

REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Drawing updated to reflect current requirements. - ro	02-11-04	R. MONNIN
B	Drawing updated to reflect current requirements. - ro	03-02-13	R. MONNIN
C	Make change to the test circuit as specified in FIGURE 2. - ro	04-04-15	R. MONNIN

THE ORIGINAL FIRST SHEET OF THIS DRAWING HAS BEEN REPLACED.

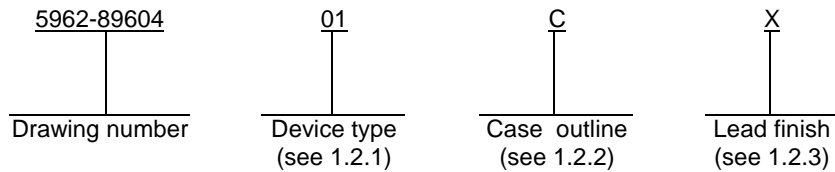
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REV STATUS	REV	C	C	C	C	C	C	C	C	C	C									
OF SHEETS	SHEET	1	2	3	4	5	6	7	8	9										

PMIC N/A	PREPARED BY JOSEPH A. KERBY	DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OHIO 43216 http://www.dsccl.dla.mil		
STANDARD MICROCIRCUIT DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE AMSC N/A	CHECKED BY CHARLES E. BESORE			
	APPROVED BY MICHAEL A. FRYE	MICROCIRCUIT, LINEAR, QUAD 2-INPUT NOR POWER DRIVER, MONOLITHIC SILICON		
	DRAWING APPROVAL DATE 89-10-27			
	REVISION LEVEL C		SIZE A	CAGE CODE 67268
		SHEET 1 OF 9		

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:



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

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>	<u>Output voltage</u>
01	UH-432	Quad 2-input NOR power driver	40 V
02	UH-432-1	Quad 2-input NOR power driver	70 V
03	UH-532	Quad 2-input NOR power driver	100 V

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack

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
Input voltage (V_{IN})	5.5 V dc
Output off-state voltage (V_{OFF}):	
Device type 01	40 V
Device type 02	70 V
Device type 03	100 V
Output on-state sink current (I_{ON}):	
One driver	500 mA
Total package	1.0 A
Power dissipation (P_D):	
Device type 01	6 W
Device type 02	10 W
Device type 03	15 W
Suppression diode on-state current (I_F)	500 mA
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J)	+150°C

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1.3 Absolute maximum ratings – continued.

Thermal resistance, junction-to-case (θ_{JC})	See MIL-STD-1835
Thermal resistance, junction-to-ambient (θ_{JA}):	
Case C	90°C/W
Case D	140°C/W

1.4 Recommended operating conditions.

Supply voltage (V_{CC})	4.5 V dc to 5.5 V dc
Current into any output (on-state)	250 mA maximum
Minimum high level input voltage (V_{IH})	2.0 V
Maximum low level input voltage (V_{IL})	0.8 V
Maximum collector cutoff current (I_{CEX})	250 mA
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.

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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 Switching waveforms, test circuit and input pulse characteristics. The switching waveforms, test circuit and input pulse characteristics 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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Input current high	I _{IN(1)}	V _{CC} = 5.5 V, other input = 0 V, driven input = 2.4 V	1,2,3	All		40	μA
		V _{CC} = 5.5 V, other input = 0 V, driven input = 5.5 V				1,000	
Input current low	I _{IN(0)}	V _{CC} = 5.5 V, other input = 4.5 V, driver input = 0.4 V	1,2,3	All		-800	μA
Output reverse current ^{1/}	I _{OFF}	V _{CC} = 4.5 V, other input = 0.8 V, driver input = 0.8 V	1,2,3	All		100	μA
Output voltage low	V _{ON}	V _{CC} = 4.5 V, other input = 0 V, driver input = 2.0 V, output = 150 mA	1,3	All		0.5	V
			2			0.6	
		1,3			0.7		
		2			0.8		
Input voltage	V _{IN(1)}	V _{CC} = 4.5 V	1,2,3	All	2.0		V
	V _{IN(0)}					0.8	
Supply current, high level (each gate)	I _{CC(1)}	V _{CC} = 5.5 V, T _A = +25°C, all inputs = 0 V	1	All		7.5	mA
			2,3			10	
Supply current, low level (each gate)	I _{CC(0)}	V _{CC} = 5.5 V, T _A = +25°C, all inputs = 5.0 V	1	All		26.5	mA
			2,3			40	
Input clamp voltage	V _{IC}	Driven input = -12 mA	1,2,3	All		-1.5	V
Propagation delay, "Turn-on" time	tpdON	V _{CC} = 5.0 V, ^{2/} C _L = 15 pF	9,10,11	All		500	ns
Propagation delay, "Turn-off" time	tpdOFF	V _{CC} = 5.0 V, ^{2/} C _L = 15 pF	9,10,11	All		750	ns

^{1/} Off state voltage V_{OFF} = 40 V for device type 01, 70 V for device type 02, and 100 V for device type 03.

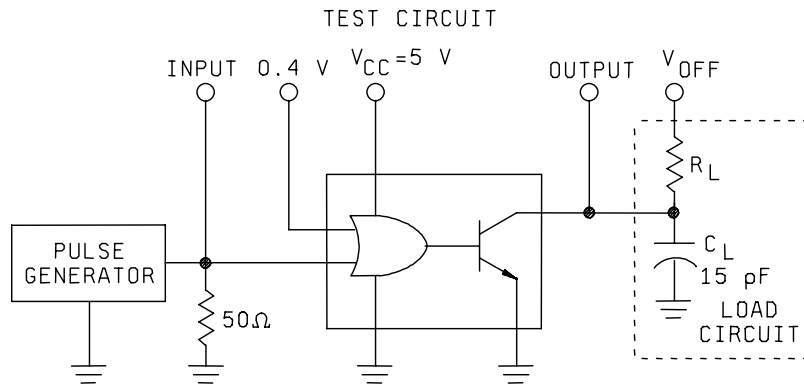
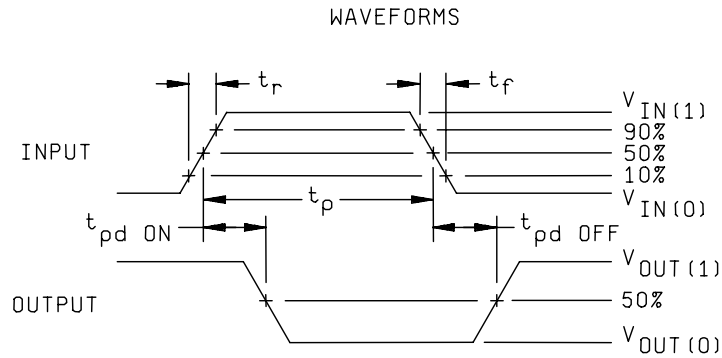
^{2/} For device type 01, V_{OFF} = 40 V, R_L = 265 Ω, for device type 02, V_{OFF} = 70 V, R_L = 465 Ω, and for device type 03, V_{OFF} = 100 V, R_L = 670 Ω.

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Device types	01, 02, and 03	
Case outlines	C	D
Terminal number	Terminal symbol	
1	INPUT 1A	INPUT 1A
2	INPUT 1B	INPUT 1B
3	OUTPUT 1	OUTPUT 1
4	INPUT 2A	V _{CC}
5	INPUT 2B	OUTPUT 2
6	OUTPUT 2	INPUT 2A
7	GND	INPUT 2B
8	OUTPUT 3	OUTPUT 3
9	INPUT 3A	INPUT 3A
10	INPUT 3B	INPUT 3B
11	OUTPUT 4	GND
12	INPUT 4A	INPUT 4A
13	INPUT 4B	INPUT 4B
14	V _{CC}	OUTPUT 4

FIGURE 1. Terminal connections.

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NOTE: C_L includes probe and test fixture capacitance.

INPUT PULSE CHARACTERISTICS

$V_{IN(0)} = 0\text{ V}$	$t_f \leq 7.0\text{ ns}$	$t_p = 1.0\text{ }\mu\text{s}$
$V_{IN(1)} = 3.5\text{ V}$	$t_r \leq 14\text{ ns}$	PRR = 500 kHz

FIGURE 2. Switching waveforms, test circuit, and input pulse characteristics.

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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) $T_A = +125^{\circ}\text{C}$, 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, 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. 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) $T_A = +125^{\circ}\text{C}$, 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-PRF-38535, appendix A.

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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*,2,3,9
Group A test requirements (method 5005)	1,2,3,9,10**,11**
Groups C and D end-point electrical parameters (method 5005)	1

* PDA applies to subgroup 1.

** Subgroups 10 and 11, if not tested, shall be guaranteed to the limits specified in table I herein.

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 43216-5000, 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.

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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 04-04-15

Approved sources of supply for SMD 5962-89604 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 <u>1/</u>	Vendor CAGE number	Vendor similar PIN <u>2/</u>
5962-8960401CA	3V146	UHD432/883
	<u>3/</u>	UHD-432/883C
5962-8960401DA	3V146	UHC432/883
	<u>3/</u>	UHC-432/883C
5962-8960402CA	3V146	UHD432-1/883
	<u>3/</u>	UHD-432-1/883C
5962-8960402DA	3V146	UHC432-1/883
	<u>3/</u>	UHC-432-1/883C
5962-8960403CA	3V146	UHD532/883
	<u>3/</u>	UHD-532/883C
5962-8960403DA	3V146	UHC532/883
	<u>3/</u>	UHC-532/883C

- 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.
- 3/ Not available from an approved source of supply.

Vendor CAGE
number

3V146

Vendor name
and address

Rochester Electronics
10 Malcolm Hoyt Drive
Newburyport, MA 01950

The information contained herein is disseminated for convenience only and the Government assumes no liability whatsoever for any inaccuracies in the information bulletin.