

TINCH-POUND

MIL-S-19500/279C (NAVY)
AMENDMENT 4
1 April 1990
SUPERSEDING
AMENDMENT 3
23 January 1973

MILITARY SPECIFICATION

SEMICONDUCTOR DEVICE, DIODE,
TYPES 1N3644, 1N3645, 1N3646, AND 1N3647
JAN AND JANTX

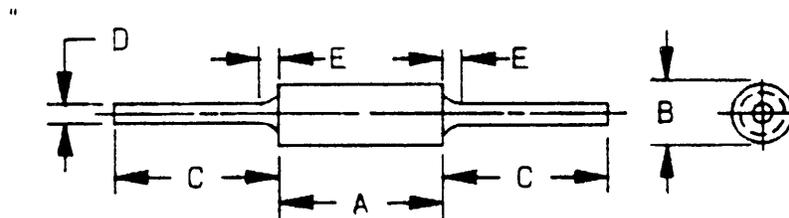
This amendment forms a part of MIL-S-19500/279C (NAVY), dated 5 March 1971, and is approved for use by the Space and Naval Warfare Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

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* TITLE, delete and substitute as printed above.

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FIGURE 1, delete and substitute new figure as follows:



Dimensions					
Symbol	Inches		Millimeters		Notes
	Min	Max	Min	Max	
A	.190	.215	4.83	5.46	4
B	.065	.110	1.65	2.79	
C	1.00	1.25	25.4	31.8	3
D	.029	.033	0.74	0.84	5
E	---	.030	---	0.76	5

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Both leads shall be within the specified limits.
4. See 3.4 for marking requirements.
5. The lead diameter is uncontrolled in this area.

FIGURE 1. Physical dimensions.

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* Add the following paragraph:

"3.3.1 Process-conditioning, testing, and screening for JANTX types. The procedure for process-conditioning, testing, and screening the JANTX types shall be as specified in 4.6 through 4.6.8."

3.4 and 3.4.1, delete and substitute the following:

"3.4 Marking. The marking shall be as specified in MIL-S-19500, with the following exceptions:

- a. The manufacturer's identification, country of origin, and inspection lot identification code may be omitted, at the option of the manufacturer.
- b. The type designation may be abbreviated by using the "J" prefix in lieu of the "JAN" on non-TX devices, the "X" prefix in lieu of the "TX" on TX devices, and by omitting the component designation (1N).

"3.4.1 Type designation. It is permissible to have the type designation on more than one line. Examples of acceptable marking are as follows:

J3	OR	JX3
644		644
DBV		DBV

"3.4.2 Polarity. The polarity shall be indicated by a contrasting color band or dot to indicate the cathode end."

* TABLE I, delete "LTPD" column and substitute the following:

LTPD	
JAN	JANTX
5	5
5	5

- - - - - for subgroup 1
 " - - - - - for subgroup 2

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* TABLE II, delete "LTPD" column and substitute the following:

LTPD	
JAN	JANTX
5	5
10	10
10	10
10	10
10	10
10	10

- - - - - for subgroup 1
 - - - - - for subgroup 2
 - - - - - for subgroup 3
 - - - - - for subgroup 4
 - - - - - for subgroup 5
 " - - - - - for subgroup 6

* TABLE II, subgroup 3, for non-cavity devices only: delete constant acceleration test.

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* TABLE II, delete "LTPD" column and substitute the following:

LTPD	
JAN	JANTX
$\lambda = 10$	$\lambda = 7$
$\lambda = 10$	$\lambda = 7$

- - - - - for subgroup 7
"- - - - - for subgroup 8

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* TABLE III, delete "LTPD" column and substitute the following:

LTPD	
JAN	JANTX
10	10

"- - - - - for subgroup 1

Add the following new paragraphs:

* "4.6 Process-conditioning, testing, and screening JANTX types. The procedure for process-conditioning, testing, and screening the JANTX types shall be in accordance with 4.6.1 through 4.6.8. Process-conditioning shall be conducted on 100 percent of the lot prior to submission of the lot to the tests specified in tables I, II, and III.

"4.6.1 High-temperature storage. All devices shall be stored for at least 48 hours at a minimum temperature (T_A) of +175°C.

"4.6.2 Thermal shock (temperature cycling). All devices shall be subjected to thermal shock (temperature cycling) in accordance with MIL-STD-750, method 1051, test condition C, except that $T_{high} = +175^\circ C$ and cycling duration shall be 10 continuous cycles and exposure time at temperature extremes shall be 15 minutes minimum."

* 4.6.3: Delete in its entirety (as added in previous amendment).

* 4.6.4, delete and substitute the following:

"4.6.3 Hermetic-seal test. All devices will be gross leak tested in accordance with MIL-STD-750, method 1071, condition D or E. If condition E is chosen for nontransparent devices after alcohol rinse, the devices shall be dried and placed on a clean, white blotter, and observed for any evidence of dye."

* 4.6.4.1, 4.6.4.2, and 4.6.4.3: Delete in their entirety (as added in previous amendment).

Add the following new paragraphs:

"4.6.5 Pre burn-in tests. The parameters V_F and I_p of table IV shall be measured and the data recorded for all devices in the lot. All devices shall be handled or identified such that the delta endpoints can be determined after the burn-in test. All devices which fail to meet these requirements shall be removed from the lot and the quantity removed shall be noted on the lot history."

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* TABLE IV. Burn-in test measurements.

Examination or test	MIL-STD-750		Symbol	Limits		Unit
	Method	Details		Min	Max	
Forward voltage	4011	I _F = 250 mA	V _F	---	5.0	V dc
Reverse current (at T _A room ambient)	4016	DC method	I _R			
1N3644		V _R = 1500 V dc		---	5.0	μA dc
1N3645		V _R = 2000 V dc		---	5.0	μA dc
1N3646		V _R = 2500 V dc		---	5.0	μA dc
1N3647		V _p = 3000 V dc		---	5.0	μA dc

"4.6.6 Burn-in test (method 1038, condition B(a)). All devices shall be operated for 164 hours (minimum) under the following conditions:

$$T_A = 25^\circ\text{C} \quad V_{RM}(wkg) = \text{full rated (see 1.2)}$$

$$I_o = 100 \text{ mA dc} \quad f = 60 \text{ Hz}$$

"4.6.7 Post burn-in tests. The parameters V_F and I_R of table IV shall be retested (within 24 hours) after burn-in and the data recorded for all devices in the lot. The parameters measured shall not have changed during the burn-in test from the initial value by more than the specified amount as follows:

$$\Delta V_F = 10 \text{ percent maximum.}$$

$$\Delta I_R = +250 \text{ nanoamperes or 100 percent maximum.}$$

* "4.6.8 Burn-in test failure (screening). All devices that exceed the delta (Δ) limits of 4.6.7 or the limits of those tests performed on table IV, shall be removed from the inspection lot and the quantity removed shall be noted on the lot history. Where the quantity removed after burn-in exceeds 10 percent of the total inspection lot on burn-in test, the entire lot shall be unacceptable as JANTX types."

The margins of this amendment are marked with an asterisk to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. 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 and relationship to the last previous amendment.

CONCLUDING MATERIAL

User activities:
Navy - AS, CG, MC, OS, SH

Preparing activity:
Navy - EC

Agent:
DLA - ES

(Project 5961 NCCO)