

The documentation and process conversion measures necessary to comply with this revision shall be completed by 20 May 2015.

INCH-POUND

MIL-PRF-19500/262H  
20 February 2015  
SUPERSEDING  
MIL-PRF-19500/262G  
6 December 2013

PERFORMANCE SPECIFICATION SHEET

TRANSISTOR, NPN, SILICON, HIGH-POWER  
TYPES 2N1722, AND 2N1724, QUALITY LEVELS JAN AND 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 NPN, silicon, power transistors for use in high-speed power-switching applications. Two levels of product assurance are provided (JAN and JANTX) for each device type as specified in [MIL-PRF-19500](#).

\* 1.2 Package outlines. The device package outlines are TO-53 in accordance with [figure 1](#) for types 2N1722 or a TO-61 in accordance with [figure 2](#) for types 2N1724 and 2N1724-2.

1.3 Maximum ratings unless otherwise specified  $T_A = +25^\circ\text{C}$ .

Types	$P_T$ (1)	$P_T$ (2)	$R_{\theta JC}$	$V_{CBO}$	$V_{CEO}$	$V_{EBO}$	$I_C$	$T_{stg}$ and $T_J$
	$T_A = +25^\circ\text{C}$	$T_C = +100^\circ\text{C}$	$^\circ\text{C}/\text{W}$	$\text{V dc}$	$\text{V dc}$	$\text{V dc}$	$\text{A dc}$	$^\circ\text{C}$
2N1722	3	50	1.5	175	80	10	5	-65 to +200
2N1724	3	50	1.5	175	80	10	5	
2N1724-2	3	50	1.5	175	80	10	5	

- (1) Derate linearly at 20 mW/ $^\circ\text{C}$  for  $T_A \geq +25^\circ\text{C} \leq +175^\circ\text{C}$ .  
(2) Derate linearly at 666 mW/ $^\circ\text{C}$  for  $T_C > +100^\circ\text{C} \leq +175^\circ\text{C}$ .

1.4 Primary electrical characteristics at  $T_C = +25^\circ\text{C}$ .

Limits	$h_{FE1}$ (1) $V_{CE} = 15 \text{ V}$ $I_C = 2 \text{ A}$	$ h_{fe} $ $V_{CE} = 15 \text{ V}$ $I_C = 500 \text{ mA dc}$ $f = 10 \text{ MHz}$ 2N1722, 2N1724	$ h_{fe} $ $V_{CE} = 15 \text{ V}$ $I_C = 500 \text{ mA dc}$ $f = 1-5 \text{ MHz}$ 2N1724-2	$V_{BE(sat)1}$ (1) $I_C = 2 \text{ A dc}$ $I_B = 200 \text{ mA dc}$	$V_{CE(sat)1}$ (1) $I_C = 2 \text{ A dc}$ $I_B = 200 \text{ mA dc}$	$C_{obo}$ $V_{CB} = 15 \text{ V dc}$ $I_E = 0$ $f = 100 \text{ kHz} \leq f \leq 1 \text{ MHz}$
Min	30	1	1	$\text{V dc}$	$\text{V dc}$	$\mu\text{F}$
Max	120	5	5	1.2	0.6	550

- (1) Pulsed (see 4.5.1).

Comments, suggestions, or questions on this document should be addressed to DLA Land and Maritime, ATTN: VAC, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to [Semiconductor@dla.mil](mailto: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



- \* 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 quality level designators for encapsulated devices that are applicable for this specification sheet is the base quality level "JAN", and "TX".
- \* 1.5.2 Device type. The designation system for the device types of transistors covered by this specification sheet are as follows.
- \* 1.5.2.1 First number and first letter symbols. The transistors of this specification sheet use the first number and letter symbols "2N".
- \* 1.5.2.2 Second number symbols. The second number symbols for the transistors covered by this specification sheet are as follows: "1722", and "1724".
- \* 1.5.3 Suffix symbols. The following suffix letters are incorporated in the PIN for this specification sheet: No suffix, designates the standard device, and the suffix symbols "-2" (for type 2N1724 only) indicates a device with altered electrical characteristics (see 1.4).
- \* 1.5.4 Lead finish. The lead finishes applicable to this specification sheet are listed on [QML-19500](#).

## 2. APPLICABLE DOCUMENTS

- \* 2.1 General. The documents listed in this section are specified in sections 3, and 4, of this specification. This section does not include 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 documents cited in sections 3, and 4, of this specification, 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.

#### DEPARTMENT OF DEFENSE SPECIFICATIONS

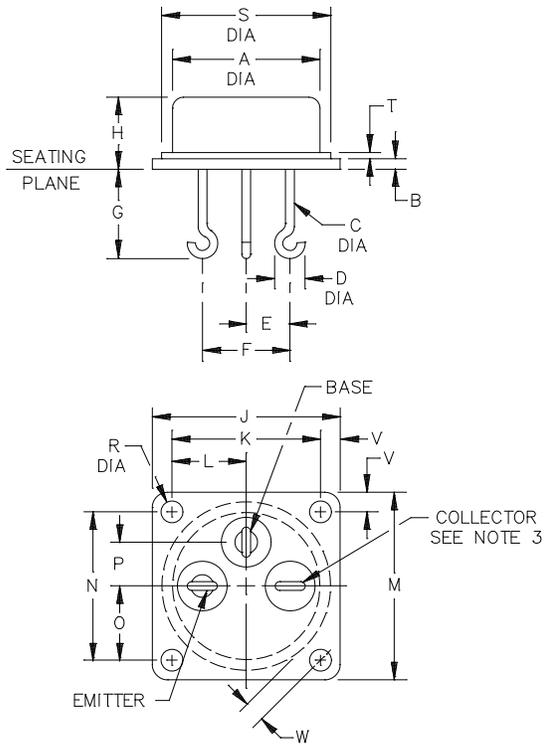
[MIL-PRF-19500](#) - Semiconductor Devices, General Specification for.

#### DEPARTMENT OF DEFENSE STANDARDS

[MIL-STD-750](#) - Test Methods for Semiconductor Devices.

- \* (Copies of these documents are available online at <http://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.

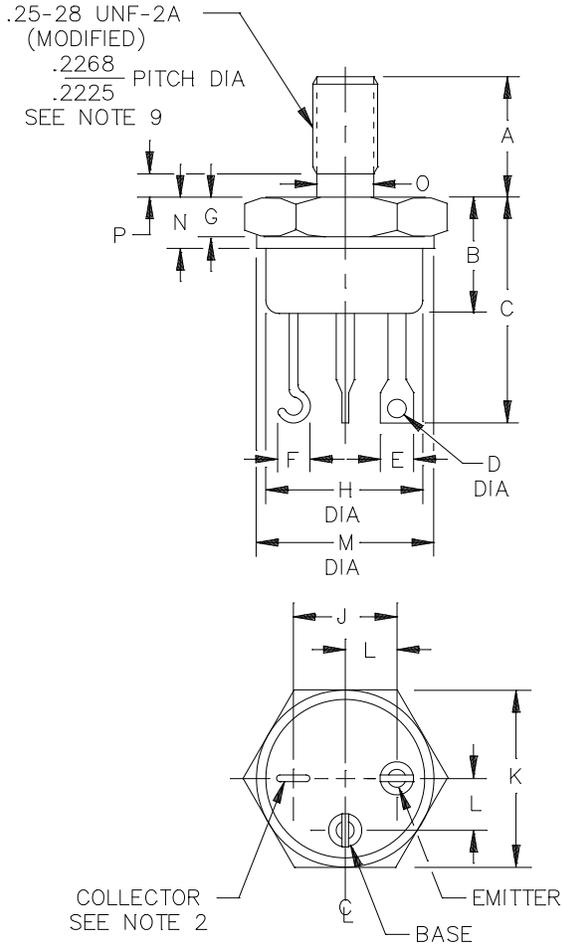


Ltr	Dimension				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
A	.670	.680	17.02	17.27	
B	.040	.055	1.02	1.40	
C	.035	.045	0.89	1.14	4
D	.130	.150	3.30	3.81	4
E	.190	.210	4.83	5.33	
F	.385	.415	9.78	10.54	
G	.370	.420	9.40	10.67	4
H	.305	.355	7.75	9.02	
J	.850	.870	21.59	22.1	
K	.670	.690	17.02	17.53	
L	.330	.350	8.38	8.89	
M	.850	.870	21.59	22.1	
N	.670	.690	17.02	17.53	
O	.330	.350	8.38	8.89	
P	.190	.210	4.83	5.33	
R	.096	.106	2.44	2.69	7
S	.765	.785	19.43	16.94	
T	.030	.065	0.76	1.65	
V	.075	.105	1.91	2.67	6
W	.075	-	1.91	-	5

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Lead spacing measured at seating plane.
3. The collector shall be electrically connected to the case.
4. All three leads.
5. All four locations.
6. All eight locations.
7. All four holes.
8. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi x$  symbology.

FIGURE 1. Physical dimensions of transistor types 2N1722 (TO-53).



Ltr	Dimension				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
A	.422	.455	10.72	11.56	
B	.325	.460	8.26	11.68	
C	.640	.875	16.26	22.22	6
D	.047	.072	1.19	1.83	7
E	.095	.115	2.41	2.92	7
F		.150		3.81	
G	.090	.150	2.29	3.81	
H	.570	.610	14.48	15.49	
J	.340	.415	8.64	10.54	
K	.667	.687	16.94	17.45	8
L	.170	.213	4.32	5.41	
M	.610	.687	15.49	17.45	
N		.270		6.86	
O	.220	.249	5.59	6.32	
P		.090		2.29	

NOTES:

1. Dimensions are in inches, millimeters are given for general information only.
2. The collector shall be electrically connected to the case.
3. Lead spacing measured at seat only.
4. Position of leads in relation to hex is not controlled.
5. Maximum recommended mounting torque: 20 in-lb.
6. All three leads.
7. Two leads.
8. All three locations.
9. In accordance with ASME Y14.5M, diameters are equivalent to  $\phi$ x symbology.
10. Threads in accordance with Handbook H28.

\* FIGURE 2. Physical dimensions (TO-61) for 2N1724, and 2N1724-2.

### 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 manufactured by a manufacturer 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.

$R_{\theta JA}$	Thermal resistance junction to ambient.
$R_{\theta JC}$	Thermal resistance junction to case.

3.4 Interface and physical dimensions. Interface and physical dimensions shall be as specified in [MIL-PRF-19500](#), and on [figure 1](#) (TO-53) and [figure 2](#) (TO-61) herein.

3.4.1 Lead finish. Lead finish shall be solderable in accordance with [MIL-PRF-19500](#), [MIL-STD-750](#), and herein. Where a choice of lead finish is desired, it shall be specified in the acquisition document (see [6.2](#)).

3.5 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in [1.3](#), [1.4](#), and [table I](#).

3.6 Electrical test requirements. The electrical test requirements shall be as specified in [table I](#) herein.

3.7 Marking. Marking shall be in accordance with [MIL-PRF-19500](#).

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](#) and [tables I and II](#)).

4.2 Qualification inspection. Qualification inspection shall be in accordance with [MIL-PRF-19500](#) and as specified in [table II](#) herein.

4.2.1 Group E qualification. Group E inspection shall be performed for qualification or re-qualification only. In case qualification was awarded to a prior revision of the specification sheet that did not request the performance of [table II](#) tests, the tests specified in [table II](#) herein that were not performed in the prior revision shall be performed on the first inspection lot of this revision to maintain qualification.

4.3 Screening. 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 herein shall not be acceptable.

Screen (see table IV of MIL-PRF-19500)	Measurement
	JANTX level
2	Required, $T_A = +200^\circ\text{C}$
(1) 3c	Thermal impedance, method 3131 of MIL-STD-750 (see 4.3.1)
9	$I_{EBO}$ , $I_{CES}$ , and $h_{FE1}$
11	$I_{EBO}$ , $I_{CES}$ , and $h_{FE1}$ $\Delta I_{EBO} = 100$ percent of initial value or $100 \mu\text{A}$ dc, whichever is greater. $\Delta I_{CES} = 100$ percent of initial value or $100 \mu\text{A}$ dc, whichever is greater. $\Delta h_{FE1} = \pm 15$ percent of initial value.
12	See 4.3.1; 168 hours minimum
13	Subgroup 2 of table I herein; $I_{EBO}$ , $I_{CES}$ , and $h_{FE1}$ $\Delta I_{EBO} = 100$ percent of initial value or $100 \mu\text{A}$ dc, whichever is greater. $\Delta I_{CES} = 100$ percent of initial value or $100 \mu\text{A}$ dc, whichever is greater. $\Delta h_{FE1} = \pm 15$ percent of initial value.

4.3.1 Power burn-in conditions. Power burn-in conditions are as follows:  $V_{CE} = 10\text{-}30$  V dc; power shall be applied to achieve  $T_J = +175^\circ\text{C}$  minimum using a minimum power dissipation = 75 percent of maximum rated PT (see 1.3). NOTE: No heat sink or forced air cooling on the devices shall be permitted.

\* 4.3.2 Thermal impedance. The thermal impedance measurements shall be performed in accordance with method 3131 of MIL-STD-750 using the guidelines in that method for determining  $I_M$ ,  $I_H$ ,  $t_H$ ,  $t_{SW}$ , (and  $V_H$  where appropriate). See table II, subgroup 4 herein.

4.4 Conformance inspection. Conformance inspection shall be 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 MIL-PRF-19500 and table I herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 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 (JAN and JANTX) of MIL-PRF-19500 and herein. Delta measurements shall be in accordance with the applicable steps of 4.5.3 herein.

4.4.2.1 Group B inspection, table E-VIB (JAN and JANTX) of MIL-PRF-19500.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B3	1037	$V_{CB} \geq 10$ V dc, 2,000 cycles.

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 herein.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	2036	Test condition A; weight = 10 pounds; time = 15 s.
* C2	2036	Test condition D1; torque = 6 inch-ounce; time = 15 s (2N1724 and 2N1724-2 only).
* C2	2036	Stud torque (2N1724 and 2N1724-2 only), test condition D2; torque = 15 inch-pound; time = 15 s.
C5	3131	See 4.3.2, $R_{\theta JC} = 1.5^{\circ}C/W$ .
C6	1037	$V_{CB} \geq 100$ V dc, 6,000 cycles.

4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the conditions specified for subgroup testing in table E-IX of MIL-PRF-19500 and as specified in table II herein. Delta measurements shall be in accordance with the applicable steps of 4.5.3.

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

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

4.5.2 Inspection conditions. Unless otherwise specified herein, all inspections shall be conducted at a case temperature ( $T_c$ ) of +25°C.

4.5.3 Delta requirements. Delta requirements shall be as specified below: (1) (2) (3) (4)

Steps	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Collector to emitter cutoff current	3041	Bias condition C, $V_{CE} = 60$ V dc	$\Delta I_{CES1}$	100 percent of initial value or 50 $\mu A$ , whichever is greater.		
* 2.	Forward - current transfer ratio	3076	$I_C = 2$ A dc $V_{CE} = 15$ V dc, pulsed (see 4.5.1)	$\Delta h_{FE1}$	$\pm 20$ percent change from initial reading		

- (1) The delta measurements for table E-VIB (JAN and JANTXV) of MIL-PRF-19500 are as follows:
  - a. Subgroup 3, see 4.5.3 herein, steps 1 and 2.
  - b. Subgroup 4, see 4.5.3 herein, steps 1 and 2.
- (2) The delta measurements for table E-VII of MIL-PRF-19500 are as follows: Subgroup 6, see 4.5.3 herein, steps 1 and 2.
- (3) Devices which exceed the table I limits for this test shall not be accepted.
- (4) Group E, table II herein, subgroups 1 and 2, see 4.5.3 herein, steps 1 and 2.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Thermal impedance	3131	See 4.3.2	$Z_{\theta JX}$			°C/W
Collector to base breakdown voltage	3011	Bias condition D, $I_C = 200$ mA dc; pulsed (see 4.5.1)	$V_{(BR)CEO}$	80		V dc
* Emitter to base breakdown voltage	3026	Bias condition D, $I_E = 10$ mA dc; pulsed (see 4.5.1)	$V_{(BR)EBO}$	10		V dc
Collector to emitter cutoff current	3041	Bias condition C, $V_{CE} = 60$ V dc	$I_{CES1}$		300	$\mu$ A dc
Collector to base cutoff current	3036	Bias condition D; $V_{CB} = 175$ V dc	$I_{CBO}$		5	mA dc
* Emitter to base cutoff current	3061	Bias condition A, $V_{EB} = 7$ V dc	$I_{EBO}$		400	$\mu$ A dc
Base emitter voltage	3066	Test condition A; $I_C = 2$ A dc; $I_B = 200$ mA dc; pulsed (see 4.5.1)	$V_{BE(sat)1}$		1.2	V dc
Collector to emitter saturated voltage	3071	$I_C = 2$ A dc; $I_B = 200$ mA dc; pulsed (see 4.5.1)	$V_{CE(sat)1}$		0.6	V dc
Forward-current transfer ratio	3076	$V_{CE} = 15$ V dc; $I_C = 2$ A dc; pulsed (see 4.5.1)	$h_{FE1}$	30	120	
Forward-current transfer ratio	3076	$V_{CE} = 15$ V dc; $I_C = 5$ A dc; pulsed (see 4.5.1)	$h_{FE2}$	15		
Forward-current transfer ratio	3076	$V_{CE} = 15$ V dc; $I_C = 100$ mA dc; pulsed (see 4.5.1)	$h_{FE3}$	30		
<u>Subgroup 3</u>						
High-temperature operation:		$T_A = +150^\circ\text{C}$				
Collector to emitter cutoff current	3041	Bias condition C; $V_{CE} = 60$ V dc	$I_{CES2}$		1.5	mA dc
Collector to emitter cutoff current	3041	Bias condition C; $V_{CE} = 120$ V dc	$I_{CES3}$		10	mA dc
Low-temperature operation :		$T_A = -55^\circ\text{C}$				
Forward-current transfer ratio	3076	$V_{CE} = 15$ V dc $I_C = 2$ A dc; pulsed (see 4.5.1)	$h_{FE4}$	15		

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 4</u>						
Magnitude of common emitter small-signal short-circuit forward-current transfer ratio	3306	$V_{CE} = 15 \text{ V dc}; I_C = 500 \text{ mA dc}$	$ h_{fe} $	1.0	5	
2N1722, 2N1724		$f = 10 \text{ MHz}$		1.0	5	
2N1724-2		$f = 1\text{-}5 \text{ MHz}$		1.0	5	
Open capacitance (open circuit)	3236	$V_{CB} = 15 \text{ V dc}; I_E = 0;$ $100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$		550	pF
<u>Subgroup 5</u>						
Safe operating area (dc operation)	3051	$t = 60 \text{ s}; 1 \text{ cycle};$ (see <a href="#">figure 3</a> ), $t_r \leq 6 \text{ sec};$ $t_f \leq 6 \text{ sec}, 1 \text{ cycle}$				
Test 1		$T_C = +100^\circ\text{C}, V_{CE} = 10 \text{ V dc}; I_C = 5 \text{ A dc}$				
Test 2		$T_C = +145^\circ\text{C}, V_{CE} = 80 \text{ V dc}; I_C = 250 \text{ mA dc}$				
Safe operating area (unclamped switching)	3053	$T_A = +25^\circ\text{C}, R_{BB1} = 5 \Omega; R_{BB2} = 10 \Omega;$ (see <a href="#">figure 4</a> ); Load condition C, $V_{BB2} = 5 \text{ V dc}$				
Test 1		$I_C = 5 \text{ A dc}; V_{BB1} = 15 \text{ V dc},$ $V_{CC} = 18 \text{ V dc}, L = 2 \text{ mH}, .56 \Omega$ (2 are used, or equivalent)				
Test 2		$I_C = 1 \text{ A dc}; V_{BB1} = 8 \text{ V dc},$ $V_{CC} = 13.5 \text{ V dc}, L = 20 \text{ mH}, .22 \Omega$ (2 are used, or equivalent)				
Safe operating area (clamped switching)	3053	$T_A = +25^\circ\text{C}, I_C = 5 \text{ A dc}, V_{CC} = 175 \text{ V dc}$ (see <a href="#">figure 5</a> ); Load condition B, $V_{BB1} = 15 \text{ V dc},$ $V_{BB2} = 5.0 \text{ V dc}, R_{BB1} = 5 \Omega; R_{BB2} = 10 \Omega; R_L = 35 \Omega; L = 20 \text{ mH};$				

1/ For sampling plan see [MIL-PRF-19500](#).

TABLE II. Group E inspection (all quality levels) - for qualification or re-qualification only.

Inspection	MIL-STD-750		Qualification
	Method	Conditions	
<u>Subgroup 1</u>			45 devices c = 0
Temperature cycling (air to air)	1051	Test condition C, 500 cycles.	
Hermetic seal	1071		
Fine leak Gross leak		See <a href="#">table I</a> , subgroup 2 and <a href="#">4.5.3</a> herein.	
Electrical measurements			
<u>Subgroup 2</u>			45 devices c = 0
Intermittent life	1037	$V_{CB} \geq 10$ V dc, 6,000 cycles.	
Electrical measurements		See <a href="#">table I</a> , subgroup 2 and <a href="#">4.5.3</a> herein.	
<u>Subgroup 4</u>			
Thermal impedance curves		See table E-IX of <a href="#">MIL-PRF-19500</a> , group E, subgroup 4.	
<u>Subgroup 5</u>			
Not applicable			
<u>Subgroup 8</u>			45 devices c = 0
Reverse stability	1033	Condition B.	

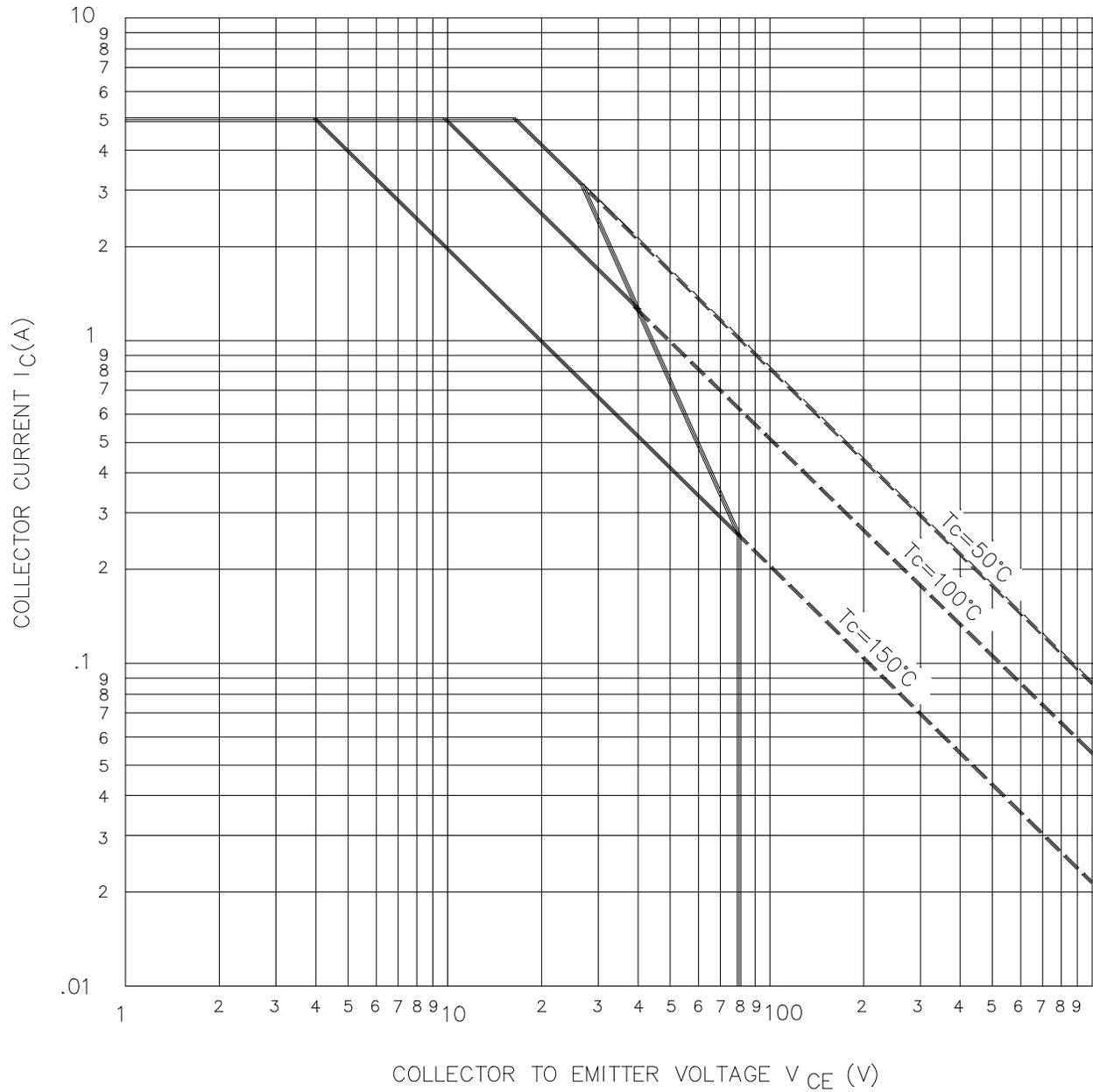


FIGURE 3. Safe operating area test graph (DC operation).

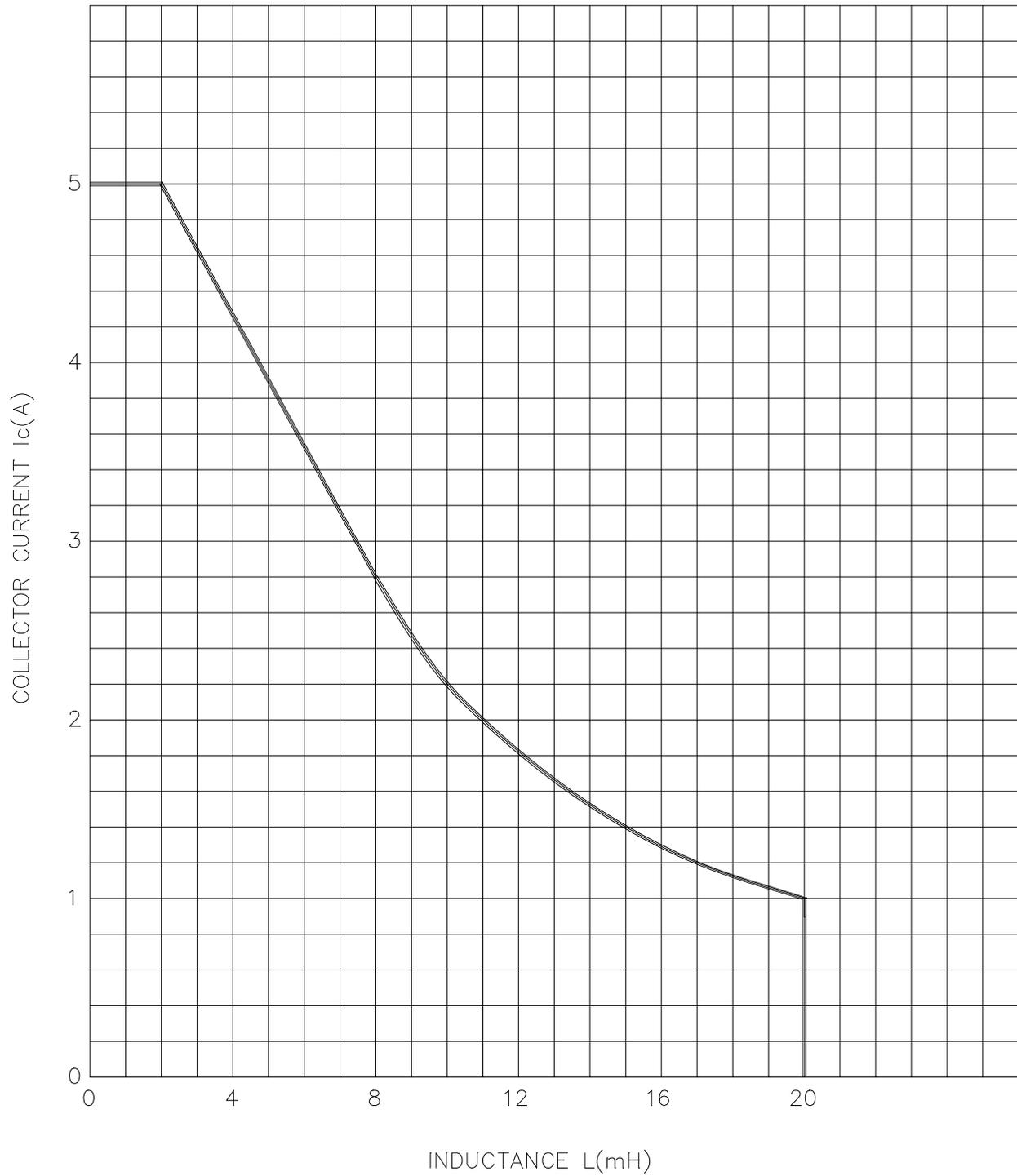


FIGURE 4. Safe operating area for switching between saturation and cutoff - unclamped inductive load.

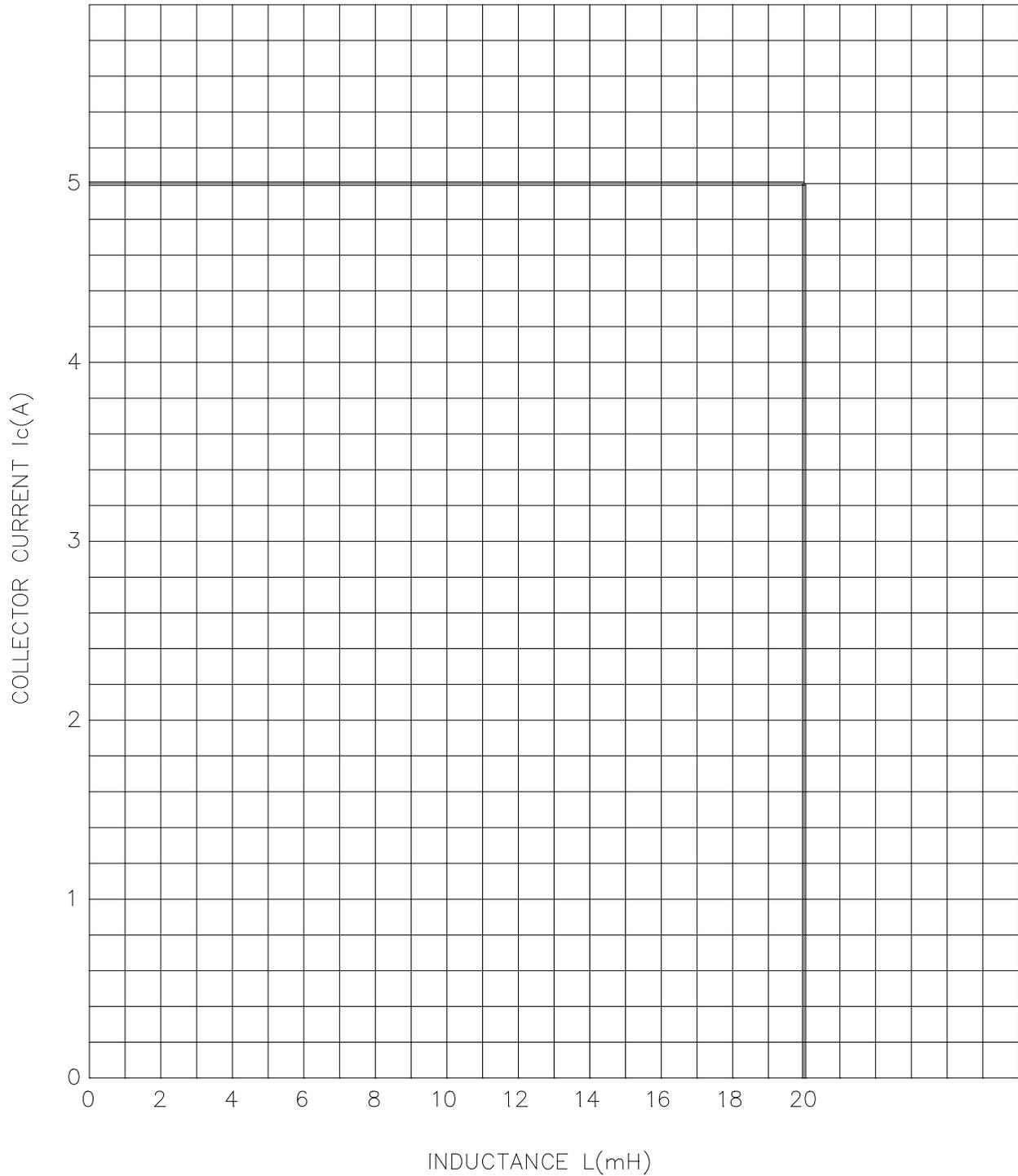


FIGURE 5. Safe operating area for switching between saturation and cutoff - clamped inductive load.

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.)

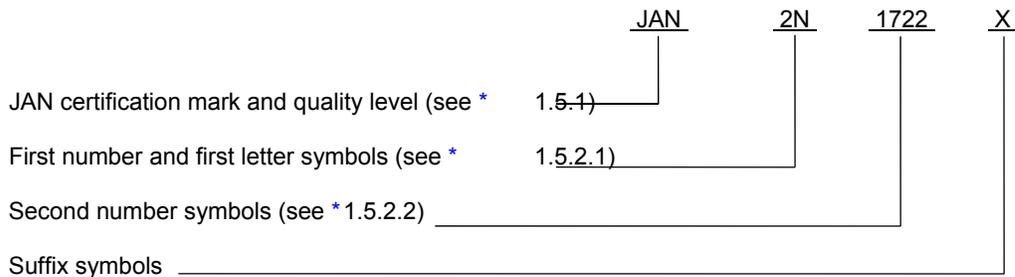
6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

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. Lead finish (see 3.4.1).
- d. Product assurance level and type designator.
- e. The complete Part or Identifying Number (PIN), see 1.5 and 6.4.

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 Land and Maritime, ATTN: VQE, P.O. Box 3990, Columbus, OH 43218-3990 or e-mail [vqe.chief@dla.mil](mailto:vqe.chief@dla.mil). An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.dla.mil>.

6.4 PIN construction example. The PINs for encapsulated devices are in the following form.



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

PINs for devices in a TO-53 package	PINs for devices in a TO-61 package
JAN2N1722	JAN2N1724
JANTX2N1722	JAN2N1724-2
	JANTX2N1724
	JANTX2N1724-2

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

Custodians:  
 Army - CR  
 Navy - EC  
 Air Force - 85  
 DLA - CC

Preparing activity:  
 DLA - CC

(Project 5961-2015-007)

Review activities:  
 Army - AR  
 Air Force - 19, 99  
 Navy - AS, CG, MC, OS, SH

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>.