MILITARY SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE, TYPE 1N830AM

1. SCOPE

1.1 Description.- This specification covers the detail requirements for a silicon diode for UHF detector applications and is in accordance with Specification MIL-S-19500, except as otherwise specified herein.

1.2 Maximum ratings.-

V_R	I_F	Rectification efficiency	Temperature range
Vdc	mAdc	%	°C.
2.0	25	65	-65 to +150

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issue in effect on date of invitation for bids, form a part of this specification to the extent specified herein:

SPECIFICATION

MILITARY
MIL-S-19500 - Semiconductor Devices, General Specification for.

STANDARD

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

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 General.- Semiconductor diodes shall be in accordance with Specification MIL-S-19500 and as specified herein.

3.2 Design and construction.- Semiconductor diodes shall be of the design, construction and physical dimensions as shown on figure 1.

3.3 Performance characteristics.- Performance characteristics shall be as specified in 4.3 and 4.4.

3.4 Marking.- Diodes shall be marked with the "USN" prefix in lieu of the "JAN" prefix. The cathode shall be indicated by a contrasting band. The type number shall include the "M" suffix. Country of origin and manufacturer's identification may be omitted from the device.

4. QUALITY ASSURANCE PROVISIONS

4.1 Qualification tests.- Qualification tests shall be conducted at a laboratory satisfactory to the Bureau of Ships. Qualification tests shall consist of the tests specified in 4.3 and 4.4. (Application for qualification tests shall be made in accordance with "Provisions Governing Qualification" (see 6.1).)

4.2 Acceptance inspection.- Acceptance inspection shall consist of the examinations and tests specified in 4.3 and 4.4.

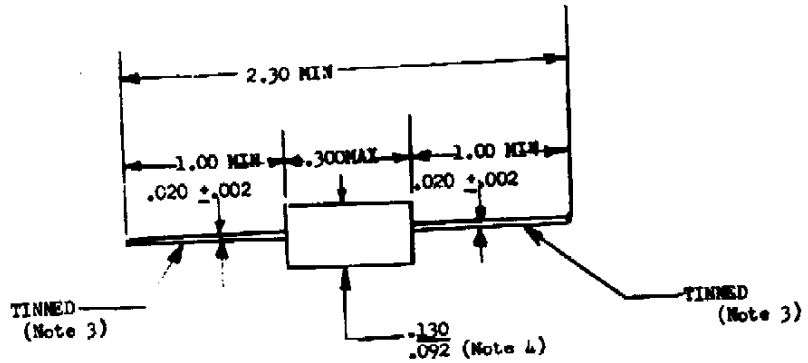
Qualification". (Copies of "Provisions Governing Qualification" may be obtained upon application to Commanding Officer, Naval Supply Depot, 5801 Tabor Avenue, Philadelphia 20, Pa.)

Notice.- When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

Preparing activity:
Navy - Ships
(Project 5960-N271(NAVY))

Table II - Group B inspection (Cont'd).

Examination or test	Conditions		LTPD	Min. rej. No.	Symbol	Limits		Unit
	MIL-STD-750 method	Specific conditions				Min.	Max.	
Subgroup 4								
Lead fatigue	2036 Condition E	---	15	5	---	---	---	---
Subgroup 5								
Salt atmosphere	1041	---	15	5	---	---	---	---
Subgroup 6								
High temperature life (nonoperating)	1031	T_A = 150°C.	λ = 15	5	---	---	---	---
Subgroup 7								
Intermittent life	1036	Off time 10 min., On time 50 min., I_F = 50 ua	λ = 15	5	---	---	---	---
End points (subgroups 2, 3, 5, 6 and 7):								
Rectification efficiency	4041	f = 100mc V_{in} = 1.0Vac across 50Ω resistor C_1 = 12pf, R_L = 5kΩ	---	---	RE	60	---	%
Reverse current at peak reverse voltage	4016 Condition B	V_R = 5.0 Vdc	---	---	I_R	---	2.0	mAdc



NOTES:
1. All dimensions in inches.
2. The specified lead diameter applies in the zone between 0.050 and 1.00 from the diode body. Outside of this zone the lead diameter is not controlled.
3. Gold plated leads may be substituted when specified in the contract or order providing gold plated units conform to subgroups 2, 4 and 5 of group B inspection.
4. The minimum body diameter shall be maintained over 0.15 inch of body length.
5. Both leads shall be electrically isolated from package.

Figure 1 - Dimensions of diode type 1N830AM.

4.2.1 Acceptance procedure.- When a second sample is chosen, the total sample shall be that sample associated with an acceptance number of one less than the minimum rejection numbers specified in tables I and II.

4.2.2 Acceptance inspection information.- When specified in the contract or order, one copy of the acceptance inspection data pertinent to the inspection lot shall accompany the shipments.

4.3 Group A inspection.- Group A inspection shall consist of the examinations and tests specified in table I.

4.4 Group B inspection.- Group B inspection shall consist of the examinations and tests specified in table II.

4.4.1 Destructive tests.- The tests in subgroups 4 and 5 of group B inspection are considered destructive.

4.4.2 Salt atmosphere.- The device shall be examined for destructive corrosion and illegible marking.

5. PREPARATION FOR DELIVERY

5.1 See Specification MIL-S-19500.

6. NOTES

6.1 The activity responsible for the qualified products list is the Bureau of Ships, Department of the Navy, Washington 25, D.C., and information pertaining to qualification of products may be obtained from that activity. Application for Qualification tests shall be made in accordance with "Provisions Governing

Table I - Group A inspection.

Examination or test	Conditions		LTPD	Min. rej. No.	Symbol	Limits		Unit
	MIL-STD-750 method	Specific conditions				Min.	Max.	
Subgroup 1								
Visual and mechanical examination	2071	---	5.0	4	---	---	---	---
Subgroup 2								
Rectification efficiency	4041	f = 100 mc, V_{in} = 1.0 Vac across 50 Ω resistor C_1 = 12pf, R_L = 5kΩ	5.0	4	RE	65	---	%
Reverse current at peak reverse voltage	4016	V_R = 5Vdc			I_R	---	2.0	mAdc

Table II - Group B inspection.

Examination or test	Conditions		LTPD	Min. rej. No.	Symbol	Limits		Unit
	MIL-STD-750 method	Specific conditions				Min.	Max.	
Subgroup 1								
Physical dimensions	2066	---	10	5	---	---	---	---
Subgroup 2								
Soldering heat	2031	---	15	5	---	---	---	---
Temperature cycling	1051 Condition B	5 cycles $T_{(high)}$ = 150°C.			---	---	---	---
Thermal shock	1056 Condition A	---			---	---	---	---
Moisture resistance	1021	---			---	---	---	---
Subgroup 3								
Shock	2016	5 blows, X_1, Y_1 and Y_2, 1,500G, 0.5 msec	15	5	---	---	---	---
Vibration, variable frequency	2056	---			---	---	---	---
Vibration fatigue	2046	---			---	---	---	---
Constant acceleration	2006	20,000G, X_1, Y_1 and Y_2			---	---	---	---