

The documentation and process conversion measures necessary to comply with this amendment shall be completed by 16 May, 2000.

MIL-S-19500/99E
AMENDMENT 3
16 February, 2000
SUPERSEDING
AMENDMENT 2
15 July 1986

MILITARY SPECIFICATION
SEMICONDUCTOR DEVICE, TRANSISTOR, NPN,
SILICON, SWITCHING, MEDIUM-POWER
TYPES 2N696, 2N697, 2N696S and 2N697S

This amendment forms a part of MIL-S-19500/99E, dated 31 July 1967, and is approved for use by all Departments and Agencies of the Department of Defense.

MIL-S-19500/99E is inactive for
new design as of June 7, 1999

PAGE 1

Title, delete and substitute new title as printed above.

1.1, add the following: "The suffix 'S' is used on devices that have 0.5 inch minimum to 0.75 inch maximum lead length."

1.4, add the following new type numbers: Following "2N696" add "2N696S"; following "2N697" add "2N697S". Make these same changes wherever they occur throughout the document.

* 1.4. Delete the C_{obo} minimum value of "8 pF" and substitute the value of "2 pF".

PAGE 2

Add the following paragraph: "3.5.1 'S' marking. The 'S' suffix shall be used on devices meeting the 0.5 inch minimum to 0.75 inch maximum lead length requirement."

PAGE 3

* FIGURE 1; Delete and substitute as shown on pages 2 and 3 of this amendment.

PAGE 4

FIGURE 2, title, delete and substitute: "FIGURE 2. Gage for lead and tab location."

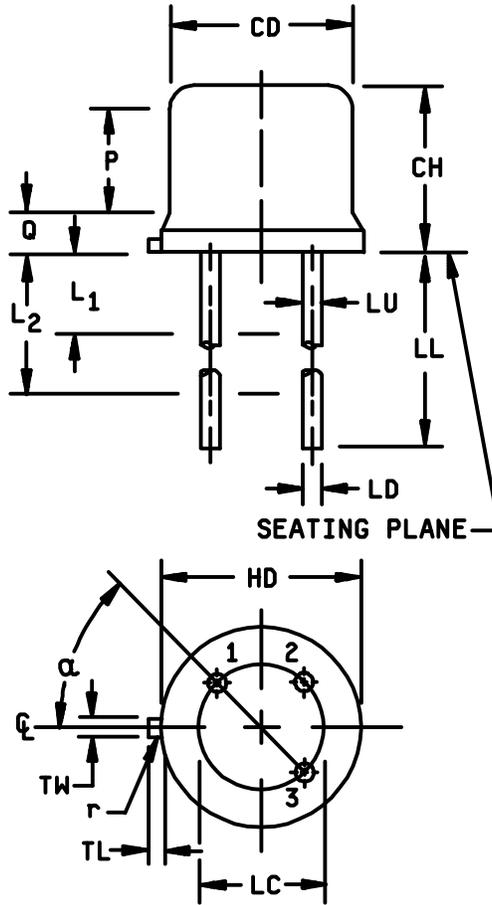
PAGE 5

* TABLE I, subgroup 2, delete " | Breakdown voltage, collector to base | 3036 | Bias condition D; $I_C = 100 \mu A$ dc | - | BV_{CBO} | 60 | - | V dc | " and substitute, " | Collector to base cutoff current | 3036 | Bias condition D; $V_{CB} = 60$ V dc | - | I_{CBO} | - | 10 | μA dc | ".

* TABLE I, subgroup 2, delete " | Breakdown voltage, emitter to base | 3026 | Bias condition D; $I_E = 100 \mu A$ dc | - | BV_{EBO} | 5 | - | V dc | " and substitute, " | Emitter to base cutoff current | 3061 | Bias condition D; $V_{EB} = 7$ V dc | - | I_{EBO1} | - | 10 | μA dc | ".

* TABLE I, subgroup 2, Collector to base cutoff current, delete " I_{CBO} " and substitute " I_{CBO2} "

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Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.335	7.75	8.51	
CH	.240	.260	6.10	6.60	
HD	.355	.370	8.51	9.40	
LC	.200 TP		5.08 TP		7
LD	.016	.021	0.41	0.53	8, 9
LL	See note 14				
LU	.016	.019	0.41	0.48	8, 9
L1		.050		1.27	8, 9
L2	.250		6.35		8, 9
TL	.029	.045	0.74	1.14	3, 4
TW	.028	.034	0.71	0.86	3
P	.100		2.54		7
Q		.050		1.27	5
r		.010		0.25	10
a	45° TP		45° TP		7

FIGURE 1. Physical dimensions (similar to TO-39, T0-5).

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FIGURE 1. Physical dimensions. continued

NOTES:

1. Dimension are in inches.
2. Metric equivalents are given for general information only.
3. Beyond r (radius) maximum, TW shall be held for a minimum length of .011 (0.28 mm).
4. Dimension TL measured from maximum HD.
5. Body contour optional within zone defined by HD, CD, and Q.
6. CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
7. Leads at gauge plane .054 +.001 -.000 inch (1.37 +0.03 -0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) at maximum material condition (MMC) relative to tab at MMC. The device may be measured by direct methods or by the gauge and gauging procedure shown in figure 2.
8. Dimension LU applies between L₁ and L₂. Dimension LD applies between L₂ and LL minimum. Diameter is uncontrolled in L₁ and beyond LL minimum.
9. All three leads (see 3.3.1 and 3.3.2).
10. The collector shall be internally connected to the case.
11. Dimension r (radius) applies to both inside corners of tab.
12. In accordance with ANSI Y14.5M, diameters are equivalent to ϕ x symbology.
13. Lead 1 = emitter, lead 2 = base, lead 3 = collector.
14. For transistor types 2N696S and 2N697S, in the TO-39 package, LL is .500 (12.70 mm) minimum, and .750 (19.05 mm) maximum.
For transistor types 2N696 and 2N697, in the TO-5 package, LL is 1.500 (38.10 mm) minimum, and 1.750 (44.45 mm) maximum.

PAGE 6

*TABLE I, subgroup 4, Open circuit output capacitance: Delete minimum value of "8 pF" and substitute "2 pF".

*TABLE I subgroup 4, High-temperature operation: Collector to base cutoff current delete "I_{CBO}" and substitute "I_{CBO3}"

PAGE 8

TABLE II, subgroup 2, seal (leak-rate), limits column: Delete "5 X 10⁻⁷" from minimum column and insert "1 X 10⁻⁷" in maximum column.

* TABLE II subgroup 2, Collector to emitter voltage (saturated): Delete 0.3 minimum limit.

The margins of this amendment are marked with asterisks 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

Custodians:
Army - CR
Navy - EC
Air Force - 11

Preparing activity:
DLA - CC

(Project 5961-2022)

Review activities:
Army - AR, EA, MI
Navy - AS, CG, MC, OS
Air Force - 19