

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	Add new source, correct figure 1 notes. Editorial changes throughout.	02 JUL 2006	Thomas M. Hess
B	Updated sources of supply. Editorial and format changes throughout.	01 SEP 2017	Thomas M. Hess

Devices on this drawing may be used as a substitute for those on MIL-S-19500/322, which has been cancelled.

CURRENT DESIGN ACTIVITY CAGE CODE 037Z3
 DEFENSE LOGISTICS AGENCY
 DLA LAND AND MARITIME,
 COLUMBUS, OHIO 43218-3990

THE ORIGINAL FIRST PAGE OF THIS DRAWING HAS BEEN REPLACED.



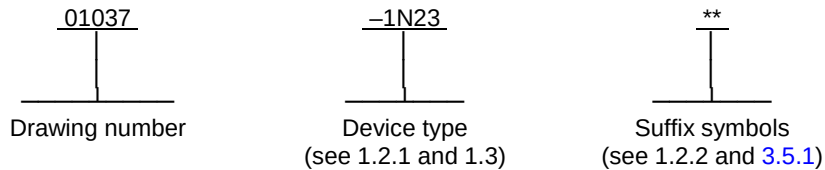
Prepared in accordance with ASME Y14.100

REV																			
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REV STATUS OF PAGES		REV	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
		PAGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14			
PMIC N/A			PREPARED BY Roger Kissel						DESIGN ACTIVITY DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218										
Original date of drawing 1 June 2001			CHECKED BY Alan Barone						TITLE SEMICONDUCTOR DEVICE, DIODE, SILICON, MIXER, 1N23WE, 1N23WEM, 1N23WEMR 1N23WG, 1N23WGM, AND 1N23WGMR										
			APPROVED BY Thomas M. Hess																
			SIZE A		CAGE CODE 037Z3				DWG. NO. 01037										
					REV B														

1. SCOPE

1.1 Scope. This drawing covers the performance requirements for a silicon point contact semiconductor diode (with removable base adapter) for use as single units, matched forward pairs, and matched forward and reverse pairs as a mixer in X-band equipment. This drawing may be used as a substitute for MIL-S-19500/322 which has been cancelled (see 6.3).

1.2 Part or Identifying Number (PIN). An example of the complete PIN is as follows:



1.2.1 Device types. The device type characterize the maximum ratings and electrical characteristics (see 1.3). The only device type for the diodes covered by this drawing is "1N23" as modified by suffix symbols.

Device type	Description	Device type	Description
1N23WE	Single device, forward polarity	1N23WG	Single device, forward polarity
1N23WEM	Matched pairs with a base adapter on anode terminal of each diode (forward polarity) in the pair.	1N23WGM	Matched pairs with a base adapter on anode terminal of each diode (forward polarity) in the pair.
1N23WEMR	Matched pairs, with a base adapter on anode terminal (forward polarity) of one diode, and a base adapter on cathode terminal (reverse polarity) of the second diode in the pair.	1N23WGMR	Matched pairs, with a base adapter on anode terminal (forward polarity) of one diode, and a base adapter on cathode terminal (reverse polarity) of the second diode in the pair.

1.2.2 Suffix symbols. The following suffix symbols are incorporated into the PINs for this drawing.

1.2.2.1 Removable adapter. All devices covered by this drawing use a "W" as the first suffix. The "W" suffix designates a diode having a removable base adapter, allowing for application as either a forward or reverse polarity diode.

1.2.2.2 Single diodes. All devices covered by this drawing use either the suffix "E" or "G" after the "W" suffix. The "E" or "G" suffix designates different overall noise figure values as described in 1.3. PINs with only suffix symbols "WE" or "WG" are supplied as single diodes.

1.2.2.3 Diode pairs. The PINs for matched pair diodes include additional suffix symbols after the "WE" or "WG" suffix symbols. These PINs consist of two diodes supplied as a matched pair. The suffix symbols and the particular device details are as follows:

- M The "M" suffix is used to designate forward polarity matched pair diodes. The diode pair consist of two diodes, both having the anode connected to the base adapter. The complete suffix symbols would be "WEM" or "WGM".
- MR The "MR" suffix is used to designate forward/reverse matched pair diodes. The diode pair consist of two diodes, one diode having the anode connected to the base adapter (forward polarity) and the second diode having the cathode connected to the base adapter (reverse polarity). The complete suffix symbols would be "WEMR" or "WGMR".

See 3.5.1 regarding product identification marking.

1.3 Ratings. Unless otherwise specified, $T_A = +25^{\circ}\text{C}$.

	NF _o		1/G	L _c	NR _o	VSWR	T _{STG} and T _{OP}
	1N23WE (1)	1N23WG (1)					
Minimum	<u>dB</u>	<u>dB</u>	<u>ohms</u>	<u>dB</u>	<u>ratio</u>	<u>ratio</u>	-65°C to +150°C
Maximum	7.5	6.5	335 435	6.0	1.4	1.3	

(1) Includes devices with additional suffix symbols "M" and "MR".

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 2

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this document. This section does not include documents cited in other sections of this document or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3 and 4 of this document, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract (see 6.2).

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-19500 – Semiconductor Devices, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-750 – Test Methods for Semiconductor Devices.

MIL-STD-1285 – Marking of Electrical and Electronic Parts.

(Copies of these documents are available online at <http://quicksearch.dla.mil>.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation or contract.

DESC Drawing

D65019 – Diode Test Holder – Model 1181-R1, 9.375 GHz (X Band).

(Requests for copies should be made to DLA Land and Maritime, ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990).

2.3 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

ASTM B16/B16M – Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines.

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

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 General. The individual item requirements shall be in accordance with MIL-PRF-19500, and as specified herein.

3.2 Certification and manufacturer eligibility.

3.2.1 Certification as approved source of supply. In order to be listed as an approved source of supply of diodes compliant to this drawing (see 6.5), a manufacturer shall submit a certificate of compliance to DLA Land and Maritime VAC prior to listing as an approved source of supply.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 3

3.2.2 Certificate of conformance. A certificate of conformance shall be provided with each lot of devices delivered in accordance with this drawing. The certificate of compliance shall state that the manufacturer's product meets the requirements of this drawing. Diodes meeting the matched pair requirements of this drawing shall be packaged with a statement to that effect (see 6.2.d).

3.2.3 Manufacturer eligibility. To be eligible for listing as an approved source of supply, a manufacturer shall be either listed on the MIL-PRF-19500 Qualified Manufacturers List for at least one device type or, when specified, perform eligibility inspection in accordance with this drawing (see 4.2) on a sample of parts agreed upon by the manufacturer and DLA Land and Maritime VAC.

3.3 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein shall be as specified in MIL-PRF-19500 and as listed in 6.6.

3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500 and herein.

3.4.1 Package outline. The semiconductor diode shall be of symmetrical construction and shall consist of a cylindrical body having pins on both ends (see figure 1). The body outline with removable base adapter shall conform to figure 1.

3.4.2 Base adapter. The base adapter shall be of the design, construction, and physical dimensions shown on figure 2.

3.4.3 Materials.

3.4.3.1 Base adapter. The material for the base adapter shall be brass in accordance with ASTM B16/B16M, or equivalent.

3.4.3.2 Package sealants. Organic package sealants may be used at the option of the manufacturer.

3.4.3.3 Plating. The metal parts of the diode and base adapter shall be gold plated as specified on figures 1 and 2.

3.5 Marking. The marking shall be placed on each device in accordance with MIL-PRF-19500 and herein, except that the manufacturer's identification and country of origin may be omitted.

3.5.1 Product identification. It is prohibited for a manufacturer not listed in 6.5 to mark diodes with this drawing's PIN.

3.5.1.1 Forward polarity diodes. The valid type designation and suffix symbols to be included in the PIN marked on the device body are "1N23WE" or "1N23WG".

3.5.1.2 Matched pair diodes. The "M" or "MR" suffix for matched pair diodes shall be omitted from the product identification marking on each device.

3.5.2 Unit pack marking. Each unit package shall be marked in accordance with MIL-STD-1285 and include the complete PIN as specified herein (see 1.2), the manufacturer's name or Commercial and Government Entity (CAGE) code, and date lot codes. The order of marking is optional.

3.6 Electrical performance characteristics. The electrical performance characteristics shall be as specified in 1.3, tables I and II.

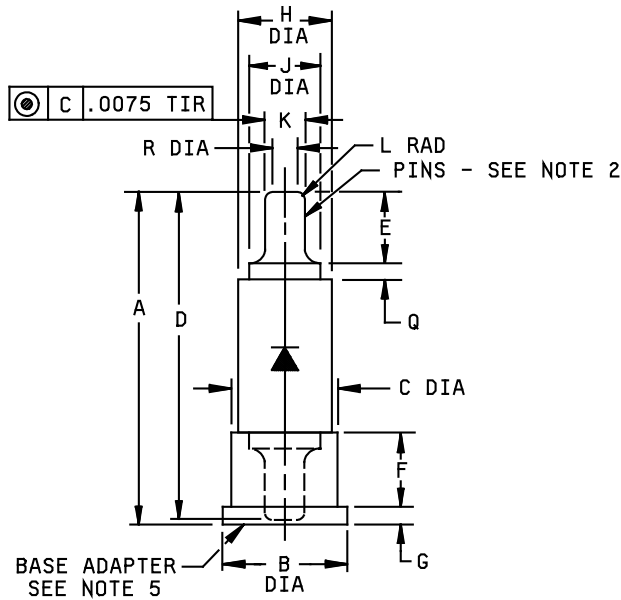
3.7 Electrical test requirements. The electrical test requirements shall be in accordance with tables I, II and III as applicable.

3.7.1 Matched pair diode requirements. After being tested in accordance with 4.5.2.1, the diode pairs shall be within the delta limits specified in subgroup 4 of table I.

3.7.1.1 Forward polarity matched pair diodes (PINs with "M" suffix). The matched pair forward polarity diodes shall consist of two diodes, with both being tested having the base adapter attached to the anode pin.

3.7.1.2 Forward and reverse polarity matched pair diodes (PINs with "MR" suffix). The matched pair forward and reverse polarity diodes shall consist of two diodes, and shall be tested with one diode having the base adapter attached to the anode pin (forward polarity) and the second diode having the base adapter attached to the cathode pin (reverse polarity).

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 4



LTR	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
A	.800	.840	20.32	21.34	
B	.292	.296	7.42	7.52	
C	.246	.250	6.25	6.35	
D	.766	.792	19.46	20.12	
E	.180	.190	4.57	4.83	2
F	.195	.199	4.95	5.05	
G	.047	.057	1.19	1.45	
H	.222	.240	5.64	6.10	
J	.195	.215	4.90	5.46	2
K	.092	.094	2.34	2.39	2, 3, 7
L	.030	.046	.76	1.17	6
Q	.017	.030	.43	.76	6
R		.030		.76	6

NOTES:

1. Dimensions are in Inches. Millimeters are given for general information only.
2. Applies to both pins.
3. The ends of both pins shall be smooth with no burrs or sharp edges. Within the diameter R, a recess is allowed on both ends of the pins.
4. Metal parts shall be gold plated 70 micro-inches minimum.
5. The polarity shall be indicated by an arrow, with the arrow pointing in the direction of easier current flow.
6. Removable base adapter shall establish the forward or reverse polarity.
7. Eccentricity between both pins and the base dimension C should not exceed .0075 inch (0.191 mm).

FIGURE 1. Package outline (similar to DO-22) for type 1N23 diodes.

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OH 43218

SIZE

A

CAGE CODE

037Z3

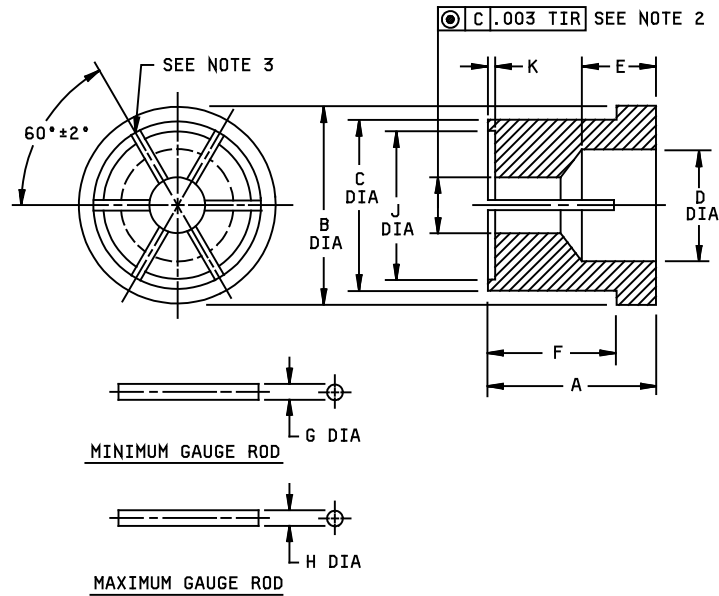
REV

B

DWG NO.

01037

PAGE **5**



LTR	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.242	.256	6.15	6.50
B	.292	.296	7.42	7.52
C	.246	.250	6.25	6.35
D		.187		4.75
E		.100		2.54
F	.195	.199	4.95	5.05
G	.0915	.0920	2.32	2.34
H	.0940	.0945	2.39	2.40
J	.216	.221	5.49	5.61
K	.031	.036	.79	.91

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. This diameter should be .100 (2.54 mm) max diameter before closing jaws. This diameter shall then be sufficiently closed and the adapter so tempered that it will fit on the minimum gage rod and maximum gage rod, in each case with a snug fit (for hand assembly).
3. Each slot shall be .013 (0.330 mm) min, .017 (0.132 mm) max wide by .185 (4.70 mm) deep before closing. The six slots are equally spaced.
4. The material for the adapter shall be brass in accordance with ASTM B16/B16M, or equivalent.
5. Metal parts shall be gold plated 70 micro-inches minimum.
6. All burrs and sharp edges shall be removed.

FIGURE 2. Removable base adapter, included with each device.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE	DWG NO.
		037Z3	01037
		REV B	PAGE 6

3.7.2 Burnout by single pulse. All diodes shall be capable of meeting the burnout by single pulse test.

3.8 Traceability and lot formation. Diodes compliant to this drawing shall meet the traceability and lot formation requirements of [MIL-PRF-19500](#) except as modified by the procuring activity.

3.9 Recycled, recovered, environmentally preferable, or biobased materials. Recycled, recovered, environmentally preferable, or biobased materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.10 Workmanship. The diodes shall be processed in such a manner as to be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Sampling and inspection. Unless otherwise specified, sampling and inspection procedures shall be performed in accordance with [MIL-PRF-19500](#), and as specified herein.

4.1.1 Structurally similar device types. Devices types 1N23WE and 1N23WG are structurally similar devices. Any device type may be sampled for groups B inspection to accept all other device types for conformance inspection.

4.1.2 Inspection of product for delivery. Inspection of product for delivery shall consist of conformance inspection in accordance with [4.4.1](#) and [4.4.2](#) (groups A and B inspection).

4.2 Eligibility verification. When conformance testing is used to verify a device manufacturer eligibility, a sample of devices shall be subjected to inspection of product for delivery in accordance with 4.1.2. When specified, group E inspection shall be performed. In addition, the device manufacturer shall make available to DLA Land and Maritime VAC, upon request, all pertinent test data on its production of the listed parts, including, but not limited to, the results of testing in accordance with [tables I, II and III](#) as applicable.

4.2.1 Group E inspection. Group E inspection shall be performed on test specimens that are representative of subsequent production.

4.2.2 Inspection routines. Group E inspection shall consist of either a full inspection or partial inspection as specified.

4.2.2.1 Full inspection. A sample of test specimens shall be submitted for group E inspection and subjected to the testing of each subgroup of [table III](#) in the order shown. Alternately, separate samples of test specimens of the same PIN may be tested for each subgroup. All product characteristics of the PINs to be listed for a manufacturer shall be covered in the full group E inspection.

4.2.2.2 Partial inspection. At the discretion of DLA Land and Maritime VAC, a manufacturer may be required to perform a partial group E inspection for the reason listed in 4.2.3. The manufacturer shall coordinate with DLA Land and Maritime VAC to determine the applicable subgroups of [table III](#) and sample quantities required to be tested.

4.2.2 Extent of listing. A group E inspection on a particular diode PIN shall be extended to cover all other diode PINs of this drawing.

4.2.3 Design, location, material, or process changes. A full or partial group E inspection may be required when any of the following events occurs:

- a. A change in the design affecting form, fit, or function of the part.
- b. A change in the location of the manufacture.
- c. A change in manufacturing source(s), process(es), inspection method(s), tooling or materials, affecting form, fit, or function.
- d. A natural or man-made event, which may adversely affect the manufacturing process.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 7

4.2.4 Nonconformance. The group E inspection is not complete until all non-conformances affecting the part are addressed and corrective actions have been implemented and accepted. The group E inspection shall be repeated for the affected characteristics and the results recorded.

4.3 Screening. Screening is not applicable for devices compliant to this drawing.

4.4 Conformance inspection.

4.4.1 Group A inspection. Group A inspection shall consist of the inspections and tests specified in [table I](#). Matched pair devices shall include subgroup 4 in the test routine. Non-matched pair devices can skip the tests of subgroup 4 from the test routine.

4.4.2 Group B inspection. Group B inspection shall consist of the inspections and tests specified in [table II](#).

4.5 Methods of inspection and test. Methods of inspection and test shall be as specified in the appropriate tables and as detailed herein.

4.5.1 Test condition details.

4.5.1.1 Electrical test parameters. Unless otherwise specified herein, the parameters to be used when performing electrical test shall be as follows:

P = 1.0 mW $\pm$ 5 percent.

f = 9,375 GHz $\pm$ 5 MHz.

NF_(IF) $\geq$ 1.5 dB.

R_L = 100 $\pm$ 1 Ω .

Z_m = 400 $\pm$ 10 Ω .

4.5.1.2 Diode test holder. The diode test holder specified on DESC Drawing D65019 or an equivalent 9.375 GHz X band test holder shall be used for all electrical test measurements.

4.5.1.3 Time limit for measurements. End-point electrical measurements for device manufacturer eligibility and conformance inspection shall be completed within 96 hours after completion of the last test in the subgroup.

4.5.2 Test method details.

4.5.2.1 Matched pair tests.

4.5.2.1.1 Forward polarity only pairs (PINs with "M" suffix). The matched forward pair diodes shall be tested to requirements of subgroup 4 of [table I](#). Both diodes shall be tested having the anode connected to the base adapter.

4.5.2.1.2 Forward and reverse polarity matched pair diodes (PINs with "MR" suffix). The matched pair forward and reverse polarity diodes shall be tested to the requirements of subgroup 4 of [table I](#). The diodes shall be tested with one diode having the anode connected to the base adapter (forward polarity) and the second diode having the cathode connected to the base adapter (reverse polarity).

4.5.2.2 High-temperature operation. The high-temperature operation test shall be performed in accordance with test method 4126 of [MIL-STD-750](#), except that the procedure shall be as follows: After the diode is placed in the diode test holder, the ambient temperature of the diode, with test conditions specified for the overall noise figure, shall be raised to +150°C and maintained at this temperature until equilibrium is reached. The NF_o shall then be determined and shall be less than the specified limit. The temperature shall then be returned to +25°C $\pm$ 3°C at which time the NF_o measurement shall be made within 5 minutes after reaching this temperature and shall be less than the specified maximum limit.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 8

4.5.2.3 Burnout by single pulse. The burnout by single pulse test shall be performed in accordance with test method 4146 of MIL-STD-750. The following details shall apply: The diode test holder shall be in accordance with DESC Drawing D65019 or equivalent. The device being tested shall be in the forward-direction operation with E = 125 V dc, minimum.

4.6 Generic test data. Generic test data may be used to satisfy the requirements of 4.2. Generic test data shall be from devices date coded no more than 1 year old and be of the same design, of the same material, and were made using the same manufacturing processes. The vendor is required to retain the generic data used for verifying manufacturer eligibility for a period of not less than 3 years from the date of listing on this drawing.

TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Voltage standing wave ratio	4136	Test condition A, I = 1.0 mAdc; see 4.5.1 for test conditions	VSWR		1.3	ratio
Intermediate frequency conductance	4116	Test condition A, f = 60 to 2000 Hz; see 4.5.1 for test conditions	1/G	335	465	ohms
Overall noise figure	4126	Test condition A; see 4.5.1 for test conditions	NF _o			
1N23WE, WEM, WEMR					7.5	dB
1N23WG, WGM, WGMR					6.5	dB
<u>Subgroup 3</u>						
Not applicable						
<u>Subgroup 4 2/</u>						
Matched pair requirements		See 3.7.1				
Conversion loss unbalance	4101	Test condition D	ΔL _c		0.3	dB
Intermediate frequency conductance unbalance	4116	Test condition B, see 4.5.1 for test conditions	Δ1/G		25	ohms

1/ For sample size, see table E-V of MIL-PRF-19500.

2/ Subgroup 4 is required for matched pair devices only.

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OH 43218

SIZE

A

CAGE CODE

037Z3

DWG NO.

01037

REV

B

PAGE **9**

TABLE II. Group B inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Physical dimensions	2066	See figures 1 and 2 .				
<u>Subgroup 2</u>						
Temperature cycling (air-to-air)	1051	Test condition F.				
Terminal strength:						
Tension	2036	Test condition A; 1 lb t = 30 sec				
Torque	2036	Test condition D ₁ ; t = 30 sec				
Moisture resistance	1021	Omit initial conditioning.				
End-point electrical measurements						
Overall (average) noise figure	4126	Test condition A, T _A = +25°C	NF _o		8.5	dB
1N23WE, WEM, WEMR					7.5	dB
1N23WG, WGM, WGMR						
<u>Subgroup 3</u>						
Shock	2016	500 G; t ≅ 1 ms, 5 blows in each orientation: X ₁ , Y ₁ , and Y ₂ .				
Vibration, variable frequency	2056	15 G; 50 to 2,000 Hz				
End-point electrical measurements		Same as subgroup 2 of this table.				
<u>Subgroup 4</u>		Not applicable.				
High temperature operation		See 4.5.2.2				
Overall (average) noise figure	4126	Test condition A at T _A = +150°C	NF _o		10.5	dB
1N23WE, WEM, WEMR					9.5	dB
1N23WG, WGM, WGMR						
Overall (average) noise figure	4126	Test condition A at T _A = +25°C	NF _o		8.5	dB
1N23WE, WEM, WEMR					7.5	dB
1N23WG, WGM, WGMR						
<u>Subgroup 5</u>						
Not applicable						
<u>Subgroup 6</u>						
High temperature life (non-operating)	1031	T _A = +150°C				
End-point electrical measurements		Same as subgroup 2 of this table.				

1/ For sampling plan, see table E-VIB of [MIL-PRF-19500](#).

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OH 43218

SIZE

A

CAGE CODE

037Z3

REV

B

DWG NO.

01037

PAGE **10**

TABLE III. Group E inspection.

Inspections	MIL-STD-750	
	Method	Conditions
<u>Subgroup 1</u>		
Temperature cycling (air to air)	1051	Test condition C, 500 cycles.
Constant acceleration	2006	
End-point electrical measurements		See table I , subgroup 2 herein.
<u>Subgroup 2</u>		
Steady-state operating life	1026	T _A = 25°C, P _T = 0.8 W, V _{CE} = 40 V dc, t = 1000 hours.
End-point electrical measurements		See table I , subgroup 2 herein.
<u>Subgroup 3</u>		
Burn-out by repetitive pulsing	4146	See 4.5.2.3 , figures 3 and 4 .
<u>Subgroup 4</u>		
High temperature life (non-operating)	1032	T _A = +100°C, time = 72 hours minimum.
End-point electrical measurements		See table I , subgroup 2 herein.
<u>Subgroup 5</u>		
Terminal strength: Tension	2036	Test condition A; 1 lb (0.454 Kg); t = 30 seconds.
Torque	2036	Test condition D ₁ ; t = 30 seconds.
Shock	2016	Three (3) shocks shall be applied in each of the three mutually perpendicular axes of the test specimen for 18 shocks total.
End-point electrical measurements		See table I , subgroup 2 herein.
<u>Subgroup 6</u>		
Conversion loss	4101	
Output noise ratio	4121	

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OH 43218

SIZE

A

CAGE CODE

037Z3

REV

B

DWG NO.

01037

PAGE **11**



NOTE: The holder used with a diode mounted in it and terminated with 100 ohms and with an incident power of 1.0 mW to the holder, shall have a 2.0 maximum VSWR over a minimum band width of 1/(pulse width used) on both sides of the RF burn-out test frequency used.

FIGURE 3. RF pulse burn-out circuit.

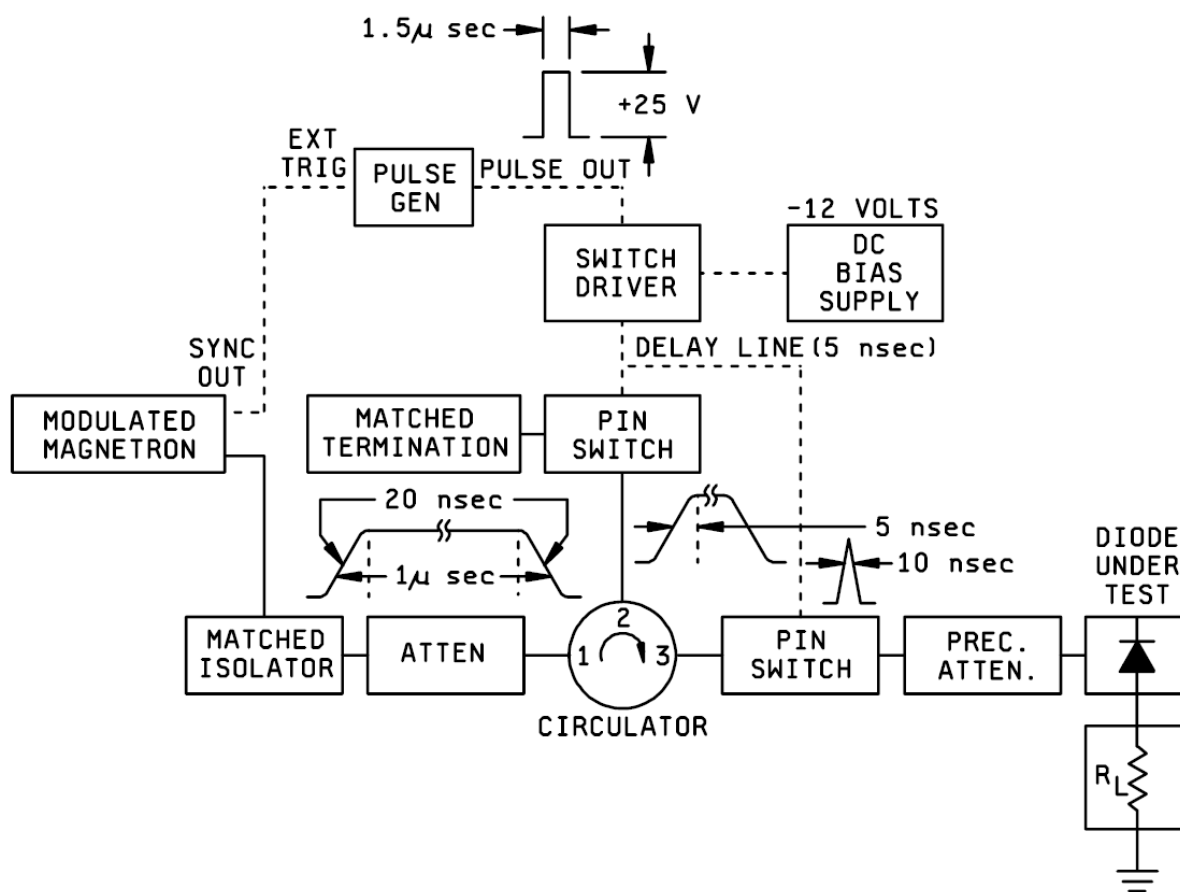


FIGURE 4. RF pulse burn-out system.

DEFENSE SUPPLY CENTER COLUMBUS
COLUMBUS, OH 43218

SIZE

A

CAGE CODE

037Z3

REV

B

DWG NO.

01037

PAGE **12**

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Devices conforming to this drawing are intended for use when performance specification sheets do not exist and qualified military devices that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of duplicate specifications, drawings, and stock number listings.

6.2 Acquisition requirements. The acquisition requirements should specify the following:

- a. Complete PIN (see 1.2).
- b. Requirements for delivery of either a copy of a certificate of compliance or the conformance inspection data that parts have passed conformance inspection with each shipment of parts by the manufacturer.
- c. Requirements for packaging and packing.
- d. When applicable, a statement of diode pair matching for diodes meeting the matched pair requirements of this drawing (PINS with suffix symbols "M" or "MR").

6.3 Replaceability. Devices covered by this drawing may be used as a substitute for those on MIL-S-19500/322.

6.4 List of superseded PINs. The following supersession data applies to PINs associated with this document:

Replacement PIN as specified herein	Superseded PIN as specified within MIL-S-19500/322B, dated 16 December 1974	Superseded PIN as specified within MIL-S-19500/233B, dated 15 April 1963	Superseded PIN as specified within MIL-S-19500/322(EL), dated 28 December 1964	Superseded PIN as specified within MIL-S-19500/281A, dated 1 July 1967
01037-1N23WE	JAN1N23WE	JAN1N23WE		JAN1N3747W
01037-1N23WEM	JAN1N23WEM	JAN1N23WEM		JAN1N3747WM
01037-1N23WEMR	JAN1N23WEMR	JAN1N23WEMR		JAN1N3747WMR
01037-1N23WG	JAN1N23WG		JAN1N23G	
01037-1N23WGM	JAN1N23WGM		JAN1N23GM	
01037-1N23WGMR	JAN1N23WGMR		JAN1N23GMR	

6.4.1 Superseded military types. Types 1N3747W, 1N3747WM, and 1N3747WMR of MIL-S-19500/281 have been replaced with device types 1N23WE, 1N23WEM, and 1N23WEMR respectively. Superseded diode types 1N23G, 1N23GM, and 1N23GMR of MIL-S-19500/233 have been replaced with device types 1N23WG, 1N23WGM, and 1N23WGMR respectively.

6.4.2 Superseded commercial types. Types 1N23WE, 1N23WEM, and 1N23WEMR with its removable adapter, may be substituted for the corresponding commercial types 1N23E, 1N23ER, 1N23EM, and 1N23EMR. Types 1N23WG, 1N23WGM, and 1N23WGMR with its removable adapter, may be substituted for the corresponding commercial types 1N23G, 1N23GR, 1N23GM, and 1N23GMR.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 03723	DWG NO. 01037
		REV B	PAGE 13

6.5 Approved sources of supply. Approved sources of supply are listed herein. Additional sources will be added as they become available. The vendors listed herein have agreed with this drawing and have submitted a certificate of compliance (see 3.4 herein) to DLA Land and Maritime, ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990 or emailed to semiconductor@dla.mil.

DSCC drawing PIN (1)	Vendor similar designation or type number (2)	Vendor CAGE	Vendor name and address
01037-1N23WE 01037-1N23WEM 01037-1N23WEMR 01037-1N23WG 01037-1N23WGM 01037-1N23WGMR	UXAN1N23WE UXAN1N23WEM UXAN1N23WEMR UXAN1N23WG UXAN1N23WGM UXAN1N23WGMR	3BBY6 	SemiGen, Inc. 920 Candia Road Manchester, NH 03109-5201 Phone: (603) 624-8311 Fax: (603) 624-8312 URL: http://www.semigen.net

- (1) Parts must be purchased to this DSCC PIN to assure that all performance requirements and inspections are met.
(2) Do not use vendor PIN's for acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

DSCC drawing PIN (1)	Vendor similar designation or type number (2)	Vendor CAGE	Vendor name and address
01037-1N23WE 01037-1N23WEM 01037-1N23WEMR 01037-1N23WG 01037-1N23WGM 01037-1N23WGMR	1N23WE 1N23WEM 1N23WEMR 1N23WG 1N23WGM 1N23WGMR	1W7D7 	Massachusetts Bay Technologies, Inc. 378 Page Street Stoughton, MA 02072-2971 Office: (781) 344-8809 Fax: (781) 341-8177 URL: https://massbaytech.com

- (1) Parts must be purchased to this DSCC PIN to assure that all performance requirements and inspections are met.
(2) Do not use vendor PIN's for acquisition. Items acquired to this number may not satisfy the performance requirements of this drawing.

6.6 Symbols used in this drawing. The following symbols are used in this drawing. The definition associated with the symbol shall be as defined in MIL-PRF-19500 or herein.

1/G	Reciprocal of conductance (Intermediate frequency impedance).
f	Local oscillator frequency.
L _c	Conversion loss. Replaces symbol "L".
NF _o	Noise figure, overall. Replaces symbols " $\overline{F}_o$ ", " $\overline{F}_{om}$ ", and " F_{om} ".
NF _{if}	Noise figure, intermediate-frequency. Replaces symbols "N _{if} ".
NR _o	Noise ratio, output. Replaces symbol "N".
P	Power.
R _L	Resistance, load.
VSWR	Voltage standing wave ratio.
Z _{if}	Impedance, intermediate frequency (IF). Replaces symbol "Z _(IF) ".
Z _m	Impedance, modulator-frequency load.

6.7 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

DEFENSE SUPPLY CENTER COLUMBUS COLUMBUS, OH 43218	SIZE A	CAGE CODE 037Z3	DWG NO. 01037
		REV B	PAGE 14