REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
E	Change to military drawing format. Change code identification to 67268. Add vendor CAGE 27014 for device type 06CX. Page 11; table I; change limits for ΔV_{IO} / ΔT. Inactivate package C for device types 02 and 05. Add device types 012X, 022X, 032X, 042X, 052X, and 062X. Editorial changes throughout.	88-02-11	R. P. Evans
F	Changes in accordance with N.O.R. 5962-R197-92.	92-07-21	M. A. Frye
G	Drawing updated to reflect current requirements. - ro	01-06-18	Raymond Monnin
H	Change the limits of test “Input voltage common mode rejection” for device type 06 on table I. - lgt	02-01-04	Raymond Monnin
J	Change the minimum value for test “slew rate” in table I, subgroup 7, device types 01, 02, and 03 from 2 V/µs to 1.5 V/µs. Drawing updated to reflect current requirements. - gt	04-04-30	Raymond Monnin
K	Correction to paragraph 3.5 and 3.5.1. Editorial changes throughout. - drw	05-04-22	Raymond Monnin
L	Change test condition for the PSRR test in table I. – drw	06-05-08	Raymond Monnin
M	Update drawing to current requirements of MIL-PRF-38535. -rrp	12-01-17	Charles F. Saffle

CURRENT CAGE CODE 67268

THE ORIGINAL FIRST SHEET OF THIS DRAWING HAS BEEN REPLACED.

REV																			
SHEET																			
REV																			
SHEET																			

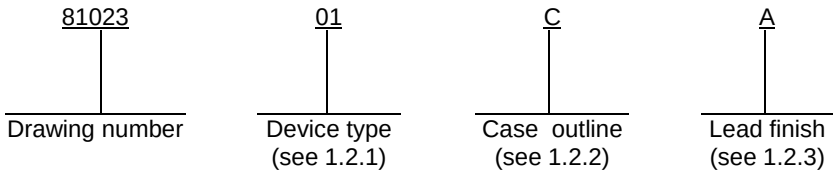
REV STATUS	REV	M	M	M	M	M	M	M	M	M	M	M	M		
OF SHEETS	SHEET	1	2	3	4	5	6	7	8	9	10	11	12		

PMIC N/A	PREPARED BY WILLIAM E. SHOUP	**DLA LAND AND MARITIME** **COLUMBUS, OHIO 43218-3990** **http://www.landandmaritime.dla.mil**
STANDARD MICROCIRCUIT DRAWING THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE	CHECKED BY C.R. JACKSON	
	APPROVED BY N. A. HAUCK	MICROCIRCUIT, LINEAR, BI-FET OPERATIONAL AMPLIFIERS, MONOLITHIC SILICON
	DRAWING APPROVAL DATE 81-06-30	
AMSC N/A	REVISION LEVEL M	SIZE A / CAGE CODE **14933** / **81023**
		SHEET 1 OF 12

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:

Device type	Generic number	Circuit function
01	061	Single operational amplifier, Bi-FET, low power
02	062	Dual operational amplifier, Bi-FET, low power
03	064	Quad operational amplifier, Bi-FET, low power
04	071	Single operational amplifier, Bi-FET, low power
05	072	Dual operational amplifier, Bi-FET, low power
06	074, 147	Quad operational amplifier, Bi-FET, low power

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

Outline letter	Descriptive designator	Terminals	Package style
C	GDIP1-T14 or CDIP2-T14	14	Dual-in-line
D	GDFP1-F14 or CDFP2-F14	14	Flat pack
G	MACY1-X8	8	Can
H	GDFP1-F10 or CDFP2-F10	10	Flat pack
P	GDIP1-T8 or CDIP2-T8	8	Dual-in-line
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 range ..... ±18 V dc
Input voltage range ..... ±15 V dc 1/
Differential input voltage range..... ±30 V dc
Output short circuit duration ..... Unlimited 2/
Power dissipation (P_D) (internally limited): 3/
Cases C, D, G, P, and 2 ..... 680 mW at T_A = +25°C
Case H ..... 675 mW at T_A = +25°C
Junction temperature (T_J) ..... +150°C

1/ For supply voltages less than ±15 V dc, the maximum input voltage is equal to the supply voltage.
2/ Short circuit may be to ground or either power supply. Rating applied to +125°C case temperature or +75°C ambient temperature.
3/ Must withstand the added P_D due to short circuit test (e.g., I_{OS}).

1.3 Absolute maximum ratings – Continued.

Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 60 seconds)	+300°C
Thermal resistance, junction-to-case (θ_{JC})	See MIL-STD-1835
Thermal resistance, junction-to-ambient (θ_{JA}) :	
Cases C and P	120°C/W
Case D	140°C/W
Case G	150°C/W
Case H	185°C/W
Case 2	65°C/W

1.4 Recommended operating conditions.

Supply voltage range	±5 V dc to ±15 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 https://assist.daps.dla.mil/quicksearch/ 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.

3.3 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.

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 DLA Land and Maritime -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 DLA Land and Maritime -VA shall be required for any change that affects this drawing.

3.9 Verification and review. DLA Land and Maritime, DLA Land and Maritime'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 $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Input offset voltage	V_{IO}	$\pm V_{CC} = \pm 15$ V, ± 9 V, $V_{CM} = 0$ V	1	01, 02, 04, 05	-6	6	mV
		$\pm V_{CC} = \pm 15$ V at $V_{CM} = 0$ V	2, 3		-9	9	
		$\pm V_{CC} = \pm 15$ V, ± 9 V, $V_{CM} = 0$ V	1	03, 06	-9	9	
		$\pm V_{CC} = \pm 15$ V at $V_{CM} = 0$ V	2, 3		-15	15	
Input offset voltage 1/ temperature sensitivity	$\Delta V_{IO}/\Delta T$	$V_{CM} = 0$ V	1, 2, 3	01, 02, 03	-60	60	µV/°C
				04, 05	-30	30	
Input offset current 2/	I_{IO}	$V_{CM} = 0$ V,	1	All	-100	100	pA
		$T_A = +25°C, +125°C$	2		-20	20	nA
Input bias current 3/	$+I_{IB}$	$V_{CM} = 0$ V,	1	All	-200	200	pA
		$T_A = +25°C, +125°C$	2		-50	50	nA
	$-I_{IB}$		1		-200	200	pA
			2		-50	50	nA
Power supply rejection ratio	PSRR	$V_{CC} = \pm 9$ V to ± 15 V, $T_A = +25°C$	1	All	80		dB
Input voltage common mode rejection 4/	CMRR	-11.5 V $\le V_{CM} \le 11.5$ V, $T_A = +25°C$	1	01, 02, 03	80		dB
		-11 V $\le V_{CM} \le 11$ V, $T_A = +25°C$		04, 05	80		
				06	75		

See footnotes at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions $-55°C \le T_A \le +125°C$ unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Supply current (per amplifier)	I_{CC}	T_A = +25°C	1	01, 02, 03		0.3	mA
				04, 05, 06		3.5	
Output voltage swing (maximum)	$+V_{OP}$, $-V_{OP}$	R_L = 10 kΩ	4, 5, 6	01, 02, 03	±10		V
		R_L = 10 kΩ		04, 05, 06	±12		
		R_L = 2 kΩ			±10		
Open loop voltage gain (single ended) 5/	$+A_{VS}$, $-A_{VS}$	V_{OUT} = -10 V to 10 V, $R_L \ge 10$ kΩ	4, 5, 6	01, 02, 03	4		V/mV
		V_{OUT} = -10 V to 10 V,	4	04, 05, 06	35		
		$R_L \ge 2$ kΩ	5, 6		15		
Slew rate	+SR and	V_{IN} = ±5 V, A_V = 1	7	01, 02, 03	1.5		V/µs
	-SR		8 1/		0.7		
			7	04, 05	8		
			8		5		
			7	06	8		
			8 1/		5		

1/ If not tested, shall be guaranteed to the limits specified in table I herein.

2/ I_{IO} is calculated as the difference between $+I_{IB}$ and $-I_{IB}$.

3/ Bias currents are actually junction leakage currents which double (approximately) for each 10°C increase in junction temperature T_J. Measurement of bias currents is specified at T_J rather than T_A, since normal warm up thermal transients will affect the bias currents. The measurements for bias currents must be made within 100 ms after power is first applied to the device for test. Measurement at T_A = -55°C is not necessary since excepted values are too small for typical test systems.

4/ CMRR is calculated from V_{IO} measurements at V_{CM} = +11.5 V and –11.5 V for device types 01, 02, 03, and V_{CM} = +11 V and –11 V for device types 04, 05, 06.

5/ Because of thermal feedback effects from output to input, open loop gain is not guaranteed to be linear or positive over the operating range. These requirements, if needed, should be specified by the user in additional procurement documents.

Device types	01				02	
Case outlines	G	H	P	2	C	G
Terminal number	Terminal number					
1	OFFSET N1	NC	OFFSET NULL	NC	-INPUT A	OUTPUT 1
2	-INPUT	OFFSET NULL (N1)	-INPUT	OFFSET NULL (N1)	+INPUT A	-INPUT 1
3	+INPUT	-INPUT	+INPUT	NC	OFFSET NULL A	+INPUT 1
4	$-V_{CC}$	+INPUT	$-V_{CC}$	NC	$-V_{CC}$	$-V_{CC}$
5	OFFSET N2	$-V_{CC}$	OFFSET NULL	-INPUT	OFFSET NULL B	+INPUT 2
6	OUTPUT	OFFSET NULL (N2)	OUTPUT	NC	+INPUT B	-INPUT 2
7	$+V_{CC}$	OUTPUT	$+V_{CC}$	+INPUT	-INPUT B	OUTPUT 2
8	NC	$+V_{CC}$	NC	NC	OFFSET NULL B	$+V_{CC}$
9	---	NC	---	NC	$+V_{CC}$ B	---
10	---	NC	---	$-V_{CC}$	OUTPUT B	---
11	---	---	---	NC	NC	---
12	---	---	---	OFFSET NULL (N2)	OUTPUT A	---
13	---	---	---	NC	$+V_{CC}$ A	---
14	---	---	---	NC	OFFSET NULL A	---
15	---	---	---	OUTPUT	---	---
16	---	---	---	NC	---	---
17	---	---	---	$+V_{CC}$	---	---
18	---	---	---	NC	---	---
19	---	---	---	NC	---	---
20	---	---	---	NC	---	---

FIGURE 1. Terminal connections.

Device types	02			03		04
Case outlines	H	P	2	C and D	2	G
Terminal number	Terminal number					
1	NC	OUTPUT A	NC	OUTPUT A	NC	OFFSET N1
2	OUTPUT	-INPUT A	OUTPUT 1	-INPUT A	OUTPUT 1	-INPUT
3	-INPUT	+INPUT A	NC	+INPUT A	-INPUT 1	+INPUT
4	+INPUT	$-V_{CC}$	NC	$+V_{CC}$	+INPUT 1	$-V_{CC}$
5	$-V_{CC}$	+INPUT B	-INPUT 1	+INPUT B	NC	OFFSET N2
6	+INPUT	-INPUT B	NC	-INPUT B	$+V_{CC}$	OUTPUT
7	-INPUT	OUTPUT B	+INPUT 1	OUTPUT B	NC	$+V_{CC}$
8	OUTPUT	$+V_{CC}$	NC	OUTPUT C	+INPUT 2	NC
9	$+V_{CC}$	---	NC	-INPUT C	-INPUT 2	---
10	NC	---	$-V_{CC}$	+INPUT C	OUTPUT 2	---
11	---	---	NC	$-V_{CC}$ / GND	NC	---
12	---	---	+INPUT 2	+INPUT D	OUTPUT 3	---
13	---	---	NC	-INPUT D	-INPUT 3	---
14	---	---	NC	OUTPUT D	+INPUT 3	---
15	---	---	-INPUT 2	---	NC	---
16	---	---	NC	---	$-V_{CC}$	---
17	---	---	OUTPUT 2	---	NC	---
18	---	---	NC	---	+INPUT 4	---
19	---	---	NC	---	-INPUT 4	---
20	---	---	$+V_{CC}$	---	OUTPUT 4	---

FIGURE 1. Terminal connections – Continued.

Device types	04			05	
Case outlines	H	P	2	C	G
Terminal number	Terminal number				
1	NC	OFFSET NULL	NC	-INPUT A	OUTPUT 1
2	OFFSET NULL (N1)	-INPUT	OFFSET NULL (N1)	+INPUT A	-INPUT 1
3	-INPUT	+INPUT	NC	OFFSET NULL A	+INPUT 1
4	+INPUT	$-V_{CC}$	NC	$-V_{CC}$	$-V_{CC}$
5	$-V_{CC}$	OFFSET NULL	-INPUT	OFFSET NULL B	+INPUT 2
6	OFFSET NULL (N2)	OUTPUT	NC	+INPUT B	-INPUT 2
7	OUTPUT	$+V_{CC}$	+INPUT	-INPUT B	OUTPUT 2
8	$+V_{CC}$	NC	NC	OFFSET NULL B	$+V_{CC}$
9	NC	---	NC	$+V_{CC}$ B	---
10	NC	---	$-V_{CC}$	OUTPUT B	---
11	---	---	NC	NC	---
12	---	---	OFFSET NULL (N2)	OUTPUT A	---
13	---	---	NC	$+V_{CC}$ A	---
14	---	---	NC	OFFSET NULL A	---
15	---	---	OUTPUT	---	---
16	---	---	NC	---	---
17	---	---	$+V_{CC}$	---	---
18	---	---	NC	---	---
19	---	---	NC	---	---
20	---	---	NC	---	---

FIGURE 1. Terminal connections – Continued.

Device types	05			06	
Case outlines	H	P	2	C and D	2
Terminal number	Terminal number				
1	NC	OUTPUT A	NC	OUTPUT A	NC
2	OUTPUT	-INPUT A	OUTPUT 1	-INPUT A	OUTPUT 1
3	-INPUT	+INPUT A	NC	+INPUT A	-INPUT 1
4	+INPUT	$-V_{CC}$	NC	$+V_{CC}$	+INPUT 1
5	$-V_{CC}$	+INPUT B	-INPUT 1	+INPUT B	NC
6	+INPUT	-INPUT B	NC	-INPUT B	$+V_{CC}$
7	-INPUT	OUTPUT B	+INPUT 1	OUTPUT B	NC
8	OUTPUT	$+V_{CC}$	NC	OUTPUT C	+INPUT 2
9	$+V_{CC}$	---	NC	-INPUT C	-INPUT 2
10	NC	---	$-V_{CC}$	+INPUT C	OUTPUT 2
11	---	---	NC	$-V_{CC}$ / GND	NC
12	---	---	+INPUT 2	+INPUT D	OUTPUT 3
13	---	---	NC	-INPUT D	-INPUT 3
14	---	---	NC	OUTPUT D	+INPUT 3
15	---	---	-INPUT 2	---	NC
16	---	---	NC	---	$-V_{CC}$
17	---	---	OUTPUT 2	---	NC
18	---	---	NC	---	+INPUT 4
19	---	---	NC	---	-INPUT 4
20	---	---	$+V_{CC}$	---	OUTPUT 4

FIGURE 1. Terminal connections – Continued.

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.

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 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. 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.

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)	1
Final electrical test parameters (method 5004)	1*, 2, 3, 4
Group A test requirements (method 5005)	1, 2, 3, 4, 5, 6, 7, 8
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-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 DLA Land and Maritime when a system application requires configuration control and the applicable SMD to that system. DLA Land and Maritime 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 DLA Land and Maritime -VA, telephone (614) 692-0544.

6.5 Comments. Comments on this drawing should be directed to DLA Land and Maritime -VA, Columbus, Ohio 43218-3990, or telephone (614) 692-0540.

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 DLA Land and Maritime -VA.

STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 12-01-17

Approved sources of supply for SMD 81023 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 DLA Land and Maritime -VA. This information bulletin is superseded by the next dated revision of MIL-HDBK-103 and QML-38535. DLA Land and Maritime maintains an online database of all current sources of supply at http://www.landandmaritime.dla.mil/Programs/Smcr/.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/	Reference military specification PIN
8102301GA	3/	TL061MLB	M38510/11901BGA
8102301HA	3/	TL061MUB	---
8102301PA	3/	TL061MJGB	M38510/11901BPA
81023012A	3/	TL061MFKB	---
8102302CA	3/	TL062MJB	---
8102302GA	3/	TL062MLB	M38510/11902BGA
8102302HA	01295	TL062MUB	---
8102302PA	01295	TL062MJGB	M38510/11902BPA
81023022A	01295	TL062MFKB	---
8102303CA	01295	TL064MJB	M38510/11903BCA
8102303DA	01295	TL064MWB	M38510/11903BDA
81023032A	01295	TL064MFKB	---
8102304GA	3/	TL071MLB	M38510/11904BGA
8102304HA	3/	TL071MUB	---
8102304PA	3/	TL071MJGB	M38510/11904BPA
81023042A	3/	TL071MFKB	---

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/	Reference military specification PIN
8102305CA	3/	TL072MJB	---
8102305GA	3/	TL072MLB	M38510/11905BGA
8102305HA	01295	TL072MUB	---
8102305PA	01295	TL072MJGB	M38510/11905BPA
81023052A	01295	TL072MFKB	---
8102306CA	01295	TL074MJB	M38510/11906BCA
	3/	LF147J-SMD	
8102306DA	01295	TL074MWB	M38510/11906BDA
81023062A	01295	TL074MFKB	---

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	Vendor name and address
01295	Texas Instruments, Inc. Semiconductor Group 8505 Forest Ln. PO Box 660199 Dallas, TX 75243 Point of contact: U.S. Highway 75 South P.O. Box 84, M/S 853 Sherman, TX 75090-9493