10 S128K8L-100ME
5962-8959803M8A	3/	EDI88128LPS85ZB
5962-8959803M9A	3/	MSM8128JXLMC-85
5962-8959803MNA	3/ 3/ 3/	L7C108-25 (GEN) L7C108KMB25 MSM8128WXLMC-85
5962-8959803MTA	3/ 3/ 3/ 3/ 3/	EDI88128LPS85FB L7C108-85 (GEN) L7C108MMB25 MSM8128GXLMC-85 S128K8L-85MF
5962-8959803MUA	3/ 3/	EDI88128LPS85LB S128K8L-85ML
5962-8959803MXA	3/ 3/ 3/	EDI88128LPS85CB MSM8128SXLMC-85 S128K8L-85MC
5962-8959803MYA	3/ 3/ 3/ 3/	EDI88128LPS85NB L7C108-85 (GEN) L7C108YMB25 S128K8L-85MS
5962-8959803MZA	3/ 3/ 3/ 3/ 3/	EDI88128LPS85TB L7C108-85 (GEN) L7C108CMB25 MSM8128KXLMC-85 S128K8L-85ME
5962-8959804M8A	3/	EDI88128LPS70ZB
5962-8959804M9A	3/	MSM8128JXLMC-70

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959804MNA	3/ 3/ 3/	L7C108-70 (GEN) L7C108KMB25 MSM8128WXLMC-70
5962-8959804MTA	3/ 3/ 3/ 3/ 3/	EDI88128LPS70FB L7C108-70 (GEN) L7C108MMB25 MSM8128GXLMC-70 S128K8L-70MF
5962-8959804MUA	3/ 3/	EDI88128LPS70LB S128K8L-70ML
5962-8959804MXA	3/ 3/ 3/	EDI88128LPS70CB MSM8128SXLMC-70 S128K8L-70MC
5962-8959804MYA	3/ 3/ 3/ 3/	EDI88128LPS70NB L7C108-70 (GEN) L7C108YMB25 S128K8L-70MS
5962-8959804MZA	3/ 3/ 3/ 3/ 3/	EDI88128LPS70TB L7C108-70 (GEN) L7C108CMB25 MSM8128KXLMC-70 S128K8L-70ME
5962-8959805BTA	3/	
5962-8959805BUA	3/	
5962-8959805BXA	3/	
5962-8959805BZA	3/	
5962-8959805M7A	57300	MT5C1009DCJ-120L883C
5962-8959805M8A	54230	EDI88128LPS120ZB
5962-8959805M9A	3/	MSM8128JXLMC-12
5962-8959805MMA	57300	MT5C1009ECA-120L883C
5962-8959805MNA	3/ 3/ 3/	L7C108-120 (GEN) L7C108KMB25 MSM8128WXLMC-12

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959805MTA	54230 57300 3/ 3/ 3/	EDI88128LPS120FB L7C108MMB25 MSM8128GXLMC-12 MT5C1009F-120L883C S128K8L-120MF
5962-8959805MUA	54230 57300 3/	EDI88128LPS120LB MT5C1009EC-120L883C S128K8L-120ML
5962-8959805MXA	54230 3/ 57300 3/	EDI88128LPS120CB MSM8128SXLMC-12 MT5C1009CW-120L883C S128K8L-120MC
5962-8959805MYA	54230 57300 3/ 3/	EDI88128LPS120NB MT5C1009SOJ-120L883C L7C108YMB25 S128K8L-120MS
5962-8959805MZA	54230 3/ 3/ 57300 3/	EDI88128LPS120TB L7C108CMB25 MSM8128KXLMC-12 MT5C1009C-120L883C S128K8L-120ME
5962-8959806BTA	3/	
5962-8959806BUA	3/	
5962-8959806BXA	3/	
5962-8959806BZA	3/	
5962-8959806M7A	57300	MT5C1009DCJ-100L883C
5962-8959806M8A	54230	EDI88128LPS100ZB
5962-8959806M9A	3/	MSM8128JXLMC-10
5962-8959806MMA	57300	MT5C1009ECA-100L883C
5962-8959806MNA	3/ 3/ 3/	L7C108-100 (GEN) L7C108KMB25 MSM8128WXLMC-10
5962-8959806MTA	54230 3/ 3/ 57300 3/	EDI88128LPS100FB L7C108MMB25 MSM8128GXLMC-10 MT5C1009F-100L883C S128K8L-100MF
5962-8959806MUA	54230 57300 3/	EDI88128LPS100LB MT5C1009EC-100L883C S128K8L-100ML

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959806MXA	54230 3/ 57300 3/	EDI88128LPS100CB MSM8128SXLMC-10 MT5C1009CW-100L883C S128K8L-100MC
5962-8959806MYA	3/ 54230 57300 3/	L7C108YMB25 EDI88128LPS100NB MT5C1009SOJ-100L883C S128K8L-100MS
5962-8959806MZA	54230 3/ 3/ 57300 3/	EDI88128LPS100TB L7C108CMB25 MSM8128KXLMC-10 MT5C1009C-100L883C S128K8L-100ME
5962-8959807BTA	3/	
5962-8959807BUA	3/	
5962-8959807BXA	3/	
5962-8959807BZA	3/	
5962-8959807M7A	57300	MT5C1009DCJ-85L883C
5962-8959807M8A	54230	EDI88128LPS85ZB
5962-8959807M9A	3/	MSM8128JXLMC-85
5962-8959807MMA	57300	MT5C1009ECA-85L883C
5962-8959807MNA	3/ 3/ 3/	L7C108-25 (GEN) L7C108KMB25 MSM8128WXLMC-85
5962-8959807MTA	54230 3/ 57300 3/ 3/	EDI88128LPS85FB L7C108MMB25 MT5C1009F-85L883C MSM8128GXLMC-85 S128K8L-85MF
5962-8959807MUA	54230 57300 3/	EDI88128LPS85LB MT5C1009EC-85L883C S128K8L-85ML
5962-8959807MXA	54230 3/ 57300 3/	EDI88128LPS85CB MSM8128SXLMC-85 MT5C1009CW-85L883C S128K8L-85MC
5962-8959807MYA	54230 3/ 57300 3/	EDI88128LPS85NB L7C108YMB25 MT5C1009SOJ-85L883C S128K8L-85MS
5962-8959807MZA	54230 3/ 3/ 57300 3/	EDI88128LPS85TB L7C108CMB25 MSM8128KXLMC-85 MT5C1009C-85L883C S128K8L-85ME

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959808BTA	3/	
5962-8959808BUA	3/	
5962-8959808BXA	3/	
5962-8959808BZA	3/	
5962-8959808M7A	57300	MT5C1009DCJ-70L883C
5962-8959808M8A	54230	EDI88128LPS70ZB
5962-8959808M9A	3/	MSM8128JXLMC-70
5962-8959808MMA	57300	MT5C1009ECA-70L883C
5962-8959808MNA	3/ 3/ 3/	L7C108-25 (GEN) L7C108KMB25 MSM8128WXLMC-70
5962-8959808MTA	54230 3/ 3/ 57300 3/	EDI88128LPS70FB L7C108MMB25 MSM8128GXLMC-70 MT5C1009F-70L883C S128K8L-70MF
5962-8959808MUA	54230 57300 3/	EDI88128LPS70LB MT5C1009EC-70L883C S128K8L-70ML
5962-8959808MXA	54230 3/ 57300 3/	EDI88128LPS70CB MSM8128SXLMC-70 MT5C1009CW-70L883C S128K8L-70MC
5962-8959808MYA	54230 3/ 57300 3/	EDI88128LPS70NB L7C108YMB25 MT5C1009SOJ-70L883C S128K8L-70MS
5962-8959808MZA	54230 3/ 3/ 57300 3/	EDI88128LPS70TB L7C108CMB25 MSM8128KXLMC-70 MT5C1009C-70L883C S128K8L-70ME
5962-8959809BTA	3/	
5962-8959809BUA	3/	
5962-8959809BXA	3/	
5962-8959809BZA	3/	
5962-8959809M7A	57300	MT5C1009DCJ-55L
5962-8959809M8A	54230	EDI88128LPS55ZB

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959809M9A	3/	MSM8128JXLMC-55
5962-8959809MMA	57300	MT5C1009ECA-55L
5962-8959809MNA	3/	L7C108-25 (GEN)
5962-8959809MNA	3/	MSM8128WXLMC-55
5962-8959809MTA	54230 3/ 3/ 57300 3/	EDI88128LPS55FB L7C108MMB25 MSM8128GXLMC-55 MT5C1009F-55L S128K8L-55MF
5962-8959809MUA	54230 57300 3/	EDI88128LPS55LB MT5C1009EC-55L S128K8L-55ML
5962-8959809MXA	54230 3/ 57300 3/ 3/	EDI88128LPS55CB MSM8128SXLMC-55 MT5C1009CW-55L PDM41024L55CE0B S128K8L-55MC
5962-8959809MYA	3/ 54230 3/ 60264 57300	S128K8L-55MS EDI88128LPS55NB L7C108YMB25 MS1128K8LC55S MT5C1009SOJ-55L
5962-8959809MZA	54230 3/ 65896 3/ 57300 3/	EDI88128LPS55TB L7C108CMB25 L7C108DMB55L MSM8128KXLMC-55 MT5C1009C-55L S128K8L-55ME
5962-8959809MZC	65896	L7C108DMB55L
5962-8959810BTA	3/	
5962-8959810BUA	3/	
5962-8959810BXA	3/	
5962-8959810BZA	3/	
5962-8959810M7A	65896 57300	L7C108DMB55L MT5C1009DCJ-45L
5962-8959810M7C	65896	L7C108DMB55L
5962-8959810M8A	54230	EDI88128LPS45ZB
5962-8959810M9A	3/	MSM8128JXLMC-45
5962-8959810MMA	57300	MT5C1009ECA-45L

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959810MNA	3/ 3/	L7C108-25 (GEN) MSM8128WXLMC-45
5962-8959810MTA	54230 3/ 3/ 57300 3/	EDI88128LPS45FB L7C108MMB25 MSM8128GXLMC-45 MT5C1009F-45L S128K8L-45MF
5962-8959810MUA	54230 57300 3/	EDI88128LPS45LB MT5C1009EC-45L S128K8L-45ML
5962-8959810MXA	54230 3/ 57300 3/ 3/	EDI88128LPS45CB MSM8128SXLMC-45 MT5C1009CW-45L PDM41024L45CE0B S128K8L-45MC
5962-8959810MYA	54230 3/ 65896 60264 57300 3/	EDI88128LPS45NB L7C108YMB25 L7C108YMB45L MS1128K8LC45S MT5C1009SOJ-45L S128K8L-45MS
5962-8959810MYC	65896	L7C108YMB45L
5962-8959810MZA	54230 3/ 65896 3/ 57300 3/	EDI88128LPS45TB L7C108CMB25 L7C108DMB45L MSM8128KXLMC-45 MT5C1009C-45L S128K8L-45ME
5962-8959810MZC	65896	L7C108DMB45L
5962-8959811BTA	3/	
5962-8959811BUA	3/	
5962-8959811BXA	3/	
5962-8959811BZA	3/	
5962-8959811M7A	65896 57300	L7C108DMB35L MT5C1009DCJ-35L
5962-8959811M7C	65896	L7C108DMB35L
5962-8959811M8A	54230	EDI88128LPS35ZB
5962-8959811M9A	3/	MSM8128JXLMC-35
5962-8959811MMA	57300	MT5C1009ECA-35L
5962-8959811MNA	3/	L7C108-25 (GEN)

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959811MNA	3/	MSM8128WXLMC-35
5962-8959811MTA	54230 3/ 3/ 57300 3/	EDI88128LPS35FB L7C108MMB25 MSM8128GXLMC-35 MT5C1009F-35L S128K8L-35MF
5962-8959811MUA	54230 57300 3/	EDI88128LPS35LB MT5C1009EC-35L S128K8L-35ML
5962-8959811MXA	54230 3/ 57300 3/ 3/	EDI88128LPS35CB MSM8128SXLMC-35 MT5C1009CW-35L PDM41024L35CE0B S128K8L-35MC
5962-8959811MYA	54230 3/ 65896 60264 57300 3/	EDI88128LPS35NB L7C108YMB25 L7C108YMB35L MS1128K8LC35S MT5C1009SOJ-35L S128K8L-35MS
5962-8959811MYC	65896	L7C108YMB35L
5962-8959811MZA	54230 3/ 65896 57300 3/ 3/	EDI88128LPS35TB L7C108CMB25 L7C108YMB35L MT5C1009C-35L MSM8128KXLMC-35 S128K8L-35ME
5962-8959811MZC	65896	L7C108YMB35L
5962-8959812BTA	3/	
5962-8959812BUA	3/	
5962-8959812BXA	3/	
5962-8959812BZA	3/	
5962-8959812M7A	65896 57300	L7C108YMB25L MT5C1009DCJ-25L
5962-8959812M7C	65896	L7C108YMB25L
5962-8959812M8A	54230	EDI88128LPS25ZB
5962-8959812M9A	3/	MSM8128JXLMC-25
5962-8959812MMA	57300	MT5C1009ECA-25L
5962-8959812MNA	3/ 3/	L7C108-25 (GEN) MSM8128WXLMC-25

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959812MTA	54230 3/ 3/ 57300 3/	EDI88128LPS25FB L7C108-25 (GEN) MSM8128GXLMC-25 MT5C1009F-25L S128K8L-25MF
5962-8959812MUA	54230 57300 3/	EDI88128LPS25LB MT5C1009EC-25L S128K8L-25ML
5962-8959812MXA	54230 3/ 57300 3/ 3/	EDI88128LPS25CB MSM8128SXLMC-25 MT5C1009CW-25L PDM41024L25CE0B S128K8L-25MC
5962-8959812MYA	54230 3/ 65896 60264 57300 3/	EDI88128LPS25NB L7C108-25 (GEN) L7C108YMB25L MS1128K8LC25S MT5C1009SOJ-25L S128K8L-25MC
5962-8959812MYC	65896	L7C108YMB25L
5962-8959812MZA	54230 3/ 65896 3/ 57300 3/	EDI88128LPS25TB L7C108-25 (GEN) L7C108YMB25L MSM8128KXLMC-25 MT5C1009C-25L S128K8L-25ME
5962-8959812MZC	65896	L7C108YMB25L
5962-8959813BTA	3/	
5962-8959813BUA	3/	
5962-8959813BXA	3/	
5962-8959813BZA	3/	
5962-8959813M7A	57300	MT5C1008DCJ-120L
5962-8959813M9A	3/	MSM8128JLMC-12
5962-8959813MMA	3/ 54230 57300 3DTT2	CY7C1009L-120LMB EDI88130LPS120L32B MT5C1008ECA-120L P4C1024L-120LMB
5962-8959813MNA	3/ 3/	L7C109-120 (GEN) MSM8128WLMC-12

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959813MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130LPS120FB L7C109-120 (GEN) MSM8128GLMC-12 MT5C1008F-120L P4C1024L-120FSMB S128K8TL-120MF
5962-8959813MTC	3/	MMDJ65608V120/883
5962-8959813MUA	54230 57300 3DTT2 3/	EDI88130LPS120LB MT5C1008EC-120L P4C1024L-120L1MB S128K8TL-120ML
5962-8959813MXA	54230 3/ 57300 3DTT2 3/	EDI88130LPS120CB MSM8128SLMC-12 MT5C1008CW-120L P4C1024L-120C6MB S128K8TL-120MC
5962-8959813MYA	54230 3/ 57300 3DTT2 3/	EDI88130LPS120NB L7C108YMB25 MT5C1008SOJ-120L P4C1024L-120CJMB S128K8TL-120MS
5962-8959813MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009L-120DMB EDI88130LPS120TB L7C108CMB25 MMC965608V120/883 MSM8128KLMC-12 MT5C1008C-120L P4C1024L-120C4MB S128K8TL-120ME
5962-8959814BTA	3/	
5962-8959814BUA	3/	
5962-8959814BXA	3/	
5962-8959814BZA	3/	
5962-8959814M7A	57300	MT5C1008DCJ-100L
5962-8959814M9A	3/	MSM8128JLMC-10
5962-8959814MMA	3/ 54230 57300 3DTT2	CY7C1009L-100LMB EDI88130LPS100L32B MT5C1008ECA-100L P4C1024L-100LMB

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959814MNA	3/ 3/	L7C108KMB25 MSM8128WLMC-10
5962-8959814MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130LPS100FB L7C108MMB25 MSM8128GLMC-10 MT5C1008F-100L P4C1024L-100FSMB S128K8TL-100MF
5962-8959814MTC	3/	MMDJ65608V100/883
5962-8959814MUA	54230 57300 3DTT2 3/	EDI88130LPS100LB MT5C1008EC-100L P4C1024L-100L1MB S128K8TL-100ML
5962-8959814MXA	54230 3/ 57300 3DTT2 3/	EDI88130LPS100CB MSM8128SLMC-10 MT5C1008CW-100L P4C1024L-100C6MB S128K8TL-100MC
5962-8959814MYA	54230 3/ 57300 3DTT2 3/	EDI88130LPS100NB L7C108YMB25 MT5C1008SOJ-100L P4C1024L-100CJMB S128K8TL-100MS
5962-8959814MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009L-100DMB EDI88130LPS100TB L7C108CMB25 MMC965608V100/883 MSM8128KLMC-10 MT5C1008C-100L P4C1024L-100C4MB S128K8TL-100ME
5962-8959815BTA	3/	
5962-8959815BUA	3/	
5962-8959815BXA	3/	
5962-8959815BZA	3/	
5962-8959815M7A	57300	MT5C1008DCJ-85L883C
5962-8959815M9A	3/	MSM8128JLMC-85
5962-8959815MMA	3/ 54230 57300 3DTT2	CY7C1009L-85LMB EDI88130LPS85L32B MT5C1008ECA-85L883C P4C1024L-85LMB

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959815MNA	3/	L7C108KMB25
5962-8959815MNA	3/	L7C109-85 (GEN)
5962-8959815MNA	3/	MSM8128WLMC-85
5962-8959815MTA	54230	EDI88130LPS85FB
5962-8959815MTA	3/	L7C108MMB25
5962-8959815MTA	3/	MSM8128GLMC-85
5962-8959815MTA	57300	MT5C1008F-85L883C
5962-8959815MTA	3DTT2	P4C1024L-85FSMB
5962-8959815MTA	3/	S128K8TL-85MF
5962-8959815MTC	3/	MMDJ65608V85/883
5962-8959815MUA	3DTT2 54230 57300 3/	P4C1024L-85FSMB EDI88130LPS85LB MT5C1008EC-85L883C S128K8TL-85ML
5962-8959815MXA	54230 3/ 57300 3DTT2 3/	EDI88130LPS85CB MSM8128SLMC-85 MT5C1008CW-85L883C P4C1024L-85C6MB S128K8TL-85MC
5962-8959815MYA	54230 3/ 57300 3DTT2 3/	EDI88130LPS85NB L7C108YMB25 MT5C1008SOJ-85L883C P4C1024L-85CJMB S128K8TL-85MS
5962-8959815MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009L-85DMB EDI88130LPS85TB L7C108CMB25 MMC965608V85/883 MSM8128KLMC-85 MT5C1008C-85L883C P4C1024L-85C4MB S128K8TL-85ME
5962-8959816BTA	3/	
5962-8959816BUA	3/	
5962-8959816BXA	3/	

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959816BZA	3/	
5962-8959816M7A	57300	MT5C1008DCJ-70L883C
5962-8959816M9A	3/	MSM8128JLMC-70
5962-8959816MMA	3/ 54230 57300 3DTT2	CY7C1009L-70LMB EDI88130LPS70L32B MT5C1008ECA-70L883C P4C1024L-70LMB
5962-8959816MNA	3/ 3/	L7C108KMB25 MSM8128WLMC-70
5962-8959816MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130LPS70FB L7C108MMB25 MSM8128GLMC-70 MT5C1008F-70L883C P4C1024L-70FSMB S128K8TL-70MF
5962-8959816MTC	3/	MMDJ65608V70/883
5962-8959816MUA	54230 57300 3/	EDI88130LPS70LB MT5C1008EC-70L883C S128K8TL-70ML
5962-8959816MXA	54230 3/ 57300 3DTT2 3/	EDI88130LPS70CB MSM8128SLMC-70 MT5C1008CW-70L883C P4C1024L-70C6MB S128K8TL-70MC
5962-8959816MYA	54230 3/ 57300 3DTT2 3/	EDI88130LPS70NB L7C108YMB25 MT5C1008SOJ-70L883C P4C1024L-70CJMB S128K8TL-70MS
5962-8959816MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009L-70DMB EDI88130LPS70TB L7C108CMB25 MMC965608V70/883 MSM8128KLMC-70 MT5C1008C-70L883C P4C1024L-70C4MB S128K8TL-70ME
5962-8959817BTA	3/	
5962-8959817BUA	3/	
5962-8959817BXA	3/	

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959817BZA	3/	
5962-8959817M7A	65896 57300	L7C109YMB55L MT5C1008DCJ-55L
5962-8959817M7C	65896	L7C109YMB55L
5962-8959817M9A	3/	MSM8128JLMC-55
5962-8959817MMA	3/ 65896 54230 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009L-55LMB L7C109KAMB55L EDI88130LPS55L32B MT5C1008ECA-55L NS41024L55E/883 P4C1024L-55LMB PDM41024L55L32B QP7C1009BL-55LMB
5962-8959817MMC	65896	L7C109KAMB55L
5962-8959817MTA	54230 3/ 3/ 57300 3/ 3DTT2 0C7V7 3/	EDI88130LPS55FB L7C108MMB25 MSM8128GLMC-55 MT5C1008F-55L NS41024L55F/883 P4C1024L-55FSMB QP7C1009BL-55FMB S128K8TL-55MF
5962-8959817MTC	3/	MMDJ65608V55/883
5962-8959817MUA	54230 65896 57300 3/ 3DTT2	EDI88130LPS55LB L7C109KMB55L MT5C1008EC-55L NS41024L55Y/883 P4C1024L-55L1MB
5962-8959817MUC	65896	L7C109KMB55L
5962-8959817MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130LPS55CB MSM8128SLMC-55 MT5C1008CW-55L P4C1024L-55C6MB PDM41024L55CB S128K8TL-55MC
5962-8959817MYA	54230 65896 60264 57300 3/ 3DTT2 3/	EDI88130LPS55NB L7C109YMB55L MS2128K8LC55S MT5C1008SOJ-55L NS41024L55S/883 P4C1024L-55CJMB S128K8TL-55MS

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959817MYC	65896	L7C109YMB55L
5962-8959817MZA	3/ 54230 65896 3/ 60264 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009L-55DMB EDI88130LPS55TB L7C109DMB55L MMC965608V55/883 MS2128K8LC55C MT5C1008C-55L NS41024L55D/883 P4C1024L-55C4MB PDM41024L55CB QP7C1009BL-55DMB S128K8TL-55ME
5962-8959817MZC	65896	L7C109DMB55L
5962-8959818BTA	3/	
5962-8959818BUA	3/	
5962-8959818BXA	3/	
5962-8959818BZA	3/	
5962-8959818M7A	65896	L7C109YMB45L
5962-8959818M7A	57300	MT5C1008DCJ-45L
5962-8959818M7C	65896	L7C109YMB45L
5962-8959818M9A	3/	MSM8128JLMC-45
5962-8959818MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009L-45LMB EDI88130LPS45L32B L7C109KAMB45L MT5C1008ECA-45L NS41024L45E/883 P4C1024L-45LMB PDM41024L45L32B QP7C1009BL-45LMB
5962-8959818MMC	65896	L7C109KAMB45L
5962-8959818MNA	3/ 3/	L7C108KMB25 MSM8128WLMC-45
5962-8959818MTA	54230 65896 3/ 57300 3/ 3DTT2 0C7V7 3/	EDI88130LPS45FB L7C109FMB45 MSM8128GLMC-45 MT5C1008F-45L NS41024L45F/883 P4C1024L-45FSMB QP7C1009BL-45FMB S128K8TL-45MF

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959818MTC	F7400	MMDJ-65608EV-45MQ
5962-8959818MUA	54230 65896 57300 3/ 3DTT2 3/	EDI88130LPS45LB L7C109KMB45L MT5C1008EC-45L NS41024L45Y/883 P4C1024L-45L1MB S128K8TL-45ML
5962-8959818MUC	65896	L7C109KMB45L
5962-8959818MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130LPS45CB MSM8128SLMC-45 MT5C1008CW-45L P4C1024L-45C6MB PDM41024L45CB S128K8TL-45MC
5962-8959818MYA	54230 65896 65896 60264 57300 3DTT2 3/	EDI88130LPS45NB L7C108YMB25 L7C109YMB45L MS2128K8LC45S MT5C1008SOJ-45L P4C1024L-45CJMB S128K8TL-45MS
5962-8959818MYC	65896	L7C109YMB45L
5962-8959818MZA	3/ 54230 3/ 65896 60264 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009L-45DMB EDI88130LPS45TB L7C108CMB25 L7C109DMB45L MS2128K8LC45C MT5C1008C-45L NS41024L45D/883 P4C1024L-45C4MB PDM41024L45CB QP7C1009BL-45DMB S128K8TL-45ME
5962-8959818MZC	65896 F7400	L7C109DMB45L MMC9-65608EV-45MQ
5962-8959818VTC	F7400	SMDJ-65608EV-45SV
5962-8959818VZC	F7400	SMC9-65608EV-45SV
5962-8959819BTA	3/	
5962-8959819BUA	3/	
5962-8959819BXA	3/	

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959819BZA	3/	
5962-8959819M7A	65896	L7C109YMB35L
5962-8959819M7A	57300	MT5C1008DCJ-35L
5962-8959819M7C	65896	L7C109YMB35L
5962-8959819M9A	3/	MSM8128JLMC-35
5962-8959819MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009L-35LMB EDI88130LPS35L32B L7C109KAMB35L MT5C1008ECA-35L NS41024L35E/883 P4C1024L-35LMB PDM41024L35L32B QP7C1009BL-35LMB
5962-8959819MMC	65896	L7C109KAMB35L
5962-8959819MNA	3/ 3/	L7C108KMB25 MSM8128WLMC-35
5962-8959819MTA	54230 3/ 57300 3/ 3/ 3DTT2 0C7V7 3/	EDI88130LPS35FB L7C108MMB25 MT5C1008F-35L MSM8128GLMC-35 NS41024L35F/883 P4C1024L-35FSMB QP7C1009BL-35FMB S128K8TL-35MF
5962-8959819MTC	3/	MMDJ65608EV-35MQ
5962-8959819MUA	54230 65896 57300 3/ 3DTT2 3/	EDI88130LPS35LB L7C109KMB35L MT5C1008EC-35L NS41024L35Y/883 P4C1024L-35L1MB S128K8TL-35ML
5962-8959819MUC	65896	L7C109KMB35L
5962-8959819MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130LPS35CB MSM8128SLMC-35 MT5C1008CW-35L P4C1024L-35C6MB PDM41024L35CB S128K8TL-35MC

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959819MYA	54230 3/ 65896 60264 57300 3DTT2 3/	EDI88130LPS35NB L7C108YMB25 L7C109YMB35L MS2128K8LC35S MT5C1008SOJ-35L P4C1024L-35CJMB S128K8TL-35MS
5962-8959819MYC	65896	L7C109YMB35L
5962-8959819MZA	3/ 54230 3/ 65896 3/ 60264 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009L-35DMB EDI88130LPS35TB L7C108CMB25 L7C109DMB35L MMC965608V-35/883 MS2128K8LC35C MT5C1008C-35L NS41024L35D/883 P4C1024L-35C4MB PDM41024L35CB QP7C1009BL-35DMB S128K8TL-35ME
5962-8959819MZC	65896	L7C109DMB35L
5962-8959819VTC	3/	SMDJ65608EV-35SV
5962-8959819VZC	3/	SMC965608EV-35SV
5962-8959820BTA	3/	
5962-8959820BUA	3/	
5962-8959820BXA	3/	
5962-8959820BZA	3/	
5962-8959820M7A	65896 57300	L7C109YMB25L MT5C1008DCJ-25L
5962-8959820M7C	65896	L7C109YMB25L
5962-8959820M9A	3/	MSM8128JLMC-25
5962-8959820MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009L-25LMB EDI88130LPS25L32B L7C109KAMB25L MT5C1008ECA-25L NS41024L25E/883 P4C1024L-25LMB PDM41024L25L32B QP7C1009BL-25LMB

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959820MMC	65896	L7C109KAMB25L
5962-8959820MNA	3/ 3/	L7C108KMB25 MSM8128WLMC-25
5962-8959820MTA	54230 3/ 65896 3/ 57300 3/ 3DTT2 0C7V7 3/	EDI88130LPS25FB L7C108MMB25 L7C109FMB25 MSM8128GLMC-25 MT5C1008F-25L NS41024L25F/883 P4C1024L-25FSMB QP7C1009BL-25FMB S128K8TL-25MF
5962-8959820MTC	3/	MMDJ65608EV25/883
5962-8959820MUA	54230 65896 57300 3/ 3DTT2 3/	EDI88130LPS25LB L7C109KMB25L MT5C1008EC-25L NS41024L25Y/883 P4C1024L-25L1MB S128K8TL-25ML
5962-8959820MUC	65896	L7C109KMB25L
5962-8959820MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130LPS25CB MSM8128SLMC-25 MT5C1008CW-25L P4C1024L-25C6MB PDM41024L25CB S128K8TL-25MC
5962-8959820MYA	54230 3/ 65896 60264 57300 3/ 3DTT2 3/	EDI88130LPS25NB L7C108YMB25 L7C109YMB25L MS2128K8LC25S MT5C1008SOJ-25L NS41024L25S/883 P4C1024L-25CJMB S128K8TL-25MS
5962-8959820MYC	65896	L7C109YMB25L

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959820MZA	3/ 54230 3/ 65896 3/ 60264 57300 3/ 3DTT2 3/ 0C7V7 3/ 3/	CY7C1009L-25DMB EDI88130LPS25TB L7C108CMB25 L7C109DMB25L MMC965608V25/883 MS2128K8LC25C MT5C1008C-25L NS41024L25D/883 P4C1024L-25C4MB PDM41024L25CB QP7C1009BL-25DMB S128K8TL-25ME SMJ5C1008L-25JDCM
5962-8959820MZC	65896	L7C109DMB25L
5962-8959821M7A	65896 57300	L7C109YMB20L MT5C1008DCJ-20L
5962-8959821M7C	65896	L7C109YMB20L
5962-8959821M9A	3/	MSM8128JLMC-20
5962-8959821MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009L-20LMB EDI88130LPS20L32B L7C109KAMB20L MT5C1008ECA-20L NS41024L20E/883 P4C1024L-20LMB PDM41024L20L32B QP7C1009BL-20LMB
5962-8959821MMC	65896	L7C109KAMB20L
5962-8959821MNA	3/ 3/	L7C109-20 (GEN) MSM8128WLMC-20
5962-8959821MTA	54230 65896 3/ 57300 3/ 3DTT2 0C7V7 3/	EDI88130LPS20FB L7C109FMB20 MSM8128GLMC-20 MT5C1008F-20L NS41024L20F/883 P4C1024L-20FSMB QP7C1009BL-20FMB S128K8TL-20MF
5962-8959821MUA	54230 65896 57300 3/ 3DTT2 3/	EDI88130LPS20LB L7C109KMB20L MT5C1008EC-20L NS41024L20Y/883 P4C1024L-20L1MB S128K8TL-20ML

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959821MUC	65896	L7C109KMB20L
5962-8959821MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130LPS20CB MSM8128SLMC-20 MT5C1008CW-20L P4C1024L-20C6MB PDM41024L20CB S128K8TL-20MC
5962-8959821MYA	54230 65896 60264 57300 3/ 3DTT2 3/	EDI88130LPS20NB L7C109YMB20L MS2128K8LC20S MT5C1008SOJ-20L NS41024L20S/883 P4C1024L-20CJMB S128K8TL-20MS
5962-8959821MYC	65896	L7C109YMB20L
5962-8959821MZA	3/ 54230 65896 60264 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009L-20DMB EDI88130LPS20TB L7C109DMB20L MS2128K8LC20C MT5C1008C-20L NS41024L20D/883 P4C1024L-20C4MB PDM41024L20CB QP7C1009BL-20DMB S128K8TL-20ME
5962-8959821MZC	65896	L7C109DMB20L
5962-8959822BTA	3/	
5962-8959822BUA	3/	
5962-8959822BXA	3/	
5962-8959822BZA	3/	
5962-8959822M7A	57300	MT5C1009DCJ-120
5962-8959822M8A	54230	EDI88128CS120ZB
5962-8959822M9A	3/	MSM8128JXMC-12
5962-8959822MMA	57300	MT5C1009ECA-120
5962-8959822MNA	3/ 3/	L7C108KMB25 MSM8128WXMC-12

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959822MNC	3/	L7C108KMB25
5962-8959822MTA	54230 3/ 3/ 57300 3/	EDI88128CS120FB L7C108MMB25 MSM8128GXMC-12 MT5C1009F-120883C S128K8-120MF
5962-8959822MUA	54230 57300 3/	EDI88128CS120LB MT5C1009EC-120 S128K8-120ML
5962-8959822MXA	54230 3/ 57300 3/	EDI88128CS120CB MSM8128SXMC-12 MT5C1009CW-120883C S128K8-120MC
5962-8959822MYA	54230 3/ 57300 3/	EDI88128CS120NB L7C108YMB25 MT5C1009SOJ-120883C S128K8-120MS
5962-8959822MZA	54230 3/ 3/ 57300 3/	EDI88128CS120TB L7C108CMB25 MSM8128KXMC-12 MT5C1009C-120883C S128K8-120ME
5962-8959823BTA	3/	
5962-8959823BUA	3/	
5962-8959823BXA	3/	
5962-8959823BZA	3/	
5962-8959823M7A	57300	MT5C1009DCJ-100
5962-8959823M8A	54230	EDI88128CS100ZB
5962-8959823M9A	3/	MSM8128JXMC-10
5962-8959823MMA	57300	MT5C1009ECA-100
5962-8959823MNC	3/	L7C108KMB25
5962-8959823MNA	3/ 3/	L7C108KMB25 MSM8128WXMC-10

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959823MTA	54230 3/ 3/ 57300 3/	EDI88128CS100FB L7C108MMB25 MSM8128GXMC-10 MT5C1009F-100883C S128K8-100MF
5962-8959823MUA	54230 57300 3/	EDI88128CS100LB MT5C1009EC-100883C S128K8-100ML
5962-8959823MXA	54230 3/ 57300 3/	EDI88128CS100CB MSM8128SXMC-10 MT5C1009CW-100883C S128K8-100MC
5962-8959823MYA	54230 3/ 57300 3/	EDI88128CS100NB L7C108YMB25 MT5C1009SOJ-100883C S128K8-100MS
5962-8959823MZA	54230 3/ 3/ 57300 3/	EDI88128CS100TB L7C108CMB25 MSM8128KXMC-10 MT5C1009C-100883C S128K8-100ME
5962-8959824BTA	3/	
5962-8959824BUA	3/	
5962-8959824BXA	3/	
5962-8959824BZA	3/	
5962-8959824M7A	57300	MT5C1009DCJ-85
5962-8959824M8A	54230	EDI88128CS85ZB
5962-8959824M9A	3/	MSM8128JXMC-85
5962-8959824MMA	57300	MT5C1009ECA-85
5962-8959824MNA	3/ 3/	L7C108KMB25 MSM8128WXMC-85
5962-8959824MNC	3/	L7C108KMB25

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959824MTA	54230 3/ 3/ 57300 3/	EDI88128CS85FB L7C108MMB25 MSM8128GXMC-85 MT5C1009F-85883C S128K8-85MF
5962-8959824MUA	54230 57300 3/	EDI88128CS85LB MT5C1009EC-85 S128K8-85ML
5962-8959824MXA	54230 3/ 57300 3/	EDI88128CS85CB MSM8128SXMC-85 MT5C1009CW-85883C S128K8-85MC
5962-8959824MYA	54230 3/ 57300 3/	EDI88128CS85NB L7C108YMB25 MT5C1009SOJ-85883C S128K8-85MS
5962-8959824MZA	54230 3/ 3/ 57300 3/	EDI88128CS85TB L7C108CMB25 MSM8128KXMC-85 MT5C1009C-85883C S128K8-85ME
5962-8959825BTA	3/	
5962-8959825BUA	3/	
5962-8959825BXA	3/	
5962-8959825BZA	3/	
5962-8959825M7A	57300	MT5C1009DCJ-70
5962-8959825M8A	54230	EDI88128CS70ZB
5962-8959825M9A	3/	MSM8128JXMC-70
5962-8959825MMA	57300	MT5C1009ECA-70
5962-8959825MNA	3/ 3/	L7C108KMB25 MSM8128WXMC-70
5962-8959825MNC	3/	L7C108KMB25
5962-8959825MTA	54230 3/ 3/ 57300 3/	EDI88128CS70FB L7C108MMB25 MSM8128GXMC-70 MT5C1009F-70883C S128K8-70MF

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959825MUA	54230 57300 3/	EDI88128CS70LB MT5C1009EC-70 S128K8-70ML
5962-8959825MXA	54230 3/ 57300 3/	EDI88128CS70CB MSM8128SXMC-70 MT5C1009CW-70883C S128K8-70MC
5962-8959825MYA	54230 3/ 57300 3/	EDI88128CS70NB L7C108YMB25 MT5C1009SOJ-70883C S128K8-70MS
5962-8959825MZA	54230 3/ 3/ 57300 3/	EDI88128CS70TB L7C108CMB25 MSM8128KXMC-70 MT5C1009C-70883C S128K8-70ME
5962-8959826BTA	3/	
5962-8959826BUA	3/	
5962-8959826BXA	3/	
5962-8959826BZA	3/	
5962-8959826M7A	65896	L7C108YMB55
5962-8959826M7A	57300	MT5C1009DCJ-55
5962-8959826M7C	65896	L7C108YMB55
5962-8959826M8A	54230	EDI88128CS55ZB
5962-8959826M9A	3/	MSM8128JXMC-55
5962-8959826MMA	57300	MT5C1009ECA-55
5962-8959826MNA	3/ 3/	L7C108KMB25 MSM8128WXMC-55
5962-8959826MNC	3/	L7C108KMB25
5962-8959826MTA	54230 3/ 3/ 57300 3/	EDI88128CS55FB L7C108MMB25 MSM8128GXMC-55 MT5C1009F-55 S128K8-55MF

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959826MUA	54230 57300 3/	EDI88128CS55LB MT5C1009EC-55 S128K8-55ML
5962-8959826MXA	54230 3/ 57300 3/ 3/	EDI88128CS55CB MSM8128SXMC-55 MT5C1009CW-55 PDM41024S55CE0B S128K8-55MC
5962-8959826MYA	54230 65896 60264 57300 3/	EDI88128CS55NB L7C108YMB55 MS1128K8C55S MT5C1009SOJ-55 S128K8-55MS
5962-8959826MYC	65896	L7C108YMB55
5962-8959826MZA	54230 3/ 65896 3/ 57300 3/	EDI88128CS55TB L7C108CMB25 L7C108DMB55 MSM8128KXMC-55 MT5C1009C-55 S128K8-55ME
5962-8959826MZC	65896	L7C108DMB55
5962-8959827BTA	3/	
5962-8959827BUA	3/	
5962-8959827BXA	3/	
5962-8959827BZA	3/	
5962-8959827M7A	65896 57300	L7C108YMB45 MT5C1009DCJ-45
5962-8959827M7C	65896	L7C108YMB45
5962-8959827M8A	54230	EDI88128CS45ZB
5962-8959827M9A	3/	MSM8128JXMC-45
5962-8959827MMA	57300	MT5C1009ECA-45
5962-8959827MNA	3/ 3/	L7C108-45 (GEN) MSM8128WXMC-45
5962-8959827MNC	3/	L7C108KMB25

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959827MTA	54230 3/ 3/ 57300 3/	EDI88128CS45FB L7C108MMB25 MSM8128GXMC-45 MT5C1009F-45883C S128K8-45MF
5962-8959827MUA	54230 57300 3/	EDI88128CS45LB MT5C1009EC-45 S128K8-45ML
5962-8959827MXA	54230 3/ 57300 3/ 3/	EDI88128CS45CB MSM8128SXMC-45 MT5C1009CW-45 PDM41024S45CE0B S128K8-45MC
5962-8959827MYA	54230 65896 60264 57300 3/	EDI88128CS45NB L7C108YMB45 MS1128K8C45S MT5C1009SOJ-45 S128K8-45MS
5962-8959827MYC	65896	L7C108YMB45
5962-8959827MZA	54230 65896 3/ 57300 3/	EDI88128CS45TB L7C108DMB45 MSM8128KXMC-45 MT5C1009C-45 S128K8-45ME
5962-8959827MZC	65896	L7C108DMB45
5962-8959828BTA	3/	
5962-8959828BUA	3/	
5962-8959828BXA	3/	
5962-8959828BZA	3/	
5962-8959828M7A	65896 57300	L7C108YMB35 MT5C1009DCJ-35
5962-8959828M7C	65896	L7C108YMB35
5962-8959828M8A	54230	EDI88128CS35ZB
5962-8959828M9A	3/	MSM8128JXMC-35

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959828MMA	57300	MT5C1009ECA-35
5962-8959828MNA	3/ 3/ 3/	L7C108-35 (GEN) L7C108KMB25 MSM8128WXMC-35
5962-8959828MNC	3/	L7C108KMB25
5962-8959828MTA	54230 3/ 3/ 57300 3/	EDI88128CS35FB L7C108MMB25 MSM8128GXMC-35 MT5C1009F-35 S128K8-35MF
5962-8959828MUA	54230 57300 3/	EDI88128CS35LB MT5C1009EC-35 S128K8-35ML
5962-8959828MNC	3/	L7C108KMB25
5962-8959828MXA	54230 3/ 57300 3/ 3/	EDI88128CS35CB MSM8128SXMC-35 MT5C1009CW-35 PDM41024S35CE0B S128K8-35MC
5962-8959828MYA	54230 65896 60264 57300 3/	EDI88128CS35NB L7C108YMB35 MS1128K8C35S MT5C1009SOJ-35 S128K8-35MS
5962-8959828MYC	65896	L7C108YMB35
5962-8959828MZA	54230 65896 3/ 57300	EDI88128CS35TB L7C108DMB35 MSM8128KXMC-35 MT5C1009C-35
5962-8959828MZA	3/	S128K8-35ME
5962-8959828MZC	65896	L7C108DMB35
5962-8959829BTA	3/	
5962-8959829BUA	3/	
5962-8959829BXA	3/	
5962-8959829BZA	3/	

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959829M7A	65896 57300	L7C108YMB25 MT5C1009DCJ-25
5962-8959829M7C	65896	L7C108YMB25
5962-8959829M8A	54230	EDI88128CS25ZB
5962-8959829M9A	3/	MSM8128JXMC-25
5962-8959829MMA	57300	MT5C1009ECA-25
5962-8959829MNA	3/ 3/	L7C108-25 (GEN) MSM8128WXMC-25
5962-8959829MNC	3/	L7C108KMB25
5962-8959829MTA	54230 3/ 3/ 57300 3/	EDI88128CS25FB L7C108MMB25 MSM8128GXMC-25 MT5C1009F-25 S128K8-25MF
5962-8959829MUA	54230 57300 3/	EDI88128CS25LB MT5C1009EC-25 S128K8-25ML
5962-8959829MXA	54230 3/ 57300 3/ 3/	EDI88128CS25CB MSM8128SXMC-25 MT5C1009CW-25 PDM41024S25CE0B S128K8-25MC
5962-8959829MYA	54230 65896 60264 57300 3/	EDI88128CS25NB L7C108YMB25 MS1128K8C25S MT5C1009SOJ-25 S128K8-25MS
5962-8959829MYC	65896	L7C108YMB25
5962-8959829MZA	54230 3/ 65896 3/ 57300 3/	EDI88128CS25TB L7C108CMB25 L7C108DMB25 MSM8128KXMC-25 MT5C1009C-25 S128K8-25ME
5962-8959829MZC	65896	L7C108DMB25
5962-8959830BTA	3/	

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959830BUA	3/	
5962-8959830BXA	3/	
5962-8959830BZA	3/	
5962-8959830M7A	57300	MT5C1008DCJ-120
5962-8959830M9A	3/	MSM8128JMC-12
5962-8959830MMA	3/ 54230 57300 3DTT2	CY7C1009-120LMB EDI88130CS120L32B MT5C1008ECA-120 P4C1024-120LMB
5962-8959830MNA	3/ 3/	L7C109KMB25 MSM8128WMC-12
5962-8959830MNC	3/	L7C109KMB25
5962-8959830MTA	54230	EDI88130CS120FB
5962-8959830MTA	3/	L7C109MMB25
5962-8959830MTA	3/	MSM8128GMC-12
5962-8959830MTA	57300	MT5C1008F-120
5962-8959830MTA	3DTT2	P4C1024-120FSMB
5962-8959830MTA	3/	S128K8-120MF
5962-8959830MTC	3/	MMDJ65608L120/883
5962-8959830MUA	54230 57300 3DTT2 3/	EDI88130CS120LB MT5C1008EC-120 P4C1024-120L1MB S128K8-120ML
5962-8959830MXA	54230 3/ 57300 3DTT2 3/	EDI88130CS120CB MSM8128SMC-12 MT5C1008CW-120 P4C1024-120C6MB S128K8-120MC

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959830MYA	54230 3/ 57300 3DTT2 3/	EDI88130CS120NB L7C109YMB25 MT5C1008SOJ-120 P4C1024-120CJMB S128K8-120MS
5962-8959830MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009-120DMB EDI88130CS120TB L7C109CMB25 MMC965608L120/883 MSM8128KMC-12 MT5C1008C-120 P4C1024-120C4MB S128K8-120ME
5962-8959831BTA	3/	
5962-8959831BUA	3/	
5962-8959831BXA	3/	
5962-8959831BZA	3/	
5962-8959831M7A	57300	MT5C1008DCJ-100
5962-8959831M9A	3/	MSM8128JMC-10
5962-8959831MMA	3/ 54230 57300 3DTT2	CY7C1009-100LMB EDI88130CS100L32B MT5C1008ECA-100 P4C1024-100LMB
5962-8959831MNA	3/ 3/	L7C109KMB25 MSM8128WMC-10
5962-8959831MNC	3/	L7C109KMB25
5962-8959831MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130CS100FB L7C109MMB25 MSM8128GMC-10 MT5C1008F-100 P4C1024-100FSMB S128K8-100MF
5962-8959831MTC	3/	MMDJ65608L100/883
5962-8959831MUA	54230 57300 3DTT2 3/	EDI88130CS100LB MT5C1008EC-100 P4C1024-100L1MB S128K8-100ML

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959831MXA	54230 3/ 57300 3DTT2 3/	EDI88130CS100CB MSM8128SMC-10 MT5C1008CW-100 P4C1024-100C6MB S128K8-100MC
5962-8959831MYA	54230 3/ 57300 3DTT2 3/	EDI88130CS100NB L7C109YMB25 MT5C1008SOJ-100 P4C1024-100CJMB S128K8-100MS
5962-8959831MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009-100DMB EDI88130CS100TB L7C109CMB25 MMC965608L100/883 MSM8128KMC-10 MT5C1008C-100 P4C1024-100C4MB S128K8-100ME
5962-8959832BTA	3/	
5962-8959832BUA	3/	
5962-8959832BXA	3/	
5962-8959832BZA	3/	
5962-8959832M7A	57300	MT5C1008DCJ-85
5962-8959832M9A	3/	MSM8128JMC-85
5962-8959832MMA	3/ 54230 57300 3DTT2	CY7C1009-85LMB EDI88130CS85L32B MT5C1008ECA-85 P4C1024-85LMB
5962-8959832MNA	3/ 3/	L7C109KMB25 MSM8128WMC-85
5962-8959832MNC	3/	L7C109KMB25
5962-8959832MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130CS85FB L7C109MMB25 MSM8128GMC-85 MT5C1008F-85 P4C1024-85FSMB S128K8-85MF

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959832MTC	3/	MMDJ65608L85/883
5962-8959832MUA	54230 57300 3DTT2 3/	EDI88130CS85LB MT5C1008EC-85 P4C1024-85L1MB S128K8-85ML
5962-8959832MXA	54230 3/ 57300 3DTT2 3/	EDI88130CS85CB MSM8128SMC-85 MT5C1008CW-85 P4C1024-85C6MB S128K8-85MC
5962-8959832MYA	54230 3/ 57300 3DTT2 3/	EDI88130CS85NB L7C109YMB25 MT5C1008SOJ-85 P4C1024-85CJMB S128K8-85MS
5962-8959832MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009-85DMB EDI88130CS85TB L7C109CMB25 MMC965608L85/883 MSM8128KMC-85 MT5C1008C-85 P4C1024-85C4MB S128K8-85ME
5962-8959833BTA	3/	
5962-8959833BUA	3/	
5962-8959833BXA	3/	
5962-8959833BZA	3/	
5962-8959833M7A	57300	MT5C1008DCJ-70
5962-8959833M9A	3/	MSM8128JMC-70
5962-8959833MMA	3/ 54230 57300 3/ 3/ 3DTT2	CY7C1009-70LMB EDI88130CS70L32B MT5C1008ECA-70 L7C109KMB25 MSM8128WMC-70 P4C1024-70LMB
5962-8959833MNA	3/ 3/	L7C109KMB25 MSM8128WMC-70

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959833MNC	3/	L7C109KMB25
5962-8959833MTA	54230 3/ 3/ 57300 3DTT2 3/	EDI88130CS70FB L7C109MMB25 MSM8128GMC-70 MT5C1008F-70 P4C1024-70FSMB S128K8-70MF
5962-8959833MTC	3/	MMDJ65608L70/883
5962-8959833MUA	54230 57300 3DTT2 3/	EDI88130CS70LB MT5C1008EC-70 P4C1024-70L1MB S128K8-70ML
5962-8959833MXA	54230 3/ 57300 3DTT2 3/	EDI88130CS70CB MSM8128SMC-70 MT5C1008CW-70 P4C1024-70C6MB S128K8-70MC
5962-8959833MTC	3/	MMDJ65608L70/883
5962-8959833MYA	54230 3/ 57300 3DTT2 3/	EDI88130CS70NB L7C109YMB25 MT5C1008SOJ-70 P4C1024-70CJMB S128K8-70MS
5962-8959833MZA	3/ 54230 3/ 3/ 3/ 57300 3DTT2 3/	CY7C1009-70DMB EDI88130CS70TB L7C109CMB25 MMC965608L70/883 MSM8128KMC-70 MT5C1008C-70 P4C1024-70C4MB S128K8-70ME
5962-8959834BTA	3/	
5962-8959834BUA	3/	
5962-8959834BXA	3/	
5962-8959834BZA	3/	
5962-8959834M7A	65896	L7C109YMB55

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959834M7A	57300	MT5C1008DCJ-55
5962-8959834M7C	65896	L7C109YMB55
5962-8959834M9A	3/	MSM8128JMC-55
5962-8959834MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009-55LMB EDI88130CS55L32B L7C109KAMB55 MT5C1008ECA-55 NS41024S55E/883 P4C1024-55LMB PDM41024S55L32B QP7C1009B-55LMB
5962-8959834MMC	65896	L7C109KAMB55
5962-8959834MNA	3/ 3/	L7C109KMB25 MSM8128WMC-55
5962-8959834MNC	3/	L7C109KMB25
5962-8959834MTA	3/ 54230 3/ 3/ 57300 3/ 3DTT2 0C7V7 3/	CY7C109A-55FMB EDI88130CS55FB L7C109MMB25 MSM8128GMC-55 MT5C1008F-55 NS41024S55F/883 P4C1024-55FSMB QP7C1009B-55FMB S128K8-55MF
5962-8959834MTC	3/	MMDJ65608L55/883
5962-8959834MUA	3/ 54230 65896 57300 3/ 3DTT2 3/	CY7C109A-55LMB EDI88130CS55LB L7C109KMB55 MT5C1008EC-55 NS41024S55Y/883 P4C1024-55L1MB S128K8-55ML
5962-8959834MUC	65896	L7C109KMB55
5962-8959834MXA	54230 3 57300 3DTT2 3/ 3/	EDI88130CS55CB SM8128SMC-55 MT5C1008CW-55 P4C1024-55C6MB PDM41024S55CB S128K8-55MC

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959834MYA	54230 3/ 65896 60264 57300 3/ 3DTT2 3/	EDI88130CS55NB L7C109YMB25 L7C109YMB55 MS2128K8C55S MT5C1008SOJ-55 NS41024S55S/883 P4C1024-55CJMB S128K8-55MS
5962-8959834MYC	65896	L7C109YMB55
5962-8959834MZA	3/ 3/ 54230 65896 3/ 3/ 3/ 60264 3/ 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009-55DMB CY7C109A-55DMB EDI88130CS55TB L7C109DMB55 CY7C109A-55DMB L7C109CMB25 MMC965608L55/883 MS2128K8C55C MSM8128KMC-55 MT5C1008C-55 NS41024S55D/883 P4C1024-55C4MB PDM41024S55TCB QP7C1009B-55DMB S128K8-55ME
5962-8959834MZC	65896	L7C109DMB55
5962-8959835BTA	3/	
5962-8959835BUA	3/	
5962-8959835BXA	3/	
5962-8959835BZA	3/	
5962-8959835M7A	65896 57300	L7C109YMB45 MT5C1008DCJ-45
5962-8959835M7C	65896	L7C109YMB45
5962-8959835M9A	3/	MSM8128JMC-45

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959835MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009-45LMB EDI88130CS45L32B L7C109KAMB45 MT5C1008ECA-45 NS41024S45E/883 P4C1024-45LMB PDM41024S45L32B QP7C1009B-45LMB
5962-8959835MMC	65896	L7C109KAMB45
5962-8959835MNA	3/ 3/	L7C109KMB25 MSM8128WMC-45
5962-8959835MNC	3/	L7C109KMB25
5962-8959835MTA	3/ 54230 3/ 3/ 57300 3/ 3DTT2 0C7V7 3/	CY7C109A-45FMB EDI88130CS45FB L7C109MMB25 MSM8128GMC-45 MT5C1008F-45 NS41024S45F/883 P4C1024-45FSMB QP7C1009B-45FMB S128K8-45MF
5962-8959835MTC	3/	MMDJ65608EV-45MQ
5962-8959835MUA	3/ 54230 65896 57300 3/ 3DTT2 3/	CY7C109A-45LMB EDI88130CS45LB L7C109KMB45 MT5C1008EC-45 NS41024S45Y/883 P4C1024-45L1MB S128K8-45ML
5962-8959835MUC	65896	L7C109KMB45
5962-8959835MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130CS45CB MSM8128SMC-45 MT5C1008CW-45 P4C1024-45C6MB PDM41024S45CB S128K8-45MC
5962-8959835MYA	54230 3/ 65896 60264 57300 3/ 3DTT2 3/	EDI88130CS45NB L7C109YMB25 L7C109YMB45 MS2128K8C45S MT5C1008SOJ-45 NS41024S45S/883 P4C1024-45CJMB S128K8-45MS

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959835MYC	65896	L7C109YMB45
5962-8959835MZA	3/ 3/ 54230 3/ 65896 3/ 60264 3/ 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009-45DMB CY7C109A-45DMB EDI88130CS45TB L7C109CMB25 L7C109DMB45 MMC965608EV45/883 MS2128K8C45C MSM8128KMC-45 MT5C1008C-45 NS41024S45D/883 P4C1024-45C4MB PDM41024S45TCB QP7C1009B-45DMB S128K8-45ME
5962-8959835MZC	65896 3/	L7C109DMB45 MMC965608EV-45MQ
5962-8959835VTC	3/	65608-45 (GEN)
5962-8959835VZC	3/	65608-45 (GEN)
5962-8959836BTA	3/	
5962-8959836BUA	3/	
5962-8959836BXA	3/	
5962-8959836BZA	3/	
5962-8959836M7A	65896 57300	L7C109YMB35 MT5C1008DCJ-35
5962-8959836M7C	65896	L7C109YMB35
5962-8959836M9A	3/	
5962-8959836MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009-35LMB EDI88130CS35L32B L7C109KAMB35 MT5C1008ECA-35 NS41024S35E/883 P4C1024-35LMB PDM41024S35L32B QP7C1009B-35LMB
5962-8959836MMC	65896	L7C109KAMB35

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959836MNA	3/ 3/	L7C109KMB25 L7C109-35 (GEN)
5962-8959836MNC	3/	L7C109KMB25
5962-8959836MTA	3/ 54230 3/ 3/ 57300 3/ 3DTT2 0C7V7 3/	CY7C109A-35FMB EDI88130CS35FB L7C109MMB25 MSM8128GMC-35 MT5C1008F-35 NS41024S35F/883 P4C1024-35FSMB QP7C1009B-35FMB S128K8-35MF
5962-8959836MTC	3/	MMDJ65608EV-35MQ
5962-8959836MUA	3/ 54230 65896 57300 3DTT2 3/ 3/	CY7C109A-35LMB EDI88130CS35LB L7C109KMB35 MT5C1008EC-35 P4C1024-35L1MB NS41024S35Y/883 S128K8-35ML
5962-8959836MUC	65896	L7C109KMB35
5962-8959836MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130CS35CB MSM8128SMC-35 MT5C1008CW-35 P4C1024-35C6MB PDM41024S35CB S128K8-35MC
5962-8959836MYA	54230 3/ 65896 60264 57300 3/ 3DTT2 3/	EDI88130CS35NB L7C109YMB25 L7C109YMB35 MS2128K8C35S MT5C1008SOJ-35 NS41024S35S/883 P4C1024-35CJMB S128K8-35MS
5962-8959836MYC	65896	L7C109YMB35

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959836MZA	3/ 3/ 54230 3/ 65896 3/ 60264 3/ 57300 3/ 3DTT2 3/ 0C7V7 3/	CY7C1009-35DMB CY7C109A-35DMB EDI88130CS35TB L7C109CMB25 L7C109DMB35 MMC965608EV35MQ MS2128K8C35C MSM8128KMC-35 MT5C1008C-35 NS41024S35D/883 P4C1024-35C4MB PDM41024S35TCB QP7C1009B-35DMB S128K8-35ME
5962-8959836MZC	65896	L7C109DMB35
5962-8959836VTC	3/	65608-35 (GEN)
5962-8959836VZC	3/	65608-35 (GEN)
5962-8959837BTA	3/	
5962-8959837BUA	3/	
5962-8959837BXA	3/	
5962-8959837BZA	3/	
5962-8959837M7A	65896 57300	L7C109YMB25 MT5C1008DCJ-25
5962-8959837M7C	65896	L7C109YMB25
5962-8959837M9A	3/	MSM8128JMC-25
5962-8959837MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009-25LMB EDI88130CS25L32B L7C109KAMB25 MT5C1008ECA-25 NS41024S25E/883 P4C1024-25LMB PDM41024S25L32B QP7C1009B-25LMB
5962-8959837MMC	65896	L7C109KAMB25
5962-8959837MNA	3/ 3/ 3/	7C109-25 (GEN) MSM8128WMC-25 L7C109KMB25

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959837MNC	3/	L7C109KMB25
5962-8959837MTA	3/ 54230 3/ 3/ 57300 3/ 3DTT2 0C7V7 3/	CY7C109A-25FMB EDI88130CS25FB L7C109MMB25 MSM8128GMC-25 MT5C1008F-25 NS41024S25F/883 P4C1024-25FSMB QP7C1009B-25FMB S128K8-25MF
5962-8959837MTC	3/	MMDJ65608L-25MQ
5962-8959837MUA	3/ 54230 65896 57300 3/ 3DTT2 3/ 3/	CY7C109A-25LMB EDI88130CS25LB L7C109KMB25 MT5C1008EC-25 NS41024S25Y/883 P4C1024-25L1MB S128K8-25ML SMJ5C1008-25HMM
5962-8959837MUC	65896	L7C109KMB25
5962-8959837MXA	54230 3/ 57300 3DTT2 3/ 3/ 3/	EDI88130CS25CB MSM8128SMC-25 MT5C1008CW-25 P4C1024-25C6MB PDM41024S25CB S128K8-25MC SMJ5C1008-25JDDM
5962-8959837MYA	54230 65896 60264 57300 3/ 3DTT2 3/	EDI88130CS25NB L7C109YMB25 MS2128K8C25S MT5C1008SOJ-25 NS41024S25S/883 P4C1024-25CJMB S128K8-25MS
5962-8959837MYC	65896	L7C109YMB25

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959837MZA	3/ 3/ 54230 65896 3/ 60264 3/ 57300 3/ 3DTT2 0C7V7 3/ 3/	CY7C1009-25DMB CY7C109A-25DMB EDI88130CS25TB L7C109DMB25 MMC965608EV25MQ MS2128K8C25C MSM8128KMC-25 MT5C1008C-25 NS41024S25D/883 P4C1024-25C4MB QP7C1009B-25DMB S128K8-25ME SMJ5C1008-25JDCM
5962-8959837MZC	65896	L7C109DMB25
5962-8959838BTA	3/	
5962-8959838BUA	3/	
5962-8959838BXA	3/	
5962-8959838BZA	3/	
5962-8959838M7A	65896	L7C109YMB20
5962-8959838M7A	57300	MT5C1008DCJ-20
5962-8959838M7C	65896	L7C109YMB20
5962-8959838M9A	3/	MSM8128JMC-20
5962-8959838MMA	3/ 54230 65896 57300 3/ 3DTT2 3/ 0C7V7	CY7C1009-20LMB EDI88130CS20L32B L7C109KAMB20 MT5C1008ECA-20 NS41024S20E/883 P4C1024-20LMB PDM41024S20L32B QP7C1009B-20LMB
5962-8959838MMC	65896	L7C109KAMB20
5962-8959838MNA	3/ 3/	L7C109-20 (GEN) MSM8128WMC-20

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959838MTA	54230 3/ 57300 3/ 3DTT2 0C7V7 3/	EDI88130CS20FB MSM8128GMC-20 MT5C1008F-20 NS41024S20F/883 P4C1024-20FSMB QP7C1009B-20FMB S128K8-20MF
5962-8959838MUA	54230 65896 57300 3/ 3DTT2 3/ 3/	EDI88130CS20LB L7C109KMB20 MT5C1008EC-20 NS41024S20Y/883 P4C1024-20L1MB S128K8-20ML SMJ5C1008-20HMM
5962-8959838MUC	65896	L7C109KMB20
5962-8959838MXA	54230 3/ 57300 3DTT2 3/ 3/	EDI88130CS20CB MSM8128SMC-20 MT5C1008CW-20 P4C1024-20C6MB S128K8-20MC SMJ5C1008-20JDDM
5962-8959838MYA	54230 65896 60264 57300 3/ 3DTT2 3/	EDI88130CS20NB L7C109YMB20 MS2128K8C20S MT5C1008SOJ-20 NS41024S20S/883 P4C1024-20CJMB S128K8-20MS
5962-8959838MYC	65896	L7C109YMB20
5962-8959838MZA	3/ 54230 65896 60264 3/ 57300 3/ 3DTT2 0C7V7 3/ 3/	CY7C1009-20DMB EDI88130CS20TB L7C109DMB20 MS2128K8C20C MSM8128KMC-20 MT5C1008C-20 NS41024S20D/883 P4C1024-20C4MB QP7C1009B-20DMB S128K8-20ME SMJ5C1008-20JDCM
5962-8959838MZC	65896	L7C109DMB20
5962-8959839M7A	65896 57300	L7C108YMB20 MT5C1009DCJ-20

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959839M7C	65896	L7C108YMB20
5962-8959839M8A	54230	EDI88128CS20ZB
5962-8959839MMA	57300	MT5C1009ECA-20
5962-8959839MNA	3/	L7C108-20 (GEN)
5962-8959839MTA	54230 57300	EDI88128CS20FB MT5C1009F-20
5962-8959839MUA	54230 57300	EDI88128CS20LB MT5C1009EC-20
5962-8959839MXA	54230 57300	EDI88128CS20CB MT5C1009CW-20
5962-8959839MYA	54230 65896 60264 57300	EDI88128CS20NB L7C108YMB20 MS1128K8C20S MT5C1009SOJ-20
5962-8959839MYC	65896	L7C108YMB20
5962-8959839MZA	54230 65896 57300	EDI88128CS20TB L7C108DMB20 MT5C1009C-20
5962-8959839MZC	65896	L7C108DMB20
5962-8959840M7A	65896 57300	L7C108YMB20L MT5C1009DCJ-20L
5962-8959840M7C	65896	L7C108YMB20L
5962-8959840M8A	54230	EDI88128LPS20ZB
5962-8959840MMA	57300 3/	MT5C1009ECA-20L L7C108-20 (GEN)
5962-8959840MTA	54230 57300	EDI88128LPS20FB MT5C1009F-20L
5962-8959840MUA	54230 57300	EDI88128LPS20LB MT5C1009EC-20L
5962-8959840MXA	54230 57300	EDI88128LPS20CB MT5C1009CW-20L

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959840MYA	54230 65896 60264 57300	EDI88128LPS20NB L7C108YMB20L MS1128K8LC20S MT5C1009SOJ-20L
5962-8959840MYC	65896	L7C108YMB20L
5962-8959840MZA	54230 65896 57300	EDI88128LPS20TB L7C108YMB20L MT5C1009C-20L
5962-8959841M7A	65896 57300	L7C109YMB15 MT5C1008DCJ-15
5962-8959841M7C	65896	L7C109YMB15
5962-8959841MMA	3/ 54230 65896 57300 0C7V7	CY7C1009-15LMB EDI88130CS15L32B L7C109KAMB15 MT5C1008ECA-15 QP7C1009B-15LMB
5962-8959841MMC	65896	L7C109KAMB15
5962-8959841MTA	57300 0C7V7	MT5C1008F-15 QP7C1009B-15FMB
5962-8959841MUA	65896 57300	L7C109KMB15 MT5C1008EC-15
5962-8959841MUC	65896	L7C109KMB15
5962-8959841MXA	57300	MT5C1008CW-15
5962-8959841MYA	65896 60264 57300	L7C109YMB15 MS2128K8C15S MT5C1008SOJ-15
5962-8959841MYC	65896	L7C109YMB15
5962-8959841MZA	3/ 54230 65896 60264	CY7C1009-15DMB EDI88130CS15TB L7C109DMB15 MS2128K8C15C
5962-8959841MZA	57300 0C7V7	MT5C1008C-15 QP7C1009B-15DMB
5962-8959841MZC	65896	L7C109DMB15
5962-8959842MXA	54230	EDI88128LP70CB

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959842MYA	54230	EDI88128LP70NB
5962-8959843MXA	54230	EDI88128C70CB
5962-8959843MYA	54230	EDI88128C70NB
5962-8959844M7A	65896 57300	L7C108YMB15 MT5C1009DCJ-15
5962-8959844M7C	65896	L7C108YMB15
5962-8959844MMA	57300	MT5C1009ECA-15
5962-8959844MTA	57300	MT5C1009F-15
5962-8959844MUA	57300	MT5C1009EC-15
5962-8959844MXA	57300	MT5C1009CW-15
5962-8959844MYA	65896 60264 57300	L7C108YMB15 MS1128K8C15S MT5C1009SOJ-15
5962-8959844MYC	65896	L7C108YMB15
5962-8959844MZA	54230 65896 57300	EDI88128CS15TB L7C108DMB15 MT5C1009C-15
5962-8959844MZC	65896	L7C108DMB15
5962-8959845MMA	54230	EDI88130CS12L32B
5962-8959845MZA	54230 54230	EDI88130CS12TB EDI88128CS12TB
5962-8959847Q6A	F7400	MM0-65608EV-30MQ
5962-8959847Q9A	3/	MMD-65608EV-30MQ
5962-8959847QTC	F7400	MMDJ-65608EV-30MQ
5962-8959847QZC	F7400	MMC9-65608EV-30MQ
5962-8959847V6A	F7400	SM0-65608EV-30SV
5962-8959847V9A	3/	SMD-65608EV-30SV

See footnotes at end of table.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor Similar PIN 2/
5962-8959847VTC	F7400	SMDJ-65608EV-30SV
5962-8959847VZC	F7400	SMC9-65608EV-30SV
5962-8959848M7A	65896	L7C108DMB15L
5962-8959848M7C	65896	L7C108DMB15L
5962-8959848MYA	65896	L7C108DMB15L
5962-8959848MYC	65896	L7C108DMB15L
5962-8959848MZA	65896	L7C108DMB15L
5962-8959848MZC	65896	L7C108DMB15L
5962-8959848MTA	54230	EDI88128LPS15FB
5962-8959848MXA	3/	1128K8LC15 (GEN)
5962-8959848MYA	60264	MS1128K8LC15S
5962-8959849QTC	F7400	AT65609EHV-DJ40MQ
5962-8959849VTC	F7400	AT65609EHV-DJ40SV
5962R8959849VTC	F7400	AT65609EHV-DJ40SR
5962-8959849QZC	F7400	AT65609EHV-C940MQ
5962-8959849VZC	F7400	AT65609EHV-C940SV
5962R8959849VZC	F7400	AT65609EHV-C940SR

1/ The lead finish shown for each PIN, representing a hermetic
    package, is the most readily available from the manufacturer
    listed for that part. If the desired lead finish is not listed contact
    the Vendor to determine availability.

2/ Caution. Do not use this number for item acquisition. Items
    acquired to this number may not satisfy the performance
    requirements of this drawing.

3/ Not available from an approved source of supply.

Vendor CAGE Number	Vendor name and address
57300	Austin Semiconductor 8701 Cross Park Drive Austin, TX 78754
65786	Cypress Semiconductor 3901 N. First Street San Jose, CA 95134-1599
54230	White Electronic Designs Corp. 3601 East University Drive Phoenix, AZ 85034
F7400	Atmel Nantes La Chantrerie BP 70602 44306 Nantes Cedex 3 France
0C7V7	QP Semiconductor 2945 Oakmead Village Court Santa Clara, CA 95051
3DTT2	Pyramid Semiconductor Corporation 1340 Bordeaux Drive Sunnyvale, CA 94089
65896	Logic Devices, Inc. 1375 Geneva Drive Sunnyvale, California 94089

The following table lists the SMD part numbers for die.

Standard microcircuit drawing PIN	Vendor CAGE number	Vendor Similar PIN 1/
5962-8959847Q6A	F7400	MM0-65608EV-30MQ
5962-8959847V6A	F7400	SM0-65608EV-30SV

1/ Caution. Do not use this number for item acquisition. Items
    acquired to this number may not satisfy the performance
    requirements of this drawing.

F7400	Atmel Nantes La Chantrerie BP 70602 44306 Nantes Cedex 3 France

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