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.	90-05-24	M. A. Frye
B	Make changes to t_{PLH}, t_{PHL}, t_{TLH}, and t_{THL} tests as specified in table I herein. - ro	00-06-21	R. Monnin
C	Update drawing to current requirements. - drw	04-06-01	R. Monnin

REV																				
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REV																				
SHEET																				

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

PMIC N/A

PREPARED BY
Gary Zahn

STANDARD MICROCIRCUIT DRAWING

THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE

AMSC N/A

CHECKED BY
Ray Monnin

APPROVED BY
Michael A. Frye

DRAWING APPROVAL DATE
89-04-17

REVISION LEVEL
C

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OHIO 43218-3990
http://www.dscc.dla.mil

MICROCIRCUIT, DIGITAL-LINEAR, DUAL PERIPHERAL NOR DRIVER, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	**67268**	**5962-88715**

SHEET 1 OF 10

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:

5962-88715	01	P	A
Drawing number	Device type (see 1.2.1)	Case outline (see 1.2.2)	Lead finish (see 1.2.3)

1.2.1 Device types. The device types 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 outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
P	GDIP1-T8 or CDIP2-T8	8	Dual-in-line package
2	CQCC1-N20	20	Square leadless chip carrier

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

1.3 Absolute maximum ratings.

Supply voltage (V_{CC})	7.0 V dc 1/
Input voltage (V_{IN})	5.5 V dc 2/
Interemitter voltage (V_{EM})	5.5 V dc
Offstate output voltage (V_{OO}):	
Device type 01	30 V dc
Device type 02	35 V dc
Device type 03	70 V dc
Continuous output current (I_{OC})	400 mA 3/
Peak output current (I_{OP}):	
(t_W < 10 ms, duty cycle < 50 %)	500 mA 3/
Continuous power dissipation (P_D):	
Device types 01, 02, and 03	1375 mW 4/
Junction temperature (T_J)	+150°C
Storage temperature range	-65°C to +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 average over a short time interval must fall within the continuous power dissipation ratings.

4/ Device types 01, 02, and 03 derate above T_A = +25°C at 11.0 mW/°C.

1.3 Absolute maximum ratings – continued.

Lead temperature (soldering, 10 seconds)	+300°C
Thermal resistance, junction-to-case (θ_{JC})	See MIL-STD-1835

1.4 Recommended operating conditions.

Supply voltage range (V_{CC})	+4.5 V dc to +5.5 V dc
Minimum high level input voltage (V_{IH})	2.0 V dc
Maximum low level input voltage (V_{IL})	0.8 V dc
Ambient operating temperature range (T_A)	-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 www.dodssp.daps.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.

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 Case outlines. The case outlines 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. The truth table shall be as specified on figure 2.

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 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.

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.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \leq T_A \leq +125°C$ unless otherwise specified		Group A subgroups	Device type	Limits		Unit
						Min	Max	
Input clamp voltage	V_{IC}	V_{CC} = 4.5 V, I_I = -12 mA		1,2,3	All		-1.5	V
High level output current	I_{OH}	V_{CC} = 4.5 V,	V_{OH} = 30 V	1,2,3	01		300	µA
		V_{IL} = 0.8 V	V_{OH} = 35 V		02		300	
			V_{OH} = 70 V		03		300	
Low level output voltage	V_{OL1}	V_{CC} = 4.5 V,	I_{OL} = 100 mA	1,2,3	All		0.5	V
	V_{OL2}	V_{IH} = 2.0 V	I_{OL} = 300 mA				0.8	
High level input current	I_{IH1}	V_{CC} = 5.5 V	V_{IN} = 5.5 V	1,2,3	All		1.0	mA
	I_{IH2}		V_{IN} = 2.4 V				40	µA
Low level input current	I_{IL}	V_{CC} = 5.5 V, V_{IN} = 0.4 v		1,2,3	All		-1.6	mA
High level supply current (outputs high)	I_{CCH}	V_{CC} = 5.5 V, V_{IN} = 0 V		1,2,3	01		17	mA
					02,03		19	
Low level supply current (output low)	I_{CCL}	V_{CC} = 5.5 V, V_{IN} = 5.0 V		1,2,3	01		79	mA
					02,03		85	
Functional tests		See 4.3.1c and figure 2		7,8	All			
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 = 50 Ω, see figure 3		9	01		35	ns
					02,03		110	
				10,11	01		135	
					02,03		150	
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 = 50 Ω, see figure 3		9,10,11	01		90	ns
					02,03		110	

TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions $-55°C \leq T_A \leq +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Transition time, low to high level output	t_{TLH}	V_{CC} = 5.0 V, I_O = 200 mA, C_L = 15 pF, R_L = 50 Ω, see figure 3	9	01		25	ns
				02,03		30	
			10,11	01		25	
				02,03		30	
Transition time, high to low level output	t_{THL}	V_{CC} = 5.0 V, I_O = 200 mA C_L = 15 pF, R_L = 50 Ω, see figure 3	9	01		20	ns
				02,03		35	
			10,11	01		30	
				02,03		35	

Device types	01, 02, and 03	
Case outlines	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	V_{CC}	NC
9	---	NC
10	---	GND
11	---	NC
12	---	2Y
13	---	NC
14	---	NC
15	---	2A
16	---	NC
17	---	2B
18	---	NC
19	---	NC
20	---	V_{CC}

NC = No connection

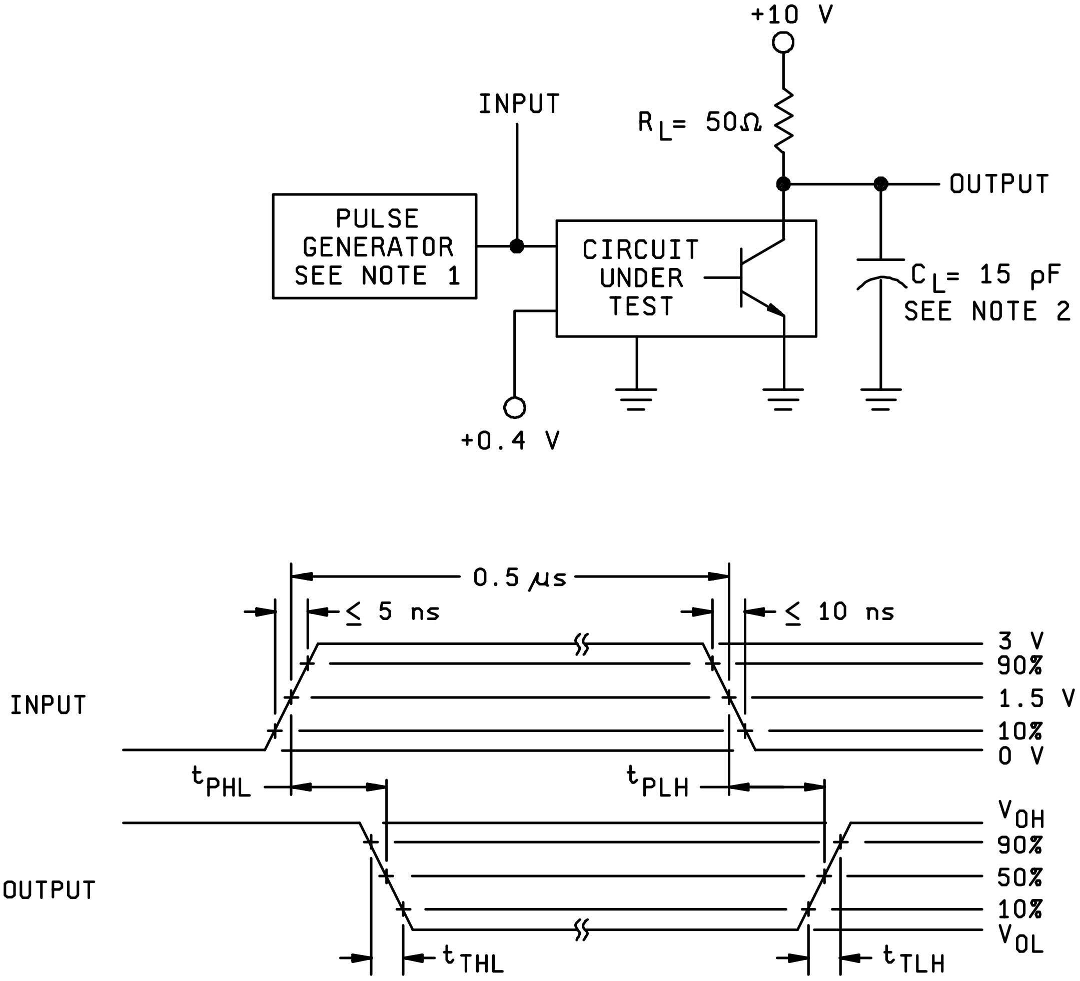
FIGURE 1. Terminal connections.

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

NOTES:

Positive logic: $Y = \overline{A + B}$ or $\overline{AB}$
Truth table is for each driver.

FIGURE 2. Truth table.



NOTES:

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

FIGURE 3. Switching times test circuit and waveforms.

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 A, B, 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°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 MIL-STD-883, 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.

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.

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. 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°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.

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 BULLETIN

DATE: 04-06-01

Approved sources of supply for SMD 5962-88715 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.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/	Replacement military specification part number
5962-88715012A	34333	SG55454BL/883B	---
5962-8871502PA	34333	SG55464Y/883B	M38510/12910BPA
5962-88715022A	34333	SG55464L/883B	---
5962-8871503PA	34333	SG55474Y/883B	---
5962-88715032A	34333	SG55474L/883B	---

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.

Vendor CAGE number	Vendor name and address
34333	Microsemi Integrated Products 11861 Western Avenue Garden Grove, CA 92641-1816