REVISIONS			
LTR	DESCRIPTION	DATE (YR-MO-DA)	APPROVED
A	Redrawn with changes. Added device types 05, 06, and 07 for cage code 32116. Made changes to table I and figures 1, 2, and 3.	94-04-08	K. A. Cottongim
B	Delete CAGE code 32116. Made changes to table I.	95-06-02	K. A. Cottongim
C	Inactivate device types 01, 05, and 07 for new design. Add device type 08.	98-06-05	K. A. Cottongim

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.

REV																			
SHEET																			
REV	C	C	C	C	C	C	C												
SHEET	15	16	17	18	19	20	21												

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

PMIC N/A

STANDARD MICROCIRCUIT DRAWING

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

AMSC N/A

PREPARED BY
Donald R. Osborne

CHECKED BY
Robert M. Heber

APPROVED BY
William K. Heckman

DRAWING APPROVAL DATE
90-11-26

REVISION LEVEL
C

DEFENSE SUPPLY CENTER COLUMBUS
P. O. BOX 3990
COLUMBUS, OHIO 43216-5000

MICROCIRCUIT, HYBRID, DIGITAL, DUAL CHANNEL, 15 VOLT, DRIVER-RECEIVER, RECEIVER IDLE NORMALLY HIGH

SIZE	CAGE CODE	
A	**67268**	**5962-89447**

SHEET 1 OF 21

DSCC FORM 2233
APR 97

5962-E097-98

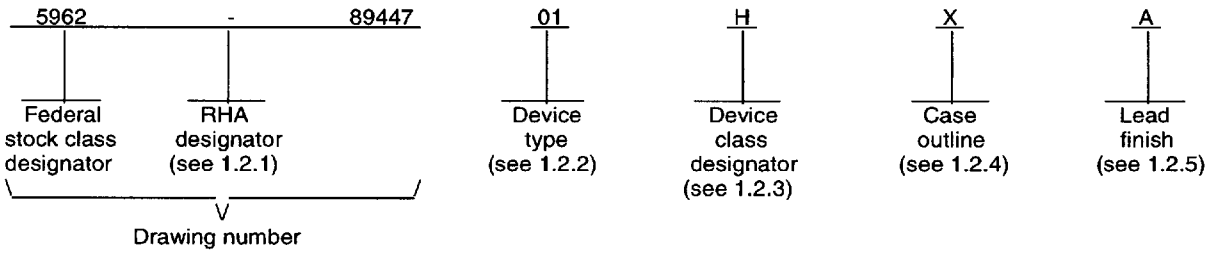
DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

9004708 0037224 942

1. SCOPE

1.1 Scope. This drawing documents five product assurance classes, class D (lowest reliability), class E, (exceptions), class G (lowest high reliability), class H (high reliability), and class K, (highest reliability) and 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 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. Device classes H and K RHA marked devices shall meet the MIL-PRF-38534 specified RHA levels and shall be marked with the appropriate RHA designator. A dash (-) indicates a non-RHA device.

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

Device types	Generic number	Circuit function	Coupling transformer turns ratio: Direct	Transformer
01 1/	ARX3416, ARX3436	Dual channel, driver-receiver, receiver idle normally high	1.4:1	2:1
02	NHI-1501	"	1.4:1	2:1
03	FC1553622	"	√2:1	2:1
04	BUS63135II, BUS63136II	"	1.4:1	2:1
05 1/	CT1487-DI	"	1.4:1	2:1
06 2/	ARX3416-002	"	1.4:1	2:1
07 1/	CT1487-DFI	"	1.4:1	2:1
08	ACT4436-DI, ACT4487-DI	"	1.4:1	2:1

1.2.3 Device class designator. This device class designator shall be a single letter identifying the product assurance level as follows:

Device class	Device performance documentation
D, E, G, H or K	Certification and qualification to MIL-PRF-38534

1.2.4 Case outline(s). The case outline(s) shall be as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
U	See figure 1	28	Dual-in-line
X	See figure 1	36	Dual-in-line
Y	See figure 1	36	Flat package
Z	See figure 1	36	Flat package

1/ Device types 01, 05, and 07 are inactive for new design. Device type 08 replaces device types 01, 05, and 07.
2/ Device type 06, the generic number CT1892-500 is obsolete as of the date of revision B and generic number 3416-511 is obsolete as of the date of revison C.

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

1.3 Absolute maximum ratings. 1/

Supply voltage range:	
V_{CC} (devices 01, 02, 05, 06, 07, and 08)	-0.3 V dc to +18 V dc
V_{EE} (devices 01, 03, 04, 05, 06, 07, and 08)	+0.3 V dc to -18 V dc
V_{CC1} (all devices)	-0.3 V dc to +7 V dc
Logic input voltage	-0.3 V dc to V_{CC1}
Receiver differential voltage	40 V_{P-P}
Receiver common mode voltage range	-10 V dc to +10 V dc
Driver peak output current	200 mA
Power dissipation (P_D) at T_C = +125°C:	
(devices 01, 06, and 08)	2 W
(device 02)	0.96 W
(device 03)	1.65 W 2/
(device 04)	3 W 2/
(devices 05 and 07)	3.8 W 2/
Storage temperature range	-65°C to +150°C
Lead temperature (soldering, 10 seconds)	+300°C
Junction temperature (T_J):	
(devices 01, 03, 06, and 08)	+167°C 3/ 4/
(device 02)	+145°C 3/ 5/
(device 04)	+160°C 3/ 6/
(devices 05 and 07)	+150°C 3/
Thermal resistance, junction-to-case (θ_{JC}):	
(devices 01, 06, and 08)	88°C/W
(device 02)	8.8°C/W
(device 03)	18°C/W
(device 04)	7.0°C/W
(devices 05 and 07)	60°C/W

1.4 Recommended operating conditions.

Supply voltage range:	
V_{CC} (devices 01, 02, 05, 06, 07, and 08)	+14.25 V dc to +15.75 V dc
V_{EE} (devices 01, 03, 04, 05, 06, 07, and 08)	-14.25 V dc to -15.75 V dc
V_{CC1} (all devices)	+4.5 V dc to +5.5 V dc
Logic input voltage	0 V dc to +5 V dc
Receiver differential voltage:	
(devices 01, 02, 05, 06, 07, and 08)	40 V_{P-P}
(devices 03 and 04)	30 V_{P-P}
Receiver common mode voltage range:	
(devices 01, 03, 04, 06, and 08)	-5 V dc to +5 V dc
(devices 02, 05, and 07)	-10 V dc to +10 V dc
Driver peak output current (all devices)	180 mA
Serial data rate	1.0 MHz maximum
Case operating temperature range (T_C)	-55°C to +125°C

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/ One channel transmitting at 100 percent duty cycle and the second channel at standby.
3/ Worst case operating junction temperature when case is held to +125°C.
4/ Maximum junction temperature rise above case temperature for the hottest die at 100% transmitting duty cycle shall be 42°C.
5/ Maximum junction temperature rise above case temperature for the hottest die at 100% transmitting duty cycle shall be 20°C.
6/ Maximum junction temperature rise above case temperature for the hottest die at 100% transmitting duty cycle shall be 21°C.

2. APPLICABLE DOCUMENTS

2.1 Government specification, standards, and handbook. The following specification, standards, and handbook 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 solitation.

SPECIFICATION

DEPARTMENT OF DEFENSE

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

STANDARDS

DEPARTMENT OF DEFENSE

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

HANDBOOK

DEPARTMENT OF DEFENSE

MIL-HDBK-780 - Standard Microcircuit Drawings.
MIL-HDBK-1553 - Multiplex Applications Handbook.

(Unless otherwise indicated, copies of the specification, standards, and handbook 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 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 applicable device class. Therefore, the tests and inspections herein may not be performed for applicable device class (see MIL-PRF-38534). Futhermore, the manufacturers may take exceptions or use alternate methods to the tests and inspections herein and not perform them. However, the performance requirements as defined in MIL-PRF-38534 shall be met for the applicable device class. The modification in the QM plan shall not affect the form, fit, or function as described herein.

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 outline(s). The case outline(s) 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 Timing waveforms. Timing waveforms shall be as specified on figure 3.

3.2.4 Typical transformer connection. The typical transformer connection shall be as specified on figure 4.

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 Device(s). Marking of device(s) 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 as listed in QML-38534.

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 (DSCC-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 DSCC-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. QUALITY ASSURANCE PROVISIONS

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.

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 DSCC-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 test method 1015 of MIL-STD-883.

(2) T_C as specified in accordance with table I of method 1015 of MIL-STD-883.

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.

TABLE I. Electrical performance characteristics.

	Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ unless otherwise specified	Device types	Group A subgroups	Limits		Unit
						Min	Max	
Receiver	Input level	V_I	Differential input, pin 20 to pin 21 2/ pin 29 to pin 30	All	4, 5, 6		51	V_{P-P}
	Input common mode voltage range	V_{ICM}	Independent of xfmr or in accordance with MIL-HDBK-1553 section 5.1.2.2	01,03,04, 06, 08	4, 5, 6	-5	+5	V(pk)
				02,05,07		-10	+10	
	Output low voltage	V_{OL}	I_{OL} = 4 mA	All	1, 2, 3		0.5	V
			I_{OL} = 16 mA	04			0.5	
	Output high voltage	V_{OH}	I_{OH} = -0.4 mA	All	1, 2, 3	2.5		V
Transmitter	Input low voltage	V_{IL}		All	1, 2, 3		0.7	V
	Input high voltage	V_{IH}		All	1, 2, 3	2		V
	Input low current	I_{IL}	V_{IL} = 0.4 V	01,02,03, 06, 08	1, 2, 3	-0.4		mA
				04,05,07		-1.0		
	Input high current	I_{IH}	V_{IH} = 2.7 V	All	1, 2, 3		0.04	mA
	Output voltage	V_O	Across 35Ω load	All	1, 2, 3	6	9	V_{P-P}
	Output noise voltage	V_{ON}	Across 35Ω load	All	4, 5, 6		10	mV_{P-P}

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

	Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ unless otherwise specified	Device types	Group A subgroups	Limits		Unit
						Min	Max	
Receiver strobe	Input low voltage	V_{SIL}		All	1, 2, 3		0.7	V
	Input high voltage	V_{SIH}		All	1, 2, 3	2		V
	Input low current	I_{SIL}	V_{SIL} = 0.4 V	01,06,08	1, 2, 3	-0.4		mA
				02,04		-0.72		
				03		-0.7		
				05,07		-1.0		
	Input high current	I_{SIH}	V_{SIH} = 2.7 V	All	1, 2, 3		0.04	mA
Transmitter inhibit	Input low voltage	V_{IIL}		All	1, 2, 3		0.7	V
	Input high voltage	V_{IIH}		All	1, 2, 3	2		V
	Input low current	I_{IIL}	V_{SIL} = 0.4 V	01,02,03, 06,08	1, 2, 3	-0.4		mA
				04		-0.72		
				05,07		-1.0		
	Input high current	I_{IIH}	V_{SIH} = 2.7 V	01,02,03, 04,06,08	1, 2, 3		0.04	mA
				05,07			0.08	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

	Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ unless otherwise specified	Device types	Group A subgroups	Limits		Unit
						Min	Max	
Power supply	Total current	I_{CC}-SB	(standby mode)	01,08 02 05,06,07	1, 2, 3		1 25 22	mA
		I_{EE}-SB		01,03,08 04 05,06,07	1, 2, 3		16.5 30 35	
		I_{CC1}-SB		01,08 02 03 04,05,06, 07	1, 2, 3		30 25 35 45	
		I_{CC}-25	(25% duty cycle into 35Ω load	01,08 02 05,06,07	4, 5, 6		55 69 80	
		I_{EE}-25		01,08 03 04 05,06,07	4, 5, 6		21 15 80 35	
		I_{CC1}-25		01,08 02 03,04,05, 06,07	4, 5, 6		30 25 45	
		I_{CC}-50	(50% duty cycle into 35Ω load)	01,08 02 05,06,07	4, 5, 6		110 118 130	
		I_{EE}-50		01,08 03,04 05,06,07	4, 5, 6		25 130 35	
		I_{CC1}-50		01,08 02 03,04,05, 06,07	4, 5, 6		30 25 45	
		I_{CC}-100	(100% duty cycle into 35Ω load)	01,08 02 05,06,07	1, 2, 3		220 209 240	
		I_{EE}-100		01,08 03,04 05,06,07	1, 2, 3		30 255 35	

See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

	Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ unless otherwise specified	Device types	Group A subgroups	Limits Min	Limits Max	Unit
Power supply	Total current	I_{CC1}-100	(100% duty cycle into 35Ω load)	01,08 02 03 04,05,06, 07	1, 2, 3		30 25 55 45	mA
Receiver	Input resistance	R_{IN}	1 MHz sine wave	01,02,08 03,04 05,06,07	4, 5, 6	10 7 9		kΩ
	Input capacitance	C_{IN}	1 MHz sine wave 2/ $T_C = +25°C$	All	4		5	pF
	Threshold voltage	V_{TH}	3/	01,06,08	1, 2, 3	0.6	1.05	V_{P-P}
				02		0.6	1.10	
				03		0.6	1.15	
				04		0.56	1.0	
				05,07		0.8	1.1	
Transmitter	Output resistance (transmitter off)	R_{OUT}	1 MHz sine wave 2/	01,02,03, 04,06,08	4, 5, 6	10		kΩ
				05,07		8		
	Output capacitance (transmitter off)	C_{OUT}	1 MHz sine wave 2/ $T_C = +25°C$	All	4		5	pF
	Output offset voltage	V_{OS}	2/ 4/	All	4, 5, 6		±90	mV(pk)
	Peak amplitude variation	A_V	5/	All	4, 5, 6		±15	%
	Zero cross stability	t_{S1}	Across 35Ω 2/ (See figure 3)	06	9,10,11	1975	2025	ns
		t_{S2}				475	525	
		t_{S3}				975	1025	
		t_{S4}				1475	1525	

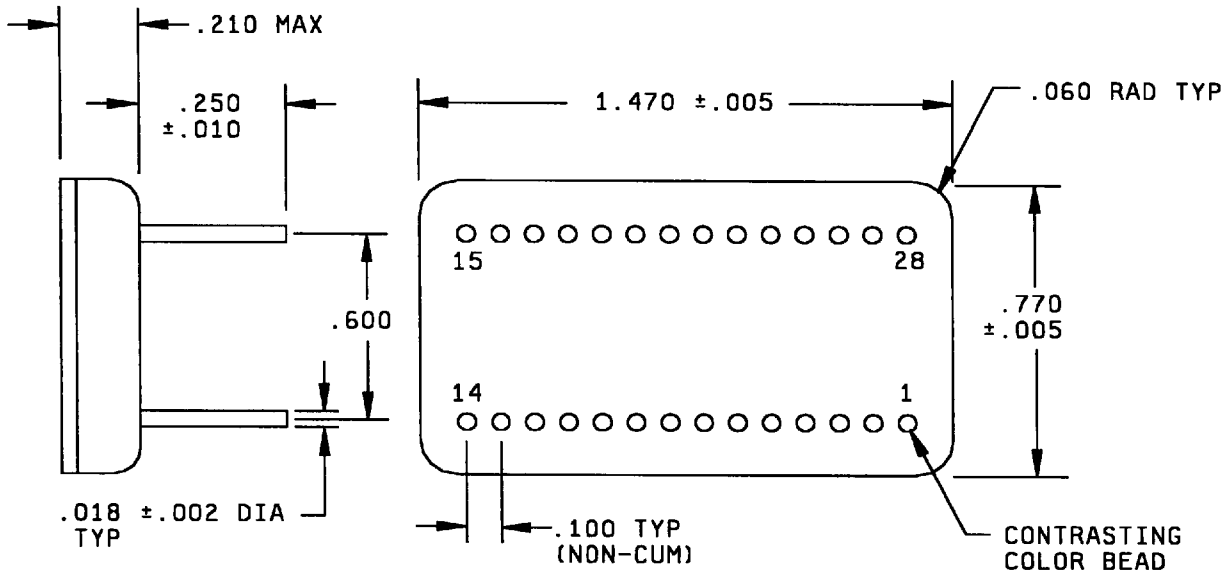
See footnotes at end of table.

TABLE I. Electrical performance characteristics - Continued.

	Test	Symbol	Conditions 1/ $-55°C \le T_C \le +125°C$ unless otherwise specified	Device types	Group A subgroups	Limits Min	Limits Max	Unit
Receiver	Delay time, input to output	t_{DR}	Delay time from dif- 2/ ferential input zero crossing to DATA or DATA (See figure 3)	01,02,03, 04,06,08	9,10,11		400	ns
				05,07			350	
	Strobe delay	t_{DS}	Delay time from strobe rising or falling edge to DATA or DATA (See figure 3) 2/	01,03,05, 06,07,08	9,10,11		250	
				02,04			200	
Transmitter	Rise time	t_R	Output load = 35Ω (See figure 3)	01,02,03, 04,05,07, 08	9,10,11	100	300	ns
				06		100	200	
	Fall time	t_F		01,02,03, 04,05,07, 08	9,10,11	100	300	
				06		100	200	
	Delay time inhibiting	t_{DT}	(See figure 3) 2/	01,03,06, 08	9,10,11		350	
				02,04			250	
				05,07			200	
	Inhibit delay inhibiting	t_{DI-H}	(See figure 3) 2/	01,02,06, 08	9,10,11		200	
				03,04			450	
				05,07			225	
	Inhibit delay active	t_{DI-L}	(See figure 3) 2/	01,02,06, 08	9,10,11		200	
				03,04			450	
				05,07			150	

1/ V_{CC} = 15 V, V_{EE} = -15 V, V_{CC1} = +5 V. All specifications and limits are for a single channel with no connections made to the other channel.
2/ This parameter is tested initially and after any process or design change which might affect this parameter.
3/ Threshold is measured in direct coupled mode including the transformer. Threshold is the maximum level on the BUS at which there are no pulses on either receiver output. Divide by 1.4 to obtain threshold in transformer coupled mode.
4/ Measured across 35Ω load, 2.5 µs after parity bit mid-bit zero crossing of a 660 µs message.
5/ Measured across 35Ω load, variation of average peak amplitude.

Case outline U.

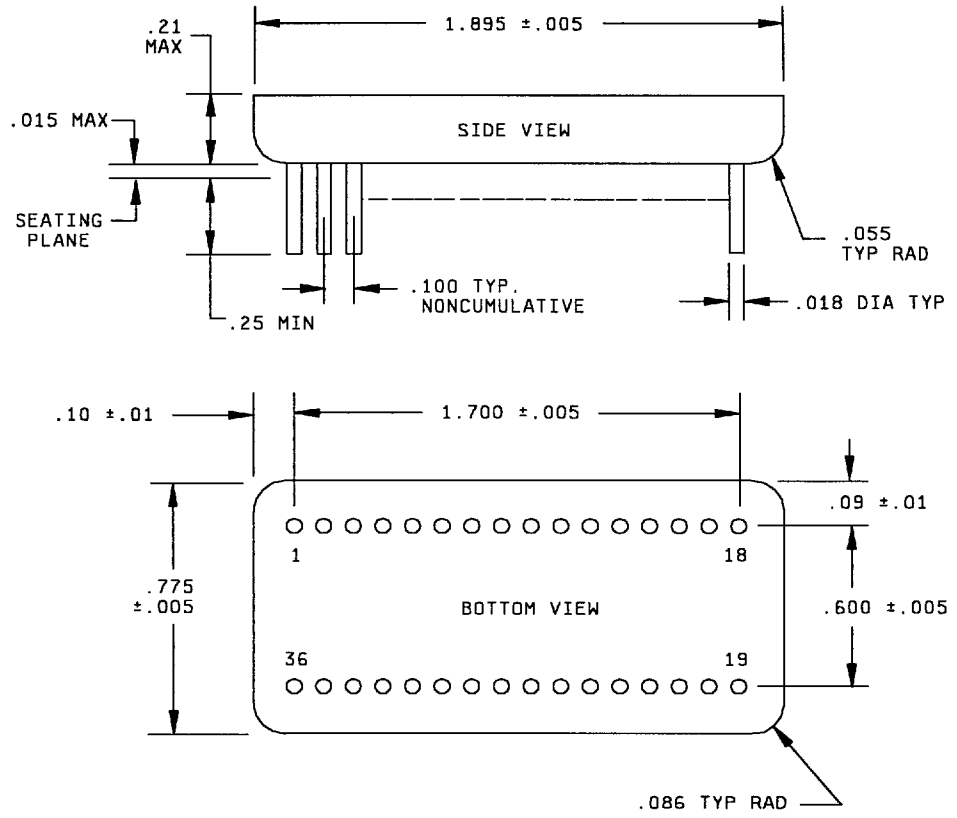


Inches	mm
.002	0.05
.005	0.13
.010	0.25
.018	0.46
.060	1.52
.100	2.54
.210	5.33
.250	6.35
.600	15.24
.770	19.56
1.470	37.34

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Lead indentification numbers are for reference only.
4. Lead spacing dimensions apply only at seating plane.

FIGURE 1. Case outline(s).

Case outline X.

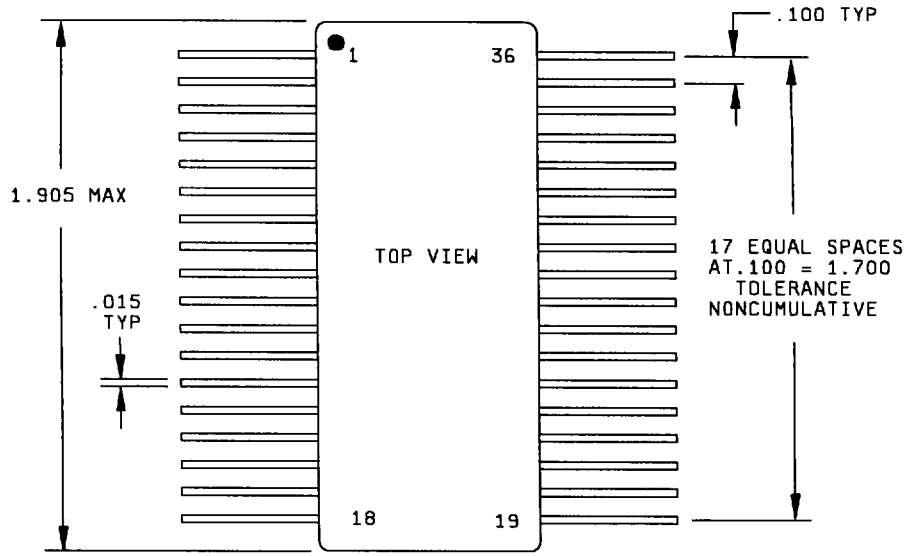


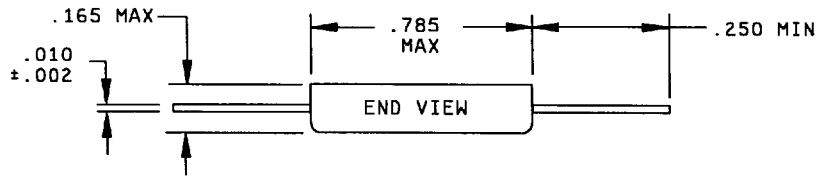
Inches	mm
.005	0.13
.01	0.3
.015	0.38
.018	0.46
.055	1.40
.086	2.18
.09	2.3
.10	2.5
.100	2.54
.600	15.24
.775	19.68
1.700	43.18
1.895	48.13

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Lead identification numbers are for reference only.
4. Lead spacing dimensions apply only at seating plane.

FIGURE 1. Case outline(s) - Continued.

Case outline Y.



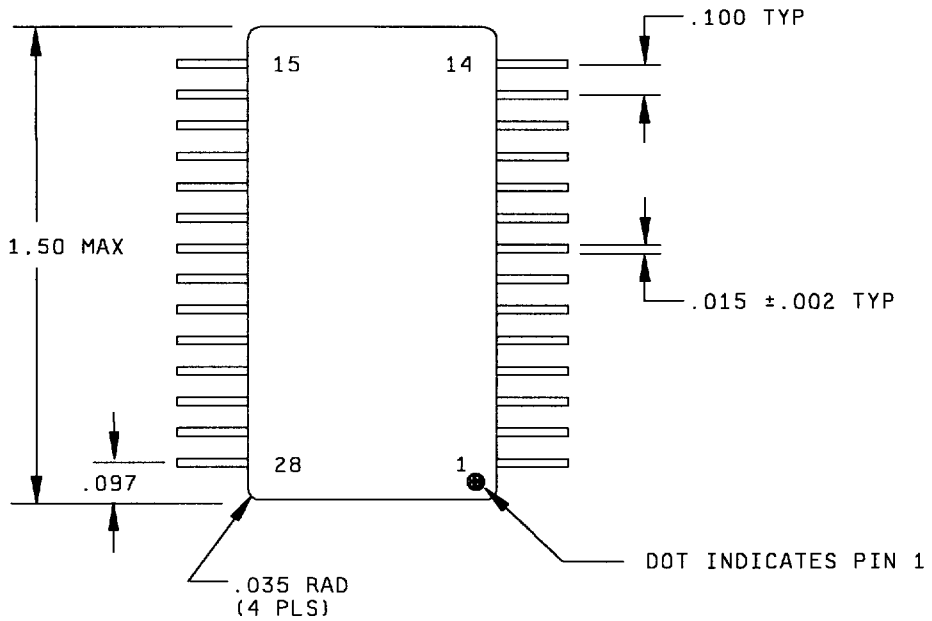


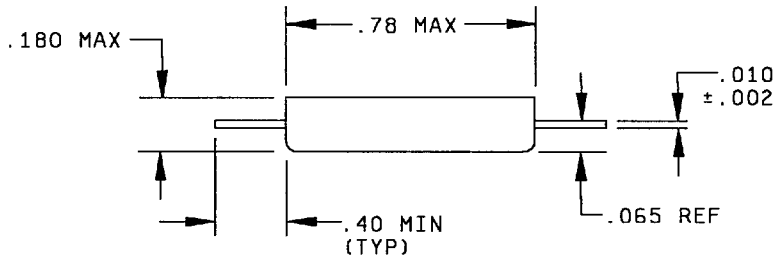
Inches	mm
.002	0.05
.010	0.25
.015	0.38
.100	2.54
.165	4.19
.250	6.35
.785	19.94
1.700	43.18
1.905	48.39

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Lead indentification numbers are for reference only.
4. Lead spacing dimensions apply only at seating plane.

FIGURE 1. Case outline(s) - Continued.

Case outline Z.





Inches	mm
.002	0.05
.003	0.08
.010	0.25
.015	0.38
.035	0.89
.065	1.65
.097	2.46
.100	2.54
.180	4.51
.40	10.16
.78	19.81
1.50	38.10

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Lead identification numbers are for reference only.
4. Lead spacing dimensions apply only at seating plane.

FIGURE 1. Case outline(s) - Continued.

Case outlines X and Y.

Pin	Function	Channel
1	TX data out	One
2	TX data out	One
3	GND or NC	One
4	NC	
5	RX data out	One
6	Strobe	One
7	GND	One
8	RX data out	One
9	GND or Case	One
10	TX data out	Two
11	TX data out	Two
12	GND or NC	Two
13	NC	
14	RX data out	Two
15	Strobe	Two
16	GND	Two
17	RX data out	Two
18	NC	
19	V_{CC}, or NC	Two
20	RX data in	Two
21	RX data in	Two
22	GND	Two
23	V_{EE} or NC	Two
24	V_{CC1}	Two
25	Inhibit	Two
26	TX data in	Two
27	TX data in	Two
28	V_{CC}, or NC	One
29	RX data in	One
30	RX data in	One
31	GND or NC	One
32	V_{EE} or NC	One
33	V_{CC1}	One
34	Inhibit	One
35	TX data in	One
36	TX data in	One

NOTE:
1. GND pins should all be connected externally. For case outlines X and Y only, pins 19 and 28 are V_{CC} for device types 01, 02, 05, 06, and 07 and no connects (NC's) for device types 03 and 04. Also, for case outlines X and Y only, pins 23 and 32 are V_{EE} for device types 01, 03, 04, 05, 06, and 07 and no connects (NC's) for device type 02.

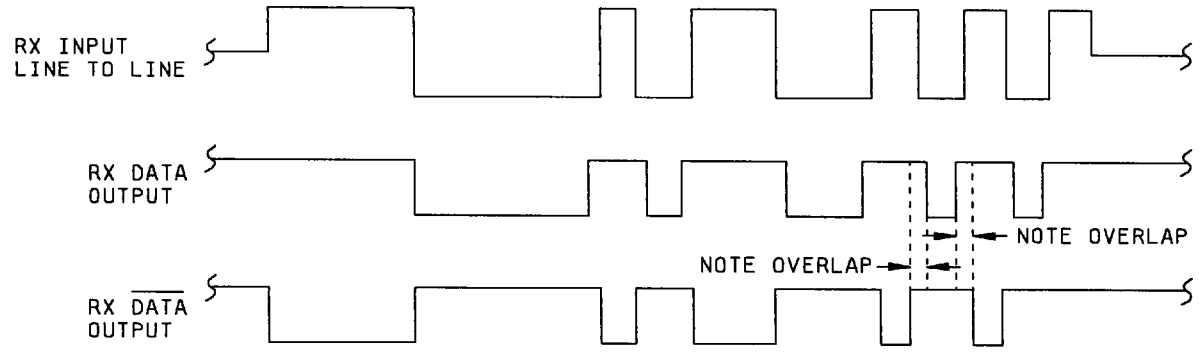
FIGURE 2. Terminal connections.

Case outlines U and Z.
(Device types 01 and 08).

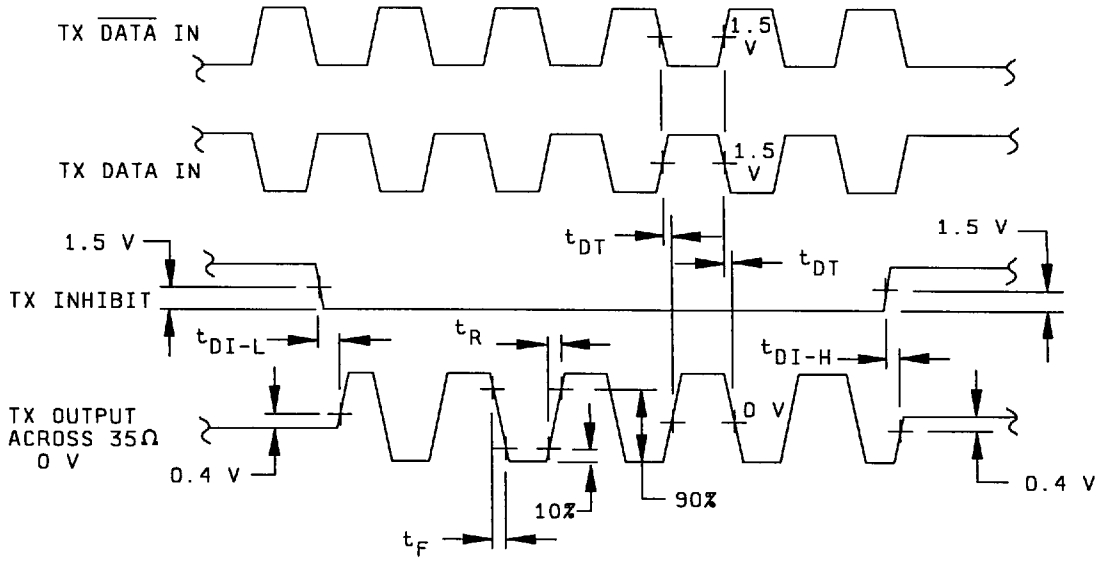
Pin	Function	Channel
1	TX data out/RX data in	One
2	TX data out/RX data in	One
3	GND	One
4	RX strobe	One
5	RX data out	One
6	RX data out	One
7	Case	
8	TX data out/RX data in	Two
9	TX data out/RX data in	Two
10	GND	Two
11	RX strobe	Two
12	RX data out	Two
13	RX data out	Two
14	No connect	
15	GND	Two
16	V_{EE}	Two
17	V_{CC1}	Two
18	TX inhibit	Two
19	TX data in	Two
20	TX data in	Two
21	V_{CC}	Two
22	GND	One
23	V_{EE}	One
24	V_{CC1}	One
25	Inhibit	One
26	TX data in	One
27	TX data in	One
28	V_{CC}	One

NOTE:
1. GND pins should all be connected externally.

FIGURE 2. Terminal connections - Continued.

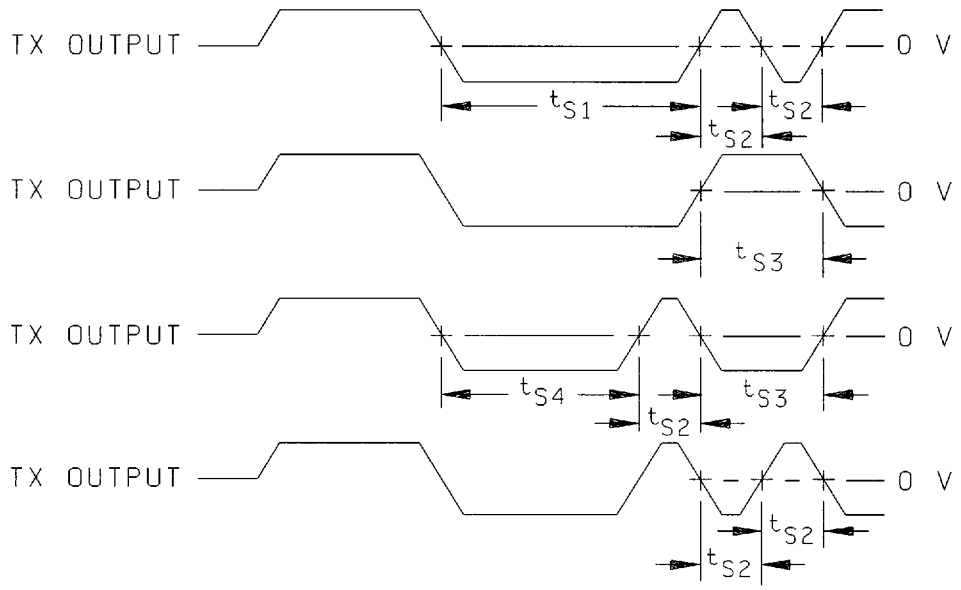


RECEIVER TIMING



TRANSMITTER TIMING

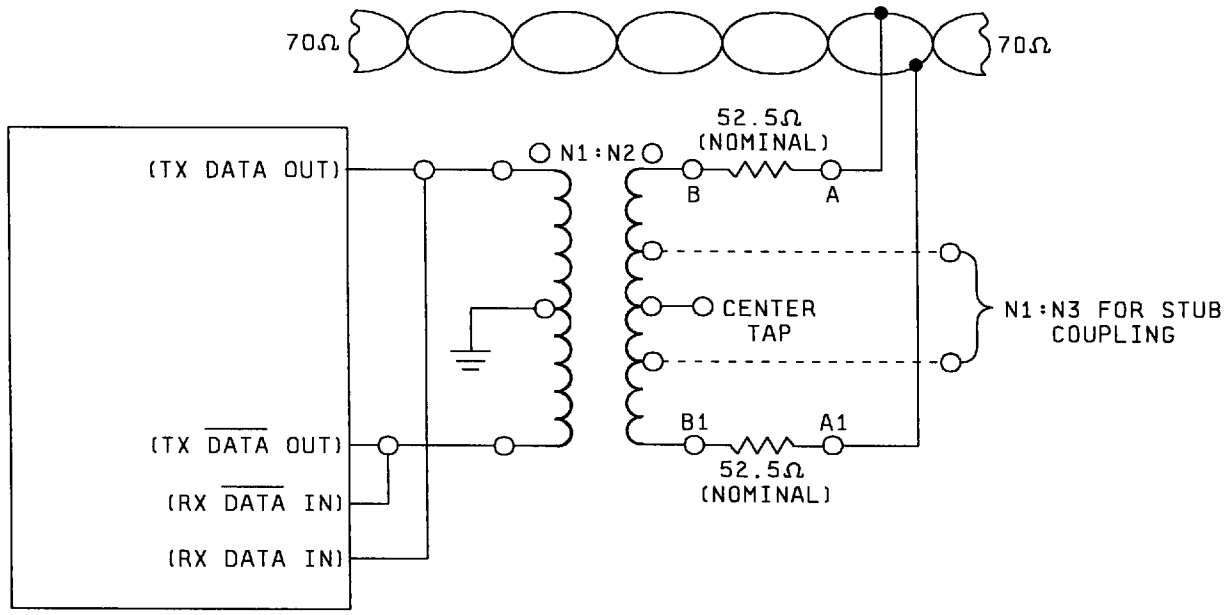
FIGURE 3. Timing waveforms.



TRANSMISSION ZERO CROSS STABILITY

NOTE: Abbreviated waveform. Above relationships apply during entire transmission.

FIGURE 3. Timing waveforms - Continued.



NOTES:
1. Device types 01, 02, 04, 05, 06, 07, and 08:
   N1:N2 = 1.4:1
   N1:N3 = 2:1
2. Device type 03:
   N1:N2 = 2:1
   N1:N3 = 2:1

FIGURE 4. Typical transformer connection.

TABLE II. Electrical test requirements.

MIL-PRF-38534 test requirements	Subgroups (in accordance with MIL-PRF-38534, group A test table)
Interim electrical parameters	----
Final electrical parameters	1*,2,3,4,5,6,9,10,11
Group A test requirements	1,2,3,4,5,6,9,10,11
Group C end-point electrical parameters	1,2,3
MIL-STD-883, group E end-point electrical parameters for RHA devices	Subgroups** (in accordance with method 5005, group A test table)

* PDA applies to subgroup 1.
** When applicable to this standard microcircuit drawing, the subgroups shall be defined.

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 7 and 8 shall be omitted.

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

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 DSCC-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 test method 1005 of MIL-STD-883.

(2) T_C as specified in accordance with table I of method 1005 of MIL-STD-883.

(3) Test duration: 1,000 hours, except as permitted by method 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 Group E inspection. Group E inspection is required only for parts intended to be marked as radiation hardness assured (see 3.5 herein). RHA levels for device classes H and K shall be M, D, R, and H. RHA quality conformance inspection sample tests shall be performed at the RHA level specified in the acquisition document.

a. RHA tests for device classes H and K for levels M, D, R, and H shall be performed through each level to determine at what levels the devices meet the RHA requirements. These RHA tests shall be performed for initial qualification and after design or process changes which may affect the RHA performance of the device.

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

c. Prior to total dose irradiation, each selected sample shall be assembled in its qualified package. It shall pass the specified group A electrical parameters in table I for subgroups specified in table II herein.

d. For device classes H and K, the devices shall be subjected to radiation hardness assured tests as specified in MIL-PRF-38534 for RHA level being tested, and meet the postirradiation end-point electrical parameter limits as defined in table I at T_A = +25°C ±5 percent, after exposure.

e. Prior to and during total dose irradiation testing, the devices shall be biased to establish a worst case condition as specified in the radiation exposure circuit.

f. For device classes H and K, subgroups 1 and 2 in table V, method 5005 of MIL-STD-883 shall be tested as appropriate for device construction.

g. When specified in the purchase order or contract, a copy of the RHA delta limits shall be supplied.

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 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 Supply Center Columbus when a system application requires configuration control and the applicable SMD. DSCC 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 DSCC-VA, telephone (614) 692-7603.

6.5 Comments. Comments on this drawing should be directed to DSCC-VA, P. O. Box 3990, Columbus, Ohio 43216-5000, or telephone (614) 692-0676.

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

STANDARD MICROCIRCUIT DRAWING SOURCE APPROVAL BULLETIN

DATE: 98-06-05

Approved sources of supply for SMD 5962-89447 are listed below for immediate acquisition only and shall be added to QML-38534 during the next revision. 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 DSCC-VA. This bulletin is superseded by the next dated revision of QML-38534.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8944701HUX	3/	ARX3436-502
5962-8944701HXX	3/	ARX3416-001-3
5962-8944701HYX	3/	ARX3416FP-001-3
5962-8944701HZX	3/	ARX3436FP-502
5962-8944702HXA	57363	NHI-1501/883
5962-8944702HXC	57363	NHI-1501/883
5962-8944702HYA	57363	NHI-1501FP/883
5962-8944702HYC	57363	NHI-1501FP/883
5962-8944703HXA	U4388	FC1553622
5962-8944703HXC	U4388	FC1553622
5962-8944703HYA	U4388	FC1553622FP
5962-8944703HYC	U4388	FC1553622FP
5962-8944704HXC	19645	BUS63135II
5962-8944704HYC	19645	BUS63136II
5962-8944705HXX	3/	CT1487-DI
5962-8944706HXA	88379	ARX3416-002-2
5962-8944706HXC	88379	ARX3416-002-2
5962-8944707HYX	3/	CT1487-DFI

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 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 a QML-38534 source. Device type 08 replaces device types 01, 05, and 07.

Standard microcircuit drawing PIN 1/	Vendor CAGE number	Vendor similar PIN 2/
5962-8944708HUA	88379	ACT4436-DI
5962-8944708HUC	88379	ACT4436-DI
5962-8944708HXA	88379	ACT4487-DI
5962-8944708HXC	88379	ACT4487-DI
5962-8944708HYA	88379	ACT4487-DFI
5962-8944708HYC	88379	ACT4487-DFI
5962-8944708HZA	88379	ACT4436-DFI
5962-8944708HZC	88379	ACT4436-DFI

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 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 a QML-38534 source. Device type 08 replaces device types 01, 05, and 07.

Vendor CAGE number	Vendor name and address
U4388	C-MAC Microcircuits Limited South Denes Great Yarmouth Norfolk NR30 3PX England
19645	ILC Data Device Corporation 105 Wilbur Place Bohemia, NY 11716-2482
57363	National Hybrid, Incorporated 2200 Smithtown Avenue Ronkonkoma, NY 11779-7359
88379	Aeroflex Circuit Technology Corporation 35 South Service Road Plainview, NY 11803-4193

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