DEFENSE LOGISTICS AGENCY
WEAPONS SUPPORT
P.O. BOX 3990
COLUMBUS, OHIO 43218-3990

August 27, 2026

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Initial Draft of Performance Specification Sheet MIL-PRF-19500/483 Rev E with Amendment 2; Project Number 5961-2026-082.

The initial draft of the subject document, dated August 27, 2026, is now available for viewing and downloading from the ASSIST or DLA Weapons Support (Columbus) -VA websites using following URLs:

https://assist.dla.mil
or
https://landandmaritimeapps.dla.mil/programs/milspec/default.aspx

The initial draft of the subject document was generated to perform and overage review and update format to be in compliance with MIL-STD-961. Highlighting has been used to allow for easy recognition of changes.

Device types covered by MIL-PRF-19500/483 include M19500/483-01, -02, -03, and -04

If this document is of interest to you, please provide your concurrence or comments to this Center by the date indicated on the ASSIST or DLA Weapons Support electronic mail notification and not 30 days from the date of this letter or the date on the draft document. Late comments will be held for the next coordination of the document. Comments from military departments must be identified as either "Essential" or "Suggested". Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians or this office, as applicable, in sufficient time to allow for consolidating the department reply. If no response is received from your activity in the allotted coordination cycle, concurrence will be assumed.

The point of contact for this action is Mr. David Corbett, DLA Weapons Support (Columbus), ATTN: VAC, Post Office Box 3990, Columbus, OH 43218-3990. Mr. Corbett can also be reached by phone at 614-693-0168 or by e-mail david.corbett@dla.mil.

Sincerely,

MUHAMMAD AKBAR
Chief,
Active Devices Branch

This draft, dated 27 August 2026, prepared by DLA−CC, has not been approved and is subject to modification. DO NOT USE PRIOR TO APPROVAL (Project 5961−2026−082). Comments are due no later than the date specified in the e-mail notification. P.O.C. is David Corbett; phone 614−693−0168 / e-mail: david.corbett@dla.mil

INCH-POUND

The documentation and process conversion measures necessary to comply with this document shall be completed by 90 days from date.

MIL-PRF-19500/483E
W/AMENDMENT 2
DRAFT
SUPERSEDING
MIL-PRF-19500/483E
W/AMENDMENT 1
7 May 2021

PERFORMANCE SPECIFICATION SHEET

RECTIFIER, SEMICONDUCTOR DEVICE, UNITIZED, SILICON, HIGH-POWER, THREE PHASE, FULL WAVE BRIDGE RECTIFIER, TYPES M19500/483-01 THROUGH M19500/483-04, QUALITY LEVEL JANTX

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-19500.

1. SCOPE

1.1 Scope. This specification covers the performance requirements for silicon, 3-phase, full wave bridge rectifiers intended for use in applications at frequencies of 1 kHz or less. One level of product assurance (JANTX) is provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1.

1.3 Maximum ratings. Unless otherwise specified, T_A = +25°C.

1.3.1 Ratings applicable to all Part or Identifying Numbers (PIN). Junction temperature: −65°C to +175°C. Storage ambient temperature: -65°C to +150°C.

1.3.2 Ratings applicable to individual types.

Types	V_{RWM}	Bridge (1) I_{O1} at T_C = +55°C	Bridge (2) I_{O2} at T_C = +100°C	$I_{F(surge)}$ $I_O = I_{O1}$ T_C = +55°C t_p = 8.3 ms	Barometric pressure (reduced)	t_{rr} I_F = 0.5 A I_R = 1.0 A I_{rec} = 0.25 A
M19500/483-	V (pk)	A dc	A dc	A (pk)	mmHg	µs
01	200	25	18.5	150	8	2.5
02	400	25	18.5	150	8	2.5
03	600	25	18.5	150	33	2.5
04	800	25	18.5	150	33	2.5

(1) Derate from 25 A dc at T_C = +55°C to 18.5 A dc at T_C = +100°C (144 mA dc/°C).
(2) Derate from 18.5 A dc at T_C = +100°C to 0 A dc at T_C = +150°C (370 mA dc/°C).

Comments, suggestions, or questions on this document should be addressed to DLA Weapons Support ~~Land and Maritime~~, ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to Semiconductor@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A
FSC 5961

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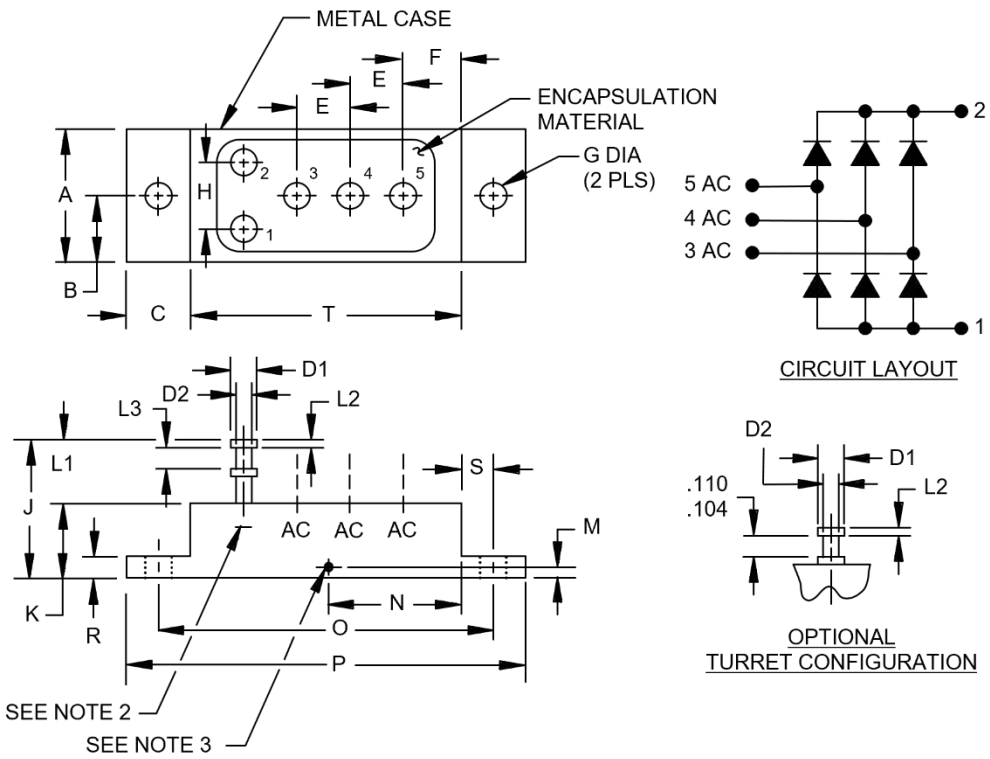


Dimensions									
Symbol	inch	inch	mm	mm	Symbol	inch	inch	mm	mm
	Min	Max	Min	Max		Min	Max	Min	Max
A	.710	.770	18.03	19.56	L1	.130	.320	3.30	8.13
B	.355	.395	9.02	10.03	L2	.015	.030	0.38	0.76
C	.355	.395	9.02	10.03	L3	.100	.125	2.54	3.18
D1	.141	.151	3.58	3.84	M	.040	.060	1.02	1.52
D2	.108	.118	2.74	3.00	N	.720	.780	18.29	19.81
E	.355	.395	9.02	10.03	O	1.84	1.90	46.74	48.26
F	.230	.270	5.84	6.86	P	2.22	2.28	56.39	57.91
G	.149	.189	3.78	4.80	R	.090	.150	2.29	3.81
H	.355	.395	9.02	10.03	S	.168	.208	4.27	5.28
J		.820		20.83	T	1.47	1.53	37.34	38.86
K	.390	.590	9.91	14.99					

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Polarity shall be marked on the bridge rectifier body adjacent to terminals. Terminal numbers are for reference and are not required to be marked on the bridge rectifier.
3. Point at which T_C is read shall be in metal part of case as shown on drawing.
4. ~~In accordance with ASME Y14.5, diameters are equivalent to Øx symbology.~~

FIGURE 1. Physical dimensions for bridge rectifier assembly.

1.5 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-19500, and as specified herein. See 6.4 for PIN construction example and 6.5 for a list of available PINs.

1.5.1 JAN certification mark and quality level. The "JAN" certification mark and the only quality level designator for devices that are applicable for this specification sheet is "TX".

1.5.2 Specification designation. The military specification PIN based designation system uses "M19500" followed by the specification sheet number "483" preceded by a slash.

1.5.3 Dash number. The dash number is a sequential two digit number ("01" through "04") that uniquely identifies the bridge rectifier (see 1.3) preceded by a dash.

1.5.4 Lead finish. The lead finishes applicable to this specification sheet are listed on QPDSIS-19500.

2. APPLICABLE PUBLICATIONS ~~DOCUMENTS~~

2.1 General. The publications ~~documents~~ listed in this section are specified in sections 3 and 4 of this specification. This section does not include publications ~~documents~~ cited in other sections of this specification 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 publications ~~documents~~ cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government publications ~~documents~~.

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

DEPARTMENT OF DEFENSE SPECIFICATIONS

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

DEPARTMENT OF DEFENSE STANDARDS

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

(Copies of these publications ~~documents~~ are available online at https://quicksearch.dla.mil.)

2.3 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 as specified in MIL-PRF-19500 and as modified herein.

3.2 Qualification. Devices furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.2 and 6.3).

3.3 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-PRF-19500 and as follows.

N = number of diodes for each leg.

3.4 Interface and physical dimensions. Interface and physical dimensions shall be as specified in MIL-PRF-19500 and on figure 1.

3.4.1 Internal construction. The bridge rectifier shall consist of a metal and plastic encased assembly of single or parallel discrete diodes.

3.4.1.1 Discrete diodes. Each discrete diode shall be a glass-to-metal, ceramic-to-metal, or fused metal oxide-to-metal hermetically sealed package. The silicon die in each discrete diode shall be metallurgically bonded directly to the terminal pins. Discrete diodes shall be JANTX level. Only those discrete diodes which have met these requirements shall be used in the rectifier bridge.

3.4.1.2 Completed assemblies. The completed assembly of diodes and other internal structures shall be encapsulated in a plastic material which polymerizes to a rigid condition by virtue of a chemical cross-linking mechanism. The bridge rectifier shall be free of voids either visible or as evidenced by failure to pass the environment test specified.

3.4.2 Terminal finish. Terminal finish shall be solderable in accordance with MIL-PRF-19500, MIL-STD-750, and herein. Where a choice of terminal finish is desired, it shall be specified in the acquisition document (see 6.2).

3.4.3 Parallel diode construction. For bridge rectifier design that employs more than one diode for each leg and N equals the number of diodes for each leg, the following design and matching conditions shall be approved by the qualifying activity.

a. Individual diode room temperature V_F matching shall be performed at a current value of (I_{O1}/N) or greater. The V_F shall be within 20 mV on each diode.

b. The same diode design shall be used in each parallel leg.

c. The design shall ensure similar lead lengths and uniform heat paths, so that all diodes in each leg are at similar junction temperatures.

3.5 Marking. Marking shall be in accordance with MIL-PRF-19500. Manufacturer's identification and date code shall be marked on the devices. Initial container package marking shall be in accordance with MIL-PRF-19500. Polarity shall be as marked on figure 1.

3.6 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in 1.3 and table I.

3.7 Electrical test requirements. The electrical test requirements shall be the subgroups specified in table I herein.

3.8 Workmanship. Semiconductor devices shall be processed in such a manner as to be uniform in quality and shall be free from other defects that will affect life, serviceability, or appearance.

4. VERIFICATION

4.1 Classification of Inspections. The inspection requirements specified herein are classified as follows:

a. Qualification inspection (see 4.2).

b. Screening (see 4.3).

c. Conformance inspection (see 4.4).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500 and as specified herein.

4.3 Screening (JANTX level). Screening shall be in accordance with table E-IV of MIL-PRF-19500, and as specified herein. The following measurements shall be made in accordance with table I herein. Devices that exceed the limits of table I, subgroup 2 and 4.3.1.1 herein shall not be acceptable.

4.3.1 Discrete diode screening. One hundred percent of the internal discrete diodes shall be subjected to the following inspections:

Screen	Measurement
3c (1)	Thermal impedance (see 4.3.1.1)
9	Not applicable
11	V_F at I_F/N and I_{R2}/N of subgroup 2 of table I herein
12	See 4.3.1.2
13	V_F at I_F/N and I_{R2}/N of subgroup 2 of table I herein. ΔV_{F1}/N = ±0.05 V dc; ΔI_{R2} = 100 percent of initial value or ±250 nA dc, whichever is greater. Scope display evaluation (see 4.5.3)

(1) This test shall be performed any time after temperature cycling, screen 3a, and does not need to be repeated in screening requirements.

4.3.1.1 Thermal impedance. The thermal impedance measurements shall be performed on the individual discrete diodes in accordance with method 3101 of MIL-STD-750 using the guidelines in that method for determining I_M, I_H, t_H, t_{SW}, (V_C and V_H where appropriate). The thermal impedance limit used in screen 3c of 4.3.1 and table I, subgroup 2 shall be set statistically by the supplier.

4.3.1.2 Power burn-in conditions. Power burn-in conditions shall be in accordance with test condition B of method 1038 of MIL-STD-750. The following details shall apply: T_A = 55°C maximum as defined in the general requirements of and mounting conditions of MIL-STD-750, V_{RWM} = rated V_{RWM} (see 1.3), I_O = 3 A dc minimum, f = 50 to 60 Hz.

4.3.2 Assembly screening. One hundred percent of the completed bridge rectifier assemblies shall be subjected to the following inspections:

Screen	Measurement
Temperature cycling	Method 1051 of MIL-STD-750, condition F.
End point electrical measurements (1)	Subgroup 2 of table I herein.
Dielectric withstanding voltage	See 4.5.1.

(1) Except thermal impedance.

4.4 Conformance inspection. Conformance inspection shall be performed on the completed bridge rectifier assemblies in accordance with MIL-PRF-19500 and as specified herein.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with table E-V of MIL-PRF-19500 and table I herein.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-VIB (JANTX) of MIL-PRF-19500 and as follows.

Subgroup	Method	Conditions
B2	1051	Condition F, 25 cycles.
B2	1071	Not applicable.
B3	1027	I_O = 0 A dc; T_A = +150°C; V_{RWM} = 80 percent of rated V_{RWM} (see 1.3); f = 50 to 60 Hz. Sampling plan n = 10 devices, c = 0. A separate sample may be pulled for each of the two B3 steps shown for simultaneous testing (method 1027 and operational thermal cycling).
B6		Not applicable.
B7	3105	Junction temperature test (see 4.5.2, n = 22, c = 0).

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-VII of MIL-PRF-19500, and as follows. Group C sample size may be modified, when applicable, per the subgroups below.

Subgroup	Method	Conditions
C2	1056	Not applicable.
C2	2036	Test condition A, 10 pounds (4.54 kg), t = 30 seconds.
C2	2036	Test condition D1, t = 10 seconds, 2 inch-pounds (0.11 n-m).
C2	1071	Not applicable.
C6	1026	I_O = 0 A dc; T_A = +150°C; V_{RWM} = 80 percent rated V_{RWM} (see 1.3), f = 50 to 60 Hz; sampling plan n = 10, c = 0.
C8	1001	Pressure = rated (see 1.3), I_R = 1.0 µA dc maximum, V_R = rated V_R (see 1.3), (applied between all terminals to the case), sampling plan n = 12 devices, c = 0.
C8	4066	Condition A; V_{RWM} = rated V_{RWM} (see 1.3), bridge I_O = 25 A dc (entire bridge biased); T_C = +55°C +10°C, −0°C; I_{FSM} = 150 A (pk) (each device for each bridge leg); tp = 8.3 ms; ten surges for each leg at minimum 1 minute intervals; sampling plan n = 22 devices, c = 0. Alternate condition: Each leg may be biased separately to I_O = 12.5 A dc, all other conditions the same as above.
C9		Operational thermal cycling (see 4.5.4); sampling plan, n = 10, c = 0. A separate sample may be pulled for C6 and C7 for simultaneous testing (method 1027 of MIL-STD-750 and operational thermal cycling).

4.4.3.1 Sampling. The following allowances for small lot samples (samples from small inspection lots) shall only apply when the discrete diodes are screened to quality level JANTX or JANTXV requirements (see 6.6).

a. Small lot samples may be used to satisfy the group C requirements for inspection lots of structurally identical devices.

b. Small lot samples may be used to satisfy the 1-year group C interval as allowed for large lot samples in MIL-PRF-19500.

4.5 Methods of inspection. Methods of inspection shall be as specified in the appropriate tables and as follows.

4.5.1 Dielectric withstanding voltage. This test shall be performed in accordance with method 1081 of MIL-STD-750. This test shall be performed with the metal case of the bridge rectifier assembly connected to ground and all five terminals connected to the high potential side of a dc power supply or a scope display test set. The voltage applied between the terminals and the case shall be 2,800 volts and shall be held at that level for 10 seconds. Any discontinuity or dynamic instability of the trace, or a breakdown current in excess of 10 µA dc, shall be cause for rejection.

4.5.2 Junction temperature test. The junction temperature test shall be performed in accordance with method 3105 of MIL-STD-750, except V_{F4} shall be ≥ V_{F2A}. The maximum junction temperature of any diode in the bridge rectifier at the below specified conditions shall be +175°C maximum. The test conditions shall be one of the following:

a. T_C = +55°C, I_O = 25 A dc, I_{ref} = 10 mA dc, or

b. T_C = +100°C, I_O = 18.5 A dc, I_{ref} = 10 mA dc.

4.5.3 Scope display evaluation. The reverse characteristics shall be inspected and evaluated in accordance with method 4023 of MIL-STD-750. The test conditions shall be as follows:

a. Test condition B.

b. Horizontal sensitivity: 50 to 200V/division.

c. Vertical sensitivity: 5 to 20 µA/division.

d. Reverse current over the knee: 50 µA minimum.

4.5.4 Operational thermal cycling. This test shall be performed by connecting a three phase 50 to 60 Hz sine wave input of 10 to 20 V rms to the ac terminals of the bridge rectifier. The resistive load or input voltage shall be made variable in order to maintain a rated bridge output current of 25 A dc. The bridge rectifier case temperature shall be maintained at +55°C except during the cooling cycle when case temperature shall be permitted to drop 20°C maximum. Life-test duration shall be 2,000 cycles with a heating time of 8 minutes, +2, −0 minutes and a cooling time ≥ 2 minutes.

4.5.5 Pulse measurements. Conditions for pulse measurements shall be as specified in section 4 of MIL-STD-750.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit	Limit	Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Forward voltage 2/	4011	Condition B; I_F = 39 A dc (pk), t_p = 8.3 ms maximum; duty cycle ≤ 2 percent; (pulsed, see 4.5.5);	V_{F1}		1.3	V (pk)
Reverse current 2/	4016	Condition A or B; V_R = rated V_{RWM} (see 1.3)	I_{R1}		1.0	µA dc
Reverse current (discrete diode)	4016	Condition A or B; V_R = rated V_{RWM} (see 1.3)	I_{R2}		1.0	µA dc
Breakdown voltage 2/	4021	I_R = 50 µA dc	$V_{(BR)}$			
M19500/483-01				220		V dc
M19500/483-02				440		V dc
M19500/483-03				660		V dc
M19500/483-04				880		V dc
Subgroup 3						
High temperature operation:		T_C = +100°C				
Reverse current 2/	4016	Condition A or B; V_R = rated V_{RWM} (see 1.3)	I_{R3}		200	µA dc
Low temperature operation:		T_A = -55°C				
Reverse current 2/	4016	Condition A or B; V_R = rated V_{RWM} (see 1.3)	I_{R4}		2.0	µA dc
Subgroup 4						
Dielectric withstanding voltage	1081	See 4.5.1				
Reverse recovery time 2/	4031	Condition B1, I_F = 0.5 A, I_R = 1.0 A, I_{rec} = 0.25 A	t_{rr}		2.5	µs
Subgroup 7						
Scope display	4023	See 4.5.3; sample size: n = 116, c = 0				

1/ For sampling plan see MIL-PRF-19500.
2/ Applies to each leg of the bridge rectifier.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When 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 activities within the Military Service or Defense Agency, or within the Military Service's system commands. 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 that may be helpful~~,~~ but is not mandatory. The notes specified in MIL-PRF-19500 are applicable to this specification.)

6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. Packaging requirements (see 5.1).

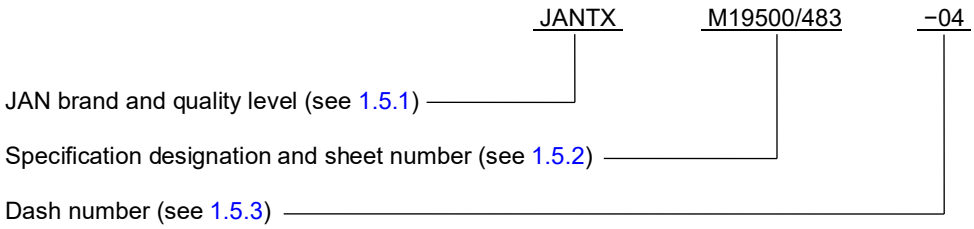
c. Terminal finish (see 3.4.2).

d. The complete PIN, see 1.5 and 6.4.

e. Destructive physical analysis when requested.

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List (QML 19500) whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DLA Weapons Support ~~Land and Maritime~~, ATTN: VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail vqe.chief@dla.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at https://qpldocs.dla.mil.

6.4 PIN construction example. The PINs are constructed using the following form.



6.5 List of PINs. The following is a list of all possible PINs for the devices available on this specification sheet.

Quality level TX
JANTXM19500/483-01
JANTXM19500/483-02
JANTXM19500/483-03
JANTXM19500/483-04

6.6 Group C sampling modification. The use of samples from small inspection lots (small lot samples) for group C inspection is allowed in this specification sheet because of the unique design and construction of the end item rectifier bridge that consists of multiple screened non-cavity discrete diodes which are assembled and then encapsulated.

6.7 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

CONCLUDING MATERIAL

Custodians:
Army − CR
Navy − SH
Air Force − 85
NASA − NA
DLA − CC

Review activities:
Army − AR, SM
Navy − AS, MC
Air Force − 19

Preparing activity:
DLA − CC

(Project 5961−2026−082)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.