

REVISIONS

LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Add device types 03 and 04. Editorial changes throughout.	94-11-15	M. A. Frye
B	Changes in accordance with NOR 5962-R106-95.	95-04-12	M. A. Frye
C	Change t_{LZ} , t_{HZ} , and t_{TD} for device type 03 in table I. Editorial changes throughout. -rrp	98-10-05	Raymond Monnin
D	Update drawing to current requirements. Editorial changes throughout. - drw	04-11-18	Raymond Monnin
E	Redraw. For device types 01 and 02, correct the R_L test condition in table I for tests V_{OD2} , Delta V_{OD2} , V_{OC} , and Delta V_{OC} , from 1000 Ω to 100 Ω . - drw	11-01-24	Charles F. Saffle

THE ORIGINAL FIRST SHEET OF THIS DRAWING HAS BEEN REPLACED.

REV																				
SHEET																				
REV	E																			
SHEET	15																			

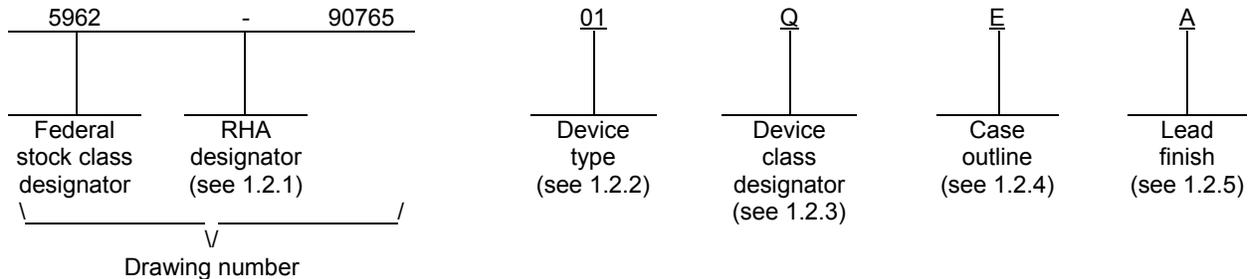
REV STATUS OF SHEETS	REV	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14		

PMIC N/A	PREPARED BY Rick C. Officer	<p align="center">DLA LAND AND MARITIME COLUMBUS, OHIO 43218-3990 http://www.dsc.dla.mil</p>																	
<p align="center">STANDARD MICROCIRCUIT DRAWING</p> <p>THIS DRAWING IS AVAILABLE FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE</p> <p align="center">AMSC N/A</p>	CHECKED BY Charles E. Besore																		
	APPROVED BY Michael A. Frye	<p align="center">MICROCIRCUIT, LINEAR, LINE DRIVER, QUAD DIFFERENTIAL, MONOLITHIC SILICON</p>																	
	DRAWING APPROVAL DATE 91-08-01																		
	REVISION LEVEL E		SIZE A	CAGE CODE 67268	5962-90765														
		SHEET 1 OF 15																	

1. SCOPE

1.1 Scope. This drawing documents two product assurance class levels consisting of high reliability (device classes Q and M) and space application (device class V). A choice of case outlines and lead finishes are available and are reflected in the Part or Identifying Number (PIN). When available, a choice of Radiation Hardness Assurance (RHA) levels is reflected in the PIN.

1.2 PIN. The PIN is as shown in the following example:



1.2.1 RHA designator. Device classes Q and V RHA marked devices meet the MIL-PRF-38535 specified RHA levels and are marked with the appropriate RHA designator. Device class M RHA marked devices meet the MIL-PRF-38535, appendix A specified RHA levels and are marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

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

<u>Device type</u>	<u>Generic number</u>	<u>Circuit function</u>
01	96F172	RS-485 comparable quad differential line driver
02	96F174	RS-485 comparable quad differential line driver
03	55LBC172	RS-485 comparable quad differential line driver, low power
04	55LBC174	RS-485 comparable quad differential line driver, low power

1.2.3 Device class designator. The device class designator is a single letter identifying the product assurance level as follows:

<u>Device class</u>	<u>Device requirements documentation</u>
M	Vendor self-certification to the requirements for MIL-STD-883 compliant, non-JAN class level B microcircuits in accordance with MIL-PRF-38535, appendix A
Q or V	Certification and qualification to MIL-PRF-38535

1.2.4 Case outlines. The case outlines are as designated in MIL-STD-1835 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
F	GDFP2-F16 or CDFP3-F16	16	Flat pack
2	CQCC1-N20	20	Square leadless chip carrier

1.2.5 Lead finish. The lead finish is as specified in MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

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1.3 Absolute maximum ratings. ^{1/}

Supply voltage (V _{CC})	7 V dc
Enable input voltage	5.5 V dc
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 60 seconds)	+300°C
Junction temperature (T _J):	
Device type 01, 02	+175°C
Device type 03, 04	+150°C
Power dissipation (P _D), T _A = +25°C ^{2/} , device types 01, 02:	
Case E	1800 mW
Case F	1000 mW
Case 2	2000 mW
Power dissipation (P _D), T _A = +25°C ^{3/} , device types 03, 04:	
Case E, 2	1375 mW
Case F	1000 mW
Thermal resistance, junction-to-case (θ _{JC})	See MIL-STD-1835
Thermal resistance, junction-to-ambient (θ _{JA}):	
Case E, device types 01, 02	80°C/W
Case E, device types 03, 04	85°C/W
Case F	140°C/W
Case 2	75°C/W

1.4 Recommended operating conditions.

Operating supply voltage range (V _{CC}):	
Device types 01, 02	4.5 V dc to 5.5 V dc
Device types 03, 04	4.75 V dc to 5.25 V dc
Ambient operating temperature range (T _A)	-55°C to +125°C
Common mode output voltage range (V _{OC})	-7 V dc to +12 V dc
High output current (I _{OH})	-60 mA
Low output current (I _{OL})	60 mA

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.)

- ^{1/} Stresses above the absolute maximum rating may cause permanent damage to the device. Extended operation at the maximum levels may degrade performance and affect reliability.
^{2/} Above T_A = +25°C, derate at a factor of 12.5 mW/°C for case E, 7.1 mW/°C for case F and 13.4 mW/°C for case 2.
^{3/} Above T_A = +25°C, derate at a factor of 11 mW/°C for cases E and 2, 8 mW/°C for case F.

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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 for device classes Q and V shall be in accordance with MIL-PRF-38535 and as specified herein 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. The individual item requirements for device class M shall be in accordance with MIL-PRF-38535, appendix A for non-JAN class level B devices and as specified herein.

3.2 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein for device classes Q and V or MIL-PRF-38535, appendix A and herein for device class M.

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

3.2.2 Terminal connections. The terminal connections shall be as specified on figure 1.

3.2.3 Truth tables. The truth tables shall be as specified on figure 2.

3.3 Electrical performance characteristics and postirradiation parameter limits. Unless otherwise specified herein, the electrical performance characteristics and postirradiation parameter limits 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 defined in table I.

3.5 Marking. The part shall be marked with the PIN listed in 1.2 herein. In addition, the manufacturer's PIN may also be marked. 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. For RHA product using this option, the RHA designator shall still be marked. Marking for device classes Q and V shall be in accordance with MIL-PRF-38535. Marking for device class M shall be in accordance with MIL-PRF-38535, appendix A.

3.5.1 Certification/compliance mark. The certification mark for device classes Q and V shall be a "QML" or "Q" as required in MIL-PRF-38535. The compliance mark for device class M shall be a "C" as required in MIL-PRF-38535, appendix A.

3.6 Certificate of compliance. For device classes Q and V, a certificate of compliance shall be required from a QML-38535 listed manufacturer in order to supply to the requirements of this drawing (see 6.6.1 herein). For device class M, 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 6.6.2 herein). The certificate of compliance submitted to DLA Land and Maritime-VA prior to listing as an approved source of supply for this drawing shall affirm that the manufacturer's product meets, for device classes Q and V, the requirements of MIL-PRF-38535 and herein or for device class M, the requirements of MIL-PRF-38535, appendix A and herein.

3.7 Certificate of conformance. A certificate of conformance as required for device classes Q and V in MIL-PRF-38535 or for device class M in MIL-PRF-38535, appendix A shall be provided with each lot of microcircuits delivered to this drawing.

3.8 Notification of change for device class M. For device class M, notification to DLA Land and Maritime -VA of change of product (see 6.2 herein) involving devices acquired to this drawing is required for any change that affects this drawing.

3.9 Verification and review for device class M. For device class M, 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.

3.10 Microcircuit group assignment for device class M. Device class M devices covered by this drawing shall be in microcircuit group number 53 (see MIL-PRF-38535, appendix A).

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TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions <u>1/</u> -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit	
					Min	Max		
Low level input voltage	V _{IL}	V _{CC} = 5.5 V	1	01, 02		0.8	V	
			2, 3			0.7		
		V _{CC} = 5.25 V	1, 2, 3			0.8		
High level input voltage	V _{IH}	V _{CC} = 5.5 V	1, 2, 3	01, 02	2		V	
		V _{CC} = 5.25 V		03, 04	2			
Input clamp voltage	V _{IC}	I _I = -18 mA, V _{CC} = 5.5 V	1, 2, 3	01, 02	-1.5		V	
		I _I = -18 mA, V _{CC} = 5.25 V		03, 04	-1.5			
Differential output voltage	V _{OD1}	I _O = 0 mA, V _{CC} = 5.5 V	1, 2, 3	01, 02		6	V	
		V _{OD2}	R _L = 54Ω, V _{CC} = 4.5 V <u>2/</u>	1, 2	01, 02	1.5		
	3				1.2			
			R _L = 54Ω, V _{CC} = 4.75 V <u>2/</u>	1, 2, 3	03, 04	1.1		5.0
			R _L = 100Ω, V _{CC} = 4.5 V <u>2/</u>	1, 2, 3	01, 02	2.0		
			R _L = 60Ω, V _{CC} = 4.75 V <u>2/</u>		03, 04	1.1		5.0
Change in magnitude of V _{OD2} <u>3/</u>	Delta V _{OD2}	R _L = 54Ω, V _{CC} = 4.5 V	1, 2	01, 02	-200	200	mV	
		R _L = 100Ω, V _{CC} = 4.5 V <u>4/</u>	3		-400	400		
		R _L = 54Ω, V _{CC} = 4.75 V	1, 2, 3	03, 04	-200	200		
Common mode output voltage	V _{OCC}	R _L = 54Ω, V _{CC} = 5.5 V	1, 2, 3	01, 02		3	V	
		R _L = 100Ω, V _{CC} = 5.5 V				3		
		R _L = 54Ω, V _{CC} = 5.25 V		03, 04	-1	3		

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - continued.

Test	Symbol	Conditions ^{1/} -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Change in magnitude of V _{OC} ^{3/}	Delta V _{OC}	R _L = 54Ω, V _{CC} = 4.5 V	1, 2, 3	01, 02	-200	200	mV
		R _L = 100Ω, V _{CC} = 4.5 V			-200	200	
		R _L = 54Ω, V _{CC} = 4.75 V		03, 04	-200	200	
Output current with power off	I _o	V _O = -7 V to 12 V, V _{CC} = 0 V	1, 2, 3	01, 02	-50	50	μA
				03, 04	-100	100	
High impedance state output current	I _{oz}	V _O = -7 V to 12 V, V _{CC} = 5.5 V, outputs disabled	1, 2, 3	01, 02	-50	50	μA
		V _O = -7 V to 12 V, V _{CC} = 5.25 V, outputs disabled		03, 04	-100	100	
Short circuit output current ^{5/}	I _{os}	V _O = -7 V, V _{CC} = 5.5 V	1, 2, 3	01, 02	-250		mA
		V _O = -7 V, V _{CC} = 5.25 V		03, 04	-250		
		V _O = 12 V, V _{CC} = 5.5 V		01, 02		250	
		V _O = 12 V, V _{CC} = 5.25 V		03, 04		250	
		V _O = 0 V, V _{CC} = 5.5 V		01, 02	-150		
		V _O = V _{CC} = 5.5 V				150	
High input current	I _{IH}	V _I = 2.4 V, V _{CC} = 5.5 V	1, 2, 3	01, 02		20	μA
		V _I = 2.4 V, V _{CC} = 5.25 V		03, 04		-100	
Low input current	I _{IL}	V _I = 0.4 V, V _{CC} = 5.5 V	1, 2, 3	01, 02	-50		μA
		V _I = 0.4 V, V _{CC} = 5.25 V		03, 04	-100		
Supply current (all drivers)	I _{CC}	V _{CC} = 5.5 V, no load, outputs enabled	1, 2, 3	01, 02		50	mA
		V _{CC} = 5.25 V, no load, outputs enabled		03, 04		7	
		V _{CC} = 5.5 V, no load, outputs disabled		01, 02		30	
		V _{CC} = 5.25 V, no load, outputs disabled		03, 04		1.5	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - continued.

Test	Symbol	Conditions <u>1/</u> -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Functional test	FT	See 4.4.1b	7, 8	All			
Propagation delay low to high level	t _{PLH}	R _L = 27 Ω, C _L = 15 pF, V _{CC} = 5 V, see figure 3	9	01, 02		16	ns
			10, 11			25	
Propagation delay high to low level	t _{PHL}	R _L = 27 Ω, C _L = 15 pF, V _{CC} = 5 V, see figure 3	9	01, 02		16	ns
			10, 11			25	
Output disable time from low level	t _{LZ}	R _L = 110 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	01, 02		25	ns
				03, 04		30	
			10, 11	01, 02		40	
				03		55	
				04		45	
Output disable time from high level	t _{HZ}	R _L = 110 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	01, 02		30	ns
				03		60	
				04		50	
			10, 11	01, 02		80	
				03		115	
				04		90	
Output enable time to low level	t _{ZL}	R _L = 110 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	01, 02		40	ns
				03, 04		30	
			10, 11	01, 02		100	
				03, 04		40	

See footnotes at end of table.

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TABLE I. Electrical performance characteristics - continued.

Test	Symbol	Conditions ^{1/} -55°C ≤ T _A ≤ +125°C unless otherwise specified	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Output enable time to high level	t _{ZH}	R _L = 110 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	01, 02		32	ns
				03, 04		30	
			10, 11	01, 02		40	
				03, 04		40	
Output to output delay time	t _{SKEW}	R _L = 60 Ω, V _{CC} = 5 V, see figure 3	9	01, 02		4	ns
			10, 11			10	
Differential output delay time	t _{DD}	R _L = 60 Ω, C _L = 15 pF, V _{CC} = 5 V, see figure 3	9	01, 02		22	ns
			10, 11			30	
		R _L = 54 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	03, 04	2	20	
			10, 11		2	40	
Differential output transition time	t _{TD}	R _L = 60 Ω, C _L = 15 pF, V _{CC} = 5 V, see figure 3	9	01, 02		22	ns
			10, 11			40	
		R _L = 54 Ω, C _L = 50 pF, V _{CC} = 5 V, see figure 3	9	03, 04	10	25	
			10, 11		03	4	
				04	4	40	

- ^{1/} All currents into device pins are positive; all currents out of the device pins are negative. All voltages are referenced to ground unless otherwise specified. Device types 01 and 03 has an active high and active low enable, common to all four drivers. Device types 02 and 04 has separate active high enables for each driver pair.
- ^{2/} T_A = -55°C limit exceeds EIA standard RS-485 specification of 1.5 V maximum.
- ^{3/} Delta V_{OD2} and delta V_{OC} are the changes in magnitude of V_{OD2} and V_{OC} respectively, that occur when the input is changed from a high to a low level.
- ^{4/} T_A = -55°C limit exceeds EIA standard RS-485 specification ±200 mV maximum.
- ^{5/} Only one output at a time should be shorted, and the duration of the short circuit should not exceed one second.

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Device types	01, 03		02, 04	
Case outlines	E and F	2	E and F	2
Terminal number	Terminal symbol			
1	1A	NC	1A	NC
2	1Y	1A	1Y	1A
3	1Z	1Y	1Z	1Y
4	E	1Z	E1, 2	1Z
5	2Z	E	2Z	E1, 2
6	2Y	NC	2Y	NC
7	2A	2Z	2A	2Z
8	GND	2Y	GND	2Y
9	3A	2A	3A	2A
10	3Y	GND	3Y	GND
11	3Z	NC	3Z	NC
12	\bar{E}	3A	E3, 4	3A
13	4Z	3Y	4Z	3Y
14	4Y	3Z	4Y	3Z
15	4A	\bar{E}	4A	E3, 4
16	V _{cc}	NC	V _{cc}	NC
17	---	4Z	---	4Z
18	---	4Y	---	4Y
19	---	4A	---	4A
20	---	V _{cc}	---	V _{cc}

NC = No connection

FIGURE 1. Terminal connections.

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Device types 01, 03

Input	Enables		Outputs	
	E	\bar{E}	Y	Z
H	H	X	H	L
L	H	X	L	H
H	X	L	H	L
L	X	L	L	H
X	L	H	Z	Z

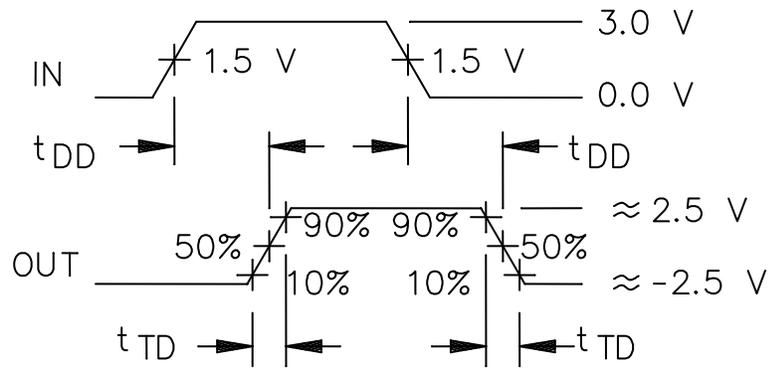
Device types 02, 04

Input	Enable	Outputs	
		Y	Z
H	H	H	L
L	H	L	H
X	L	Z	Z

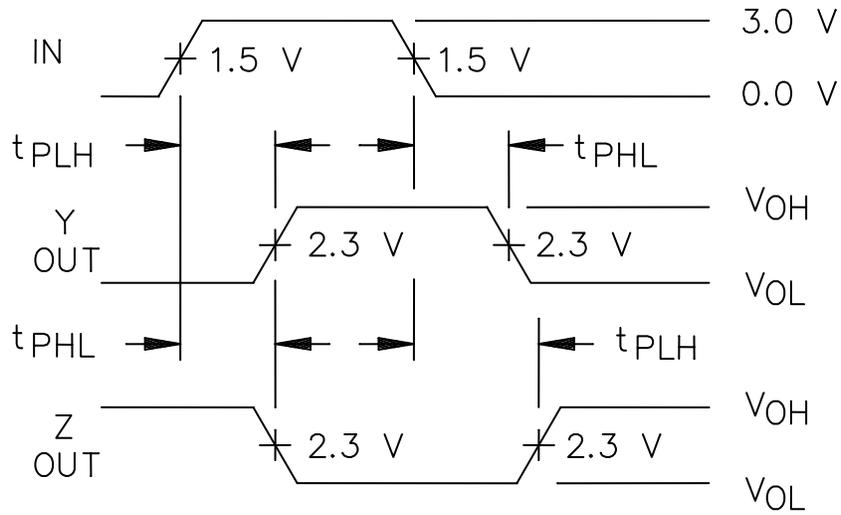
H = High level
 L = Low level
 X = Don't care
 Z = High impedance (off)

FIGURE 2. Truth tables.

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Differential output delay times



Propagation delay times

FIGURE 3. Timing waveforms.

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SIZE
A

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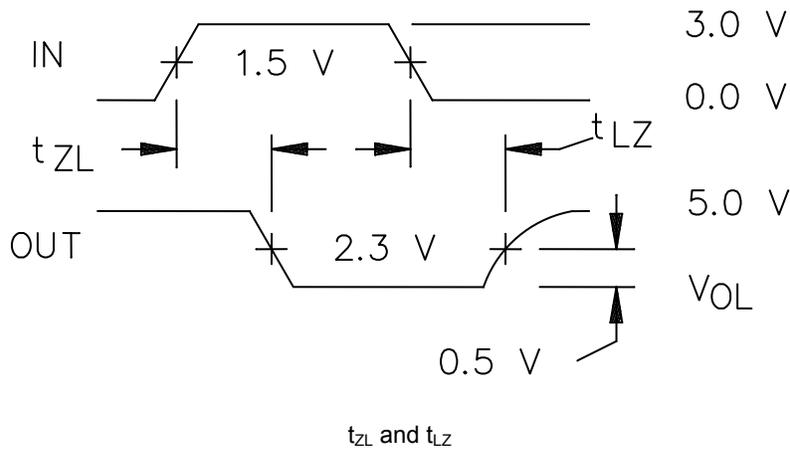
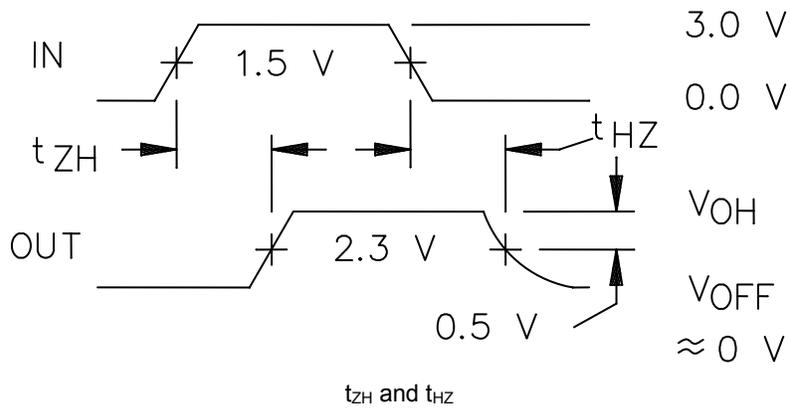


FIGURE 3. Timing waveforms - continued.

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SIZE
A

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E

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4. VERIFICATION

4.1 Sampling and inspection. For device classes Q and V, sampling and inspection procedures shall be in accordance with MIL-PRF-38535 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. For device class M, sampling and inspection procedures shall be in accordance with MIL-PRF-38535, appendix A.

4.2 Screening. For device classes Q and V, screening shall be in accordance with MIL-PRF-38535, and shall be conducted on all devices prior to qualification and technology conformance inspection. For device class M, screening shall be in accordance with method 5004 of MIL-STD-883, and shall be conducted on all devices prior to quality conformance inspection.

4.2.1 Additional criteria for device class M.

- 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) $T_A = +125^{\circ}\text{C}$, minimum.
- b. Interim and final electrical test parameters shall be as specified in table II herein.

4.2.2 Additional criteria for device classes Q and V.

- a. The burn-in test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document revision level control of the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing 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.
- b. Interim and final electrical test parameters shall be as specified in table II herein.
- c. Additional screening for device class V beyond the requirements of device class Q shall be as specified in MIL-PRF-38535, appendix B.

4.3 Qualification inspection for device classes Q and V. Qualification inspection for device classes Q and V shall be in accordance with MIL-PRF-38535. Inspections to be performed shall be those specified in MIL-PRF-38535 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4 Conformance inspection. Technology conformance inspection for classes Q and V shall be in accordance with MIL-PRF-38535 including groups A, B, C, D, and E inspections and as specified herein. Quality conformance inspection for device class M shall be in accordance with MIL-PRF-38535, appendix A and as specified herein. Inspections to be performed for device class M shall be those specified in method 5005 of MIL-STD-883 and herein for groups A, B, C, D, and E inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection.

- a. Tests shall be as specified in table II herein.
- b. For device class M, subgroups 7 and 8 tests shall be sufficient to verify the truth table. For device classes Q and V, subgroups 7 and 8 shall include verifying the functionality of the device.
- c. Subgroups 4, 5, and 6 in table I, method 5005 of MIL-STD-883 shall be omitted.

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TABLE II. Electrical test requirements.

Test requirements	Subgroups (in accordance with MIL-STD-883, method 5005, table I)	Subgroups (in accordance with MIL-PRF-38535, table III)	
	Device class M	Device class Q	Device class V
Interim electrical parameters (see 4.2)	1	---	1
Final electrical parameters (see 4.2)	1, 2, 3, 9 <u>1/</u>	1, 2, 3, 9 <u>1/</u>	1, 2, 3, 9 <u>1/</u>
Group A test requirements (see 4.4)	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 8, 9, 10, 11	1, 2, 3, 7, 8, 9, 10, 11
Group C end-point electrical parameters (see 4.4)	1, 2, 3	1, 2, 3	1, 2, 3
Group D end-point electrical parameters (see 4.4)	1, 2, 3	1, 2, 3	1, 2, 3
Group E end-point electrical parameters (see 4.4)	---	---	---

1/ PDA applies to subgroup 1.

4.4.2 Group C inspection. The group C inspection end-point electrical parameters shall be as specified in table II herein.

4.4.2.1 Additional criteria for device class M. Steady-state life test conditions, method 1005 of MIL-STD-883:

- a. 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.
- b. $T_A = +125^{\circ}\text{C}$, minimum.
- c. Test duration: 1,000 hours, except as permitted by method 1005 of MIL-STD-883.

4.4.2.2 Additional criteria for device classes Q and V. The steady-state life test duration, test condition and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The test circuit shall be maintained under document revision level control by the device manufacturer's TRB in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing 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.

4.4.3 Group D inspection. The group D inspection end-point electrical parameters shall be as specified in table II herein.

4.4.4 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.5 herein).

- a. End-point electrical parameters shall be as specified in table II herein.
- b. For device classes Q and V, the devices or test vehicle shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535 for the RHA level being tested. For device class M, the devices shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38535, appendix A for the RHA level being tested. All device classes must meet the postirradiation end-point electrical parameter limits as defined in table I at $T_A = +25^{\circ}\text{C} \pm 5^{\circ}\text{C}$, after exposure, to the subgroups specified in table II herein.

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5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-PRF-38535 for device classes Q and V or MIL-PRF-38535, appendix A for device class M.

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.

6.1.1 Replaceability. Microcircuits covered by this drawing will replace the same generic device covered by a contractor prepared specification or drawing.

6.1.2 Substitutability. Device class Q devices will replace device class M devices.

6.2 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.

6.3 Record of users. Military and industrial users should inform DLA Land and Maritime when a system application requires configuration control and which SMD's are applicable 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 microelectronic devices (FSC 5962) should contact DLA Land and Maritime -VA, telephone (614) 692-0547.

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

6.5 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535 and MIL-HDBK-1331.

6.6 Sources of supply.

6.6.1 Sources of supply for device classes Q and V. Sources of supply for device classes Q and V are listed in QML-38535. The vendors listed in QML-38535 have submitted a certificate of compliance (see 3.6 herein) to DLA Land and Maritime -VA and have agreed to this drawing.

6.6.2 Approved sources of supply for device class M. Approved sources of supply for class M 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.

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STANDARD MICROCIRCUIT DRAWING BULLETIN

DATE: 11-01-24

Approved sources of supply for SMD 5962-90765 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.dscc.dla.mil/Programs/Smcr/>.

Standard microcircuit drawing PIN <u>1/</u>	Vendor CAGE number	Vendor similar PIN <u>2/</u>
5962-9076501M2A	27014	DS96F172ME/883
5962-9076501MEA	27014	DS96F172MJ/883
5962-9076501MFA	<u>3/</u>	DS96F172MW/883
5962-9076501VEA	<u>3/</u>	DS96F172MJ-QMLV
5962-9076502M2A	27014	DS96F174ME/883
5962-9076502MEA	27014	DS96F174MJ/883
5962-9076502MFA	<u>3/</u>	DS96F174MW/883
5962-9076502VEA	27014	DS96F174MJ-QMLV
5962-9076503Q2A	01295	SNJ55LBC172FK
5962-9076503QEA	01295	SNJ55LBC172J
5962-9076503QFA	01295	SNJ55LBC172W
5962-9076504Q2A	01295	SNJ55LBC174FK
5962-9076504QEA	01295	SNJ55LBC174J
5962-9076504QFA	01295	SNJ55LBC174W

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.

Vendor CAGE
number

Vendor name
and address

27014

National Semiconductor
2900 Semiconductor Dr
PO Box 58090
Santa Clara, CA 95052-8090

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

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