REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Update to current MIL-PRF-38534 requirements. Corrections throughout. -gc	16-11-23	Charles F. Saffle

REV																				
SHEET																				
REV	A	A																		
SHEET	15	16																		

REV STATUS	REV	A	A	A	A	A	A	A	A	A	A	A	A	A	A
OF SHEETS	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14

PMIC N/A

PREPARED BY
Greg Cecil

STANDARD MICROCIRCUIT DRAWING

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

AMSC N/A

CHECKED BY
Greg Cecil

APPROVED BY
Charles F. Saffle

DRAWING APPROVAL DATE
13-10-10

REVISION LEVEL
A

DLA LAND AND MARITIME
COLUMBUS, OHIO 43218-3990
http://www.landandmaritime.dla.mil/

MICROCIRCUIT, HYBRID, LINEAR, POSITIVE, SWITCHING, VOLTAGE REGULATOR, ADJUSTABLE OUTPUT

SIZE	CAGE CODE	
A	**67268**	**5962-13236**

SHEET 1 OF 16

DSCC FORM 2233
APR 97

5962-E061-17

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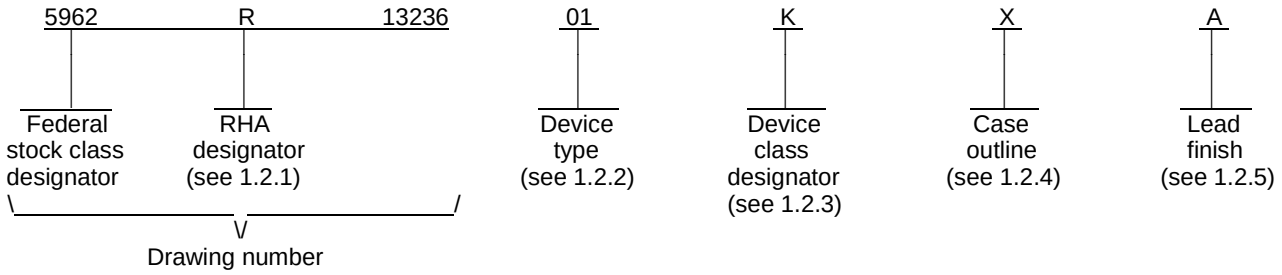
1. SCOPE

1.1 Scope. This drawing documents five product assurance classes as defined in paragraph 1.2.3 and MIL-PRF-38534. A choice of case outlines and lead finishes which are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of radiation hardness assurance levels are reflected in the PIN.

1.2 PIN. The PIN shall be as shown in the following example:



1.2.1 Radiation hardness assurance (RHA) designator. RHA marked devices meet the MIL-PRF-38534 specified RHA levels and are marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

1.2.2 Device type. The device type identify the circuit function as follows:

Device type	Generic number	Circuit function
01	MHP8565A	Radiation hardened, 3.5 A, switching voltage regulator

1.2.3 Device class designator. This device class designator is a single letter identifying the product assurance level. All levels are defined by the requirements of MIL-PRF-38534 and require QML Certification as well as qualification (Class H, K, and E) or QML Listing (Class G and D). The product assurance levels are as follows:

Device class	Device performance documentation
K	Highest reliability class available. This level is intended for use in space applications.
H	Standard military quality class level. This level is intended for use in applications where non-space high reliability devices are required.
G	Reduced testing version of the standard military quality class. This level uses the Class H screening and In-Process Inspections with a possible limited temperature range, manufacturer specified incoming flow, and the manufacturer guarantees (but may not test) periodic and conformance inspections (Group A, B, C, and D).
E	Designates devices which are based upon one of the other classes (K, H, or G) with exception(s) taken to the requirements of that class. These exception(s) must be specified in the device acquisition document; therefore the acquisition document should be reviewed to ensure that the exception(s) taken will not adversely affect system performance.
D	Manufacturer specified quality class. Quality level is defined by the manufacturers internal, QML certified flow. This product may have a limited temperature range.

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1.2.4 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
U	See figure 1	5	Straight leads, glass sealed, soft copper leads
X	See figure 1	5	Surface mount lead bend, glass sealed, soft copper leads
Y	See figure 1	5	Leads formed down, glass sealed, soft copper leads
Z	See figure 1	5	Leads formed up, glass sealed, soft copper leads

1.2.5 Lead finish. The lead finish is as specified in MIL-PRF-38534.

1.3 Absolute maximum ratings. 1/

Input voltage (V_{IN})	+16 V dc
Output current (I_{OUT})	4 A
Output power	15 W
Enable pin voltage	7.0 V
Junction temperature (T_J)	+150°C
Thermal resistance, junction-to-case at +125°C:	
Forward switch	2.5°C/W
Catch diode	1.5°C/W
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C

1.4 Recommended operating conditions.

Input voltage range (V_{IN})	+4.5 V dc to +5.5 V dc
Output voltage range	1 V to 3.3 V
Case operating temperature range (T_C)	-55°C to +125°C

1.5 Radiation features. 2/ 3/

Maximum total dose available (dose rate = 50-300 rad(Si)/s):	100 krads(Si) 4/
Maximum total dose available (dose rate ≤ 10 mrads(Si)/s):	50 krads(Si) 4/
Single event phenomenon (SEP) effective linear energy transfer (LET):	
No SEL, SEB, SEFI, SEGR	≤ 85.5 MeV-cm^2/mg 5/
SEU	≤ 85.5 MeV-cm^2/mg 6/

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.

1/ Stresses above the absolute maximum ratings may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.
2/ See 4.3.5 for the manufacturer's radiation hardness assurance analysis and testing.
3/ Bipolar device types may degrade from displacement damage from radiation which could affect RHA levels. This device has not been characterized for displacement damage.
4/ The device on this drawing has been high dose rate tested using condition A to 200 krads(Si) to ensure RHA designator level "R" (100 krad(Si)), and low dose rate tested using condition C to 50 krad(Si) per test method 1019 of MIL-STD-1019 of MILK-STD-883. This testing will be repeated after any design or process changes that can affect RHA response.
5/ Single event testing was performed at 85 MeV-cm^2/mg with no latch-up, burn-out, functional interrupt, or gate ruptures exhibited.
6/ Singe event upsets (transient voltages) were observed to be within the limits specified in Table 1B herein.

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DEPARTMENT OF DEFENSE SPECIFICATION

MIL-PRF-38534 - Hybrid Microcircuits, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard Microcircuits.
MIL-STD-1835 - Interface Standard for 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://quicksearch.dla.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM F1192 - Standard Guide for the Measurement of Single Event Phenomena (SEP) Induced by Heavy Ion Irradiation of Semiconductor Devices.

(Copies of these documents are available online at http://www.astm.org/)

2.3 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 performance requirements for device classes D, E, G, H, and K shall be in accordance with MIL-PRF-38534. Compliance with MIL-PRF-38534 may include the performance of all tests herein or as designated in the device manufacturer's Quality Management (QM) plan or as designated for the applicable device class. The manufacturer may eliminate, modify or optimize the tests and inspections herein, however the performance requirements as defined in MIL-PRF-38534 shall be met for the applicable device class. In addition, the modification in the QM plan shall not affect the form, fit, or function of the device for the applicable device class.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38534 and herein.

3.2.1 Case outlines. The case outlines shall be in accordance with 1.2.4 herein and figure 1.

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 2.

3.2.3 Radiation exposure circuits. The radiation exposure circuit shall be maintained by the manufacturer under document revision level control and shall be made available to the preparing and acquiring activity upon request.

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 specified 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 defined in table I.

3.5 Marking of devices. Marking of devices shall be in accordance with MIL-PRF-38534. The device shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's vendor similar PIN may also be marked.

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3.6 Data. In addition to the general performance requirements of MIL-PRF-38534, the manufacturer of the device described herein shall maintain the electrical test data (variables format) from the initial quality conformance inspection group A lot sample, for each device type listed herein. Also, the data should include a summary of all parameters manually tested, and for those which, if any, are guaranteed. This data shall be maintained under document revision level control by the manufacturer and be made available to the preparing activity (DLA Land and Maritime-VA) upon request.

3.7 Certificate of compliance. A certificate of compliance shall be required from a manufacturer in order to supply to this drawing. The certificate of compliance (original copy) submitted to DLA Land and Maritime-VA shall affirm that the manufacturer's product meets the performance requirements of MIL-PRF-38534 and herein.

3.8 Certificate of conformance. A certificate of conformance as required in MIL-PRF-38534 shall be provided with each lot of microcircuits delivered to this drawing.

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-PRF-38534 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

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TABLE IA. Electrical performance characteristics.

Test	Symbol	Conditions 1/ 2/ $-55°C \le T_C \le +125°C$ unless otherwise specified		Group A subgroups	Device type	Limits		Unit
						Min	Max	
Output voltage accuracy 3/	V_{OUT}	V_O = 1.21 V		1,2,3	01	1.19	1.23	V
			M, D, P, L, R	1		1.17	1.24	
Line regulation	K_{VI}	4.5 V ≤ V_{IN} ≤ 5.5 V, V_O = 1.21 V		1,2,3	01		±0.5	%
Load regulation	K_{VO}	1 A ≤ I_{OUT} ≤ 2 A		1,2,3	01		±1.0	%
Current limit 3/ 4/	I_{CL}			1,2,3	01	3.5		A
			M, D, P, L, R	1		3.0		
Input voltage on Enable pin to guarantee shutdown	V_{SHDN}	I_O = 0 A		1	01	0.13	0.60	V

1/ Post irradiation testing shall be in accordance with 4.3.5 and table II herein.
2/ Unless otherwise specified, V_{IN} = 5.0 V, V_{OUT} = 2.5 V, and I_{OUT} = 1.0 A.
3/ The device on this Standard Microcircuit Drawing (SMD) has been high dose rate tested using condition A to 200 krads(Si) to ensure RHA designator level "R" (100 krads(Si)), and low dose rate using condition C to 50 krads(Si) per test method 1019 of MIL-STD-883 for these parameters. This testing will be repeated after any design or process changes that can affect RHA response.
4/ Output current limit function provides protection from transient overloads, but it may exceed the maximum continuous rating. Continuous operation in current limit may damage the device.

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TABLE IB. SEP test limits.

<table>
<tr><th>Device type</th><th>SEP</th><th>Temperature (TC)</th><th>Conditions/Results</th><th>Effective linear energy transfer (LET)</th></tr>
<tr><td>01</td><td>SEL (Destructive)</td><td>+25°C 4/</td><td>None observed</td><td>≤ 85.5 MeV-cm^2/mg</td></tr>
<tr><td>01</td><td>SEB</td><td>+25°C 4/</td><td>None observed</td><td>≤85.5 MeV-cm^2/mg</td></tr>
<tr><td>01</td><td>SEFI</td><td>+25°C 4/</td><td>None observed</td><td>≤85.5 MeV-cm^2/mg</td></tr>
<tr><td>01</td><td>SEGR</td><td>+25°C 4/</td><td>None observed</td><td>≤85.5 MeV-cm^2/mg</td></tr>
<tr><td>01</td><td>SEU (SET)</td><td>+25°C 4/</td><td>Input Voltage: Nominal with 10 uF

Output: Capacitance 440 uF nominal and ESR ≤ 100m Ω

Matrix of Worst Case negative Output Transients vs. Load
<table>
<tr><th>Load Voltage 1/</th><th>Load Current 2/</th><th>Amplitude of max transient voltage (mv) 3/</th><th>Max pulse width (uS)</th></tr>
<tr><td>V_{Low}</td><td>I_{LOW}</td><td>62</td><td>30</td></tr>
<tr><td>V_{Low}</td><td>I_{MED}</td><td>68</td><td>30</td></tr>
<tr><td>V_{Low}</td><td>I_{HIGH}</td><td>112</td><td>30</td></tr>
<tr><td>V_{Med}</td><td>I_{LOW}</td><td>77</td><td>40</td></tr>
<tr><td>V_{Med}</td><td>I_{MED}</td><td>98</td><td>70</td></tr>
<tr><td>V_{Med}</td><td>I_{HIGH}</td><td>128</td><td>40</td></tr>
<tr><td>V_{High}</td><td>I_{LOW}</td><td>120</td><td>40</td></tr>
<tr><td>V_{High}</td><td>I_{MED}</td><td>140</td><td>40</td></tr>
<tr><td>V_{High}</td><td>I_{HIGH}</td><td>164</td><td>70</td></tr>
</table></td><td>≤ 85.5 MeV-cm^2/mg</td></tr>
</table>

1/ Load voltage (low = internal reference voltage, medium = nominal, and high = maximum recommended).
2/ Approximate load currents (low = 1 amp, medium = 2 amp, and high = 3 amp).
3/ Amplitudes ≤ 50 mV are not reported.
4/ Test repeated at 100°C with similar results.

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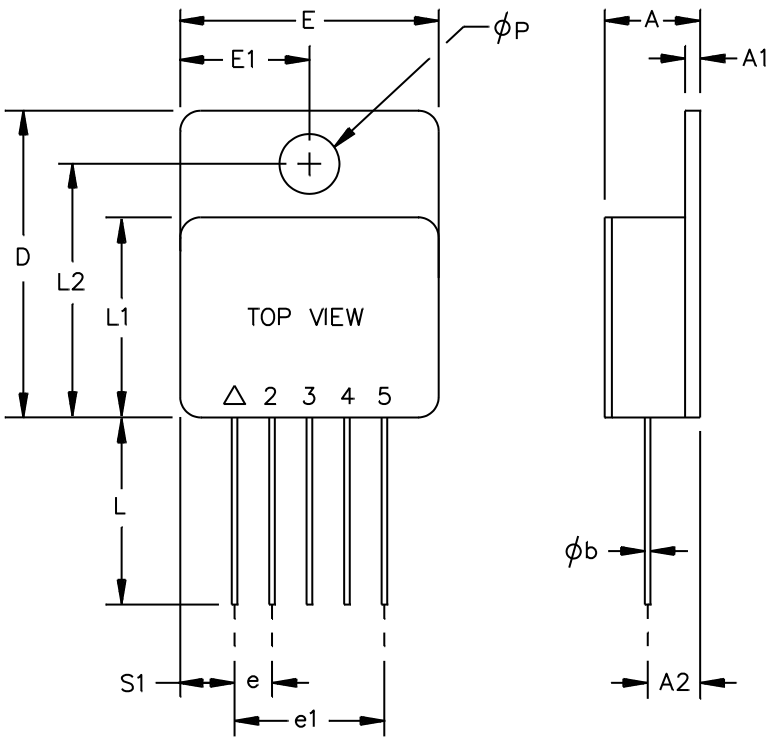
Case outline U.



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	---	6.48	---	.260
A1	.0.90	1.14	.035	.045
A2	3.30	3.81	.130	.150
øb	0.71	0.81	.025	.035
D	20.70	20.96	.815	.835
E	17.40	17.65	.685	.695
E1	8.64	8.89	.340	,350
e	2.54 TYP		.100 TYP	
e1	10.03	10.29	.395	.405
L	12.70	---	.500	---
L1	13.34	13.84	.530	.550
L2	17.65	17.96	.695	.707
øP	3.94	4.19	.155	.165
S1	3.68 REF		.145 REF	

NOTES:
1. The U. S. Government preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and inch-pound units, the inch-pound units shall take precedence.
2. Pin numbers are for reference only.
3. Case outline U weight: 7.87 grams typical.

FIGURE 1. Case outlines.

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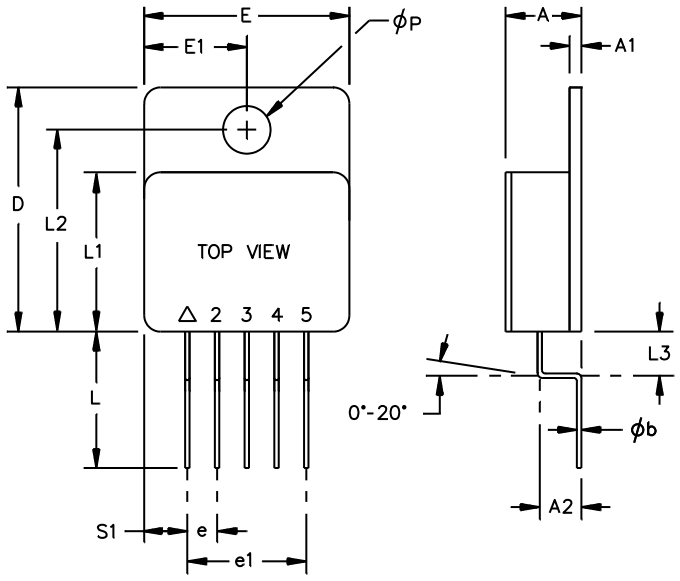
Case outline X.



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	---	6.48	---	.260
A1	.0.90	1.14	.035	.045
A2	3.30	3.81	.130	.150
øb	0.71	0.81	.025	.035
D	20.70	20.96	.815	,835
E	17.40	17.65	.685	.695
E1	8.64	8.89	.340	,350
e	2.54 TYP		.100 TYP	
e1	10.03	10.29	.395	.405
L	4.70	5.72	.185	.225
L1	13.34	13.84	.530	.550
L2	17.65	17.96	.695	.707
L3	2.41	2.92	.095	.115
øP	3.94	4.19	.155	.165
S1	3.68 REF		.145 REF	

NOTES:
1. The U. S. Government preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and inch-pound units, the inch-pound units shall take precedence.
2. Pin numbers are for reference only.
3. Case outline X weight: 7.87 grams typical.

FIGURE 1. Case outlines - Continued.

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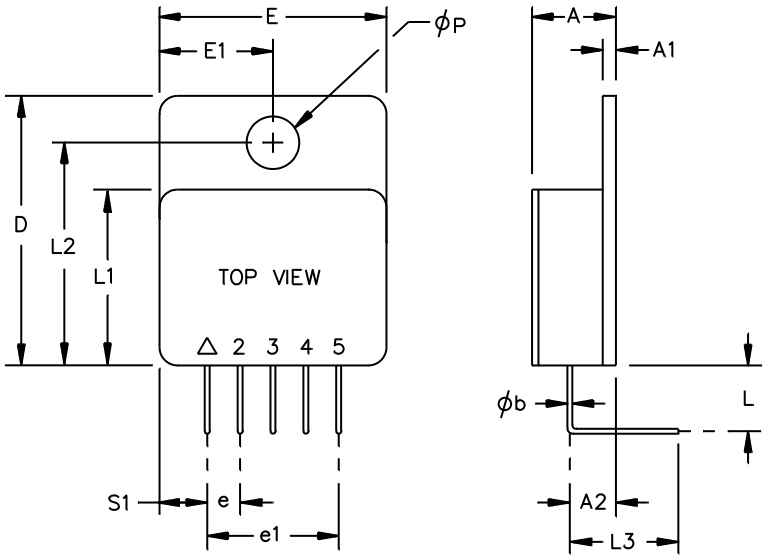
Case outline Y.



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	---	6.48	---	.260
A1	.0.90	1.14	.035	.045
A2	3.30	3.81	.130	.150
øb	0.64	0.89	.025	.035
D	20.70	20.96	.815	,835
E	17.40	17.65	.685	.695
E1	8.64	8.89	.340	,350
e	2.54 TYP		.100 TYP	
e1	10.03	10.29	.395	.405
L	4.32	4.83	.170	.190
L1	13.34	13.84	.530	.550
L2	17.65	17.96	.695	.707
L3	8.38	---	.390	---
øP	3.94	4.19	.155	.165
S1	3.68 REF		.145 REF	

NOTES:
1. The U. S. Government preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and inch-pound units, the inch-pound units shall take precedence.
2. Pin numbers are for reference only.
3. Case outline Y weight: 7.87 grams typical.

FIGURE 1. Case outlines - Continued.

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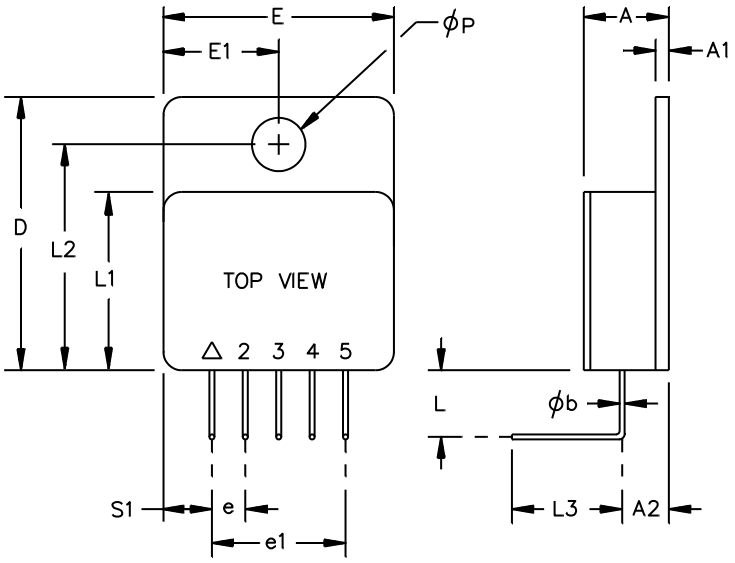
Case outline Z.



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	---	6.48	---	.260
A1	.0.90	1.14	.035	.045
A2	3.30	3.81	.130	.150
øb	0.64	0.89	.025	.035
D	20.70	20.96	.815	,835
E	17.40	17.65	.685	.695
E1	8.64	8.89	.340	,350
e	2.54 TYP		.100 TYP	
e1	10.03	10.29	.395	.405
L	4.32	4.83	.170	.190
L1	13.34	13.84	.530	.550
L2	17.65	17.96	.695	.707
L3	8.38	---	.390	---
øP	3.94	4.19	.155	.165
S1	3.68 REF		.145 REF	

NOTES:
1. The U. S. Government preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and inch-pound units, the inch-pound units shall take precedence.
2. Pin numbers are for reference only.
3. Case outline Z weight: 7.87 grams typical.

FIGURE 1. Case outlines - Continued.

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Device type	01	
Case outlines	U, X, Y, and Z	
Terminal number	Terminal symbol	Terminal description
1	V_{IN}	Input voltage
2	GND	Current ground
3	V_{OUT}	Output voltage
4	Enable	Enable output
5	Adjust	Output voltage adjust
Case	N/C	Isolated

FIGURE 2. Terminal connections.

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TABLE II. Electrical test requirements.

MIL-PRF-38534 test requirements	Subgroups (in accordance with MIL-PRF-38534, group A test table)
Interim electrical parameters	1
Final electrical parameters	1*, 2, 3
Group A test requirements	1, 2, 3
Group C end-point electrical parameters	1, 2, 3
End-point electrical parameters for radiation hardness assurance (RHA) devices	1

* PDA applies to subgroup 1.

4.2 Screening. Screening shall be in accordance with MIL-PRF-38534. 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 either DLA Land and Maritime-VA or the acquiring activity upon request. Also, 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_C = +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 Conformance and periodic inspections. Conformance inspection (CI) and periodic inspection (PI) shall be in accordance with MIL-PRF-38534 and as specified herein.

4.3.1 Group A inspection (CI). Group A inspection shall be in accordance with MIL-PRF-38534 and as follows:

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, 6, 7, 8, 9, 10, and 11 shall be omitted.

4.3.2 Group B inspection (PI). Group B inspection shall be in accordance with MIL-PRF-38534.

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4.3.3 Group C inspection (PI). Group C inspection shall be in accordance with MIL-PRF-38534 and as follows:

a. End-point electrical parameters shall be as specified in table II herein.

b. Steady-state life test, 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 either DLA Land and Maritime-VA or the acquiring activity upon request. Also, 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 minimum as specified in 1005 of MIL-STD-883.

4.3.4 Group D inspection (PI). Group D inspection shall be in accordance with MIL-PRF-38534.

4.3.5 Radiation Hardness Assurance (RHA). RHA qualification is required for those devices with the RHA designator as specified herein. See table IIIA and IIIB.

Table IIIA. Radiation Hardness Assurance Methods Table.

RHA Method Employed	**Testing at rated total dose of (100 krad)**		**Worst Case Analysis Performed**					**End point electrical tests after final total dose**	
	Element level	Hybrid device level 1/	Hybrid device level	Includes temperature effects	Combines temperature and radiation effects	Combines total dose and displacement effects	End-of-life	Element Level	Hybrid device level
	2X	2X	Yes	Yes	Yes	No	No	T_C = +25ºC	T_C = +25ºC

1/ Element level testing is met through hybrid level testing because the device contains only one integrated circuit besides diodes and passive elements.

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Table IIIB. Hybrid level and element level test table.

Radiation Test		Total Dose			Heavy Ion		Neutron	
		Low Dose Rate	High Dose Rate (HDR)	ELDRS Characterization	SEU (upset)	SEL (latch-up)	SEE (upset)	Displacement Damage (DD)
Hybrid Level Testing		Tested (51 krads)	Tested (200 krads)	Not performed	Tested (85.5 MeV)	Tested (85.5 MeV)	Not tested	Not Tested
Element Level Testing								
	Bipolar Linear or Mixed Signal > 90 nm	Hybrid level test 1/	Hybrid level test 1/	Not performed	Hybrid level test 1/	Hybrid level test 1/	Not tested	Not Tested

1/ Element level testing is met through hybrid level testing because the device contains only one integrated circuit besides diodes and passive elements.

4.3.5.1 Radiation Hardness Assurance (RHA) inspection. RHA qualification is required for those devices with the RHA designator as specified herein. End-point electrical parameters for radiation hardness assurance (RHA) devices shall be specified in table II. Radiation testing will be in accordance with the qualifying activity (DLA Land and Maritime -VQ) approved plan and with MIL-PRF-38534, Appendix G.

a. The hybrid device manufacturer shall establish procedures controlling component radiation testing, and shall establish radiation test plans used to implement component lot qualification during procurement. Test plans and test reports shall be filed and controlled in accordance with the manufacturer's configuration management system.

b. The hybrid device manufacturer shall oversee component lot qualification, and monitor design changes for continued compliance to RHA requirements.

4.3.5.1.1 Hybrid level radiation qualification. This device is characterized and tested, initially and after any design or process changes which may affect the RHA response of the device type.

4.3.5.1.1.1 Total ionizing dose irradiation testing. Devices are tested at High Dose Rate (HDR) in accordance with condition A and Low Dose Rate Tested (LDR) to Condition D in accordance with method 1019 of MIL-STD-883. A minimum of 4 biased and 4 unbiased devices are HDR tested to 2X the rated value and 4 biased and 4 unbiased are LDR tested to 1X the rated value. 0.9900/90% statistics are applied to degradations for HDR and LDR which are compared against Table IA for acceptance.

4.3.5.1.1.2 Single event phenomena (SEP). A minimum of one device is tested in accordance with ASTM F1192. Test conditions for SEP are as follows:

a. The ion beam angle of incidence shall be normal to the die surface. No shadowing of the ion beam due to fixturing is allowed.

b. The fluence shall be $\geq 1x10^6$ particles/cm^2.

c. The flux shall be between 10^2 and 10^5 ions/cm^2/s.

d. The particle range shall be $\geq$ 35 micron in active silicon.

e. The characterization is performed at nominal input voltage with 10 µF capacitance. The load is varied (low = internal reference voltage, medium = nominal voltage, and high = maximum recommended voltage); Approximate Current (low = 1 amp, medium = 2 amp, and high = 3 amp) with capacitance of 440 µF and ESR ≤ 100 mΩ. The test temperature shall be +25ºC ±10 ºC in air.

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4.3.5.1.2 Element level radiation qualification. Element are tested at the hybrid level since this device contains only one microcircuit element along with passive elements and diodes.

4.3.5.2 Radiation lot acceptance. Each wafer lot of microcircuit elements shall be evaluated for acceptance in accordance with the approved plan and MIL-PRF-38534 and herein.

4.3.5.2.1 Total Ionizing Dose. Every wafer lot of the microcircuit elements will be RLAT (Radiation Lot Acceptance Testing) tested at hybrid level (in this device or a similar device) at HDR in accordance with condition A of method 1019 of MIL-STD-883. A minimum of 4 biased samples and 4 unbiased samples will be tested. 0.9900/90% statistics are applied to the device parameter degradations which are compared against Table 1 herein or in the SMD for the similar device for lot acceptance.

4.3.5.2.2 Technologies not being tested. Testing is not performed on technologies including IN5822 and IN4148 diodes which the manufacturer considers to be radiation hard.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38534.

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 as specified in MIL-PRF-38534.

6.4 Record of users. Military and industrial users should inform DLA Land and Maritime when a system application requires configuration control and the applicable SMD. 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 microelectronic devices (FSC 5962) should contact DLA Land and Maritime-VA, telephone (614) 692-8108.

6.5 Comments. Comments on this drawing should be directed to DLA Land and Maritime-VA, Columbus, Ohio 43218-3990, or telephone (614) 692-1081.

6.6 Sources of supply. Sources of supply are listed in MIL-HDBK-103 and QML-38534. The vendors listed in MIL-HDBK-103 and QML-38534 have submitted a certificate of compliance (see 3.7 herein) to DLA Land and Maritime-VA and have agreed to this drawing.

6.7 Additional information. When applicable, a copy of the following additional data shall be maintained and available from the device manufacturer:

a. RHA upset levels.

b. Test conditions (SEP).

c. Occurrence of latchup (SEP).

d Occurrence of Burn-out (SEP).

e. Occurrence of Gate Rupture (SEP).

f. Occurrence of Single Event Functional Interrupt (SEP).

g Occurrence of Single Event Upset (SEP).

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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 16-11-23

Approved sources of supply for SMD 5962-13236 are listed below for immediate acquisition information only and shall be added to MIL-HDBK-103 and QML-38534 during the next revisions. MIL-HDBK-103 and QML-38534 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 revisions of MIL-HDBK-103 and QML-38534. DLA Land and Maritime maintains an online database of all current sources of supply at https://landandmaritimeapps.dla.mil/programs/smcr/.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962R1323601HUA	43611	MHP8565AHA
5962R1323601HUC	43611	MHP8565AHC
5962R1323601HXA	43611	MHP8565AH-1A
5962R1323601HXC	43611	MHP8565AH-1C
5962R1323601HYA	43611	MHP8565AH-2A
5962R1323601HYC	43611	MHP8565AH-2C
5962R1323601HZA	43611	MHP8565AH-3A
5962R1323601HZC	43611	MHP8565AH-3C
5962R1323601KUA	43611	MHP8565AKA
5962R1323601KUC	43611	MHP8565AKC
5962R1323601KXA	43611	MHP8565AK-1A
5962R1323601KXC	43611	MHP8565AK-1C
5962R1323601KYA	43611	MHP8565AK-2A
5962R1323601KYC	43611	MHP8565AK-2C
5962R1323601KZA	43611	MHP8565AK-3A
5962R1323601KZC	43611	MHP8565AK-3C

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
43611	Microsemi Corporation DBA Microsemi – Lawrence Division 6 Lake Street Lawrence, MA 01841

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

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