

REVISIONS													
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED										
A	Add device types 02 and 03. Add case outline P. Make changes to table I and editorial changes throughout.	1990 MAY 24	<i>M. A. Lyle</i>										

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REV STATUS OF SHEETS	REV	A	A	A	A	A	A	A	A	A	A		
	SHEET	1	2	3	4	5	6	7	8	9	10		

PMIC N/A	PREPARED BY <i>Stan Zab</i>	DEFENSE ELECTRONICS SUPPLY CENTER DAYTON, OHIO 45444			
STANDARDIZED MILITARY DRAWING	CHECKED BY <i>Ray Monnin</i>	MICROCIRCUITS, INTERFACE, DUAL PERIPHERAL NOR DRIVER, MONOLITHIC SILICON			
	APPROVED BY <i>M. A. Lyle</i>				
	THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE	DRAWING APPROVAL DATE 17 APRIL 1989	SIZE A	CAGE CODE 67268	5962-88715
AMSC N/A	REVISION LEVEL A	SHEET 1			

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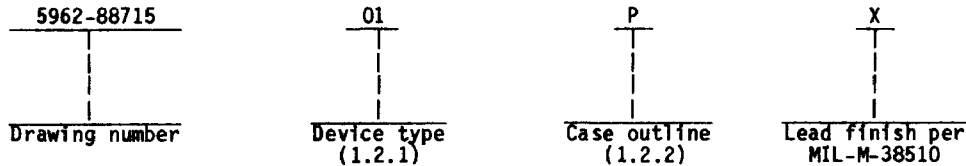
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5962-E1660

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

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 types. The device types shall identify the circuit function as follows:

Device type	Generic number	Circuit function
01	55454	Dual peripheral NOR driver
02	55464	Dual peripheral NOR driver
03	55474	Dual peripheral NOR 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
P	D-4 (8-lead, .405" x .310" x .200"), dual-in-line package
2	C-2 (20-terminal, .358" x .358" x .100"), square chip carrier package

1.3 Absolute maximum ratings.

Supply voltage (V_{CC}) 1/	7.0 V dc
Input voltage (V_{IN}) 2/	5.5 V dc
Interemitter voltage (V_{EM})	5.5 V dc
Offstate output voltage (V_{OO}):	
Device 01	30 V dc
Device 02	35 V dc
Device 03	70 V dc
Continuous output current (I_{OC}) 3/	400 mA
Peak output current (I_{OP}) 3/:	
($t_w < 10$ ms, duty cycle $< 50\%$)	500 mA
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Continuous power dissipation (P_D):	
Devices 01, 02, and 03	1375 mW 4/
Thermal resistance, junction-to-case (θ_{JC})	See MIL-M-38510, appendix C
Junction temperature (T_J)	+150°C

- 1/ Voltage values are with respect to ground.
- 2/ This is the voltage between two emitters of a multiple-emitter transistor.
- 3/ Both halves of these dual circuits may conduct rated current simultaneously; however, power dissipation averaged over a short time interval must fall within the continuous power dissipation ratings.
- 4/ Devices 01, 02, and 03 derate above $T_A = +25^\circ\text{C}$ at 11.0 mW/°C.

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1.4 Recommended operating conditions.

Supply voltage range (V_{CC})	-----	+4.5 V dc to +5.5 V dc
Ambient operating temperature range (T_A)	-----	-55°C to +125°C
Minimum high level input voltage (V_{IH})	-----	2.0 V dc
Maximum low level input voltage (V_{IL})	-----	0.8 V dc

2. APPLICABLE DOCUMENTS

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

STANDARD

MILITARY

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

BULLETIN

MILITARY

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

(Copies of the specification, standard, 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 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.2 Truth table. The truth table shall be as specified on figure 2.

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

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

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C, unless otherwise specified	Device type	Group A subgroups	Limits		Units
					Min	Max	
Input clamp voltage	V _{IC}	V _{CC} = 4.5 V, I _I = -12 mA	A11	1,2,3		-1.5	V
High level output current	I _{OH}	V _{CC} = 4.5 V V _{IL} = 0.8 V	V _{OH} = 30 V	01	1,2,3	300	μA
			V _{OH} = 35 V	02			
			V _{OH} = 70 V	03			
Low level output voltage	V _{OL1}	V _{CC} = 4.5 V V _{IH} = 2.0 V	I _{OL} = 100 mA	A11	1,2,3	0.5	V
	V _{OL2}		I _{OL} = 300 mA				
High level input current	I _{IH1}	V _{CC} = 5.5 V	V _{IN} = 5.5 V	A11	1,2,3	1.0	mA
	I _{IH2}		V _{IN} = 2.4 V				
Low level input current	I _{IL}	V _{CC} = 5.5 V, V _{IN} = 0.4 V	A11	1,2,3		-1.6	mA
High level supply current (outputs high)	I _{CCH}	V _{CC} = 5.5 V, V _{IN} = 0 V	01	1,2,3		17	mA
			02,03				
Low level supply current (output low)	I _{CCL}	V _{CC} = 5.5 V, V _{IN} = 5.0 V	01	1,2,3		79	mA
			02,03				
Functional tests		See 4.3.1c and figure 2		7,8			
Propagation delay time, low to high level output	t _{PLH}	V _{CC} = 5.0 V, I _O = 200 mA C _L = 15 pF, R _L = 50Ω See figure 3	01	9		35	ns
			02,03				
			01	10,11		55	
			02,03				

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C, unless otherwise specified	Device type	Group A subgroups	Limits		Units
					Min	Max	
Propagation delay time high to low level output	t _{PHL}	V _{CC} = 5.0 V, I _O = 200 mA C _L = 15 pF, R _L = 50Ω See figure 3	01	9,10,11		35	ns
			02,03			50	
Transition time, low to high level output	t _{TLH}		01	9		8.0	ns
			02,03			25	
			01	10,11		10	
			02,03			25	
Transition time, high to low level output	t _{THL}		01	9		12	ns
			02,03			20	
			01	10,11		14	
			02,03			20	

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-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 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-ECS 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-ECS 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.

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Device types	01, 02, and 03	
Case outline	P	2
Terminal number	Terminal symbol	
1	1A	NC
2	1B	1A
3	1Y	NC
4	GND	NC
5	2Y	1B
6	2A	NC
7	2B	1Y
8	VCC	NC
9	---	NC
10	---	GND
11	---	NC
12	---	2Y
13	---	NC
14	---	NC
15	---	2A
16	---	NC
17	---	2B
18	---	NC
19	---	NC
20	---	VCC

FIGURE 1. Terminal connections.

Inputs		Output Y
A	B	
L	L	H (off state)
L	H	L (on state)
H	L	L (on state)
H	H	L (on state)

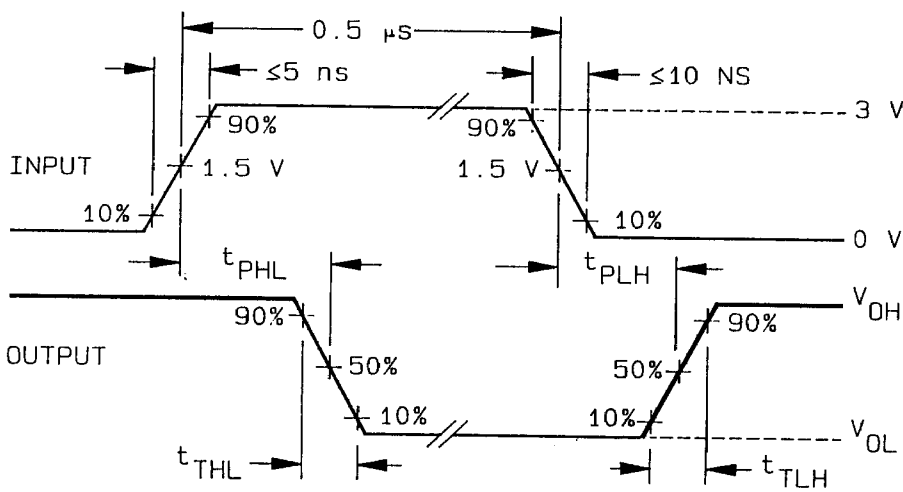
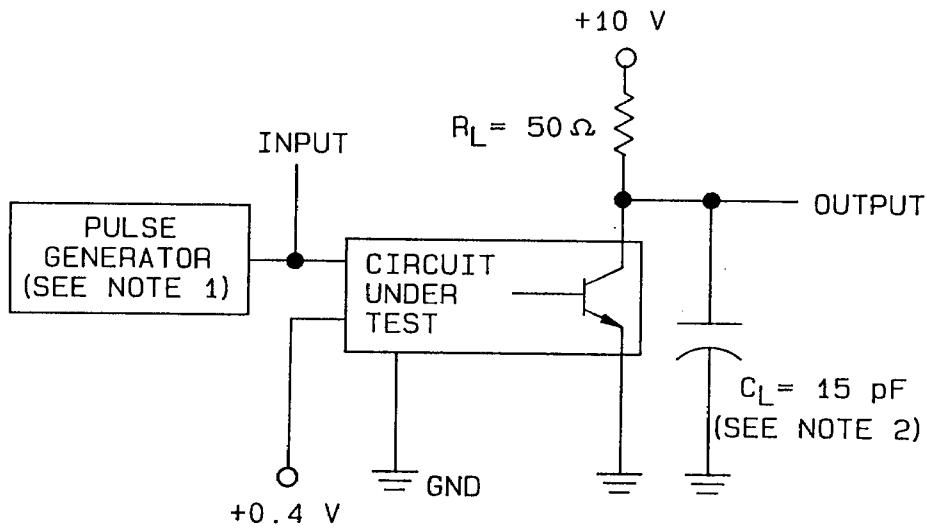
Positive logic: $Y = \overline{A + B}$ or \overline{AB}

FIGURE 2. Truth table (each driver).

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- NOTES:
1. Pulse generator characteristics: $\text{PRR} < 1.0 \text{ MHz}$, $Z_{\text{OUT}} = 50 \Omega$.
 2. C_L = load capacitance and includes scope and jig capacitance.

FIGURE 3. Switching times test circuit and waveforms.

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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 3.6 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, and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.
- c. Subgroups 7 and 8 shall include verification of the truth table.

TABLE II. Electrical test requirements.

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

* PDA applies to subgroup 1.

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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 3.6 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.

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 M38510/12910.

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 Electronic 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 microelectronic devices (FSC 5962) should contact DESC-ECS, telephone (513) 296-6022.

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

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6.6 Approved source of supply. An approved source of supply is listed in MIL-BUL-103. Additional sources will be added to MIL-BUL-103 as they become available. The vendor listed in MIL-BUL-103 has agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-ECS. The approved source of supply listed below is for information purposes only and is current to the date of the last action of this document.

Military drawing part number	Vendor CAGE number	Vendor similar part number <u>1/</u>	Replacement military specification part number
5962-88715012X	34333	SG55454BL/883B	---
5962-8871502PX	34333	SG55464BY/883B	M38510/12910BPX
5962-88715022X	34333	SG55464BL/883B	---
5962-8871503PX	34333	SG55474BY/883B	---
5962-88715032X	34333	SG55474BL/883B	---

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

Vendor CAGE number

34333

Vendor name and address

Silicon General, Inc.
11861 Western Avenue
Garden Grove, CA 92641

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