

The documentation process conversion measures necessary to comply with this revision shall be completed by 16 October 1999.

INCH-POUND

MIL-PRF-19500/488C
16 July 1999
SUPERSEDING
MIL-S-19500/488C
25 August 1992

PERFORMANCE SPECIFICATION SHEET

SEMICONDUCTOR DEVICE, TRANSISTOR, NPN, SILICON, HIGH-POWER
TYPES 2N5671 AND 2N5672
JAN, JANTX, JANTXV AND JANS

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

1. SCOPE

1.1 Scope. This specification covers the performance requirements for NPN, silicon, high-power transistors. Four levels of product assurance are provided for each device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1 (similar to TO-3).

1.3 Maximum ratings.

Types	P_T 1/ $T_A = +25^\circ\text{C}$	P_T 2/ $T_C = +25^\circ\text{C}$	V_{CBO}	V_{CEO}	V_{EBO}	I_C	I_B	T_{STG} and T_{op}
	<u>W</u>	<u>W</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>	<u>A dc</u>	<u>A dc</u>	<u>°C</u>
2N5671	6.0	140	120	90	7.0	30	10	-65 to +200
2N5672	---	---	150	120	---	---	---	---

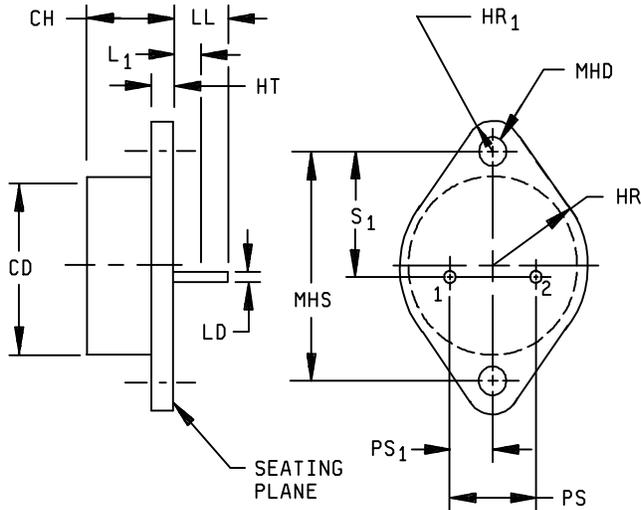
1/ Derate linearly 34.2 mW/°C for $T_A > +25^\circ\text{C}$.

2/ Derate linearly 800 mW/°C for $T_C > +25^\circ\text{C}$.

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

Limits	h_{FE1}	$V_{CE(sat)1}$	C_{obo} 100 kHz < f < 1 MHz $V_{CB} = 10$ V dc $I_E = 0$	$ h_{fe} $ f = 5 MHz $I_C = 2.0$ A dc $V_{CE} = 10$ V dc	Pulse response		$R_{\theta JC}$
	$V_{CE} = 2.0$ V dc $I_C = 15$ A dc	$I_C = 15$ A dc $I_B = 1.2$ A dc			t_{on}	t_{off}	
		<u>V dc</u>	<u>pF</u>		<u>μs</u>	<u>μs</u>	<u>°C/W</u>
Min	20	---	---	10	---	---	---
Max	100	0.75	900	40	0.5	1.5	1.25

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAC, 3990 East Broad St., Columbus, OH 43216-5000, by using the addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Terminal 1, emitter; terminal 2, base; case, collector.
4. These dimensions should be measured at points .050-.055 inch (1.27-1.40 mm) below seating plane. When gauge is not used, measurement will be made at the seating plane.
5. The seating plane of the header shall be flat within .004 inch (0.10 mm) concave to .004 inch (0.10 mm) convex inside a .930 inch (23.62 mm) diameter circle on the center of the header and flat within .006 inch (0.15 mm) concave to .006 inch (0.15 mm) convex overall.
6. Collector shall be electrically connected to the case.
7. LD applies between L₁ and LL. Diameter is uncontrolled in L₁.
8. In accordance with ANSI Y14.5M, diameters are equivalent to ϕx symbology.

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	---	.875	---	22.22	
CH	.250	.450	6.35	11.43	
HT	.050	.135	1.27	3.43	
HR	.495	.525	12.57	13.34	
HR ₁	.131	.188	3.33	4.78	
LD	.038	.043	0.97	1.09	7
LL	.312	---	7.92	---	
L ₁	---	.050	---	1.27	
MHD	.151	.161	3.84	4.09	
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	4
PS ₁	.205	.225	.521	5.72	4
s ₁	.655	.675	16.64	17.15	

FIGURE 1. Physical dimensions (similar to TO-3).

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 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 listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATION

DEPARTMENT OF DEFENSE

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

STANDARD

MILITARY

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

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Automated Printing Service, Building 4D (NPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated specifications or specification sheets), 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 Qualification. Devices furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.2 and 6.3).

3.2 Associated specification. The individual item requirements shall be in accordance with MIL-PRF-19500 and as specified herein.

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

3.4 Interface requirements and physical dimensions. The Interface requirements and physical dimensions shall be as specified in MIL-PRF-19500 and herein.

3.4.1 Lead finish. Lead finish shall be solderable in accordance with MIL-STD-750, MIL-PRF-19500, and herein.

3.5 Marking. Marking shall be in accordance with MIL-PRF-19500.

3.6 Electrical performance characteristics. Unless otherwise specified herein, the electrical performance characteristics are as specified in paragraph 1.3, 1.4, and table I herein.

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

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.

4.3 Screening (JANS, JANTX and JANTXV levels only). Screening shall be in accordance with MIL-PRF-19500, table IV, 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	
	JANS level	JANTX and JANTXV levels
9	I _{CEX1} and h _{FE1}	I _{CEX1}
11	I _{CEX1} and h _{FE1} ; ΔI _{CEX1} = 100 percent of initial value or 2 mA dc, whichever is greater. Δh _{FE1} = ± 15 percent of initial value.	I _{CEX1} and h _{FE1} ; ΔI _{CEX1} = 100 percent of initial value or 3 mA dc, whichever is greater.
12	See 4.3.1	See 4.3.1
13	Subgroups 2 and 3 of table I herein. ΔI _{CEX1} = 100 percent of initial value or 2 mA dc, whichever is greater. Δh _{FE1} = ± 15 percent of initial value.	Subgroup 2 of table I herein. ΔI _{CEX1} = 100 percent of initial value or 3 mA dc, whichever is greater. Δh _{FE1} = ± 25 percent of initial value.

4.3.1 Power burn-in conditions. Power burn-in conditions are as follows:

$$T_J = 187.5 \pm 12.5^\circ\text{C} \quad V_{CB} \geq 30 \text{ V dc} \quad T_A = 35^\circ\text{C MAX.}$$

4.4 Conformance inspection. Conformance inspection shall be in accordance with MIL-PRF-19500.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with table 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 tables VIa (JANS) and VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 and paragraphs 4.4.2.1 and 4.4.2.2 herein. Electrical measurements (end-points) shall be in accordance with table I, group A, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

4.4.2.1 Group B inspection. (JANS) table VIa of MIL-PRF-19500.

Subgroup	Method	Conditions
B4	1037	$V_{CB} \geq 30$ V dc, for 2,000 cycles.
B5	1027	$V_{CB} \geq 30$ V dc, $T_A = +125^\circ\text{C} \pm 25^\circ\text{C}$ for 96 hours; $P_T = 6$ W at $T_A = +112^\circ\text{C}$ or adjusted as required by the chosen T_A to give an average lot $T_J = 275^\circ\text{C}$. Marking legibility requirement shall not apply.
B6	3131	See 4.5.2.

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

Subgroup	Method	Conditions
B3	1027	For eutectic die attach: $T_A \leq 35^\circ\text{C}$; adjust P_T to achieve $T_J = +187.5^\circ\text{C} \pm 5^\circ\text{C}$, $V_{CB} \geq 30$ V dc
B3	1037	For solder die attach: $V_{CB} \geq 30$ V dc, 2000 cycles.
B5	3131	See 4.5.2.
B6	1032	$T_A = +200^\circ\text{C}$.
B7	---	Load condition B; (clamped inductive) (destructive)(see figure 6); $T_C = +25^\circ\text{C}$; Duty cycle ≤ 10 percent; $t_p = 5$ ms; $R_S = 0.1$ ohm; $R_{BB1} = 1\Omega$; $V_{BB1} = 10$ V dc max; $R_{BB2} = 20\Omega$; $V_{BB2} = 4$ V dc; $I_C = 30$ A dc; $V_{CC} = 90$ V dc (2N5671) and 120 V dc (2N5672); $R_L = 3.0\Omega$ (2N5671), 4.0Ω (2N5672); $L = 50$ μH , 0.1Ω ; $CR = 1N1186A$; Clamp voltage = 90 V dc +0, -5 V dc (2N5671); 120 V dc +0, -5 (2N5672). Device fails if clamp voltage is not reached.
B7	3053	Load condition C; (unclamped inductive lead), (see figure 5); $T_C = +25^\circ\text{C}$; Duty cycle ≤ 10 percent; $R_S = 0.1$ ohm;
	Test 1:	$t_p = 5$ ms; $R_{BB1} = 1\Omega$; $V_{BB1} = 10$ V dc max; $R_{BB2} = 20\Omega$; $V_{BB2} = 4$ V dc; $I_C = 30$ A dc; $V_{CC} = 10$ V dc, $L = 50\mu\text{H}$, 0.1Ω
	Test 2:	$t_p = 5$ ms; $R_{BB1} = 40\Omega$; $V_{BB1} = 10$ V dc max; $R_{BB2} = 20\Omega$; $V_{BB2} = 4$ V dc; $I_C = 6.5$ A dc; $V_{CC} = 10$ V dc, $L = 500\mu\text{H}$, 0.1Ω
B7	---	Electrical measurements: see table I, group A, subgroup 2 herein.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VII of MIL-PRF-19500, and as follows. Electrical measurements (end-points) shall be in accordance with table I, group A, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

Subgroup	Method	Conditions
C2	1056	Test condition B.
C2	2036	Test condition A, weight = 10 lbs, application time = 15 seconds.
C6	1026	For eutectic die attach: $T_A \leq 35^\circ\text{C}$; adjust P_T to achieve $T_J = +187.5^\circ\text{C} \pm 5^\circ\text{C}$, $V_{CB} \geq 30 \text{ V dc}$
C6	1037	For solder die attach: $V_{CB} \geq 30 \text{ V dc}$, 6000 cycles.

4.5 Methods 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 Thermal resistance. Thermal resistance measurements shall be conducted in accordance with test method 3131 of MIL-STD-750. The following details shall apply.

- a. Collector current magnitude during power application shall be 2.2 A dc.
- b. Collector to emitter voltage magnitude shall be 20 V dc.
- c. Reference temperature measuring point shall be the case.
- d. Reference temperature measuring point shall be within the range $25^\circ\text{C} \leq T_R \leq 75^\circ\text{C}$ and recorded before the test is started.
- e. Mounting arrangement shall be with heat sink to header.
- f. Maximum limit of $R_{\theta JC}$ shall be 1.25°C/W .

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical inspection	2071					
<u>Subgroup 2</u>						
Breakdown voltage, collector to emitter	3011	$I_C = 200 \text{ mA dc}; L = 15 \text{ mH};$ $30 \text{ Hz} \leq f \leq 60 \text{ Hz},$ (see figure 2)	$V_{(BR)CEO}$			
2N5671				90	---	V dc
2N5672				120	---	V dc
Breakdown voltage, collector to emitter	3011	$I_C = 200 \text{ mA dc}; L = 15 \text{ mH};$ $R_{BE} = 50 \text{ ohms};$ $30 \text{ Hz} \leq f \leq 60 \text{ Hz}$ (see figure 2)	$V_{(BR)CER}$			
2N5671				110	---	V dc
2N5672				140	---	V dc
Breakdown voltage, collector to emitter	3011	$I_C = 200 \text{ mA dc}; L = 2 \text{ mH};$ $V_{BE} = -1.5 \text{ V dc};$ $30 \text{ Hz} \leq f \leq 60 \text{ Hz}$ (see figure 2)	$V_{(BR)CEX}$			
2N5671				120	---	V dc
2N5672				150	---	V dc
Emitter to base cutoff current	3061	Bias condition D; $V_{EB} = 7.0 \text{ V dc}$	I_{EBO}	---	10	mA dc
Collector to emitter cutoff current	3041	Bias condition D; $V_{CE} = 80 \text{ V dc}$	I_{CEO}	---	10	mA dc
Collector to emitter cutoff current	3041	Bias condition A; $V_{BE} = 1.5 \text{ V dc}$	I_{CEX1}			
2N5671		$V_{CE} = 110 \text{ V dc}$		---	12	mA dc
2N5672		$V_{CE} = 135 \text{ V dc}$		---	10	mA dc
Collector to base cutoff current	3036	Bias condition D $V_{CE} = 120 \text{ V dc}$ $V_{CE} = 150 \text{ V dc}$	I_{CBO}	---	25	mA dc
2N5671						
2N5672						
Forward-current transfer ratio	3076	$V_{CE} = 2.0 \text{ V dc};$ $I_C = 15 \text{ A dc};$ pulsed (see 4.5.1)	h_{FE1}	20	100	---

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 2</u> - Continued						
Forward-current transfer ratio	3076	$V_{CE} = 5.0 \text{ V dc}; I_B = 20 \text{ A dc};$ pulsed (see 4.5.1)	h_{FE2}	20	---	---
Collector to emitter voltage (saturated)	3071	$I_C = 15 \text{ A dc};$ $I_B = 1.2 \text{ A dc};$ pulsed (see 4.5.1)	$V_{CE}(\text{sat})1$	---	0.75	V dc
<u>Subgroup 2</u> - Continued						
Base emitter voltage (saturated)	3066	Test condition A; $I_B = 1.2 \text{ A dc};$ $I_C = 15 \text{ A dc};$ pulsed (see 4.5.1)	$V_{BE}(\text{sat})$	---	1.5	V dc
Collector to emitter voltage (saturated)	3071	$I_C = 30 \text{ A dc};$ $I_B = 6 \text{ A dc};$ pulsed (see 4.5.1)	$V_{CE}(\text{sat})2$	---	5.0	V dc
<u>Subgroup 3</u>						
High temperature operation:		$T_A = +150^\circ\text{C}$				
Collector to emitter cutoff current	3041	Bias condition A; $V_{BE} = -1.5 \text{ V dc};$ $V_{CE} = 100 \text{ V dc}$ $V_{CE} = 100 \text{ V dc}$	I_{CEX2}	---	15 10	mA dc mA dc
Low temperature operation:		$T_A = -65^\circ\text{C}$				
Forward-current transfer ratio	3076	$V_{CE} = 2.0 \text{ V dc};$ $I_C = 15 \text{ A dc};$ pulsed (see 4.5.1)	h_{FE3}	10	---	---
<u>Subgroup 4</u>						
Magnitude of small-signal short-circuit forward-current transfer ratio	3306	$V_{CE} = 10 \text{ V dc};$ $I_C = 2.0 \text{ A dc};$ $f = 5.0 \text{ MHz}$	$ h_{fe} $	10	40	---
Open circuit output capacitance	3236	$V_{CB} = 10 \text{ V dc};$ $I_E = 0;$ $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	C_{obo}	---	900	pF

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 4</u> - Continued						
Pulse response:	3251	Test condition A; except test circuit and pulse requirements in accordance with figure 3.				
Turn-on time		$V_{CC} = 30 \text{ V dc} \pm 2 \text{ V dc};$ $I_C = 15 \text{ A dc};$ $I_{B1} = 1.2 \text{ A dc}$	t_{on}	---	0.5	μs
Turn-off time		$V_{CC} = 30 \text{ V dc} \pm 2 \text{ V dc};$ $I_C = 15 \text{ A dc};$ $I_{B1} = 1.2 \text{ A dc};$ $I_{B2} = 1.2 \text{ A dc}$	t_{off}	---	1.5	μs
<u>Subgroup 5</u>						
Safe operating area (continuous dc)	3051	$T_C = +25^\circ\text{C}; t \geq 1 \text{ s}; 1 \text{ cycle};$ (see figure 4)				
<u>Test 1</u>		$I_C = 5.8 \text{ A dc};$ $V_{CE} = 24 \text{ V dc}$				
<u>Test 2</u>		$I_C = 0.9 \text{ A dc};$ $V_{CE} = 45 \text{ V dc}$				
<u>Test 3</u>		$I_C = 30 \text{ A dc};$ $V_{CE} = 4.67 \text{ V dc}$				
<u>Test 4</u>		$I_C = 0.19 \text{ A dc};$ $V_{CE} = 90 \text{ V dc}$				
2N5671 only						
<u>Test 5</u>		$I_C = 0.11 \text{ A dc};$ $V_{CE} = 120 \text{ V dc}$				
2N5672 only						

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection ^{1/}	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Safe operating area (switching)	3053	Load condition B; (clamped inductive lead) (see figure 6); $T_C = +25^\circ\text{C}$; Duty cycle ≤ 10 percent; $t_p = 5$ ms; $R_S = 0.1$ ohm; $R_{BB1} = 1\Omega$; $V_{BB1} = 10$ V dc max; $R_{BB2} = 20\Omega$; $V_{BB2} = 4$ V dc; $I_C = 30$ A dc; $V_{CC} = 90$ V dc (2N5671) and 120 V dc (2N5672); $R_L = 3.0\ \Omega, 4.0\ \Omega$; $L = 50\ \mu\text{H}, 0.1\ \Omega$; $CR = 1\text{N}1186\text{A}$; Clamp voltage = 90 V dc +0, -5 (2N5671); 120 V dc +0, -5 (2N5672). Device fails if clamp voltage is not reached.				
Electrical measurements		See table I, subgroup 2 herein				
<u>Subgroups 6 and 7</u>						
Not applicable						

^{1/} For sampling plan, see MIL-PRF-19500.

TABLE II. Groups B and C delta measurements. 1/, 2/

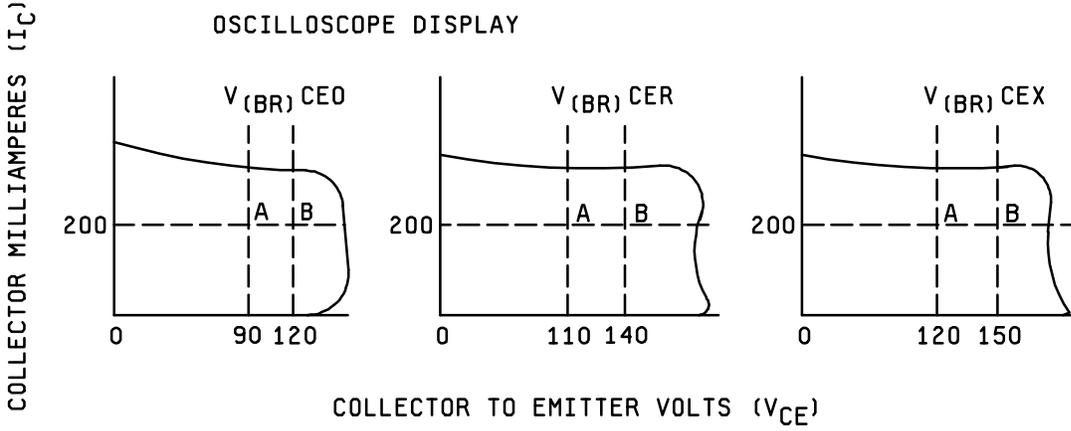
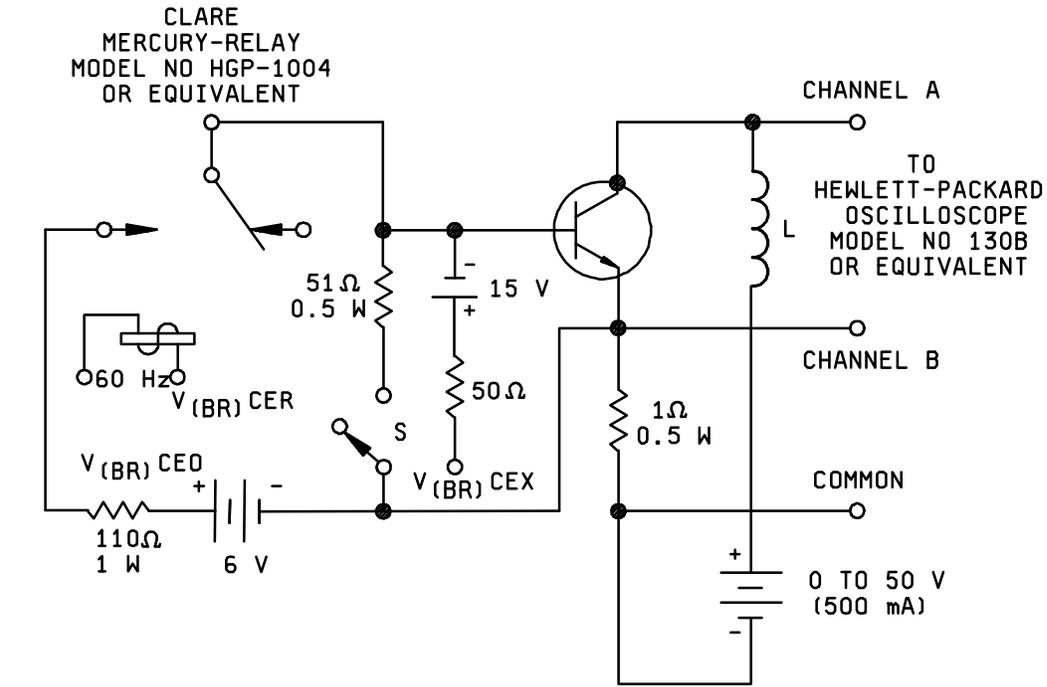
Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Collector to emitter cutoff current 2N5671 2N5672	3041	Bias condition A; $V_{BE} = -1.5$ V dc; $V_{CE} = 110$ V dc $V_{CE} = 135$ V dc	ΔI_{CEX1}	---	100 percent of initial value or 3 mA dc, whichever is greater.	
2.	Forward-current transfer ratio	3076	$V_{CE} = 2$ V dc; $I_C = 15$ A dc; pulsed (see 4.5.1)	Δh_{FE1}	---	± 25 percent change from previously measured value.	

1/ The delta measurements for group B, table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 are as follows:

- a. Subgroups 3 and 6, see table II herein, steps 1 and 2.

2/ The delta measurements for group C, table VII of MIL-PRF-19500 are as follows:

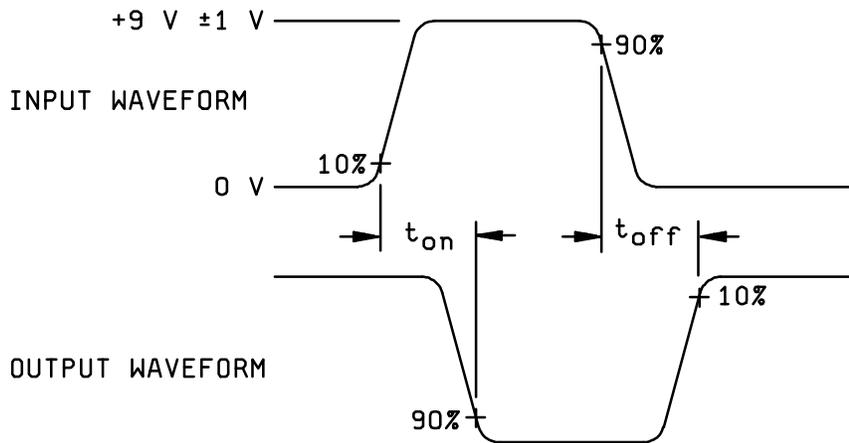
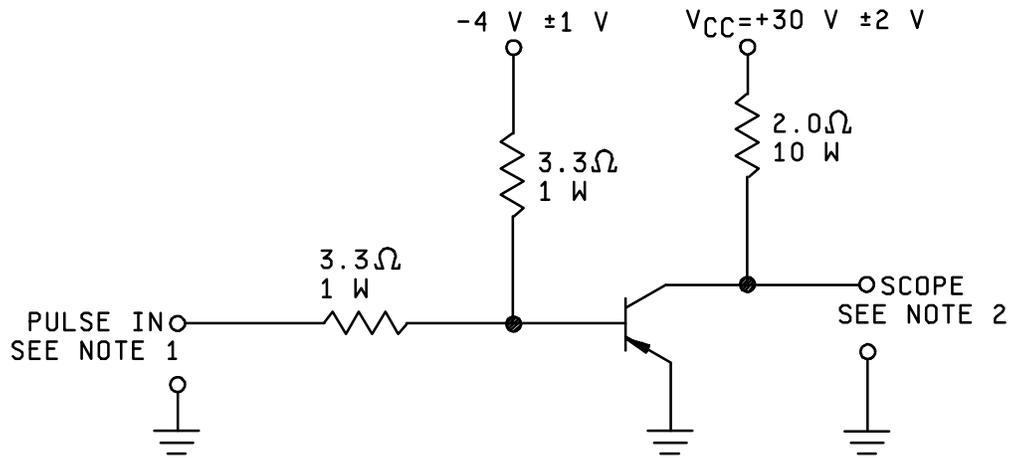
- a. Subgroup 6, see table II herein, steps 1 and 2.



NOTE:

$V_{(BR)CEO}$, $V_{(BR)CER}$, $V_{(BR)CEX}$, is acceptable when the trace falls to the right and above point "A" for type 2N5671. The trace shall fall to the right and above point "B" for type 2N5672.

FIGURE 2. $V_{(BR)CEO}$ - $V_{(BR)CER}$ - $V_{(BR)CEX}$ measurement circuit.



NOTES:

1. The rise time (t_r) and fall time (t_f) of the applied pulse shall be each $\leq 20\text{ ns}$; duty cycle ≤ 2 percent; generator source impedance shall be 50 ohms ; pulse width = $20\text{ }\mu\text{s}$.
2. Output sampling oscilloscope: $Z_{in} \geq 100\text{ k}\Omega$; $C_{in} \leq 50\text{ pF}$; rise time $\leq 20\text{ ns}$.

FIGURE 3. Pulse response test circuit.

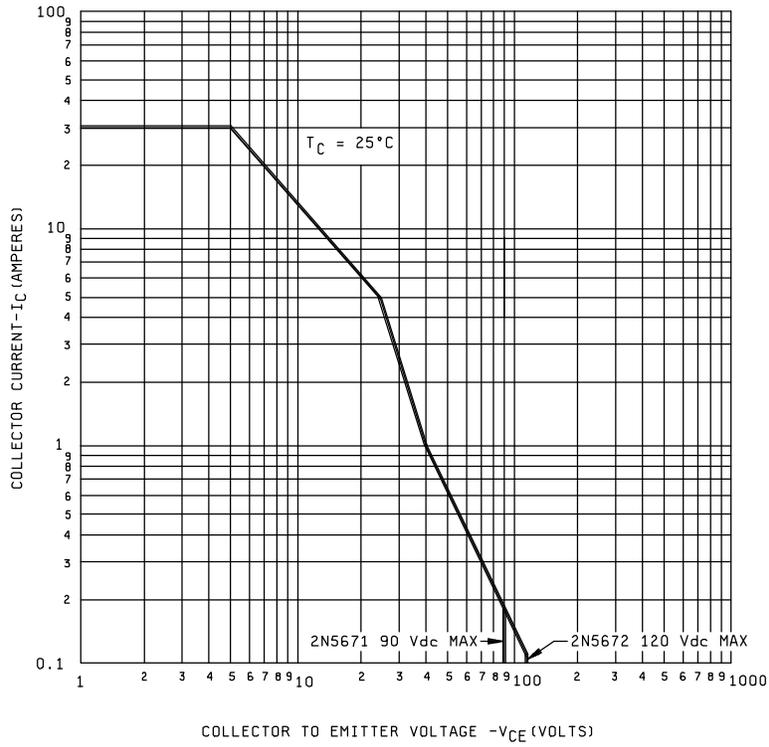


FIGURE 4. Maximum safe operating area graph (continuous dc).

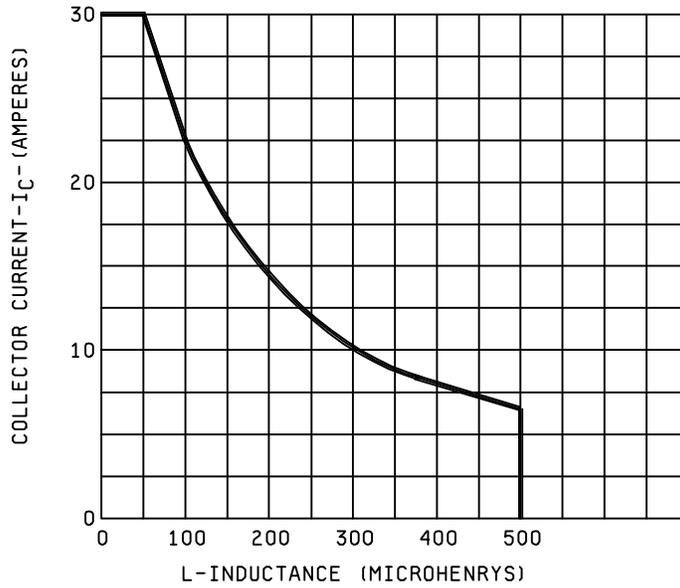


FIGURE 5. Safe operating area for switching between saturation and cutoff (unclamped inductive load).

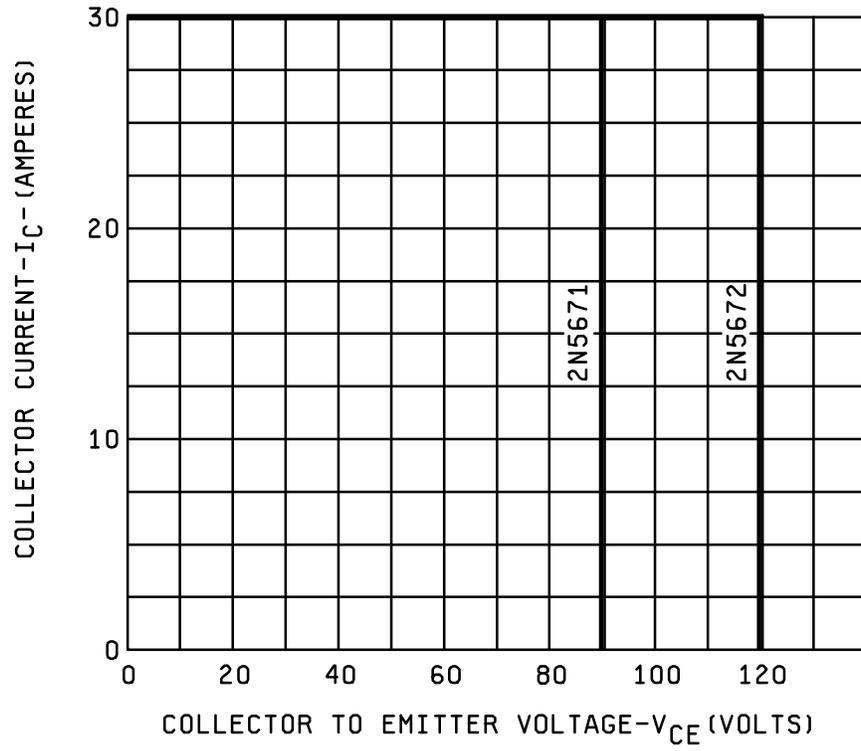


FIGURE 6. Safe operating area for switching between saturation and cutoff (clamped inductive load).

5. PACKAGING

5.1 Packaging. Packaging shall prevent mechanical damage of the devices during shipping and handling and shall not be detrimental to the device. When actual packaging of material is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Points' packaging activity within the Military Department or Defense Agency, or within the Military Departments' System Command. Packaging data retrieval is available from the managing Military Departments' 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.)

6.1 Notes. The notes specified in MIL-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. See MIL- PRF-19500.

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 purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center Columbus, ATTN: DSCC-VQE, 3990 East Broad Street, Columbus, OH 43216-5000.

6.4 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.

CONCLUDING MATERIAL

Custodians:

Army - CR
Navy - EC
Air Force - 11
NASA - NA
DLA - CC

Preparing activity:
DLA - CC

(Project 5961- 2041)

Review activities:

Army - AR, MI, SM
Navy - SH
Air Force - 13, 19, 80, 99

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL**INSTRUCTIONS**

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-19500/488C	2. DOCUMENT DATE 99/07/16
3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, TRANSISTOR, NPN, SILICON, HIGH-POWER TYPES 2N5671 AND 2N5672 JAN, JANTX, JANTXV AND JANS		
4. NATURE OF CHANGE <i>(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)</i>		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (Last, First, Middle initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) Commercial DSN FAX EMAIL	7. DATE SUBMITTED
8. PREPARING ACTIVITY		
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c. ADDRESS Defense Supply Center Columbus ATTN: DSCC-VAC Columbus, OH 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Standardization Program Office (DLSC -LM) 8725 John J. Kingman Road, Suite 2533 Fort Belvoir, Virginia 22060-6221 Telephone (703) 767-6888 DSN 427-6888	