

**REVISIONS**

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
B	Add device type 06. Add vendor CAGE OHGZ7 as a supplier of device types 01 through 04. Editorial changes throughout.	93-09-17	M. A. FRYE

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

REV																					
SHEET																					
REV	A	A	A	A	A	A	B	A	A												
SHEET	15	16	17	18	19	20	21	22	23												
REV STATUS OF SHEETS		REV		B	B	A	A	B	B	B	B	B	B	B	B	B	A	A			
		SHEET		1	2	3	4	5	6	7	8	9	10	11	12	13	14				
PMIC N/A		PREPARED BY Kenneth Rice				DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444															
<b>STANDARDIZED MILITARY DRAWING</b>  THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE  AMSC N/A		CHECKED BY Charles Reusing				MICROCIRCUIT, MEMORY, DIGITAL, CMOS, 1K X 9 FIFO, MONOLITHIC SILICON															
		APPROVED BY Monica L. Poelking																			
		DRAWING APPROVAL DATE 27 March 1990				SIZE A	CAGE CODE 67268	5962-89536													
		REVISION LEVEL B				SHEET		1	OF		23										

DESC FORM 193

JUL 91

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

5962-E415-93

9004708 0001351 603

1. SCOPE

1.1 Scope. This drawing describes device requirements for class B microcircuits in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices".

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



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

Device type	Generic number	Circuit function	Access time
01	(see 6.6)	1k X 9-bit parallel FIFO	120 ns
02	(see 6.6)	1k X 9-bit parallel FIFO	80 ns
03	(see 6.6)	1k X 9-bit parallel FIFO	65 ns
04	(see 6.6)	1k X 9-bit parallel FIFO	40 ns
05	(see 6.6)	1k X 9-bit parallel FIFO	30 ns
06	(see 6.6)	1k X 9-bit parallel FIFO	20 ns

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

Outline letter	Descriptive designator	Terminals	Package style
X	CDIP3-T28 or GDIP4-T28	28	Dual-in-line package
Y	GDIP1-T28 or GCIP2-T28	28	Dual-in-line package
Z	GDIP2-F28	28	Flat package, configuration 1
U	CQCC1-N32	32	Rectangular leadless chip carrier package

1.2.3 Lead finish. The lead finish shall be as specified in MIL-M-38510. Finish letter "X" shall not be marked on the microcircuit or its packaging. The "X" designation is for use in specifications when lead finishes A, B, and C are considered acceptable and interchangeable without preference.

1.3 Absolute maximum ratings.

Terminal voltage with respect to ground . . . . .	-0.5 V dc to +7.0 V dc
DC output current . . . . .	50 mA
Storage temperature range . . . . .	-65°C to +150°C
Maximum power dissipation (P <sub>D</sub> ) . . . . .	1.0 W
Lead temperature (soldering, 10 seconds) . . . . .	+260°C
Thermal resistance, junction-to-case (Θ <sub>JC</sub> ) . . . . .	See MIL-STD-1835
Junction temperature (T <sub>J</sub> ) . . . . .	+150°C 1/

1.4 Recommended operating conditions.

Supply voltage range (V <sub>CC</sub> ) . . . . .	4.5 V dc to 5.5 V dc
Minimum high level input voltage (V <sub>IH</sub> ) . . . . .	2.2 V dc
Maximum low level input voltage (V <sub>IL</sub> ) . . . . .	+0.8 V dc 2/
Case operating temperature range (T <sub>C</sub> ) . . . . .	-55°C to +125°C

1/ Maximum junction temperature may be increased to +175°C during burn-in and steady state life.

2/ 1.5 V undershoots are allowed for 10 ns once per cycle.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-89536
	REVISION LEVEL <b>B</b>	SHEET <b>2</b>

DESC FORM 193A  
JUL 91

■ 9004708 0001352 54T ■

2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, and bulletin. Unless otherwise specified, the following specification, standards, and bulletin of the issue listed in that issue of the Department of Defense Index of Specifications and Standards specified in the solicitation, form a part of this drawing to the extent specified herein.

SPECIFICATION

MILITARY

MIL-M-38510 - Microcircuits, General Specification for.

STANDARDS

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.  
MIL-STD-1835 - Microcircuit Case Outlines.

BULLETIN

MILITARY

MIL-BUL-103 - List of Standardized Military Drawings (SMD's).

(Copies of the specification, standards, and bulletin required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

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 shall take precedence.

3. REQUIREMENTS

3.1 Item requirements. The individual item requirements shall be in accordance with 1.2.1 of MIL-STD-883, "Provisions for the use of MIL-STD-883 in conjunction with compliant non-JAN devices" and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-M-38510 and herein.

3.2.1 Case outline(s). The case outline(s) shall be in accordance with 1.2.2 herein.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.3 Truth table(s). The truth table(s) shall be as specified on figure 2.

3.2.4 Die overcoat. Polyimide and silicone coatings are allowable as an overcoat on the die for alpha particle protection provided that each coated microcircuit inspection lot (see MIL-M-38510) shall be subjected to and pass the internal moisture content test, (test method 1018 of MIL-STD-883), the frequency of the internal water vapor testing may not be decreased unless approved by the preparing activity.

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 or ambient) 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.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL A	SHEET 3

DESC FORM 193A  
JUL 91

9004708 0001353 486

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Input leakage current	I <sub>LI</sub>	0.0 V ≤ V <sub>IN</sub> ≤ V <sub>CC</sub>	1,2,3	A11	-10	10	μA
Output leakage current	I <sub>LO</sub>	0.0 V ≤ V <sub>OUT</sub> ≤ V <sub>CC</sub> , $\bar{R} \geq V_{IH}$	1,2,3	A11	-10	10	μA
Output low voltage	V <sub>OL</sub>	V <sub>CC</sub> = 4.5 V, I <sub>OL</sub> = 8.0 mA, V <sub>IL</sub> = 0.8 V, V <sub>IH</sub> = 2.2 V	1,2,3	A11		0.4	V
Output high voltage	V <sub>OH</sub>	V <sub>CC</sub> = 4.5 V, I <sub>OH</sub> = -2.0 mA, V <sub>IL</sub> = 0.8 V, V <sub>IH</sub> = 2.2 V	1,2,3	A11	2.4		V
Operating supply current	I <sub>CC1</sub>	f = maximum, outputs open, V <sub>CC</sub> = 5.5 V $\bar{R} = \overline{FL/RT} = V_{IH}$	1,2,3	01-03		100	mA
		f = 20 MHz, outputs open, V <sub>CC</sub> = 5.5 V		04-06		140	
Standby power supply current	I <sub>CC2</sub>	$\bar{R} = \bar{W} = \bar{RS} = \overline{FL/RT} = V_{IH}$ , outputs open, f = 0 MHz	1,2,3	01-03		15	mA
				04-06		20	
Power down current	I <sub>CC3</sub>	All inputs = V <sub>CC</sub> - 0.2 V, outputs open, f = 0 MHz	1,2,3	A11		900	μA
Input capacitance	C <sub>IN</sub>	V <sub>I</sub> = 0 V, f = 1.0 MHz, T <sub>A</sub> = +25°C, see 4.3.1c	4	A11		8.0	pF
Output capacitance	C <sub>OUT</sub>	V <sub>O</sub> = 0 V, f = 1.0 MHz, T <sub>A</sub> = +25°C, see 4.3.1c	4	A11		8	pF
Functional tests		See 4.3.1d	7,8A,8B	A11			

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL A	SHEET 4

DESC FORM 193A  
JUL 91

■ 9004708 0001354 312 ■

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Read cycle time	t <sub>RC</sub>	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01	140		ns
				02	100		
				03	80		
				04	50		
				05	40		
				06	30		
Access time	t <sub>A</sub>		9,10,11	01		120	ns
				02		80	
				03		65	
				04		40	
				05		30	
				06		20	
Read recovery time	t <sub>RR</sub>		9,10,11	01,02	20		ns
				03	15		
				04-06	10		
Read pulse width	t <sub>RPW</sub>		9,10,11	01	120		
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Read pulse low to data bus at low Z	t <sub>RLZ</sub>		9,10,11	01-03	10		ns
				04-06	5.0		

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-89536
		REVISION LEVEL <b>B</b>	SHEET 5

DESC FORM 193A  
JUL 91

9004708 0001355 259

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Write pulse high to data bus at low Z	t <sub>wLZ</sub> 1/ 2/	C <sub>L</sub> = 30 pF. See figures 4 and 5	9,10,11	01,02	20.0		ns
				03	15		
				04	10		
				05,06	5.0		
Data valid from read pulse high	t <sub>DV</sub>		9,10,11	All	5.0		ns
Read pulse high to data bus at high Z	t <sub>rHZ</sub> 1/		9,10,11	01		35	ns
				02,03		30	
				04		25	
				05		20	
				06		15	
Write cycle time	t <sub>wC</sub>		9,10,11	01	140		ns
				02	100		
				03	80		
				04	50		
				05	40		
				06	30		
Write pulse width	t <sub>wPW</sub>		9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Write recovery time	t <sub>wR</sub>		9,10,11	01,02	20		ns
				03	15		
				04-06	10		

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 6

DESC FORM 193A  
JUL 91

■ 9004708 0001356 195 ■

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Data setup time	t <sub>DS</sub>	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01,02	40		ns
				03	30		
				04	20		
				05	18		
				06	12		
Data hold time	t <sub>DH</sub>		9,10,11	01-03	10		ns
				04-06	0.0		
Reset cycle time	t <sub>RSC</sub>		9,10,11	01	140		ns
				02	100		
				03	80		
				04	50		
				05	40		
				06	30		
Reset pulse width	t <sub>RS</sub>		9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Reset recovery time	t <sub>RSR</sub>		9,10,11	01,02	20		ns
				03	15		
				04-06	10		

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 7

DESC FORM 193A  
JUL 91

9004708 0001357 021

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Reset setup time	t <sub>RSS</sub> 1/	C <sub>L</sub> = 30 pF. See figures 4 and 5	9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Retransmit cycle time	t <sub>RTC</sub>		9,10,11	01	140		ns
				02	100		
				03	80		
				04	50		
				05	40		
				06	30		
Retransmit pulse width	t <sub>RT</sub>		9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Retransmit recovery time	t <sub>RTR</sub>		9,10,11	01,02	20		ns
				03	15		
				04-06	10		
Reset to empty flag low	t <sub>EFL</sub>		9,10,11	01		140	ns
				02		100	
				03		80	
				04		50	
				05		40	
				06		30	

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 8

DESC FORM 193A  
JUL 91

■ 9004708 0001358 T68 ■



TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Read low to empty flag low	t <sub>REF</sub>	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01-03		60	ns
				04,05		30	
				06		20	
Read high to full flag high	t <sub>RFF</sub>		9,10,11	01-03		60	ns
				04		35	
				05		30	
				06		20	
Write high to empty flag high	t <sub>WEF</sub>		9,10,11	01-03		60	ns
				04		35	
				05		30	
				06		20	
Write low to full flag low	t <sub>WFF</sub>		9,10,11	01-03		60	ns
				04		35	
				05		30	
				06		20	
Reset to half full and full flag high	t <sub>HFH</sub> , t <sub>FFH</sub>		9,10,11	01		140	ns
				02		100	
				03		80	
				04		50	
				05		40	
				06		30	

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 9

DESC FORM 193A  
JUL 91

9004708 0001359 9T4

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Read/write to $\overline{X0}$ low	t <sub>X0L</sub>	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01		120	ns
				02		80	
				03		65	
				04		40	
				05		30	
				06		20	
Read/write to $\overline{X0}$ high	t <sub>X0H</sub>		9,10,11	01		120	ns
				02		80	
				03		65	
				04		40	
				05		30	
				06		20	
$\overline{XI}$ pulse width	t <sub>XI</sub>		9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
$\overline{XI}$ recovery time	t <sub>XIR</sub>		9,10,11	ALL	10		ns
$\overline{XI}$ setup time	t <sub>XIS</sub>		9,10,11	01-03	15		ns
				04-06	10		

See footnotes at end of table.

STANDARDIZED  
MILITARY DRAWING  
DEFENSE ELECTRONICS SUPPLY CENTER  
DAYTON, OHIO 45444

SIZE  
A

5962-89536

REVISION LEVEL  
B

SHEET  
10

DESC FORM 193A  
JUL 91

9004708 0001360 616

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Retransmit setup time	t <sub>RTS</sub> 1/	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Read pulse width after EF high	t <sub>RPE</sub>		9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		
Write low to half-full flag low	t <sub>WHF</sub>		9,10,11	01		140	ns
				02		100	
				03		80	
				04		50	
				05		40	
				06		30	
Read high to half-full flag high	t <sub>RHF</sub>		9,10,11	01		140	ns
				02		100	
				03		80	
				04		50	
				05		40	
				06		30	

See footnotes at end of table.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 11

DESC FORM 193A  
JUL 91

■ 9004708 0001361 552 ■

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>C</sub> ≤ +125°C V <sub>SS</sub> = 0 V, 4.5 V ≤ V <sub>CC</sub> ≤ 5.5 V unless otherwise specified	Group A subgroups	Device types	Limits		Unit
					Min	Max	
Write pulse width after FF high	t <sub>WPF</sub>	C <sub>L</sub> = 30 pF, See figures 4 and 5	9,10,11	01	120		ns
				02	80		
				03	65		
				04	40		
				05	30		
				06	20		

1/ If not tested, shall be guaranteed to the limits specified in table I.

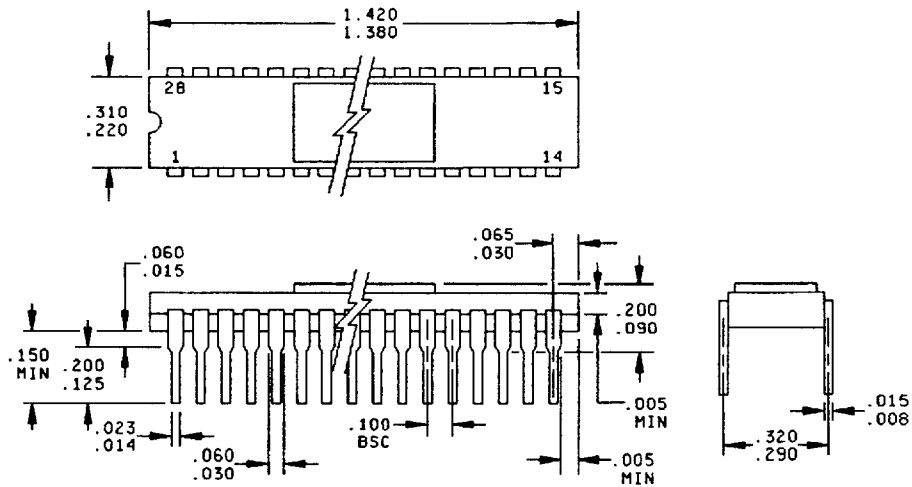
2/ Only applies to read data flow-through mode.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL B	SHEET 12

DESC FORM 193A

JUL 91

■ 9004708 0001362 499 ■



Inches	mm	Inches	mm
.005	.13	.125	3.18
.008	.20	.150	3.81
.014	.36	.200	5.08
.015	.38	.220	5.59
.023	.58	.290	7.37
.030	.76	.310	7.87
.060	1.52	.320	8.13
.065	1.65	1.380	35.05
.090	2.29	1.420	36.07
.100	2.54		

NOTES:

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

FIGURE 1. Case outline X.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-89536
		REVISION LEVEL A	SHEET 13

DESC FORM 193A  
 JUL 91

9004708 0001363 325

Device type	ALL	
Case outline	X and Y	Z
Terminal number	Terminal symbol	Terminal symbol
1	$\bar{W}$	NC
2	D8	$\bar{W}$
3	D3	D8
4	D2	D3
5	D1	D2
6	D0	D1
7	$\bar{XI}$	D0
8	$\bar{FF}$	$\bar{XI}$
9	Q0	$\bar{FF}$
10	Q1	Q0
11	Q2	Q1
12	Q3	NC
13	Q8	Q2
14	GND	Q3
15	$\bar{R}$	Q8
16	Q4	GND
17	Q5	NC
18	Q6	$\bar{R}$
19	Q7	Q4
20	$\bar{XO}/\bar{HF}$	Q5
21	$\bar{EF}$	Q6
22	$\bar{RS}$	Q7
23	$\bar{FL}/\bar{RT}$	$\bar{XO}/\bar{HF}$
24	D7	$\bar{EF}$
25	D6	$\bar{RS}$
26	D5	$\bar{FL}/\bar{RT}$
27	D4	NC
28	V <sub>CC</sub>	D7
29	---	D6
30	---	D5
31	---	D4
32	---	V <sub>CC</sub>

FIGURE 2. Terminal connections.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL A	SHEET 14

DESC FORM 193A  
 JUL 91

9004708 0001364 261

Reset and retransmit  
single device configuration/width expansion mode

Mode	Inputs			Internal status		Outputs		
	$\overline{RS}$	$\overline{RT}$	$\overline{XI}$	Read pointer	Write pointer	$\overline{EF}$	$\overline{FF}$	$\overline{HF}$
Reset	0	X	0	Location zero	Location zero	0	1	1
Retransmit	1	0	0	Location zero	Unchanged	X	X	X
Read/Write	1	1	0	Increment $\underline{1}$ /	Increment $\underline{1}$ /	X	X	X

$\underline{1}$ / Pointer will increment if flag is high.

Reset and first load  
depth expansion/compound expansion mode

Mode	Inputs			Internal status		Outputs	
	$\overline{RS}$	$\overline{FL}$	$\overline{XI}$	Read pointer	Write pointer	$\overline{EF}$	$\overline{FF}$
Reset first device	0	0	$\underline{1}$ /	Location zero	Location zero	0	1
Reset all other devices	0	1	$\underline{1}$ /	Location zero	Location zero	0	1
Read/Write	1	X	$\underline{1}$ /	X	X	X	X

$\underline{1}$ /  $\overline{XI}$  is connected to  $\overline{X0}$  of previous device.

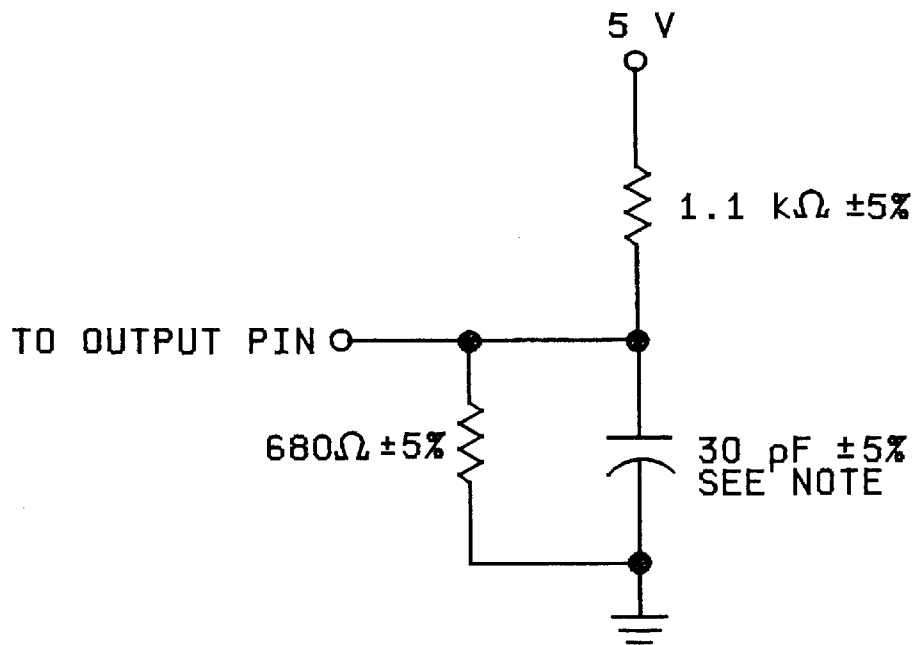
NOTE:  $\overline{RS}$  = Reset input,  $\overline{FL}/\overline{RT}$  = First load/retransmit,  
 $\overline{EF}$  = Empty flag output,  $\overline{FF}$  = Full flag output,  $\overline{XI}$  = Expansion input,  
and  $\overline{HF}$  = Half-full flag output  
0 = Low level voltage  
1 = High level voltage  
X = Don't care

FIGURE 3. Truth tables.

<b>STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444</b>	<b>SIZE A</b>		5962-89536
		REVISION LEVEL A	SHEET 15

DESC FORM 193A  
JUL 91

■ 9004708 0001365 1T8 ■



NOTE:  $C_L$  includes scope and jig capacitance.

AC test conditions

Input pulse levels	GND to 3.0 V
Input rise and fall times	$\leq 5$ ns
Input timing reference levels	1.5 V
Output reference levels	1.5 V

FIGURE 4. Output load circuit and ac test conditions.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-89536
		REVISION LEVEL <b>A</b>	SHEET 16

DESC FORM 193A  
 JUL 91

9004708 0001366 034



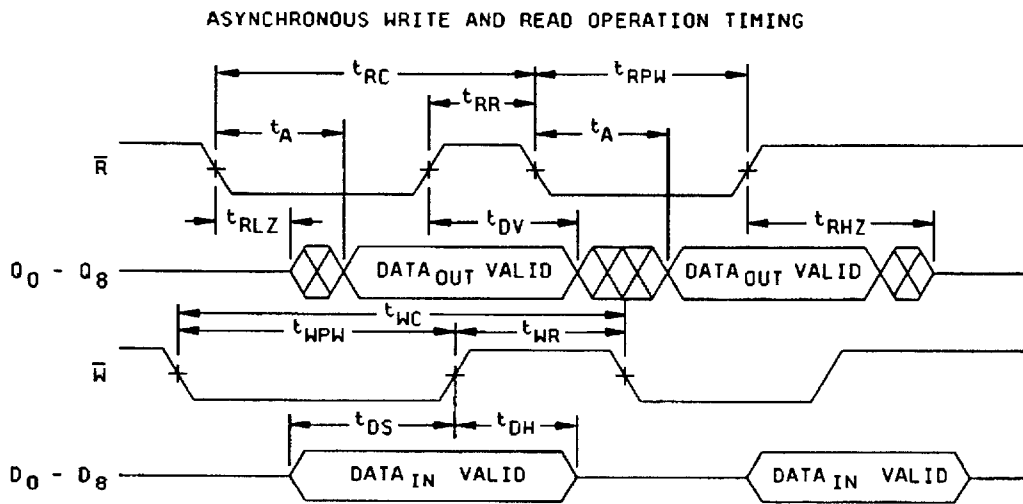
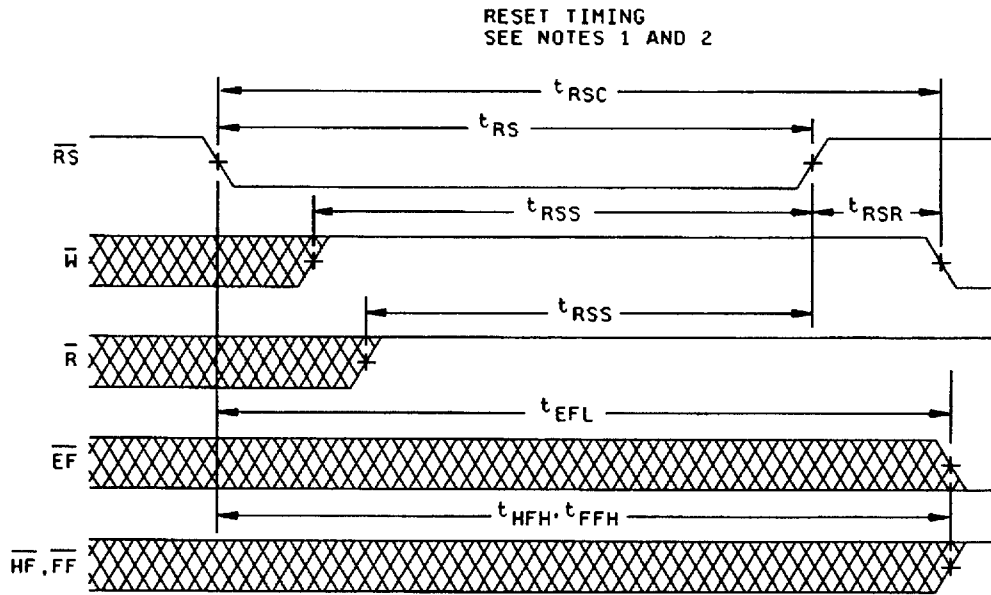


FIGURE 5. Timing waveforms.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-89536
		REVISION LEVEL <b>A</b>	SHEET 17

DESC FORM 193A  
JUL 91

9004708 0001367 T70

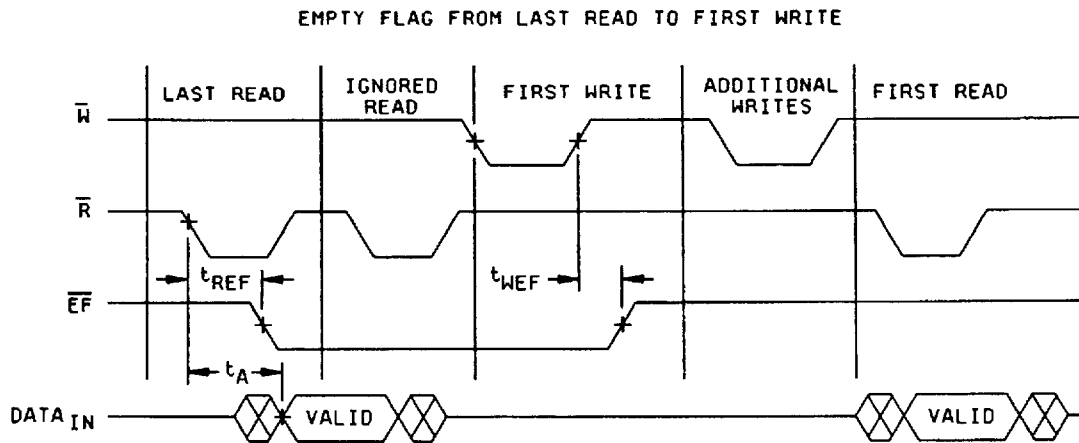
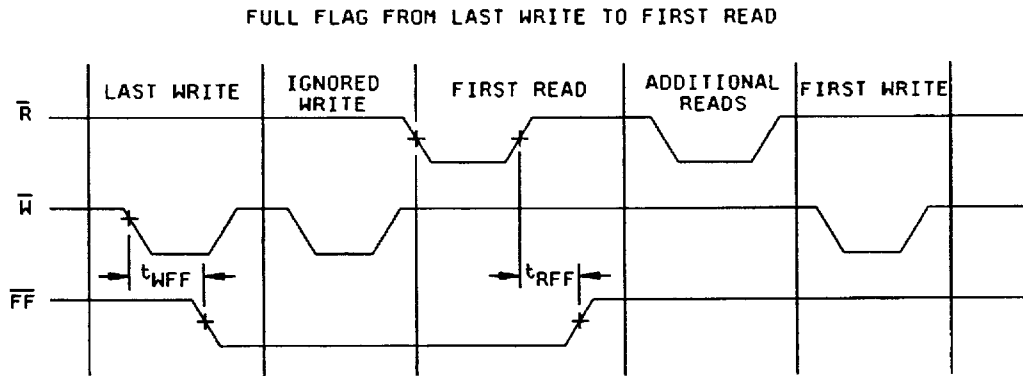


FIGURE 5. Timing waveforms - Continued.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-89536
		REVISION LEVEL <b>A</b>

DESC FORM 193A  
 JUL 91

9004708 0001368 907

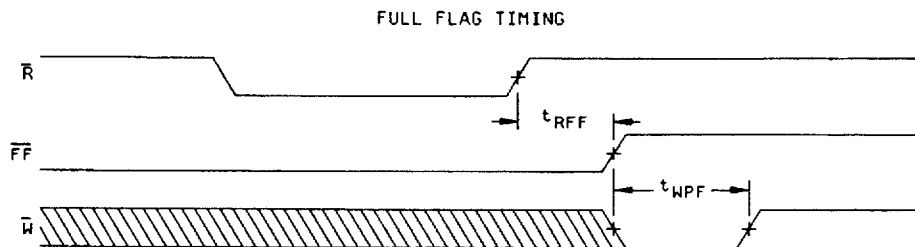
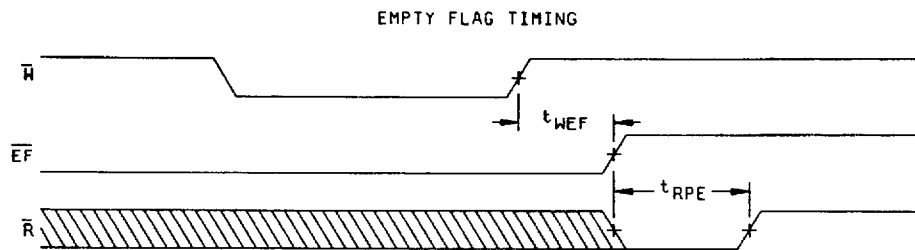
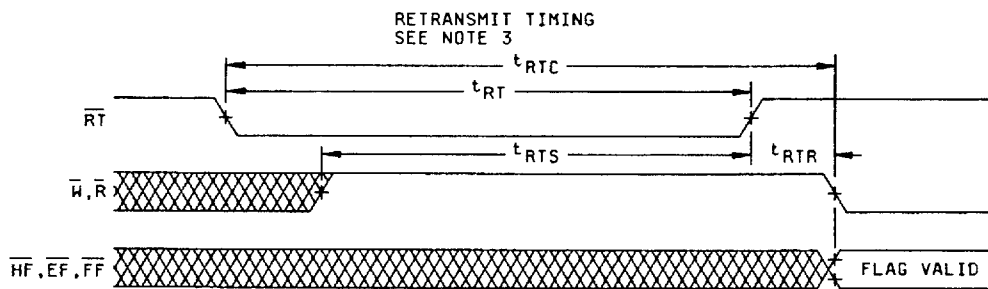


FIGURE 5. Timing waveforms - Continued.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-89536
		REVISION LEVEL <b>A</b>

DESC FORM 193A  
JUL 91

■ 9004708 0001369 843 ■

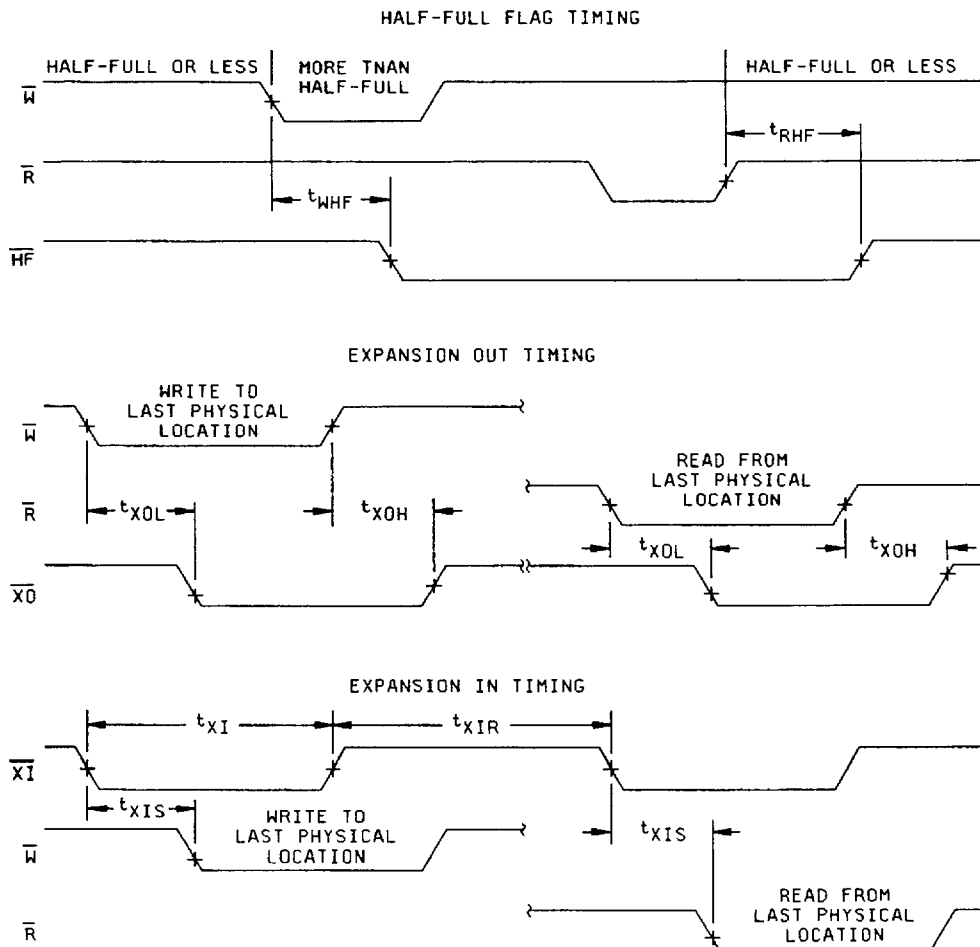


FIGURE 5. Timing waveforms - Continued.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-89536
	REVISION LEVEL A	SHEET 20

DESC FORM 193A  
 JUL 91

9004708 0001370 565

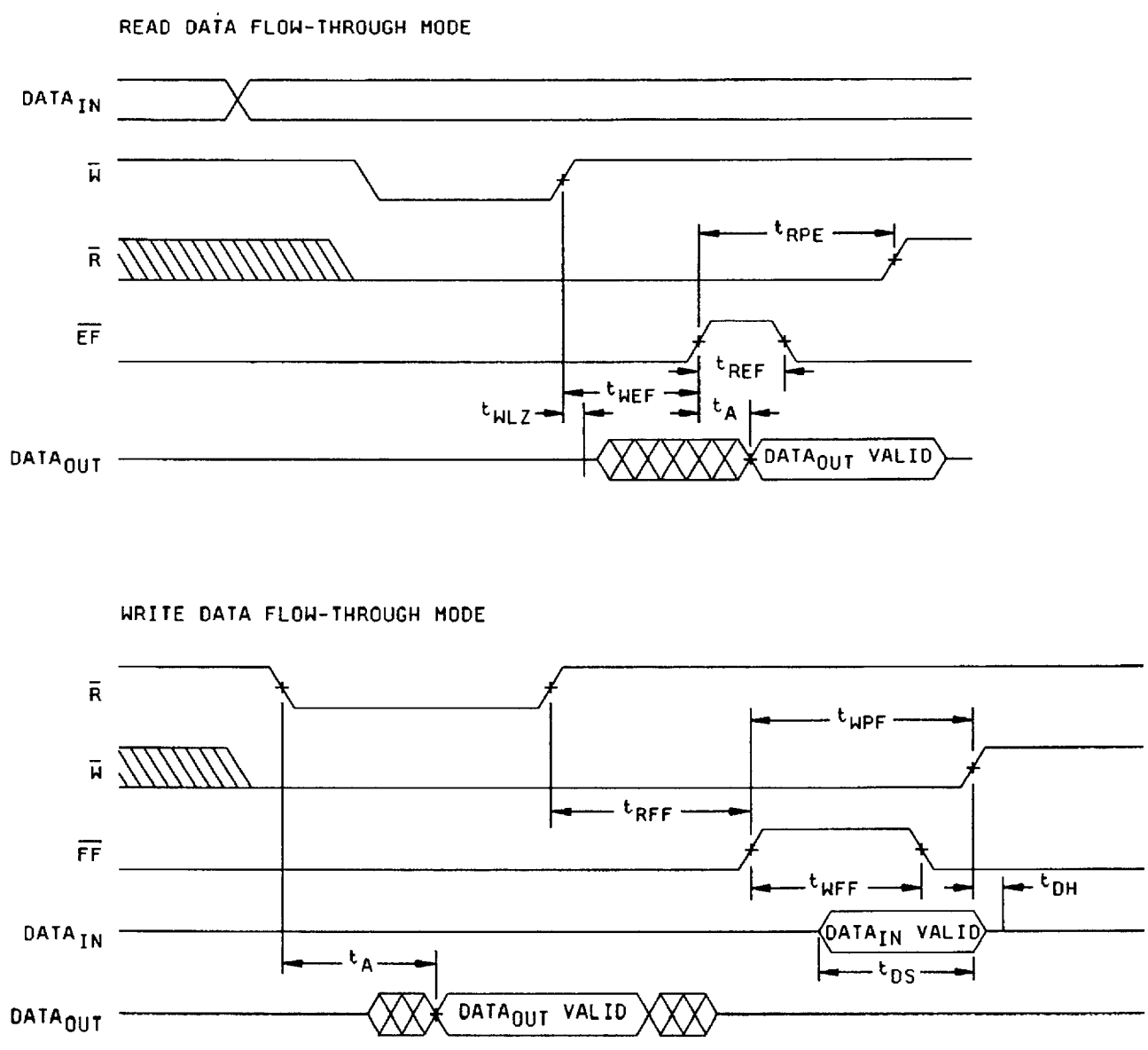


FIGURE 5. Timing waveforms - Continued.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL A	SHEET 21

DESC FORM 193A  
 JUL 91

9004708 0001371 4T1

3.5 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked as listed in MIL-BUL-103 (see 6.6 herein).

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-BUL-103 (see 6.6 herein). The certificate of compliance submitted to DESC-EC prior to listing as an approved source of supply shall affirm that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.7 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change. Notification of change to DESC-EC shall be required in accordance with MIL-STD-883 (see 3.1 herein).

3.9 Verification and review. DESC, DESC'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.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with section 4 of MIL-M-38510 to the extent specified in MIL-STD-883 (see 3.1 herein).

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 test 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.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (in accordance with 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 subgroup 1.

\*\* See 4.3.1c.

<b>STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444</b>	<b>SIZE A</b>		<b>5962-89536</b>
		<b>REVISION LEVEL A</b>	<b>SHEET 22</b>

DESC FORM 193A  
JUL 91

9004708 0001372 338

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 ( $C_{IN}$  measurement) shall be measured only for the initial test and after process or design changes which may affect input capacitance.
- d. Subgroups 7 and 8 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 test 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-M-38510.

6. NOTES

6.1 Intended use. Microcircuits conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for original equipment manufacturer application. When a military specification exists and the product covered by this drawing has been qualified for listing on QPL-38510, the device specified herein will be inactivated and will not be used for new design. The QPL-38510 product shall be the preferred item for all applications.

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 in accordance with MIL-STD-481 using DD Form 1693, Engineering Change Proposal (Short Form).

6.4 Record of users. Military and industrial users shall inform Defense Electronics Supply Center when a system application requires configuration control and the applicable SMD. DESC 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 DESC-EC, telephone (513) 296-6047.

6.5 Comments. Comments on this drawing should be directed to DESC-EC, Dayton, Ohio 45444, or telephone (513) 296-5377.

6.6 Approved sources of supply. Approved sources of supply are listed in MIL-BUL-103. The vendors listed in MIL-BUL-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-EC.

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		5962-89536
		REVISION LEVEL A	SHEET 23

DESC FORM 193A  
 JUL 91

9004708 0001373 274