

<b>NOTICE OF REVISION (NOR)</b> (See MIL-STD-480 for instructions) This revision described below has been authorized for the document listed.		<b>DATE (YYMMDD)</b> <b>92-10-27</b>	Form Approved OMB No. 0704-0188
Public reporting burden for this collection is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.			
<b>1. ORIGINATOR NAME AND ADDRESS</b> Defense Electronics Supply Center Dayton, Ohio 45444-5277		<b>2. CAGE CODE</b> 67268	<b>3. NOR NO.</b> 5962-R005-93
		<b>4. CAGE CODE</b> 67268	<b>5. DOCUMENT NO.</b> <b>5962-89876</b>
<b>6. TITLE OF DOCUMENT</b>  Microcircuits, Linear, Transistor Array, Monolithic Silicon		<b>7. REVISION LETTER</b> (Current) New	(New) A
		<b>8. ECP NO.</b> No registered users	
<b>9. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES</b> All			
<b>10. DESCRIPTION OF REVISION</b>  Sheet 1: Revisions ltr column; add "A". Revisions description column; add "Changes in accordance with NOR 5962-R005-93". Revisions date column; add "92-10-27". Revision level block; add "A". Rev status above sheet number 1, 2, and 6, add "A".  Sheet 2: 1.2.2 Case outline; Under case outline letter column add "F", under descriptive designator column add "GDFP2-F16 or CDFP3-F16", under terminals column add "16", and under package style column add "flat pack". 1.3 Absolute maximum ratings; Delete "Thermal resistance, junction-to-ambient ( $\Theta_{JA}$ )- - - 80° C/W" and substitute "Thermal resistance, junction-to-ambient ( $\Theta_{JA}$ ): Case E - - - 80° C/W, Case F - - - 115° C/W". Delete "Power dissipation ( $P_D$ ) $\frac{1}{2}$ - - - 1.0 W" and substitute "Power dissipation ( $P_D$ ): Case E - - - 1.0 W, Case F - - - 1.09 W". Under footnotes, delete " $\frac{1}{2}$ Absolute maximum rating for power dissipation is for one darlington pair only. Derate 12.5 mW/° C above +25° C ambient." and substitute " $\frac{1}{2}$ Absolute maximum rating for power dissipation is for one darlington pair only. Derate case outline E at 12.5 mW/° C above +25° C ambient and case outline F at 8.7 mW/° C above +25° C ambient." Revision level block; add "A".  Sheet 6: Figure 1; for case outline, delete "E" and substitute "E, F". Revision level block; add "A".			
<b>11. THIS SECTION FOR GOVERNMENT USE ONLY</b>			
a. CHECK ONE <input checked="" type="checkbox"/> EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE. <input type="checkbox"/> REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE. <input type="checkbox"/> CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:			
b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT  DESC-ECS	<b>SIGNATURE AND TITLE</b>  Sandra Rooney  for Branch Chief	<b>DATE (YYMMDD)</b>  92-10-27	
<b>12. ACTIVITY ACCOMPLISHING REVISION</b> DESC-ECS	REVISION COMPLETED (Signature)  Marcia B Kelleher	<b>DATE (YYMMDD)</b>  92-10-27	

[illegible]

## 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 or Identifying Number (PIN). The complete PIN shall be as shown in the following example:

<u>5962-89876</u>	<u>01</u>	<u>E</u>	<u>X</u>
Drawing number	Device type (1.2.1)	Case outline (1.2.2)	Lead finish per MIL-M-38510

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

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>
01	2023	7 gate darlington transistor array

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

<u>Outline letter</u>	<u>Descriptive designator</u>	<u>Terminals</u>	<u>Package style</u>
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line

1.3 Absolute maximum ratings.

Output voltage ( $V_{CE}$ )	-----	95 V dc
Input voltage ( $V_{IN}$ )	-----	30 V dc
Peak output current ( $I_{OUT}$ )	-----	500 mA
Ground terminal current ( $I_{GND}$ )	-----	3.0 A
Continuous input current ( $I_{IN}$ )	-----	25 mA
Power dissipation ( $P_D$ ) <sup>1/</sup>	-----	1.0 W
Storage temperature range	-----	-65° C to +150° C
Junction temperature ( $T_J$ )	-----	+175° C
Thermal resistance, junction-to-ambient ( $\Theta_{JA}$ )	----	80° C/W

1.4 Recommended operating conditions.

Ambient operating temperature range ( $T_A$ )	-----	-55° C to +125° C
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<sup>1/</sup> Absolute maximum rating for power dissipation is for one darlington pair only.  
Derate 12.5 mW/° C above +25° C ambient.

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## 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.  
MIL-STD-1835 - Microcircuit Case Outlines.

### 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 Case outline(s). The case outline(s) 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 test circuit and waveforms. The switching test circuit and waveforms 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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions -55° C ≤ T <sub>A</sub> ≤ +125° C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Output leakage current	I <sub>CEX</sub>	V <sub>CE</sub> = 95 V	1,2,3	01		100	μA
Collector emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 350 mA, I <sub>B</sub> = 500 μA	2	01		1.8	V
		I <sub>C</sub> = 200 mA, I <sub>B</sub> = 350 μA				1.5	
		I <sub>C</sub> = 100 mA, I <sub>B</sub> = 250 μA				1.3	
		I <sub>C</sub> = 350 mA, I <sub>B</sub> = 500 μA	1			1.6	
		I <sub>C</sub> = 200 mA, I <sub>B</sub> = 350 μA				1.3	
		I <sub>C</sub> = 100 mA, I <sub>B</sub> = 250 μA				1.1	
		I <sub>C</sub> = 350 mA, I <sub>B</sub> = 850 μA	3			1.8	
		I <sub>C</sub> = 200 mA, I <sub>B</sub> = 550 μA				1.5	
		I <sub>C</sub> = 100 mA, I <sub>B</sub> = 350 μA				1.3	
Input voltage	V <sub>IN(ON)</sub>	V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 200 mA	2	01		2.4	V
		V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 250 mA				2.7	
		V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 300 mA				3.0	
		V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 200 mA	1,3			3.3	
		V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 250 mA				3.6	
		V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 300 mA				3.9	
Input current	I <sub>IN(ON)</sub>	V <sub>IN</sub> = 3.85 V	1,2,3	01	650	1350	μA
Input current	I <sub>IN(OFF)</sub>	I <sub>C</sub> = 500 μA	2	01	20		μA

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T <sub>A</sub> ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Clamp diode leakage current	I <sub>R</sub>	V <sub>R</sub> = 95 V	1,2,3	01		50	μA
Clamp diode forward leakage	V <sub>F</sub>	I <sub>F</sub> = 350 mA	1,2,3	01		2.0	V
Turn-on delay	t <sub>PHL</sub>	See figure 2	9,10,11	01		1000	ns
Turn-off delay	t <sub>PLH</sub>	See figure 2	9,10,11	01		1000	ns

3.5 Marking. Marking shall be in accordance with MIL-STD-883 (see 3.1 herein). The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN 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-EC 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-EC 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.

#### 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<sub>A</sub> = +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.

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Device type	01
Case outline	E
Terminal number	Terminal symbol
1	IN1
2	IN2
3	IN3
4	IN4
5	IN5
6	IN6
7	IN7
8	GND
9	COM
10	OUT7
11	OUT6
12	OUT5
13	OUT4
14	OUT3
15	OUT2
16	OUT1

FIGURE 1. Terminal connections.

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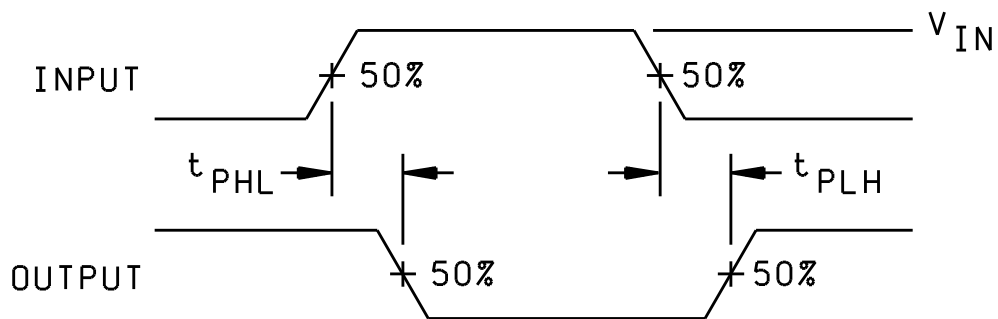
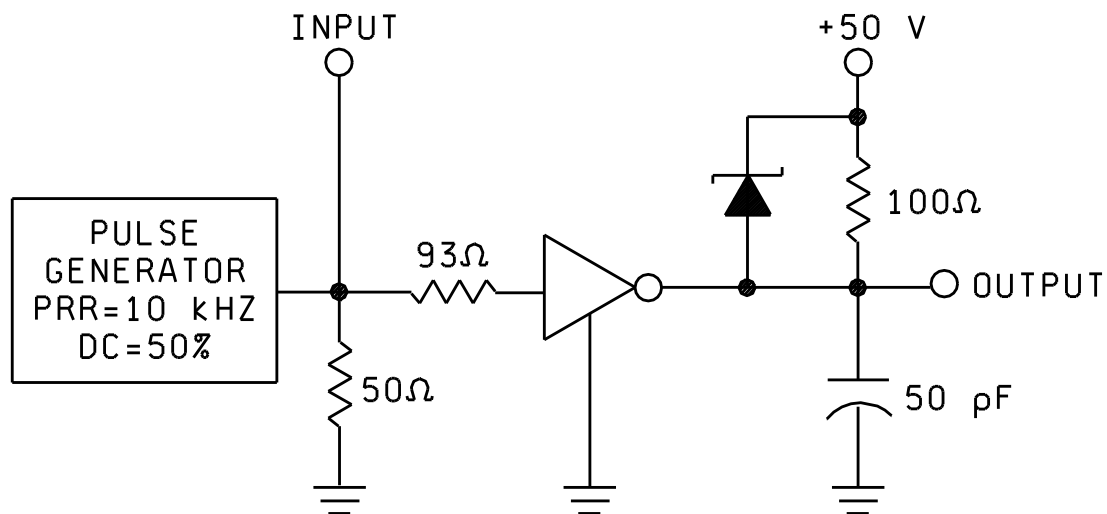


FIGURE 2. Switching test circuit and waveforms.

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

\* PDA applies to subgroup 1.

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

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 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.

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## 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 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 Electronics 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 microelectronics devices (FSC 5962) should contact DESC-EC, telephone (513) 296-6047.

6.5 Comments. Comments on this drawing should be directed to DESC-EC, Dayton, Ohio 45444, or telephone (513) 296-5377.

6.6 Approved sources of supply. Approved sources of supply are listed in MIL-BUL-103. The vendors listed in MIL-BUL-103 have agreed to this drawing and a certificate of compliance (see 3.6 herein) has been submitted to and accepted by DESC-EC.

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# STANDARDIZED MILITARY DRAWING SOURCE APPROVAL BULLETIN

DATE: 92-08-27

Approved sources of supply for SMD 5962-89876 are listed below for immediate acquisition only and shall be added to MIL-BUL-103 during the next revision. MIL-BUL-103 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 DESC-EC. This bulletin is superseded by the next dated revision of MIL-BUL-103.

Standardized military drawing PIN	Vendor CAGE number	Vendor similar PIN <sup>1/</sup>
5962-8987601EX	31019	ULS2023H/883 or ULS2023R/883
	34333	SG2023J/883B

<sup>1/</sup> 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

31019

Allegro Microsystems Incorporated  
3900 Welsh Road  
Willow Grove, PA 19090-2909

34333

Silicon General  
11861 Western Avenue  
Garden Grove, CA 92641

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