

REVISIONS

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Changes in accordance with NOR 5962-R015-92	91-10-22	Michael A. Frye
B	Boilerplate update, part of 5 year review. ksr	06-07-21	Raymond Monnin

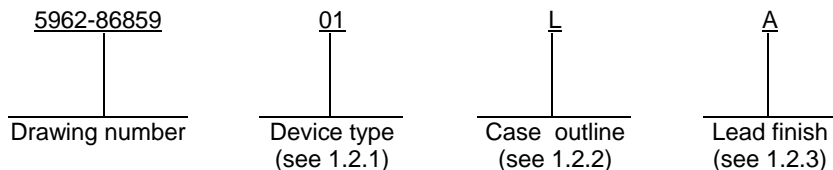
REV																				
SHEET																				
REV	B	B	B	B	B	B														
SHEET	15	16	17	18	19	20														
REV STATUS OF SHEETS	REV			B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
	SHEET			1	2	3	4	5	6	7	8	9	10	11	12	13	14			

PMIC N/A	PREPARED BY Kenneth Rice	<p align="center">DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990 http://www.dsccl.dla.mil</p>																		
<p align="center">STANDARD MICROCIRCUIT DRAWING</p> <p>THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE</p> <p align="center">AMSC N/A</p>	CHECKED BY Raymond Monnin																			
	APPROVED BY Michael A. Frye	<p align="center">MICROCIRCUIT, MEMORY, DIGITAL, CMOS 16K X 4 SRAM, MONOLITHIC SILICON</p>																		
	DRAWING APPROVAL DATE 88-06-20																			
	REVISION LEVEL B		<table border="1"> <tr> <td>SIZE A</td> <td>CAGE CODE 67268</td> <td>5962-86859</td> </tr> </table>	SIZE A	CAGE CODE 67268	5962-86859														
SIZE A	CAGE CODE 67268	5962-86859																		
		SHEET	1 OF 20																	

1. SCOPE

1.1 Scope. This drawing describes device requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A.

1.2 Part or Identifying Number (PIN). The complete PIN is as shown in the following example:



1.2.1 Device type(s). The device type(s) identify the circuit function as follows:

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>	<u>Access time</u>
01			85 ns
02			85 ns
03			70 ns
04			70 ns
05			55 ns
06			55 ns
07			45 ns
08			45 ns
09			35 ns
10			35 ns
11	See 6.4	16K X 4 Static Ram	70 ns
12			70 ns
13			55 ns
14			55 ns
15			45 ns
16			45 ns
17			35 ns
18			35 ns
19			55 ns
20			55 ns
21			45 ns
22			45 ns
23			35 ns
24			35 ns

1.2.2 Case outline(s). The case outline(s) are as designated in MIL-STD-1835 and as follows:

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
K	GDFP2-F24 or CDFP3-F24	24	flat package
L	GDIP3-T24 or CDIP4-T24	24	dual-in-line package
T	See Figure 1	22	dual-in-line package
U	CQCC4-N28	28	leadless chip carrier package
W	GDIP1-T22 or CDIP2-T22	22	dual-in-line package
X	CQCC3-N28	28	leadless chip carrier package
Y	See Figure 1	22	dual-in-line package
Z	See Figure 1	22	leadless chip carrier package

1.2.3 Lead finish. The lead finish is as specified in MIL-PRF-38535, appendix A.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A	REVISION LEVEL B	5962-86859 SHEET 2
---	------------------	----------------------------	--

1.3 Absolute maximum ratings. 1/

Supply voltage range (V_{CC})	-0.5 V dc to +7.0 V dc	1/
DC output current.....	20 mA	
Ambient storage temperature.....	-65°C to +150°C	
Temperature under bias.....	-55°C to +125°C	
Thermal resistance, junction-to-case (θ_{JC}):		
Cases K, L, U, W, and X.....	See MIL-STD-1835	
Cases Y and T	28°C/W	2/
Cases Z.....	22°C/W	2/
Power dissipation (P_D)	1.0 W	

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	+4.5 V dc to +5.5 V dc	1/
Ground voltage (V_{SS})	0 V dc	
Input high voltage (V_{IH}).....	+2.2 V dc to $V_{CC} + 0.5$ V dc	
Input low voltage (V_{IL})	-0.5 V dc to .8 V dc	3/
Operating case temperature range (T_C)	-55°C to +125°C	

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://assist.daps.dla.mil/quicksearch/> or <http://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 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.

1/ All voltage referenced to V_{SS} .

2/ When a thermal resistance value is included in MIL-STD-1835, it shall supersede the value stated herein.

3/ V_{IL} negative undershoots to a minimum of -2.0 V dc are allowed with a maximum 20 ns pulse width.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 3

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein. Product built to this drawing that is produced by a Qualified Manufacturer Listing (QML) certified and qualified manufacturer or a manufacturer who has been granted transitional certification to MIL-PRF-38535 may be processed as QML product in accordance with the manufacturers approved program plan and qualifying activity approval in accordance with MIL-PRF-38535. This QML flow as documented in the Quality Management (QM) plan may make modifications to the requirements herein. These modifications shall not affect form, fit, or function of the device. These modifications shall not affect the PIN as described herein. A "Q" or "QML" certification mark in accordance with MIL-PRF-38535 is required to identify when the QML flow option is used.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535, appendix A and herein.

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

3.2.2 Truth tables. The truth tables shall be as specified on figure 3.

3.2.3 Case outlines. The case outlines shall be in accordance with 1.2.2 herein and figure 1.

3.2.4 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. Unless otherwise specified herein, the electrical performance characteristics 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 II. The electrical tests for each subgroup are described in table I.

3.5 Marking. Marking shall be in accordance with MIL-PRF-38535, appendix A. 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.

3.5.1 Certification/compliance mark. A compliance indicator "C" shall be marked on all non-JAN devices built in compliance to MIL-PRF-38535, appendix A. The compliance indicator "C" shall be replaced with a "Q" or "QML" certification mark in accordance with MIL-PRF-38535 to identify when the QML flow option is used.

3.6 Certificate of compliance. 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 herein). The certificate of compliance submitted to DSCC-VA prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-PRF-38535, appendix A and the requirements herein.

3.7 Certificate of conformance. A certificate of conformance as required in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change. Notification of change to DSCC-VA shall be required for any change that affects this drawing.

3.9 Verification and review. DSCC, DSCC'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.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 4

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 Screening. Screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection. The following additional criteria shall apply:

a. Burn-in test, method 1015 of MIL-STD-883.

(1) Test condition C or 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 method 1015 of MIL-STD-883.

(2) $T_A = +125^{\circ}\text{C}$, minimum.

b. Interim and final electrical test parameters shall be as specified in table II herein, except interim electrical parameter tests prior to burn-in are optional at the discretion of the manufacturer.

4.3 Quality conformance inspection. Quality conformance inspection shall be in accordance with method 5005 of MIL-STD-883 including groups A, B, C, and D inspections. The following additional criteria shall apply.

4.3.1 Group A inspection.

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

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

c. Subgroup 4 (C_I and C_O measurement) 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.

d. Subgroups 7, 8A, and 8B shall include verification of the truth table.

4.3.2 Groups C and D inspections.

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

b. Steady-state life test conditions, method 1005 of MIL-STD-883.

(1) Test condition C or 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 method 1005 of MIL-STD-883.

(2) $T_A = +125^{\circ}\text{C}$, minimum.

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

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535, appendix A.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 5

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 type	Limits		Unit
					Min	Max	
Input leakage current	I _{LI}	V _{CC} = max, V _{IN} = GND to V _{CC}	1, 2, 3	All		10	μA
Output leakage current	I _{LO}	V _{CC} = max, V _{OUT} = GND to V _{CC} $\overline{CE} \geq V_{IH}$ $\overline{WE} \leq V_{IL}$	1, 2, 3	All		10	μA
Output low voltage	V _{OL}	V _{CC} = 4.5 V, I _{OL} = 8 mA V _{IL} = 0.8 V, V _{IH} = 2.2 V	1, 2, 3	All		0.4	V
Output high voltage	V _{OH}	V _{CC} = 4.5 V, I _{OH} = -4 mA V _{IL} = 0.8 V, V _{IH} = 2.2 V	1, 2, 3	All	2.4		V
Operating supply current	I _{CC1}	$\overline{CE} = V_{IL}$, outputs open V _{CC} = max, f = 1/t _{AVAX}	1, 2, 3	01, 03, 05, 07, 09		140	mA
				02, 04, 06, 08, 10, 17, 18, 23, 24		115	
				11-16, 19- 22		90	
Standby power supply current (TTL)	I _{CC2}	$\overline{CE} \geq V_{IH}$, outputs open V _{CC} = max	1, 2, 3	01-10		50	mA
				11-24		30	
Standby power supply current (CMOS)	I _{CC3}	V _{CC} + 0.2 V ≥ $\overline{CE} \geq V_{CC} - 0.2$ V outputs open V _{CC} + 0.2 V ≥ V _{IN} ≥ V _{CC} - 0.2 V or +0.2 V ≥ V _{IN} ≥ -0.2 V	1, 2, 3	All		25	mA
Data retention current	I _{CC4} 1/	V _{CC} = V _{DR} = 2.0 V	1, 2, 3	02, 04, 06, 08, 10, 11, 13, 15, 17, 19, 21, 23		1000	μA
Input capacitance	C _I 1/	V _I = 5.0 V or GND f = 1 MHz, T _C = +25°C See 4.3.1c	4	All		8	pF
Output capacitance	C _O 1/	V _O = 5.0 V or GND f = 1 MHz, T _C = +25°C See 4.3.1c	4	All		10	pF

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 6

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions <u>3/ 4/</u> -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 type	Limits		Unit
					Min	Max	
Read cycle time	t _{AVAX} <u>1/ 2/</u>		9, 10, 11	01, 02	85		ns
				03, 04, 11, 12	70		
				05, 06, 13, 14, 19, 20	55		
				07, 08, 15, 16, 21, 22	45		
				09, 10, 17, 18, 23, 24	35		
Address cycle time	t _{AVQV} <u>2/</u>		9, 10, 11	01, 02		85	ns
				03, 04, 11, 12		70	
				05, 06, 13, 14, 19, 20		55	
				07, 08, 15, 16, 21, 22		45	
				09, 10, 17, 18, 23, 24		35	
Chip-enable access time	t _{ELQV} <u>1/ 2/</u>		9, 10, 11	01, 02		85	ns
				03, 04, 11, 12		70	
				05, 06, 13, 14, 19, 20		55	
				07, 08, 15, 16, 21, 22		45	
				09, 10, 17, 18, 23, 24		35	
Output hold from address change	t _{AVQX} <u>1/ 2/</u>		9, 10, 11	All	3		ns
Chip select to power up time	t _{PU} <u>5/</u>		9, 10, 11	All	0		ns

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 7

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions <u>3/ 4/</u> -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 type	Limits		Unit
					Min	Max	
Chip deselect to power down time	t _{PD} <u>5/</u>		9, 10, 11	01, 02		85	ns
				03, 04, 11, 12		70	
				05, 06, 13, 14, 19, 20		55	
				07, 08, 15, 16, 21, 22		45	
				09, 10, 17, 18, 23, 24		35	
Output enable to output valid	t _{OLQV} <u>2/</u>		9, 10, 11	01- 06		55	ns
				07-18		35	
Chip select to output in low Z	t _{ELQX} <u>1/ 2/ 6/</u>		9, 10, 11	All	3		ns
Output enable to output in low Z	t _{OLQX} <u>1/ 2/ 6/</u>		9, 10, 11	01-18	3		ns
Chip select to output in high Z	t _{EHQZ} <u>1/ 2/ 6/</u>		9, 10, 11	01-24		30	ns
Output disable to output in high Z	t _{OHQZ} <u>1/ 2/ 6/</u>		9, 10, 11	01-18		30	ns
Write enable to output in high Z	t _{WLQZ} <u>1/ 2/ 6/</u>			01-06, 11, 12		40	ns
				07-10, 13-24		20	
Data valid to end of drive	t _{DVWH} <u>2/</u>		9, 10, 11	01-24	35		ns
Data hold time	t _{WHDX} <u>2/</u>		9, 10, 11	01-24	5		ns
Output active from end of write	t _{WHQV} <u>1/ 2/ 6/</u>		9, 10, 11	01-24	3		ns

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 8

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions <u>2/</u> <u>3/</u> <u>4/</u> -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 type	Limits		Unit
					Min	Max	
Write cycle time <u>1/</u>	t _{AVAV}		9, 10, 11	01, 02	75		ns
				03, 04, 11, 12	60		
				05, 06, 13, 14, 19, 20	55		
				07, 08, 15, 16, 21, 22	45		
				09, 10, 17, 18, 23, 24	35		
Chip-select to end of write	t _{ELWH} <u>4/</u>		9, 10, 11	01, 02	75		ns
				03, 04, 11, 12	60		
				05, 06, 13, 14, 19, 20	50		
				07, 08, 15, 16, 21, 22	40		
				09, 10, 17, 18, 23, 24	30		
Address valid to end of write	t _{AVWH}			01-04, 11, 12	75		ns
				05-10, 13-24	40		
Address-setup time	t _{AVQX} <u>1/</u> <u>2/</u>		9, 10, 11	01-24	5		ns
Write pulse width	t _{WLWH}			01-04, 11, 12	75		ns
				05-10, 13-24	40		
Write recovery time	t _{EHOL}		9, 10, 11	01-24	5		ns

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

2/ For timing waveforms, see figure 4.

3/ AC parameters are tested using input rise and fall times of 5 ns and input pulse levels of GND to 3.0 V. Both input and output timing reference levels are 1.5 V, and the output load is shown on figure 5.

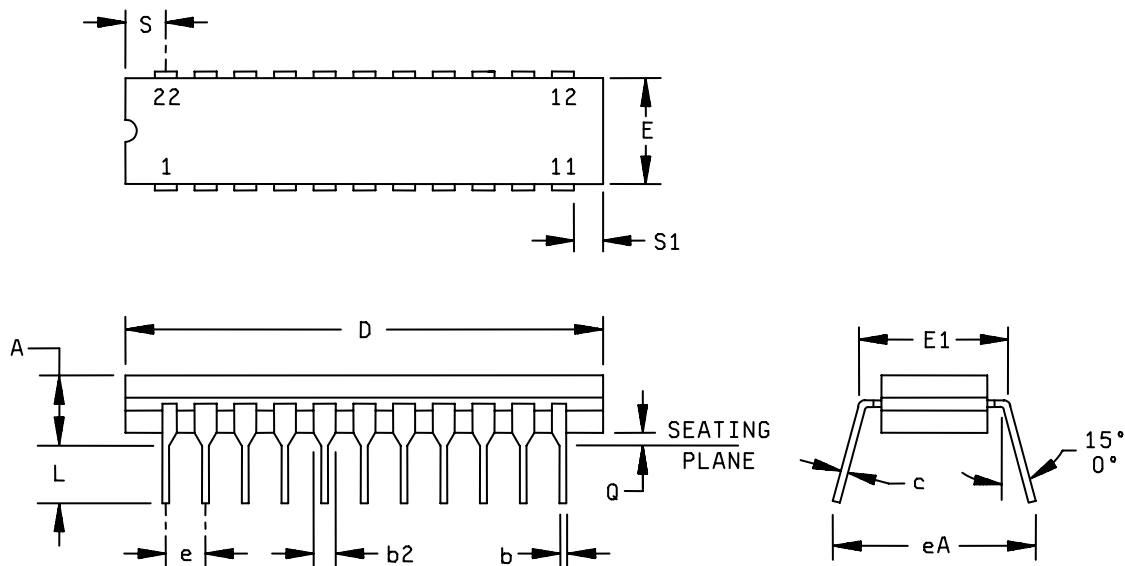
4/ On devices with two chip selects, both chip selects must be active low for the device to be selected.

5/ This parameter if not tested, shall be guaranteed to the limits specified in table I.

6/ Transition is measured ±500 mV from steady state.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 9

Case Y

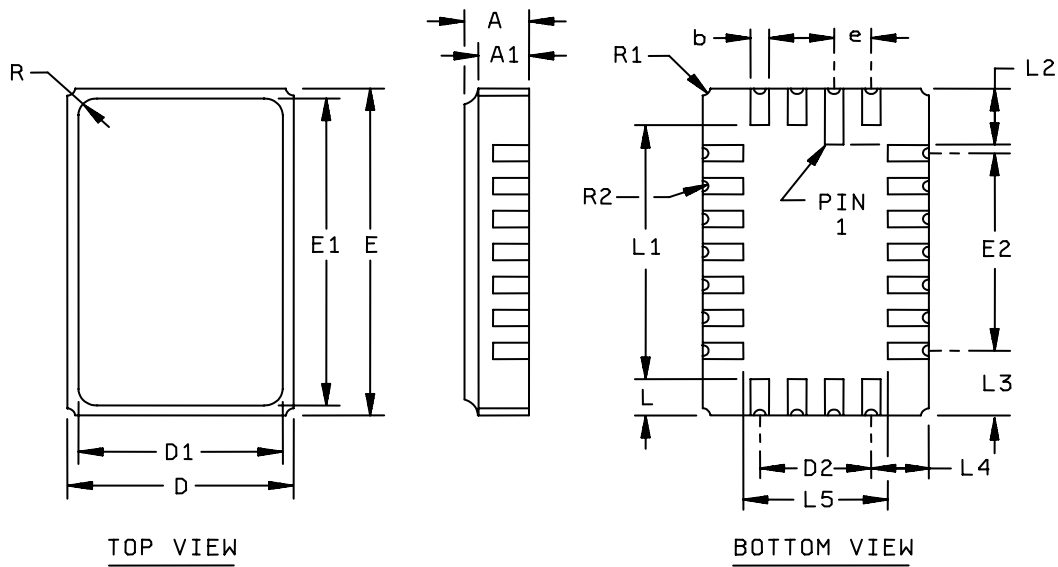


Limits Symbol	Inches		mm	
	Min	Max	Min	Max
A	.155	.200	3.94	5.08
b	.015	.020	0.38	0.51
b2	.045	.065	1.14	1.65
c	.009	.012	0.22	0.30
D	1.060	1.110	26.92	28.19
E	.245	.310	6.22	7.87
E1	.290	.320	7.37	8.13
e	.090	.110	2.29	2.79
eA	.330	.390	8.38	9.91
L	.125	.200	3.18	5.08
Q	.015	.060	0.38	1.52
S	.005		0.13	
S1	.025	.045	0.64	1.14

FIGURE 1. Case outlines.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 10

Case Z

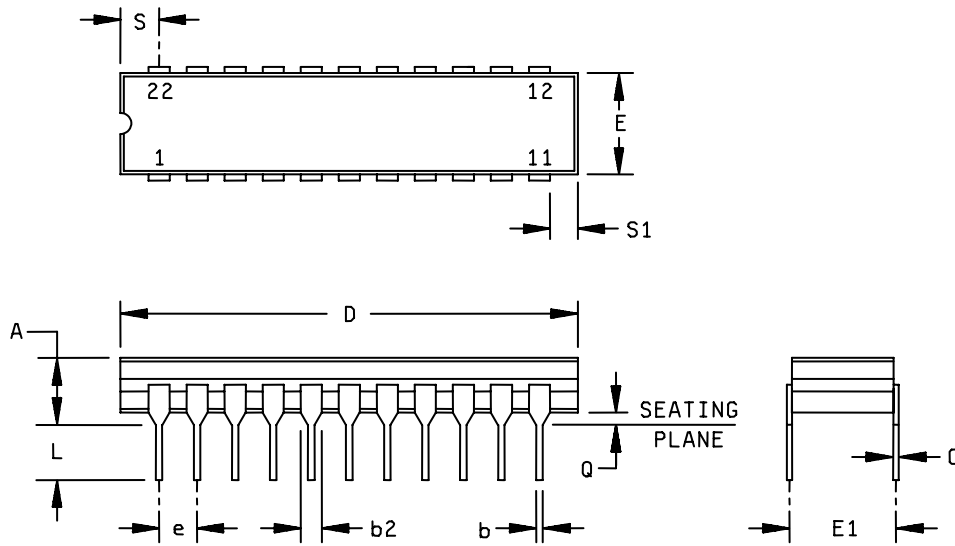


Limits Symbol	Inches		mm	
	Min	Max	Min	Max
A	.060	.080	1.52	2.03
A1	.050	.068	1.27	1.73
b	.022	.028	.559	.711
D	.284	.296	7.21	7.52
D1	.265	.275	6.73	6.99
D2	.150 REF		3.81	
e	.050 ± .005 BSC		1.27 ± 0.13	
E	.484	.496	12.29	12.60
E1	.465	.475	11.81	12.07
E2	.300 REF		7.62	
L	.039	.051	.991	1.30
L1	.395	.405	10.03	10.29
L2	.058	.072	1.47	1.83
L3	.090	.100	2.29	2.54
L4	.065	.075	1.65	1.91
L5	.195	.205	4.95	5.21
R	0.03 REF		0.76	
R1	.012 REF		.305	
R2	.009	.010	.229	.254

FIGURE 1. Case outlines - Continued.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 11

Case T



Limits Symbol	Inches	
	Min	Max
A	.100	.200
b	.014	.023
b2	.030	.060
C	.008	.015
D	1.050	1.26
E	.260	.310
E1	.280	.320
e	.100	BSC
L	.125	.200
L1	.150	
Q	.015	.060
S	.030	.065
S1	.005	
S2	.005	

Inches	mm
.005	0.13
.008	0.20
.014	0.36
.015	0.38
.023	0.58
.030	0.76
.060	1.52
.065	1.65
.100	2.54
.125	3.18
.150	3.81
.200	5.08
.260	6.60
.290	7.37
.310	7.87
.320	8.13
1.050	26.67
1.260	32.00

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Case outlines - Continued.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 12

Terminal symbol						
Device	01-10		11-18		19-24	
Case	L	X	<u>1/</u> L, K	<u>2/</u> X, U	T <u>3/</u> W, Y, Z	K
Terminal number						
1	A ₀	NC	A ₀	NC	A ₅	A ₀
2	A ₁	NC	A ₁	NC	A ₆	A ₁
3	A ₂	A ₀	A ₂	A ₀	A ₇	A ₂
4	A ₃	A ₁	A ₃	A ₁	A ₈	A ₃
5	A ₄	A ₂	A ₄	A ₂	A ₉	A ₄
6	A ₅	A ₃	A ₅	A ₃	A ₁₀	A ₅
7	A ₆	A ₄	A ₆	A ₄	A ₁₁	A ₆
8	A ₇	A ₅	A ₇	A ₅	A ₁₂	A ₇
9	A ₈	A ₆	A ₈	A ₆	A ₁₃	A ₈
10	\overline{CE}_1	A ₇	\overline{CE}	A ₇	\overline{CE}	\overline{CE}
11	\overline{OE}	A ₈	\overline{OE}	A ₈	GND	NC
12	GND	\overline{CE}_1	GND	\overline{CE}	\overline{WE}	GND
13	\overline{WE}	\overline{OE}	\overline{WE}	\overline{OE}	I/O ₀	\overline{WE}
14	I/O ₁	GND	I/O ₁	GND	I/O ₁	I/O ₁
15	I/O ₂	\overline{CE}_2	I/O ₂	NC	I/O ₂	I/O ₂
16	I/O ₃	\overline{WE}	I/O ₃	\overline{WE}	I/O ₃	I/O ₃
17	I/O ₄	I/O ₁	I/O ₄	I/O ₁	A ₀	I/O ₄
18	\overline{CE}_2	I/O ₂	NC	I/O ₂	A ₁	NC
19	A ₉	I/O ₃	A ₉	I/O ₃	A ₂	A ₉
20	A ₁₀	I/O ₄	A ₁₀	I/O ₄	A ₃	A ₁₀
21	A ₁₁	A ₉	A ₁₁	A ₉	A ₄	A ₁₁
22	A ₁₂	A ₁₀	A ₁₂	A ₁₀	V _{CC}	A ₁₂
23	A ₁₃	A ₁₁	A ₁₃	A ₁₁	---	A ₁₃
24	V _{CC}	A ₁₂	V _{CC}	A ₁₂	---	V _{CC}
25	---	A ₁₃	---	A ₁₃	---	---
26	---	NC	---	NC	---	---
27	---	NC	---	NC	---	---
28	---	V _{CC}	---	V _{CC}	---	---

NC = no connection

1/ K does not apply to devices 11 – 14.

2/ U does not apply to devices 11 – 14.

3/ Y does not apply to devices 19 and 20.

FIGURE 2. Terminal connections.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 13

Device types 01 through 10

Mode	$\overline{CE1}$	$\overline{CE2}$	\overline{WE}	\overline{OE}	I/O	Power
Standby	H	X	X	X	High Z	Standby
Standby	X	H	X	X	High Z	Standby
Read	L	L	H	L	D _{OUT}	Active
Write	L	L	L	X	D _{IN}	Active
Read	L	L	H	H	High Z	Active

Device types 11 through 24

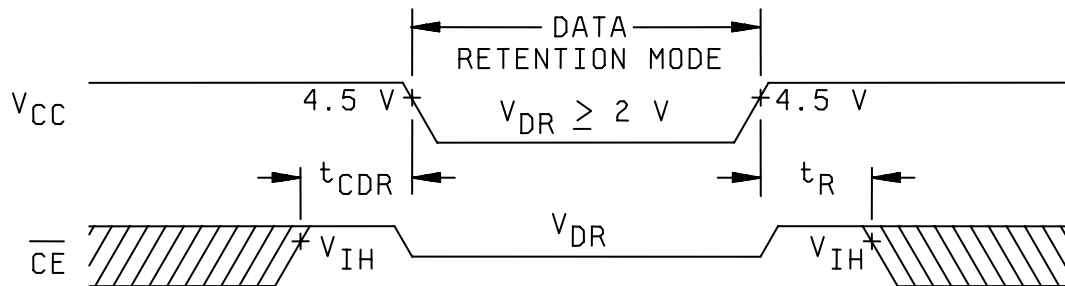
Mode	\overline{CE}	\overline{WE}	\overline{OE} ^{1/}	I/O	Power
Standby	H	X	X	High Z	Standby
Read	L	H	L	D _{OUT}	Active
Write	L	L	X	D _{IN}	Active
Read ^{1/}	L	H	H	High Z	Active

^{1/} Does not apply to devices 19 through 24.

FIGURE 3. Truth tables.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 14

LOW V_{CC} DATA RETENTION WAVEFORM
(DEVICE TYPES 02,04,06,08,10,11,13,15,17,19,21, AND 23)



NOTE: $t_{CDR} = 0$ ns (minimum); may not be tested, but is guaranteed.

$t_r = t_{AVAX}$

TIMING WAVEFORM OF READ CYCLE NO.1

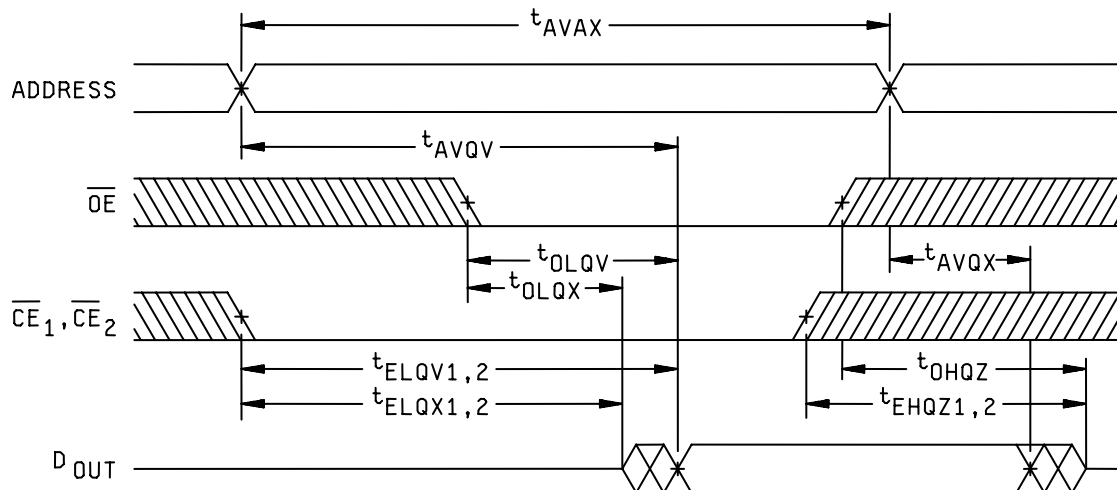
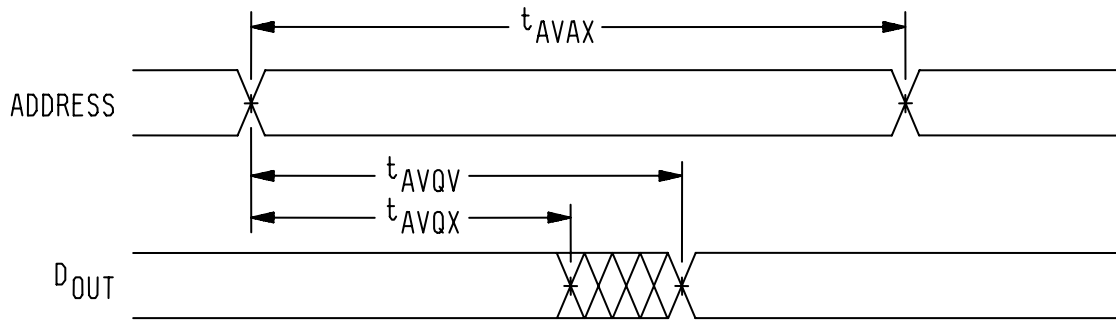


FIGURE 4. Switching time waveforms.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 15

TIMING WAVEFORM OF READ CYCLE NO.2



TIMING WAVEFORM OF READ CYCLE NO.3

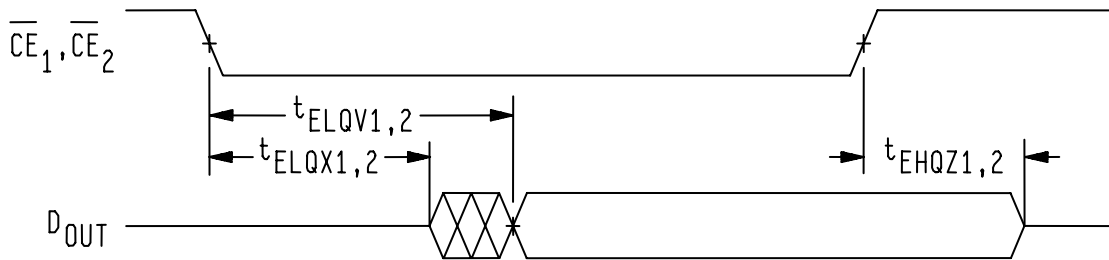


FIGURE 4. Switching time waveforms - Continued.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 16

TIMING WAVEFORM OF WRITE CYCLE NO.1

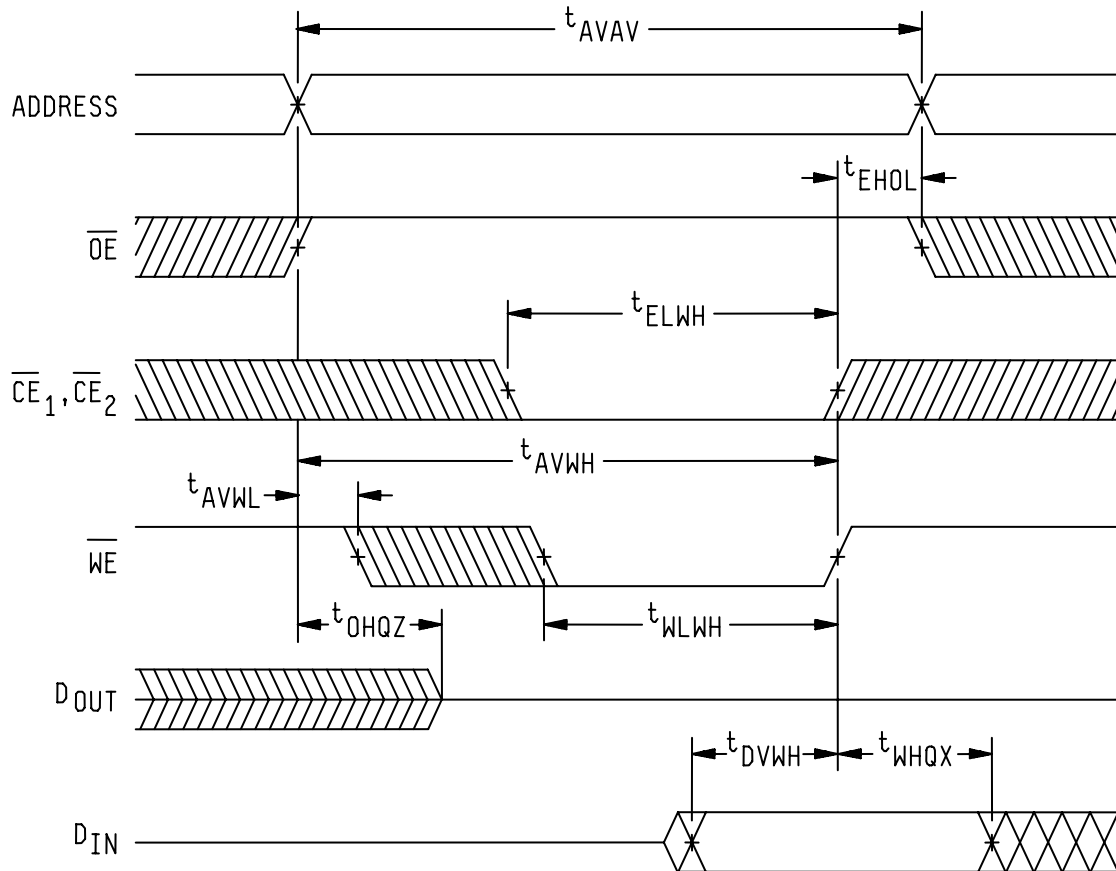


FIGURE 4. Switching time waveforms - Continued.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 17

TIMING WAVEFORM OF WRITE CYCLE NO.2

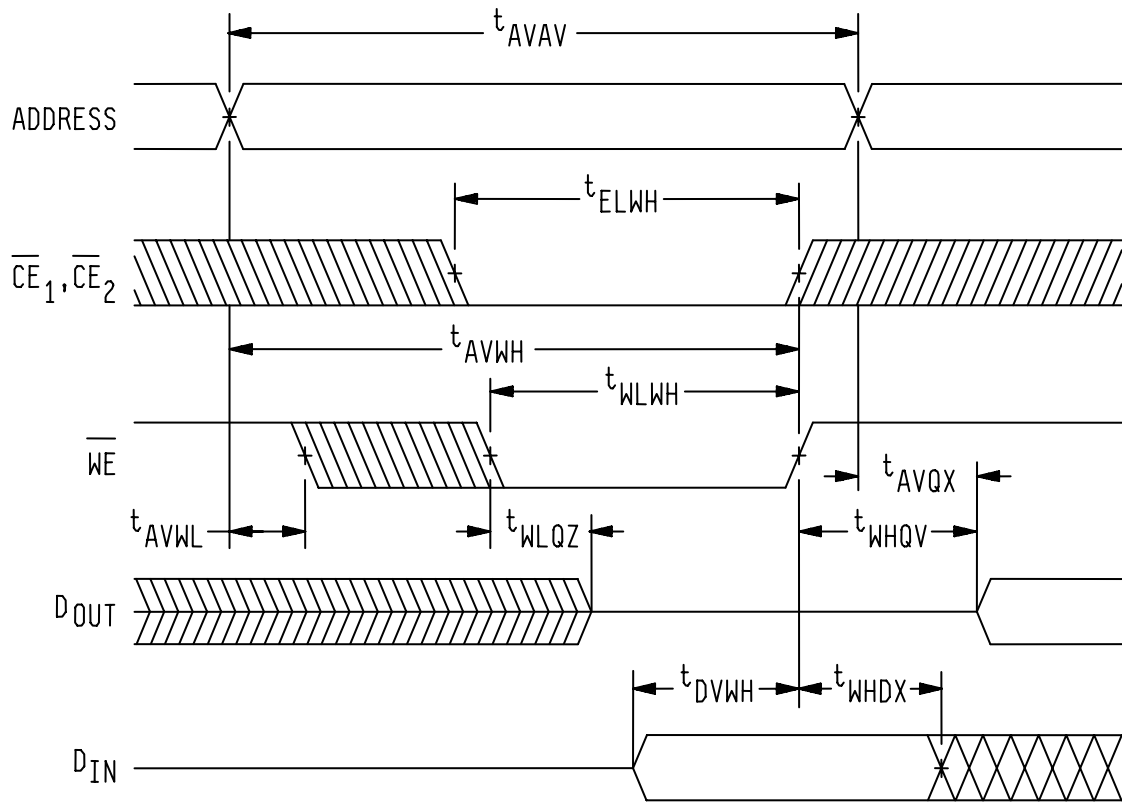
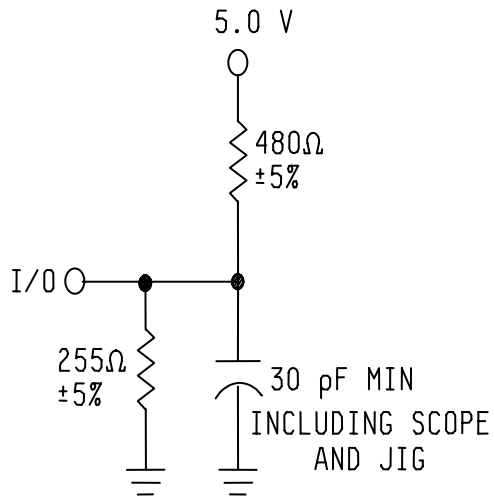
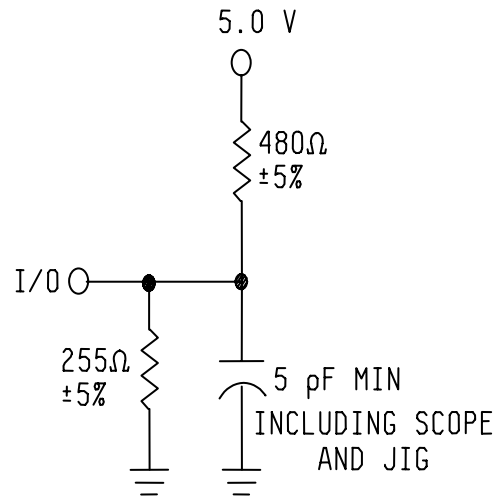


FIGURE 4. Switching time waveforms - Continued.

<p>STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990</p>	<p>SIZE A</p>		<p>5962-86859</p>
		<p>REVISION LEVEL B</p>	<p>SHEET 18</p>



CIRCUIT A OR EQUIVALENT



CIRCUIT B OR EQUIVALENT

FOR t_{ELQX} , t_{OLQX} , t_{EHQZ} , t_{OHQZ} , t_{WLQZ} , t_{WHQV}

FIGURE 5. Output load circuits.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 19

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table I)
Interim electrical parameters (method 5004)	---
Final electrical test parameters (method 5004)	1*, 2, 3, 7*, 8A, 8B, 9, 10, 11
Group A test requirements (method 5005)	1, 2, 3, 4**, 7***, 8A***, 8B***, 9, 10, 11
Groups C and D end-point electrical parameters (method 5005)	2, 3, 7, 8A, 8B

* PDA applies to subgroups 1 and 7.

** see 4.3.1c.

*** see 4.3.1d.

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.

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

6.3 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.

6.4 Record of users. Military and industrial users shall inform Defense Supply Center Columbus (DSCC) when a system application requires configuration control and the applicable SMD. DSCC 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 microelectronics devices (FSC 5962) should contact DSCC-VA, telephone (614) 692-0544.

6.5 Comments. Comments on this drawing should be directed to DSCC-VA, Columbus, Ohio 43218-3990, or telephone (614) 692-0547.

6.6 Approved sources of supply. Approved sources of supply 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 DSCC-VA.

STANDARD MICROCIRCUIT DRAWING DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43218-3990	SIZE A		5962-86859
		REVISION LEVEL B	SHEET 20

STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 06-07-21

Approved sources of supply for SMD 5962-86859 are listed below for immediate acquisition information only and shall be added to MIL-HDBK-103 and QML-38535 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 DSCC-VA. This information bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535. DSCC maintains an online database of all current sources of supply at <http://www.dscclia.mil/Programs/Smcr/>.

Standard microcircuit drawing PIN <u>1</u> /	Vendor CAGE number	Vendor similar PIN <u>2</u> /
5962-8685901LA	<u>3</u> / 3DTT2	IDT7198S85CB P4C198A-85DMB
5962-8685901XA	<u>3</u> / 3DTT2	IDT7198S85LB P4C198A-85LMB
5962-8685902LA	<u>3</u> / 3DTT2	IDT7198L85CB P4C198AL-85DMB
5962-8685902XA	<u>3</u> / 3DTT2	IDT7198L85LB P4C198AL-85LMB
5962-8685903LA	<u>3</u> / 3DTT2	IDT7198S70CB P4C198A-70DMB
5962-8685903XA	<u>3</u> / 3DTT2	IDT7198S70LB P4C198A-70LMB
5962-8685904LA	<u>3</u> / 3DTT2	IDT7198L70CB P4C198AL-70DMB
5962-8685904XA	<u>3</u> / 3DTT2	IDT7198L70LB P4C198AL-70LMB
5962-8685905LA	<u>3</u> / 3DTT2	IDT7198S55CB P4C198A-55CMB
5962-8685905XA	<u>3</u> / 3DTT2	IDT7198S55LB P4C198A-55LMB
5962-8685906LA	<u>3</u> / 3DTT2	IDT7198L55CB P4C198AL-55CMB
5962-8685906XA	<u>3</u> / 3DTT2	IDT7198L55LB P4C198AL-55LMB
5962-8685907LA	<u>3</u> / 3DTT2	IDT7198S45CB P4C198A-45CMB
5962-8685907XA	<u>3</u> / 3DTT2	IDT7198S45LB P4C198A-45LMB

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING BULLETIN – Continued.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8685908LA	<u>3/</u> 3DTT2	IDT7198L45CB P4C198AL-45CMB
5962-8685908XA	<u>3/</u> 3DTT2	IDT7198L45LB P4C198AL-45LMB
5962-8685909LA	<u>3/</u> 3DTT2	IDT7198S35CB P4C198A-35CMB
5962-8685909XA	<u>3/</u> 3DTT2	IDT7198S35LB P4C198A-35LMB
5962-8685910LA	<u>3/</u> 3DTT2	IDT7198L35CB P4C198AL-35CMB
5962-8685910XA	<u>3/</u> 3DTT2	IDT7198L35LB P4C198AL-35LMB
5962-8685911LA	<u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-70LM F1625DMQB70 IDT6198L70CB MT5C6405C-70L
5962-8685911XA	<u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-70LM F1625LMQB70 IDT6198L70LB
5962-8685911UA	0EU86	MT5C6405EC-70L
5962-8685911KA	<u>3/</u>	6198L70EB
5962-8685912KA	<u>3/</u>	6198S70EB
5962-8685912UA	0EU86	MT5C6405EC-70
5962-8685912LA	<u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-70M F1624DMQB70 IDT6198S70CB MT5C6405C-70
5962-8685912XA	<u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-70M F1624LMQB70 IDT6198S70LB
5962-8685913KA	<u>3/</u>	6198L55EB
5962-8685913LA	<u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-55LM F1624DMQB55 IDT6198L55CB MT5C6405C-55L
5962-8685913XA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-55LM F1625LMQB55 IDT6198L55LB P4C198L-55

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING BULLETIN – Continued.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8685913UA	0EU86	MT5C6405EC-55L
5962-8685914KA	<u>3/</u>	6198S55EB
5962-8685914UA	0EU86	MT5C6405EC-55
5962-8685914LA	<u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-55M IDT6198S55CB F1624DMQB55 MT5C6405C-55
5962-8685914XA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-55M IDT6198S55LB F1624LMQB55 P4C198-55
5962-8685915LA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-45LM F1625DMQB45 CY7C166L-45DMB IDT6198L45CB MT5C6405C-45L
5962-8685915XA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-45LM F1625LMQB45 CY7C166L-45LMB IDT6198L45LB P4C198L-45
5962-8685915UA	<u>3/</u> 0EU86	CY7C166L-45LMB MT5C6405EC-45L
5962-8685915KA	<u>3/</u> <u>3/</u>	CY7C166L-45KMB 6198L45
5962-8685916LA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u> 0EU86	IMS1624S-45M F1624DMQB45 CY7C166-45DMB IDT6198S45CB MT5C6405C-45
5962-8685916XA	<u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u> <u>3/</u>	IMS1624W-45M F1624LMQB45 CY7C166-45LMB IDT6198S45LB P4C198-45
5962-8685916UA	<u>3/</u> 0EU86	CY7C166-45LMB MT5C6405EC-45
5962-8685916KA	<u>3/</u> <u>3/</u>	CY7C166-45KMB 6198S45
5962-8685917LA	<u>3/</u> <u>3/</u> <u>3/</u> 3DTT2 0EU86	F1625DMQB35 CY7C166L-35DMB IDT6198L35CB P4C198L-35CMB MT5C6405C-35L
5962-8685917XA	<u>3/</u> <u>3/</u> <u>3/</u> 3DTT2	F1625LMQB35 CY7C166L-35LMB IDT6198L35LB P4C198L-35LMB

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING BULLETIN – Continued.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8685917UA	<u>3/</u> 3DTT2 0EU86	CY7C166L-35LMB P4C198L-35LMB MT5C6405EC-35L
5962-8685917KA	<u>3/</u> <u>3/</u>	CY7C166L-35KMB 6198L35
5962-8685918LA	<u>3/</u> <u>3/</u> <u>3/</u> 3DTT2 0EU86	F1624DMQB35 CY7C166-35DMB IDT6198S35CB P4C198L-35CMB MT5C6405C-35
5962-8685918XA	<u>3/</u> <u>3/</u> <u>3/</u> 3DTT2	F1624LMQB35 CY7C166-35LMB IDT6198S35LB P4C198-35LMB
5962-8685918UA	<u>3/</u> 3DTT2 0EU86	CY7C166-35LMB P4C198-35LMB MT5C6405EC-35
5962-8685918KA	<u>3/</u> <u>3/</u>	CY7C166-35KMB 6198S35
5962-8685919WA	<u>3/</u>	F1621DMQB55
5962-8685919ZA	<u>3/</u> <u>3/</u>	F1621LMQB55 P4C188L-55
5962-8685919TA	<u>3/</u> 0EU86	IDT7188L55CB MT5C6404C-55L
5962-8685919KA	<u>3/</u>	IDT7188L55FB
5962-8685919YA	61772	IDT7188L55DB
5962-8685920WA	<u>3/</u>	F1620DMQB55
5962-8685920ZA	<u>3/</u> <u>3/</u>	F1620LMQB55 P4C188-55
5962-8685920TA	<u>3/</u> 0EU86	IDT7188S55CB MT5C6404C-55
5962-8685920KA	<u>3/</u>	IDT7188S55FB
5962-8685920YA	61772	IDT7188S55DB
5962-8685921WA	<u>3/</u>	F1621DMQB45
5962-8685921ZA	<u>3/</u> <u>3/</u> <u>3/</u>	F1621LMQB45 CY7C164L-45LMB P4C188L-45
5962-8685921YA	<u>3/</u> 61772	CY7C164L-45DMB IDT7188L45DB
5962-8685921KA	<u>3/</u> <u>3/</u>	CY7C164L-45KMB IDT7188L45FB

See footnotes at end of table.

STANDARD MICROCIRCUIT DRAWING BULLETIN – Continued.

Standard microcircuit drawing PIN <u>1/</u>	Vendor CAGE number	Vendor similar PIN <u>2/</u>
5962-8685921TA	<u>3/</u> 0EU86	IDT7188L45CB MT5C6404C-45L
5962-8685922WA	<u>3/</u>	F1620DMQB45
5962-8685922ZA	<u>3/</u> <u>3/</u> <u>3/</u>	F1620LMQB45 CY7C164-45LMB P4C188-45
5962-8685922YA	<u>3/</u> 61772	CY7C164-45DMB IDT7188S45DB
5962-8685922KA	<u>3/</u> <u>3/</u>	CY7C164-45KMB IDT7188S45FB
5962-8685922TA	<u>3/</u> 0EU86	IDT7188S45CB MT5C6404C-45
5962-8685923WA	<u>3/</u>	F1621DMQB35
5962-8685923ZA	<u>3/</u> <u>3/</u> 3DTT2	F1621LMQB35 CY7C164L-35LMB P4C188L-35LMB
5962-8685923YA	<u>3/</u> 61772	CY7C164L-35DMB IDT7188L35DB
5962-8685923KA	<u>3/</u> <u>3/</u>	CY7C164L-35KMB IDT7188L35FB
5962-8685923TA	<u>3/</u> 3DTT2 0EU86	IDT7188L35CB P4C188L-35CMB MT5C6405C-35L
5962-8685924WA	<u>3/</u>	F1620DMQB35
5962-8685924ZA	<u>3/</u> <u>3/</u> 3DTT2	F1620LMQB35 CY7C164-35LMB P4C188-35LMB
5962-8685924YA	<u>3/</u> 61772	CY7C164-35DMB IDT7188S35DB
5962-8685924KA	<u>3/</u> <u>3/</u>	CY7C164-35KMB IDT7188S35FB
5962-8685924TA	<u>3/</u> 3DTT2 0EU86	IDT7188S35CB P4C188-35CMB MT5C6405C-35

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 its 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.

STANDARD MICROCIRCUIT DRAWING BULLETIN – Continued.

<u>Vendor CAGE number</u>	<u>Vendor name and address</u>
61772	Integrated Device Technology, Inc. 2975 Stender Way Santa Clara, CA 95054
3DTT2	Pyramid Semiconductor Corporation 1340 Bordeaux Drive Sunnyvale, CA 94089
0EU86	Austin Semiconductor Inc. 8701 Cross Park Dr. Austin, TX 78754-4566

The information contained herein is disseminated for convenience only and the Government assumes no liability whatsoever for any inaccuracies in the information bulletin.