

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 listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

SPECIFICATION

MILITARY

MIL-PRF-38535 - Integrated Circuits, Manufacturing, General Specification for.

STANDARDS

MILITARY

MIL-STD-883 - Test Methods and Procedures for Microelectronics.
MIL-STD-973 - Configuration Management.
MIL-STD-1835 - Microcircuit Case Outlines.

HANDBOOKS

MILITARY

MIL-HDBK-103 - List of Standard Microcircuit Drawings (SMD's).
MIL-HDBK-780 - Standard Microcircuit Drawings.

(Unless otherwise indicated, copies of the specification, standards, and handbooks are available 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 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 Logic diagram(s). The logic diagram(s) 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 as listed in MIL-HDBK-103 (see 6.6 herein). 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.

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions 1/ -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device Type	Limits 2/		Unit
					Min	Max	
Input supply section							
Supply current	I _{CC}	+V _{IN} = 6 V	1, 2, 3	All		4.0	mA
		+V _{IN} = 40 V				6.0	
Under-voltage lockout threshold	V _{TH}	+V _{IN} low to high, V _{OUT} SENSE = 0 V	1, 2, 3	All	3.9	4.9	V
Threshold hysteresis	V _{TH} (HYST)		1, 2, 3	All		0.35	V
Reverse current	I _R	+V _{IN} = -1.0 V, driver sink open	1, 2, 3	All		20	mA
Regulating voltage and error amplifier section							
Regulating level at V _{OUT} SENSE	V _{REG}	I _{DRIVER} = 10 mA	1	01	4.94	5.06	V
			2, 3		4.9	5.1	
			1	02	2.47	2.53	
			2, 3		2.45	2.55	
Line regulation	V _{LN}	+V _{IN} = 5.2 V to 35 V	1, 2, 3	01		40	mV
				02		20	
Load regulation	V _{LD}	I _{DRIVER} = 0 mA to 250 mA	1, 2, 3	01		25	mV
				02		15	
Bias current at V _{OUT} SENSE	I _{IB}	V _{OUT} SENSE = 5.0 V	1, 2, 3	01	75	210	μA
		V _{OUT} SENSE = 2.5 V		02	-1.0		
Error amp transconductance	----	±100 μA at compensation/shutdown pin	1, 2, 3	All	0.8	2.0	ms
Maximum compensation output current	I _{CO}	Sink or source, driver source open	1, 2, 3	All	90	260	μA
Driver section							
Maximum current	I _{MAX}		1, 2, 3	All	250		mA
Saturation voltage	V _{SAT}	I _{DRIVER} = 250 mA, at DRIVER SINK pin	1, 2, 3	All		2.8	V
Pull-up current at driver sink	----	COMP/SHUTDOWN = 0.45 V	1, 2, 3	All	140	300	μA

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - Continued.

Test	Symbol	Conditions -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device Type	Limits		Unit	
					Min	Max		
Driver section - Continued.								
Driver sink leakage	----	In under-voltage lockout	1, 2, 3	All		10	μA	
		In reverse voltage				10		
Foldback current limit section								
Current limit levels at sense resistor out	----	V _{OUT} SENSE = (0.99) V _{REG}	1, 2, 3	All	2.2	2.8	A	
		V _{OUT} SENSE = (0.5) V _{REG}			1.3	1.7		
		V _{OUT} SENSE = 0 V			0.25	0.55		
Current limit amp transconductance	----	±100 μA at COMP/SHUTDOWN pin, V _{OUT} SENSE = (0.9) V _{REG}	1, 2, 3	All	12	42	ms	
Limiting voltage at current limit (-)	3/	----	V _{OUT} SENSE = (0.9) V _{REG} volts below +V _{IN} , T _A = +25°C	1	All	80	140	mV

1/ Unless otherwise specified, +V_{IN} = 6 V, Driver sink = 5 V, and Driver source = 0 V.

2/ The algebraic convention, whereby the most negative value is a minimum and the most positive is a maximum, is used in this table. Negative current shall be defined as conventional current flow out of a device terminal.

3/ This voltage has a positive temperature coefficient of approximately 3500 ppm/°C.

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Device type	01 and 02	
Case outline	P	2
Terminal number	Terminal symbol	
1	+V _{IN}	N/C
2	COMP/SHUTDOWN	+V _{IN}
3	GROUND	+V _{IN}
4	DRIVER SOURCE	N/C
5	V _{OUT} SENSE	COMP/SHUTDOWN
6	DRIVER SINK	N/C
7	CURRENT LIMIT (-)	GROUND
8	SENSE RESISTOR OUT	N/C
9	----	N/C
10	----	DRIVER SOURCE
11	----	N/C
12	----	V _{OUT} SENSE
13	----	N/C
14	----	N/C
15	----	DRIVER SINK
16	----	N/C
17	----	CURRENT LIMIT (-)
18	----	N/C
19	----	SENSE RESISTOR OUT
20	----	SENSE RESISTOR OUT

FIGURE 1. Terminal connections.

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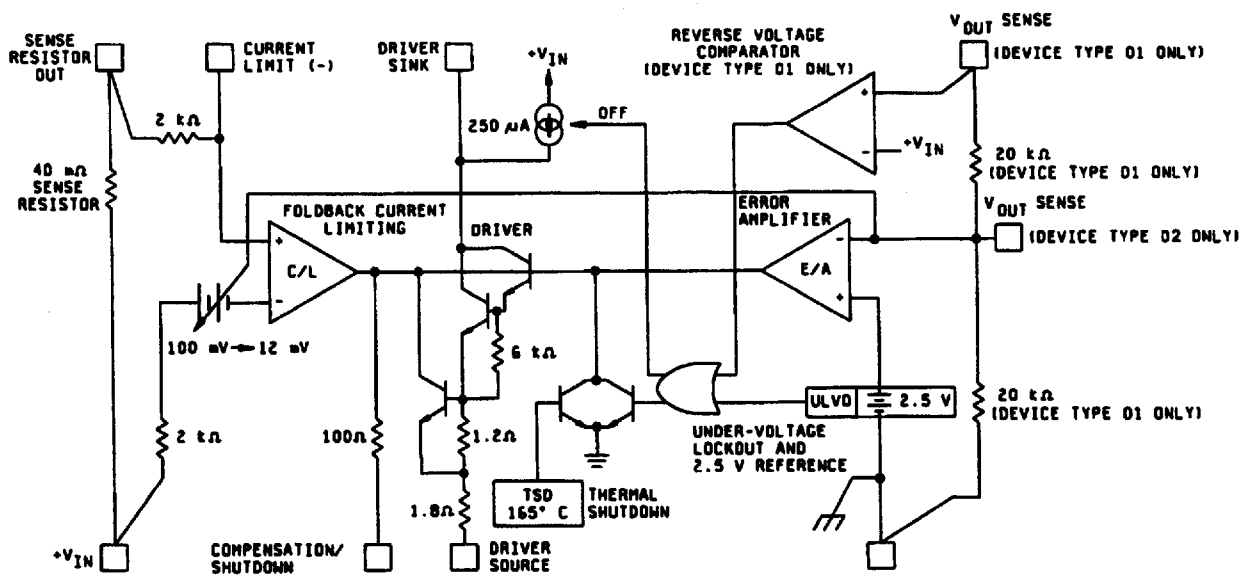


FIGURE 2. Logic diagram.

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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 DESC-EC 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 DESC-EC shall be required in accordance with MIL-PRF-38535, appendix A.

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 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 C. 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 test 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, 8, 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 C. 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 test 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.

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TABLE II. Electrical test requirements.

MIL-STD-883 test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table 1)
Interim electrical parameters (method 5004)	----
Final electrical test parameters (method 5004)	1, 2, 3
Group A test requirements (method 5005)	1, 2, 3
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 in accordance with MIL-STD-973 using DD Form 1692, Engineering Change Proposal.

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 45444-5270, or telephone (513) 296-5377.

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 DESC-EC.

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