

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:

80037	01	C	X
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

Device type	Generic number	Circuit
01	LM106	High-speed voltage comparator

1.2.2 Case outlines. The case outlines 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
D	F-2 (14-lead, .390" x .260" x .085"), flat 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

1.3 Absolute maximum ratings.

Positive supply voltage (V^+)	15.0 V dc
Negative supply voltage (V^-)	-15.0 V dc
Output voltage (V_{OUT})	24.0 V dc
Output to negative supply voltage	30.0 V dc
Input voltage	± 7.0 V dc
Differential input voltage (V_{ID})	± 5.0 V dc
Output short circuit duration	10 seconds
Strobe voltage	6.0 V dc
Storage temperature range	-65°C to +150°C
Junction temperature	+150°C
Lead temperature (soldering, 60 seconds)	+300°C
Power dissipation (P_D) $T_A = +25^\circ\text{C}$	500 mW
Thermal resistance, junction-to-case (θ_{JC}):	
Cases C, D, G, and P	See MIL-M-38510, appendix C
Thermal resistance, junction-to-ambient (θ_{JA}):	
Case G	150°C/W
Cases C, D, and P	120°C/W

1.4 Recommended operating conditions.

Positive supply voltage (V^+)	+12.0 V dc
Negative supply voltage range (V^-)	-3.0 V dc to -12.0 V dc
Differential input voltage (V_{ID})	± 5 V dc
Ambient operating temperature range (T_A)	-55°C to +125°C

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	80037	
		REVISION LEVEL D	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 Functional diagram and terminal connections. The functional diagram and terminal connections shall be as specified on figure 1.

3.2.2 Case outlines. The case outlines 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.

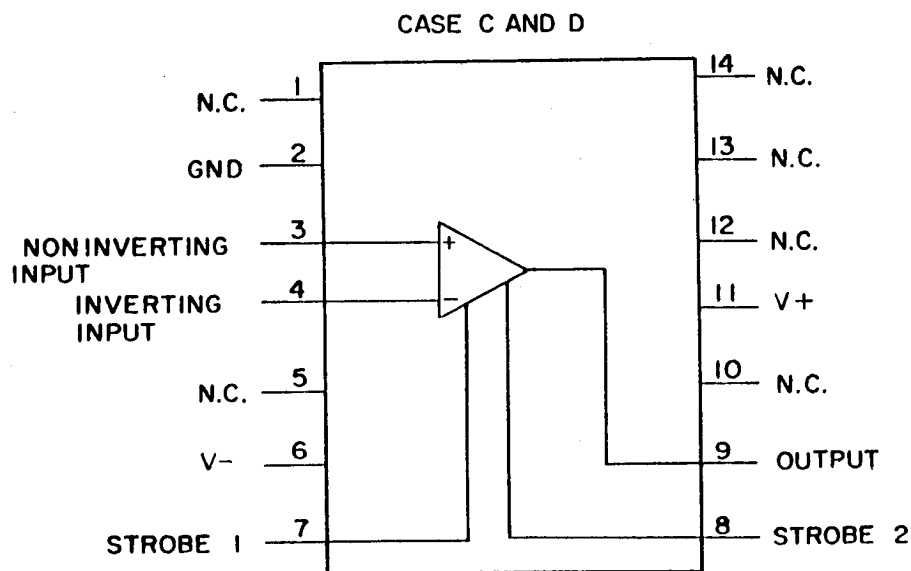
3.6 Certificate of conformance. A certificate of conformance as required in MIL-STD-883 (see 3.1 herein) shall be provided with each lot of microcircuits delivered to this drawing.

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		80037
		REVISION LEVEL D	SHEET 3

DESC FORM 193A
SEP 87

* U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904



NOTE: N.C.= No connection

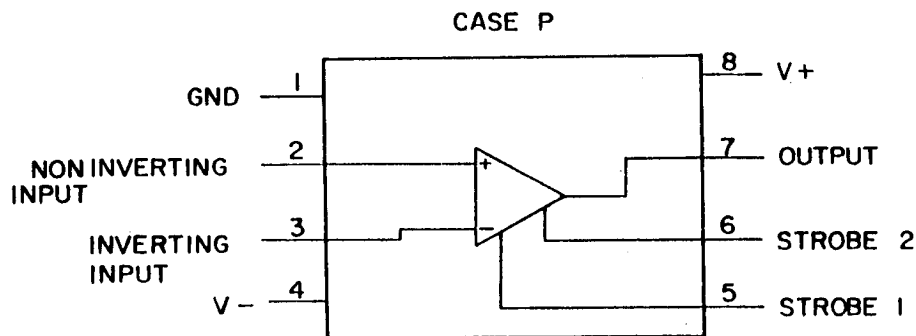


FIGURE 1. Functional diagram and terminal connections (top view).

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	80037
	REVISION LEVEL D	SHEET 4

DESC FORM 193A
SEP 87

☆U.S. GOVERNMENT PRINTING OFFICE: 1987 - 748-129-60913

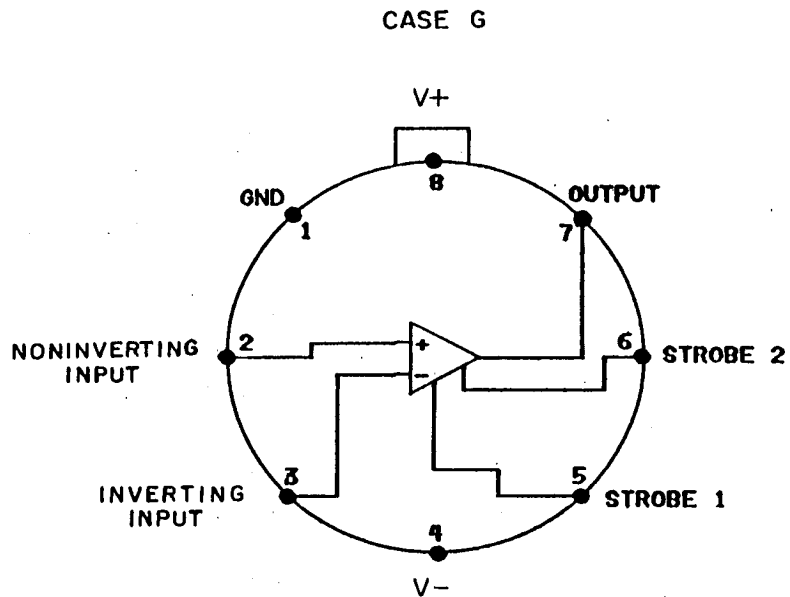


FIGURE 1. Functional diagram and terminal connections (top view) - Continued.

**STANDARDIZED
MILITARY DRAWING**

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
A

80037

REVISION LEVEL
D

SHEET 5

DESC FORM 193A
SEP 87

☆U.S. GOVERNMENT PRINTING OFFICE: 1987 - 748-129-60913

Table I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ $V^+ = 12\text{ V}$, $V^- = -6\text{ V}$ $-55^\circ\text{C} < T_A < +125^\circ\text{C}$ unless otherwise specified	Group A subgroups	Limits		Unit
				Min	Max	
Input offset voltage	V_{IO}	$V^- = -12\text{ V}$, $0.5\text{ V} \leq V_{OUT} \leq 4.4\text{ V}$ $-5\text{ V} \leq V_{CM} \leq 5\text{ V}$	1	-2	2	mV
			2, 3	-3	3	
Input offset current	I_{IO}	$V^- = -12\text{ V}$, $0.5\text{ V} \leq V_{OUT} \leq 4.4\text{ V}$ $-5\text{ V} \leq V_{CM} \leq 5\text{ V}$	1, 2	-3	3	μA
			3	-7	7	
Input bias current	$\pm I_{IB}$	$V^- = -12\text{ V}$ $V_{STROBE} = 2.5\text{ V}$	1, 2		20	
			3		45	
Strobe current	I_{STROBE}	$V_{STROBE} = 400\text{ mV}$, $V_{ID} = -5\text{ mV}$	1, 2, 3		-3.2	mA
High level output voltage	V_{OH}	$I_{OH} = -400\text{ }\mu\text{A}$, $V_{ID} \geq 5\text{ mV}$	1, 2, 3	2.5	5.5	V
Low level output voltage	V_{OL}	$V_{ID} \leq -5\text{ mV}$	1, 2, 3		1.0	V
		$I_{OL} = 50\text{ mA}$				
		$T_A = +25^\circ\text{C}$, $I_{OL} = 100\text{ mA}$	1		1.5	
Output leakage	I_{CEX}	$8\text{ V} \leq V_{OUT} \leq 24\text{ V}$ $V_{ID} \geq 5\text{ mV}$	1, 3		1.0	μA
			2		100	
Positive supply current	$+I_{CC}$	$V_{ID} = -5\text{ mV}$, $V^- = -12\text{ V}$	1, 2, 3		10	mA
Negative supply current	$-I_{CC}$		1, 2, 3		-3.6	mA
Differential input voltage range	V_{ID}		1, 2, 3	± 5		V
Strobe on voltage	V_{STROBE}		1, 2, 3	0.9		V
Strobe off voltage	$V_{H\text{ STROBE}}$		1, 2, 3		2.2	V
Input voltage range	V_I	$-7\text{ V} \geq V^- \geq -12\text{ V}$, $V^+ = 12\text{ V}$	1, 2, 3	± 5		V

1/ Unless otherwise specified, strobes are at high level for all tests.

**STANDARDIZED
MILITARY DRAWING**

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
A

80037

REVISION LEVEL

D

SHEET

6

DESC FORM 193A
SEP 87

★ U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904

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 4, 5, 6, 7, 8, 9, 10, and 11 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.

STANDARDIZED MILITARY DRAWING

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

SIZE
A

80037

REVISION LEVEL
D

SHEET
7

DESC FORM 193A
SEP 87

★ U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904

TABLE II. Electrical test requirements.

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

* PDA applies to subgroup 1.

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. Replaceability is determined as follows:

- a. Microcircuits covered by this drawing will replace the same generic device covered by a contractor-prepared specification or drawing.
- b. When a QPL source is established, the part numbered device specified in this drawing will be replaced by the microcircuit identified as part number M38510/103038--.

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

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A	80037	
		REVISION LEVEL D	SHEET 8

DESC FORM 193A
SEP 87

☆ U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904

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>	Replacement military specification part number
8003701CX	<u>2/</u>	LM106	M38510/10303BCX
8003701DX	<u>2/</u>	LM106	M38510/10303BDX
8003701GX	27014	LM106H/883	M38510/10303BGX
8003701PX	<u>2/</u>	LM106	M38510/10303BPX

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

2/ This case outline no longer available from an approved source.

Vendor CAGE
number

27014

Vendor name
and address

National Semiconductor
2900 Semiconductor Drive
P.O. Box 58090
Santa Clara, CA 95052-8090

STANDARDIZED MILITARY DRAWING DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444	SIZE A		80037
		REVISION LEVEL D	SHEET 9

DESC FORM 193A
SEP 87

☆ U. S. GOVERNMENT PRINTING OFFICE: 1988-549-904