NOTICE OF REVISION (NOR)

THIS REVISION DESCRIBED BELOW HAS BEEN AUTHORIZED FOR THE DOCUMENT LISTED.

1. DATE (YYMMDD) 97-04-08

Form Approved OMB No. 0704-0188

2. PROCURING ACTIVITY NO.

3. DODAAC

4. ORIGINATOR

a. TYPED NAME *(First, Middle Initial, Last)*

b. ADDRESS *(Street, City, State, Zip Code)*
Defense Supply Center Columbus
3990 East Broad Street
Columbus, OH 43216-5000

5. CAGE CODE 67268

7. CAGE CODE 67268

6. NOR NO. 5962-R253-97

8. DOCUMENT NO. 5962-86861

9. TITLE OF DOCUMENT
MICROCIRCUIT, LINEAR, PRECISION VOLTAGE REFERENCE, 2.5-VOLT, MONOLITHIC SILICON

10. REVISION LETTER

a. CURRENT C

b. NEW D

11. ECP NO. 5962-86861ECP-1

12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES
All

13. DESCRIPTION OF REVISION

Sheet 1: Revisions ltr column; add "D".
Revisions description column; add "Changes in accordance with NOR 5962-R253-97".
Revisions date column; add "97-04-08".
Revision level block; change from "C" to "D".
Rev status of sheets; for sheet 1, change from "C" to "D"; for sheet. 2 , change from "A" to "D"; for sheet 5, add "D".

Sheet 2: 1.2.2. Case outline(s). Delete this paragraph entirely and substitute the following;
"1.2.2 Case outline(s). The case outline(s) are as designated in MIL-STD-1835 and as follows:

Outline letter	Desriptive designator	Terminals	Package style
P	GDIP1-T8 or CDIP2-T8	8	Dual-in-line
X	See figure 2	3	Can
Y	MACY1-X3	3	Can"

1.3 Absolute maximum ratings.
Under power dissipation, add; "Case Y . . . . . 1.0 W"
Under thermal resistance, junction-to-case, add; "Case Y . . . . . 15° C/W"
Under thermal resistance, junction-to-ambient, add; "Case Y . . . . . 120° C/W"
Revision level block; change from "A" to "D".

Sheet 5. FIGURE 1. Terminal connections. Add case outline "Y" with pin assignments of pin 1 is "$+V_{IN}$", pin 2 is "V_{OUT}", and pin 3 is "$-V_{IN}$".
Revision level block; add "D".

14. THIS SECTION FOR GOVERNMENT USE ONLY

a. *(X one)*		
	X	(1) Existing document supplemented by the NOR may be used in manufacture.
		(2) Revised document must be received before manufacturer may incorporate this change.
		(3) Custodian of master document shall make above revision and furnish revised document.

b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT
DSCC-VAS

c. TYPED NAME *(First, Middle Initial, Last)*
RAYMOND MONNIN

d. TITLE
Chief, Microelectronics Team

e. SIGNATURE
RAYMOND MONNIN

f. DATE SIGNED (YYMMDD) 97-04-08

15a. ACTIVITY ACCOMPLISHING REVISION
DSCC-VAS

b. REVISION COMPLETED *(Signature)*
RICK OFFICER

c. DATE SIGNED (YYMMDD) 97-04-08

NOTICE OF REVISION (NOR)

THIS REVISION DESCRIBED BELOW HAS BEEN AUTHORIZED FOR THE DOCUMENT LISTED.

1. DATE (YYMMDD) 96-10-23

Form Approved OMB No. 0704-0188

2. PROCURING ACTIVITY NO.

3. DODAAC

4. ORIGINATOR

a. TYPED NAME *(First, Middle Initial, Last)*

b. ADDRESS *(Street, City, State, Zip Code)*
Defense Supply Center Columbus
3990 East Broad Street
Columbus, OH 43216-5000

5. CAGE CODE 67268

7. CAGE CODE 67268

6. NOR NO. 5962-R016-97

8. DOCUMENT NO. **5962-86861**

9. TITLE OF DOCUMENT
MICROCIRCUIT, LINEAR, PRECISION VOLTAGE REFERENCE, 2.5 VOLT, MONOLITHIC SILICON

10. REVISION LETTER

a. CURRENT B

b. NEW C

11. ECP NO. 5962-86861ECP-1

12. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES
All

13. DESCRIPTION OF REVISION

Sheet 1: Revisions ltr column; add "C".
Revisions description column; add "Changes in accordance with NOR 5962-R016-97".
Revisions date column; add "96-10-23".
Revision level block; change from "B" to "C".
Rev status of sheets; for sheet 1, change from "B" to "C" and for sheet 3, change from "A" to "C".

Sheet 3: 3.5. Marking. Delete the second sentence and substitute the following;
"The part shall be marked with the part number listed in 1.2 herein with an optional exception for case X, which may have the "5962-" deleted."
Revision level block; change from "A" to "C".

14. THIS SECTION FOR GOVERNMENT USE ONLY

a. *(X one)*		
	X	(1) Existing document supplemented by the NOR may be used in manufacture.
		(2) Revised document must be received before manufacturer may incorporate this change.
		(3) Custodian of master document shall make above revision and furnish revised document.

b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT
DSCC-VAS

c. TYPED NAME *(First, Middle Initial, Last)*
RAYMOND MONNIN

d. TITLE
Chief, Microelectronics Team

e. SIGNATURE
RAYMOND MONNIN

f. DATE SIGNED (YYMMDD)
96-10-23

15a. ACTIVITY ACCOMPLISHING REVISION
DSCC-VAS

b. REVISION COMPLETED *(Signature)*
RICK OFFICER

c. DATE SIGNED (YYMMDD)
96-10-23

DD Form 1695, APR 92 Previous editions are obsolete.

NOTICE OF REVISION (NOR)

(See MIL-STD-480 for instructions)
This revision described below has been authorized for the document listed.

DATE (YYMMDD) 92-11-20

Form Approved
OMB No. 0704-0188

1. ORIGINATOR NAME AND ADDRESS

Defense Electronics Supply Center
Dayton, Ohio 45444-5277

2. CAGE CODE 67268

3. NOR NO. 5962-R271-92

4. CAGE CODE 67268

5. DOCUMENT NO. **5962-86861**

6. TITLE OF DOCUMENT

MICROCIRCUITS, LINEAR, PRECISION VOLTAGE REFERENCE, 2.5-VOLT, MONOLITHIC SILICON

7. REVISION LETTER

(Current) A (New) B

8. ECP NO. **5962-86861ECP-1**

9. CONFIGURATION ITEM (OR SYSTEM) TO WHICH ECP APPLIES

All

10. DESCRIPTION OF REVISION

Sheet 1: Revisions ltr column; add "C"
Revisions description column; add "Changes in accordance with NOR 5962-R271-92".
Revisions date column; add "92-11-20".
Revision level block; add "B".
Revision status of sheets; For sheet 4, add "B".

Sheet 4: TABLE I, quiescent current test, group A subgroup 1, device types 01 and 02 , under max limits, delete 1.7 mA and substitute 2.0 mA.

TABLE I, output voltage test, under conditions column, delete "V_O = 2.5 V" and add footnote 1/. Also, under group A subgroups column, delete 2 and 3.

TABLE I, output voltage temperature coefficient test, under conditions column, add footnote 1/.

TABLE I, add the following description for footnote 1/;

"1/ Measurements of output voltage temperature coefficient is acceptable for output voltage across temperature measurement (subgroups 2 and 3) or visa versa."

Revision level block; add "B".

11. THIS SECTION FOR GOVERNMENT USE ONLY

a. CHECK ONE

[X] EXISTING DOCUMENT SUPPLEMENTED BY THIS NOR MAY BE USED IN MANUFACTURE.

[ ] REVISED DOCUMENT MUST BE RECEIVED BEFORE MANUFACTURER MAY INCORPORATE THIS CHANGE.

[ ] CUSTODIAN OF MASTER DOCUMENT SHALL MAKE ABOVE REVISION AND FURNISH REVISED DOCUMENT TO:

b. ACTIVITY AUTHORIZED TO APPROVE CHANGE FOR GOVERNMENT	SIGNATURE AND TITLE	DATE (YYMMDD)
DESC-ECS	MICHAEL A. FRYE BRANCH CHIEF	92-11-20
12. ACTIVITY ACCOMPLISHING REVISION	REVISION COMPLETED (Signature)	DATE (YYMMDD)
DESC-ECS	Phu Nguyen	92-11-20

REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Add device type 03. Add one vendor, CAGE 64155. Make changes to table I and throughout.	91-02-14	M. A. Frye

REV																			
SHEET																			
REV																			
SHEET																			

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

PMIC N/A

STANDARDIZED MILITARY DRAWING

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

AMSC N/A

PREPARED BY
Rick C. Officer

CHECKED BY
Charles E. Besore

APPROVED BY
Michael A. Frye

DRAWING APPROVAL DATE
87-11-17

REVISION LEVEL
A

DEFENSE ELECTRONICS SUPPLY CENTER
DAYTON, OHIO 45444

MICROCIRCUITS, LINEAR, PRECISION VOLTAGE REFERENCE, 2.5-VOLT, MONOLITHIC SILICON

SIZE	CAGE CODE	
A	**67268**	**5962-86861**

SHEET 1 OF 8

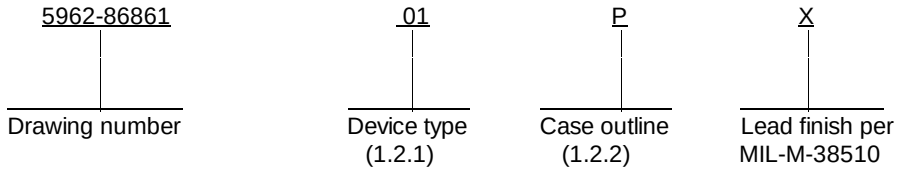
DESC FORM 193
SEP 87

5962-E1644

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:



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

Device type	Generic number	Circuit function
01	580S, 1503	Precision 2.5 V reference (1%)
02	580T, 1503A	Precision 2.5 V reference (.4%)
03	580U	Precision 2.5 V reference (.4%)

1.2.2 Case outline(s). The case outline(s) 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
X	See figure 2, TO-52 (3-lead, .230" x .150"), can package

1.3 Absolute maximum ratings.

Supply voltage (V_{CC}) . . . . . 40 V dc
Storage temperature range . . . . . -65°C to +150°C
Maximum power dissipation (P_D):
  Case P . . . . . 600 mW 1/
  Case X . . . . . 350 mW
Lead temperature (soldering, 10 seconds) . . . . . +300°C
Thermal resistance, junction-to-case (Θ_{JC}):
  Case P . . . . . See MIL-M-38510, appendix C
  Case X . . . . . 30°C/W
Thermal resistance, junction-to-ambient (Θ_{JA}):
  Case X . . . . . 150°C/W
Junction temperature (T_J) . . . . . +175°C

1.4 Recommended operating conditions.

Supply voltage (V_{CC}) . . . . . +4.5 V dc to +30 V dc
Ambient operating temperature range (T_A) . . . . . -55°C to +125°C

1/ Derate case P at 4.8 mW/°C above +25°C.

2. APPLICABLE DOCUMENTS

2.1 Government specification and standard. 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 Case outline(s). The case outline(s) shall be in accordance with 1.2.2 herein.

3.3 Electrical performance characteristics. Unless otherwise specified, 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-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).

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_A \le +125°C$ V_{CC} = +15 V, I_L = 0 mA (unless otherwise specified)	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Quiescent current	I_{CC}		1	01, 02		1.7	mA
				03		1.5	
			2, 3	All		2.0	
Output voltage	V_{OUT}	V_O = 2.5 V T_A = +25°C	1, 2, 3	All	2.475	2.525	V
			12	02, 03	2.49	2.51	
Line regulation	VR_{LINE1}	V_{CC} = 7 V to 30 V T_A = +25°C	1	01, 02		±6	mV
				03		±2	
	VR_{LINE2}	V_{CC} = 4.5 V to 7 V T_A = +25°C		01, 02		±3	
				03		±1	
Load regulation	VR_{LOAD}	I_L = 0 mA to 10 mA T_A = +25°C	1	All		±10	mV
Output voltage temperature coefficient	TCV_{OUT}		2, 3	01		±25	mV
				02		±11	
				03		±4.5	

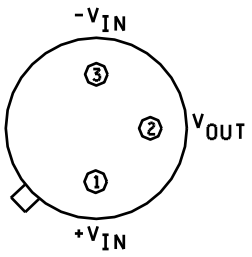
3.6 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to be listed as an approved source of supply in MIL-BUL-103 (see 6.6 herein). The certificate of compliance submitted to DESC-ECS prior to listing as an approved source of supply shall affirm that 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.

Case X



Case P

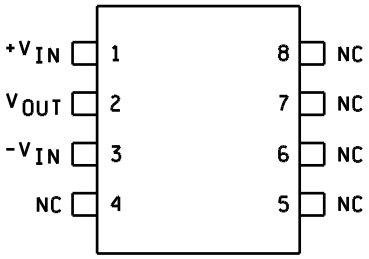
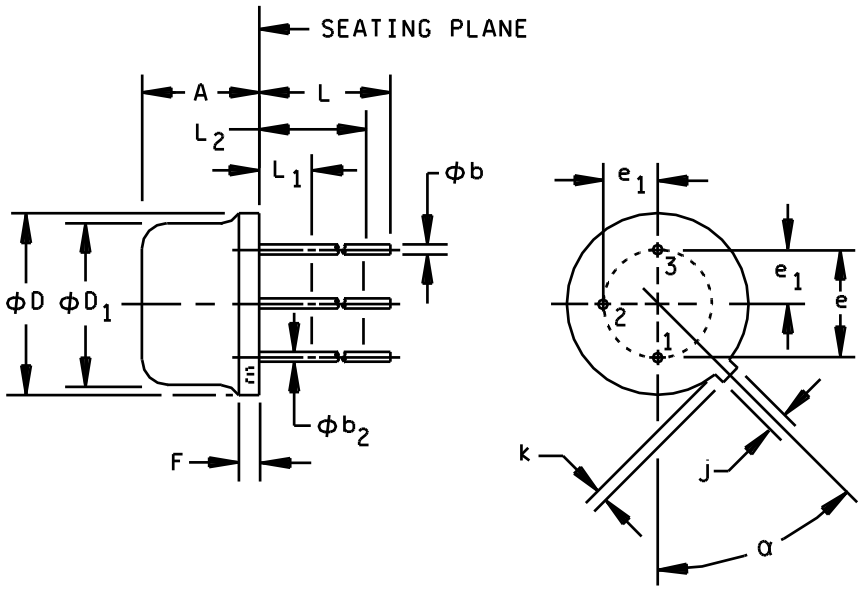


FIGURE 1. Terminal connections.

Case X



NOTES:

1. (Three leads) ϕb_2 applies between L_1 and L_2. ϕb applies between L_2 and0.5 inch (12.70 mm) from seating plane. Diameter is uncontrolled in L_1 and beyond 0.5 inch (12.70 mm) from seating plane.
2. Leads having maximum diameter 0.019 inch (0.48 mm) measured in gauging plane 0.054 inch (1.4 mm) +0.001 inch (0.03 mm) -0.000 inch (0.00 mm) below the seating plane of the device are within 0.007 inch (0.18 mm) of their true positions relative to a maximum-width tab.
3. Measured from maximum diameter of the actual device.
4. All leads - increase maximum limit by 0.003 inch (0.08 mm) when hot solder dip finish is applied.

FIGURE 2. Case outline.

Case X

Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	0.115	0.150	2.92	3.81	
ϕb		0.021		0.53	1, 4
ϕb_2	0.016	0.019	0.41	0.48	1, 4
ϕD	0.209	0.230	5.31	5.84	
ϕD_1	0.178	0.195	4.52	4.95	
e	0.100 T.P.		2.54 T.P.		2
e_1	0.050 T.P.		1.27 T.P.		2
F		0.030		0.76	
j	0.036	0.046	0.91	1.17	
k	0.028	0.048	0.71	1.22	3
L	0.500		12.70		1
L_1		0.050		1.27	1
L_2	0.250		6.35		
α	45° T.P.				

FIGURE 2. Case outline - Continued.

TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (per method 5005, table I)
Interim electrical parameters	1
Final electrical test parameters	1*, 2, 3, 12
Group A test requirements	1, 2, 3, 12
Groups C and D end-point electrical parameters	1

* PDA applies to subgroup 1.

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°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.

c. Optional subgroup 12 is used for grading and part selection at T_A = +25°C. It is not included in PDA.

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, 8, 9, 10, and 11 in table I, method 5005 of MIL-STD-883 shall be omitted.

c. Optional subgroup 12 is used for grading and part selection at T_A = +25°C.

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°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. 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 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.

6.6 Approved source of supply. An approved source of supply is 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-ECS.

STANDARDIZIED MILITARY DRAWING SOURCE APPROVEL BULLETIN

DATE: 91-02-14

Approved sources of supply for SMD 5962-86861 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-ECS. This bulletin is superseded by the next dated revision of MIL-BUL-103.

Standardized military drawing PIN	Vendor CAGE number	Vendor similar PIN 1/
5962-8686101PX	34333	SG1503Y/883B
5962-8686101XX	24355	AD580SH/883B
	34333	SG1503T/883B
	64155	LT580SH/883
5962-8686102PX	34333	SG1503AY/883B
5962-8686102XX	24355	AD580TH/883B
	64155	LT580TH/883
5962-8686101XX	24355	AD580UH/883B
	64155	LT580UH/883

1/ 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
24355	Analog Devices Route 1 Industrial Park P.O. Box 9106 Norwood, MA 02062 Point of contact: 804 Woburn Street Wilmington, MA 01887
34333	Silicon General, Incorporated 11861 Western Ave Garden Grove, CA 92641
64155	Linear Technology Corporation 1630 McCarthy Boulevard Milpitas, CA 95035-7487