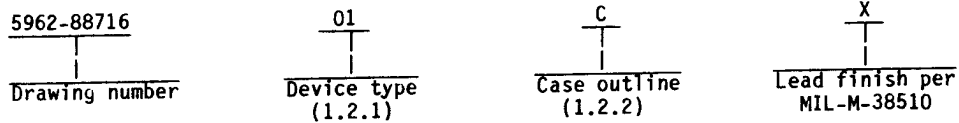




1. SCOPE

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 number. The complete part number shall be as shown in the following example:



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

Device type	Generic number	Circuit function
01	SG1626	Dual high speed inverting driver

1.2.2 Case outline. The case outline shall be as designated in appendix C of MIL-M-38510, and as follows:

Outline letter	Case outline
C	D-1 (14-lead, .785" x .310" x .200"), dual-in-line package
G	A-1 (8-lead, .370" x .185"), can package
P	D-4 (8-lead, .405" x .310" x .200"), dual-in-line package
X	See figure 1, TO-66 (5-lead), can package

1.3 Absolute maximum ratings.

Supply voltage ( $V_{CC}$ ) - - - - -	+22 V dc
Logic input voltage ( $V_{IN}$ ) - - - - -	+7.0 V dc
Source/Sink output current (each output):	
Continuous - - - - -	±0.5 A
Pulse, 500 ns - - - - -	±3.0 A
Storage temperature range - - - - -	-65°C to +150°C
Power dissipation at $T_A = +25^\circ\text{C}$ ( $P_D$ ):	
Case C - - - - -	1.4 W 1/
Case G - - - - -	0.6 W 1/
Case P - - - - -	1.0 W 1/
Case X - - - - -	2.5 W 1/
Lead temperature (soldering, 10 seconds) - - - - -	+300°C
Thermal resistance, junction-to-case ( $\theta_{JC}$ ):	
Case outlines C, G, P - - - - -	See MIL-M-38510, appendix C
Case outline X - - - - -	6.0°C/W
Junction temperature ( $T_J$ ) - - - - -	+150°C

1.4 Recommended operating conditions.

Supply voltage range - - - - -	4.5 V dc to 20 V dc 2/
Frequency range - - - - -	DC to 1.5 MHz
Peak pulse current ( $I_{OUT}$ ) - - - - -	±3.0 A
Logic input voltage ( $V_{IN}$ ) - - - - -	-0.5 V dc to 5.5 V dc
Ambient operating temperature range ( $T_A$ ) - - - - -	-55°C to +125°C

1/ Derate linearly above  $T_A = +25^\circ\text{C}$ , for case C derate to 11.2 mW/°C, case G derate to 4.8 mW/°C; case P derate to 8.0 mW/°C, and case X derate to 20.0 mW/°C.

2/ AC performance has been optimized for  $V_{CC} = 8.0$  V dc to 20 V dc.

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-88716
	REVISION LEVEL	SHEET 2

**2. APPLICABLE DOCUMENTS**

2.1 Government specification and standard. Unless otherwise specified, the following specification and standard, 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

**STANDARD**

**MILITARY**

MIL-STD-883 - Test Methods and Procedures for Microelectronics

(Copies of the specification and standard 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 Terminal connections. The terminal connections shall be as specified on figure 2.

3.2.2 Case outline. The case outline shall be in accordance with 1.2.2 herein.

3.3 Electrical performance characteristics. Unless otherwise specified, the electrical performance characteristics are as specified in table I and apply over the full ambient operating temperature range.

3.4 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the part number listed in 1.2 herein. In addition, the manufacturer's part number may also be marked as listed in 6.4 herein

3.5 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 6.4. The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall state that the manufacturer's product meets the requirements of MIL-STD-883 (see 3.1 herein) and the requirements herein.

3.6 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.

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

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	<b>SIZE</b> A		5962-88716
		<b>REVISION LEVEL</b>	<b>SHEET</b> 3

DESC FORM 193A  
SEP 87

U. S. GOVERNMENT PRINTING OFFICE: 1968-550-547

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ -55°C < T <sub>A</sub> < +125°C unless otherwise specified	Group A subgroups	Limits		Unit	
				Min	Max		
Logic 1 input voltage	V <sub>IH</sub>		1, 2, 3	2.0		V	
Logic 0 input voltage	V <sub>IL</sub>		1, 2, 3		0.7	V	
Input high current	I <sub>IH</sub>	V <sub>IN</sub> = 2.4 V	1, 2, 3		200	μA	
		V <sub>IN</sub> = 5.5 V	1, 2, 3		1.0	mA	
Input low current	I <sub>IL</sub>	V <sub>IN</sub> = 0 V	1, 2, 3		-4.0	mA	
Input clamp voltage	V <sub>IC</sub>	I <sub>IN</sub> = -10 mA	1, 2, 3		-1.5	V	
Output high voltage	V <sub>OH</sub>	I <sub>OUT</sub> = -200 mA, 10 V ≤ V <sub>CC</sub> ≤ 20 V	1, 2, 3	V <sub>CC</sub> -3		V	
Output low voltage	V <sub>OL</sub>	I <sub>OUT</sub> = 200 mA, 10 V ≤ V <sub>CC</sub> ≤ 20 V	1, 2, 3		1.0	V	
Supply current	I <sub>CCL</sub>	V <sub>IN</sub> = 2.4 V (both inputs)	1, 2, 3		27	mA	
	I <sub>CCH</sub>	V <sub>IN</sub> = 0 V (both inputs)			12		
Propagation delay time, high-to-low level output	t <sub>PHL</sub>	V <sub>CC</sub> = 15 V, see figures 3 and 4	C <sub>L</sub> = 1000 pF 2/	9		18	ns
				10, 11		30	
			C <sub>L</sub> = 2500 pF	9		25	
				10, 11		40	

See footnotes at end of table.

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-88716
	REVISION LEVEL	SHEET 4

DESC FORM 193A  
SEP 87

U. S. GOVERNMENT PRINTING OFFICE: 1988-550-547

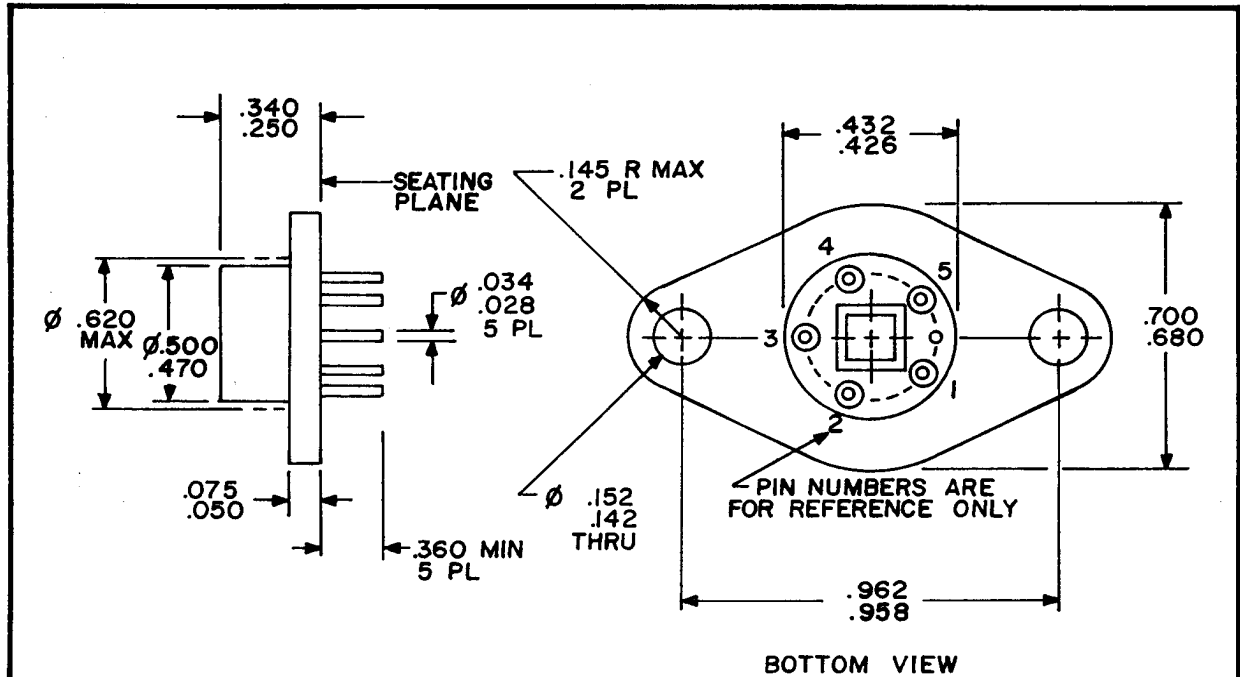
TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions 1/ -55°C < T <sub>A</sub> < +125°C unless otherwise specified	Group A subgroups	Limits		Unit	
				Min	Max		
Propagation delay time, low-to-high level output	t <sub>PLH</sub>	V <sub>CC</sub> = 15 V, see figures 3 and 4	C <sub>L</sub> = 1000 pF 2/	9		25	ns
				10, 11		40	
			C <sub>L</sub> = 2500 pF	9		35	
				10, 11		50	
Output transition time, low-to-high level	t <sub>TLH</sub>	V <sub>CC</sub> = 15 V, see figures 3 and 4	C <sub>L</sub> = 1000 pF 2/	9		30	ns
				10, 11		35	
			C <sub>L</sub> = 2500 pF	9		40	
				10, 11		50	
Output transition time, high-to-low level	t <sub>THL</sub>	V <sub>CC</sub> = 15 V, see figures 3 and 4	C <sub>L</sub> = 1000 pF 2/	9		20	ns
				10, 11		30	
			C <sub>L</sub> = 2500 pF	9		40	
				10, 11		50	
Dynamic supply current (both outputs)	I <sub>CC</sub>	C <sub>L</sub> = 2500 pF, f = 200 kHz, Duty cycle = 50% See figure 3	4		35	mA	
			5, 6		40		

1/ All tests are measured at V<sub>CC</sub> = 4.5 V and 20 V, unless otherwise specified.

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

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-88716
	REVISION LEVEL	SHEET 5



Inches	mm	Inches	mm
.028	0.71	.426	10.82
.034	0.86	.432	10.97
.050	1.27	.470	11.94
.075	1.91	.500	12.70
.142	3.61	.620	15.75
.145	3.68	.680	17.27
.152	3.86	.700	17.78
.250	6.35	.958	24.33
.340	8.64	.962	24.24
.360	9.14		

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

FIGURE 1. Case outline X.

<b>STANDARDIZED          MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-88716
	REVISION LEVEL	SHEET 6

DESC FORM 193A  
 SEP 87

U. S. GOVERNMENT PRINTING OFFICE: 1968-550-547

Device type	01	01	01	01
Case outline	C	G	P	X (see note)
Terminal number	Terminal symbol			
1	NC	OUT A	NC	IN A
2	NC	NC	IN A	OUT A
3	OUT A	IN A	GND	VCC
4	NC	GND	IN B	OUT B
5	IN A	IN B	OUT B	IN B
6	NC	NC	VCC	---
7	GND	OUT B	OUT A	---
8	NC	VCC	NC	---
9	NC	---	---	---
10	IN B	---	---	---
11	NC	---	---	---
12	OUT B	---	---	---
13	NC	---	---	---
14	VCC	---	---	---

NOTE: Case and mounting tab are internally connected to substrate ground.

FIGURE 2. Terminal connections.

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	<b>SIZE</b> <b>A</b>	5962-88716
	<b>REVISION LEVEL</b>	<b>SHEET</b> 7

DESC FORM 193A  
SEP 87

U. S. GOVERNMENT PRINTING OFFICE: 1988 560 547

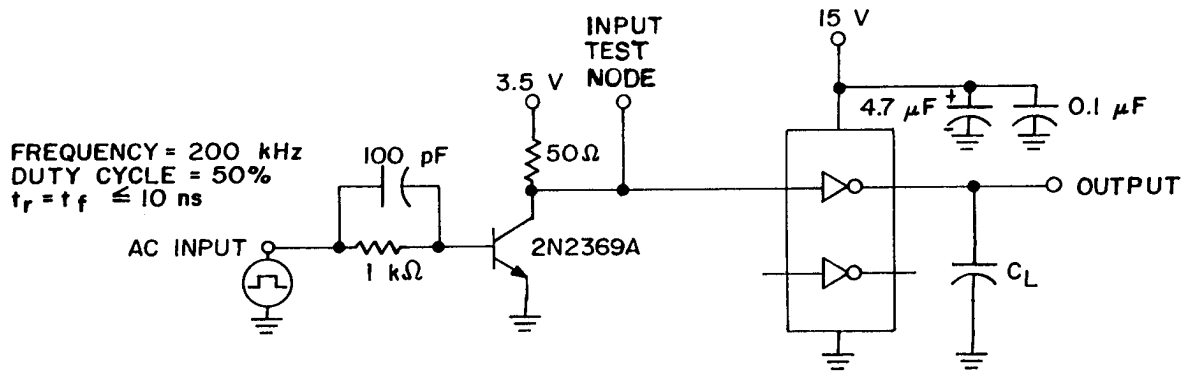


FIGURE 3. Output load circuit.

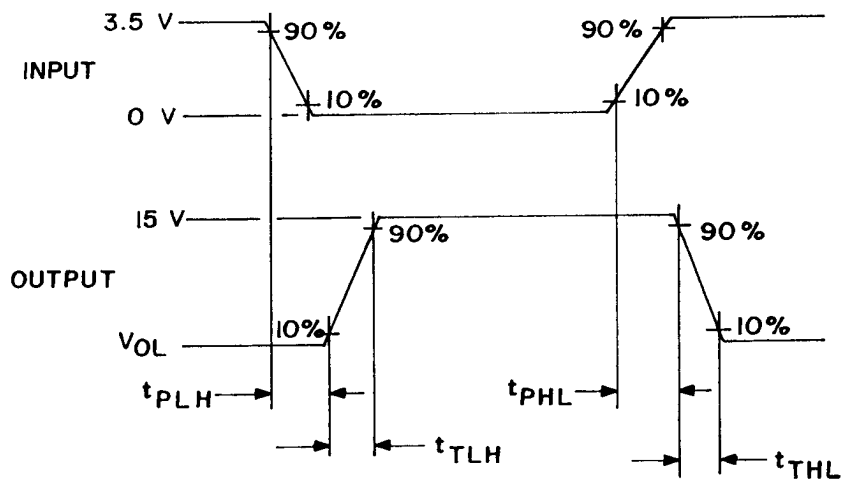


FIGURE 4. Switching time waveforms.

<b>STANDARDIZED          MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>	5962-88716
	REVISION LEVEL	SHEET 8

DESC FORM 193A  
 SEP 87

U. S. GOVERNMENT PRINTING OFFICE: 1988-550-547



3.8 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 A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

(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 7 and 8 in table I, method 5005 of MIL-STD-883 shall be omitted.

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 A, B, C, or D using the circuit submitted with the certificate of compliance (see 3.5 herein).

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

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

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-88716
		REVISION LEVEL	SHEET 9

DESC FORM 193A  
SEP 87

☆ U. S. GOVERNMENT PRINTING OFFICE: 1988-550-547

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters (method 5004)	1
Final electrical test parameters (method 5004)	1*,2,3,4*,5,6,9
Group A test requirements (method 5005)	1,2,3,4,5,6, 9,10,11
Groups C and D end-point electrical parameters (method 5005)	1, 4

\* PDA applies to subgroups 1 and 4.

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 OEM 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 Comments. Comments on this drawing should be directed to DESC-ECS, Dayton, Ohio 45444, or telephone 513-296-5375.

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE <b>A</b>		5962-88716
		REVISION LEVEL	SHEET 10

DESC FORM 193A  
SEP 87

☆ U. S. GOVERNMENT PRINTING OFFICE: 1988-550-547

6.4 Approved source of supply. An approved source of supply is listed herein. Additional sources will be added as they become available. The vendor listed herein has agreed to this drawing and a certificate of compliance (see 3.5 herein) has been submitted to DESC-ECS.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>
5962-8871601CX	34333	SG1626J/883B
5962-8871601GX	34333	SG1626T/883B
5962-8871601PX	34333	SG1626Y/883B
5962-8871601XX	34333	SG1626R/883B

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

Vendor CAGE number

34333

Vendor name and address

Silicon General, Incorporated  
11651 Monarch Street  
Garden Grove, CA 92641

<b>STANDARDIZED MILITARY DRAWING</b> DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	<b>SIZE A</b>	5962-88716
	REVISION LEVEL	<b>SHEET</b> 11

DESC FORM 193A  
SEP 87

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