

The documentation process conversion measures necessary to comply with this revision shall be completed by 20 February 1998

INCH-POUND

MIL-PRF-19500/623A  
 20 November 1997  
 SUPERSEDING  
 MIL-S-19500/623  
 5 April 1993

PERFORMANCE SPECIFICATION SHEET  
 SEMICONDUCTOR DEVICE, DARLINGTON TRANSISTOR, PNP, SILICON, HIGH-POWER  
 TYPE 2N7371 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 PNP silicon, high-power darlington transistor. Three levels of product assurance are provided as specified in MIL-PRF-19500.

1.2 Physical dimensions. See figure 1 (TO - 254AA).

1.3 Maximum ratings.

	$P_T$ 1/ $T_C = +25^\circ\text{C}$	$V_{CBO}$	$V_{CEO}$	$V_{EBO}$	$I_B$	$I_C$	$T_J$ and $T_{STG}$	$R_{\theta JC}$
	<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>	<u>°C/W</u>
2N7371	100	100	100	5.0	0.2	12	-65 to +175	1.5

1/ Derate linearly 0.667 W/°C above  $T_C = +25^\circ\text{C}$ .

1.4 Primary electrical characteristics.

	$h_{FE2}$ 1/	$V_{BE(SAT)1}$ 1/	$V_{CE(SAT)1}$ 1/	$ h_{re} $
	$V_{CE} = 3.0 \text{ V dc}$ $I_C = 6.0 \text{ A dc}$	$I_C = 12.0 \text{ A dc}$ $I_B = 120 \text{ mA dc}$	$I_C = 12.0 \text{ A dc}$ $I_B = 120 \text{ mA dc}$	$V_{CE} = 3.0 \text{ V dc}$ $I_C = 5.0 \text{ A dc}$ $f = 1 \text{ MHz}$
		<u>V dc</u>	<u>V dc</u>	
Min	1,000			10
Max	18,000	4.0	3.0	250

1/ Pulsed (see 4.5.1).  
 AMSC N/A

FSC 5961

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-VAT, 3990 East Broad Street, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

## 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 Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, 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).

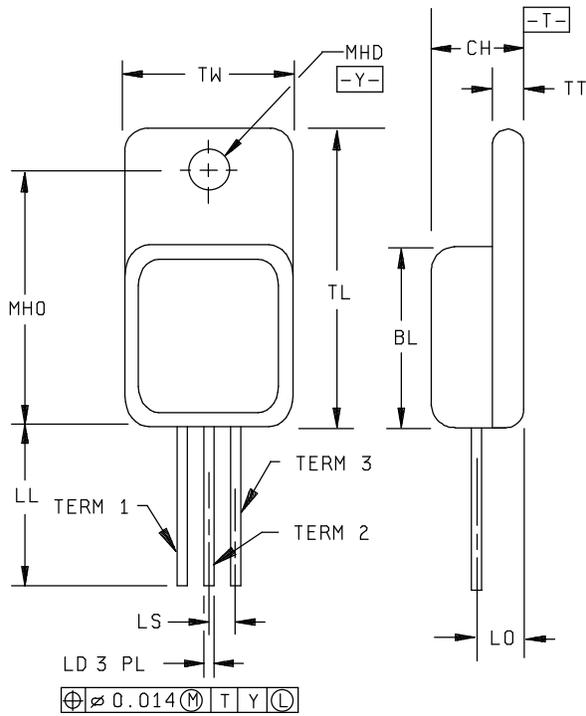
3.2 Associated specification. The individual item requirements shall be in accordance with MIL-PRF-19500 and as specified herein.

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 on figure 1 herein. Methods used for electrical isolation of the terminal feedthroughs shall employ materials that contain a minimum of 90 percent ceramic  $Al_2O_3$  or equivalent. Examples of such construction techniques are metallized ceramic eyelets or ceramic walled packages. The preferred measurements used herein are the metric units. However, this transistor was designed using inch-pound units of measurement. In case of conflicts between the metric and inch-pound units, the inch-pound units shall rule.

3.4.1 Lead finish. Lead finish shall be solderable in accordance with MIL-STD-750, MIL-PRF-19500, and herein. Where a choice of lead finish or formation is desired, it shall be specified in the acquisition requirements (see 6.2). When lead formation is performed, as a minimum, the vendor shall perform 100 percent hermetic seal in accordance with appendix E, table IV, screen 14, of MIL-PRF-19500.

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



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.535	.545	13.59	13.89
CH	.249	.260	6.32	6.60
LD	.035	.045	0.89	1.43
LL	.530	.550	13.46	13.97
LO	.150 BSC		3.81 BSC	
LS	.150 BSC		3.81 BSC	
MHD	.139	.149	3.53	3.78
MHO	.665	.685	16.89	17.40
TL	.790	.800	20.07	20.32
TT	.040	.050	1.02	1.27
TW	.535	.545	13.59	13.89
Term 1	Base			
Term 2	Collector			
Term 3	Emitter			

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. All terminals are isolated from case.

FIGURE 1. Dimensions and configuration (T0-254AA).

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

3.7 Electrical test requirements. The electrical requirements shall be the subgroups specified in 4.4.2 and 4.4.3 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 (Appendix E, 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 appendix E, table IV) of MIL-PRF-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
1/	Thermal impedance (see 4.3.2)	Thermal impedance (see 4.3.2)
9	$I_{CEX1}$ and $h_{FE2}$	Not applicable
11	Subgroup 2 of table I herein; $I_{CEX1}$ and $h_{FE2}$ ; $\Delta I_{CEX1}$ = 100 percent of initial value or 100 $\mu$ A dc, whichever is greater. $\Delta h_{FE2}$ = $\pm$ 40 percent of initial value.	$I_{CEX1}$ and $h_{FE2}$
12	t = 160 hours	t = 80 hours
13	Subgroups 2 and 3 of table I herein; $I_{CEX1}$ and $h_{FE2}$ ; $\Delta I_{CEX1}$ = 100 percent of initial value or 100 $\mu$ A dc, whichever is greater. $\Delta h_{FE2}$ = $\pm$ 40 percent of initial value.	Subgroup 2 of table I herein; $I_{CEX1}$ and $h_{FE2}$ ; $\Delta I_{CEX1}$ = 100 percent of initial value or 100 $\mu$ A dc, whichever is greater. $\Delta h_{FE2}$ = $\pm$ 40 percent of initial value.

1/ May be performed anytime before screen 9.

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

$$T_J = 162.5 \pm 12.5^\circ\text{C}, V_{CE} \geq 10 \text{ V dc}, t_A = 30 \pm 5^\circ\text{C}.$$

4.3.2 Thermal impedance  $Z_{\theta JX}$  measurements for screening. The  $Z_{\theta JX}$  measurements shall be performed in accordance with MIL-STD-750, method 3131. The maximum limit and conditions for  $Z_{\theta JX}$  in screening (appendix E, table IV of MIL-PRF-19500) shall be derived by each vendor by means of process control of actual measurements which characterizes the die attach process. When three lot date codes have exhibited control, the data from these three lots will be used to establish a fixed screening limit (not to exceed the end point limit). Once a fixed limit has been established, monitor all future sealing lots using a sample from each lot to be plotted on the applicable X and R chart.

4.3.2.1 Thermal impedance ( $Z_{\theta JX}$  measurements) for initial qualification or requalification. The  $Z_{\theta JX}$  measurements shall be performed in accordance with MIL-STD-750. Method 3131 (read and record date  $Z_{\theta JX}$ ) derived conditions limits and thermal response curve shall be supplied to the qualifying activity on the qualification lot prior to qualification approval.

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 appendix E, 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 appendix E, table VIb of MIL-PRF-19500. Electrical measurements (end-points) and delta requirements shall be in accordance with the applicable steps of table III herein.

4.4.2.1 Group B inspection, appendix E, table VIa (JANS) of MIL-PRF-19500. Subgroup 4: Condition for intermittent operation life are as follows:  $V_{CB} \geq 10$  V dc.  $\Delta T_J$  between cycles  $\geq +100^\circ\text{C}$ , 2,000 cycles.

4.4.2.2 Group B inspection, appendix E, table VIb (JANTX and JANTXV) of MIL-PRF-19500. Subgroup 3: Condition for intermittent operation life are as follows:  $V_{CB} \geq 10$  V dc.  $\Delta T_J$  between cycles  $\geq +100^\circ\text{C}$ , 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 appendix E, table VII of MIL-PRF-19500. Electrical measurements (end points) and delta requirements shall be in accordance with the applicable steps of table III herein.

4.4.3.1 Group C inspection, appendix E, table VII of MIL-PRF-19500.

- a. Subgroup 2: Condition for terminal strength (tension) is method 2036, condition A, weight = 4.5 kg, t = 10 seconds.
- b. Subgroup 6: Condition for intermittent operation life are as follows:  $V_{CB} \geq 10$  V dc.  $\Delta T_J$  between cycles  $\geq +100^\circ\text{C}$ , 6,000 cycles.

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 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 1.0 A dc.
- b. Collector to emitter voltage magnitude shall be  $\geq 10$  V dc.
- c. Reference temperature measuring point shall be the case.
- d. Reference point temperature shall be  $+25^\circ\text{C} \leq T_R \leq +75^\circ\text{C}$  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  $1.5^\circ\text{C/W}$ .

4.5.3 Thermal Impedance  $Z_{\theta JX}$  limit for end point measurements.

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The following test conditions shall be used for  $Z_{\theta JX}$ , end point measurements:  $Z_{\theta JX} = 1.4^{\circ}\text{C}/\text{W}$

- a.  $I_M$  ..... 10 mA.
- b.  $V_{CE}$  measurement voltage..... 20 V (same as  $V_H$ ).
- c.  $I_H$  collector heating current..... 4 A (minimum).
- d.  $V_H$  collector-emitter heating voltage ..... 20 V (minimum).
- e.  $t_H$  heating time..... 100 ms.
- f.  $t_{MD}$  measurement delay time..... 50  $\mu\text{s}$  to 80  $\mu\text{s}$ .
- g.  $t_{sw}$  sample window time ..... 10  $\mu\text{s}$  (maximum).

TABLE I. Group A inspection.

Inspection 1/  	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Collector - emitter breakdown voltage	3011	Bias condition D; $I_C = 100$ mA dc pulsed (see 4.5.1)	$V_{CE(sus)}$	100		V dc
Collector - emitter cutoff current	3036	Bias condition D; $V_{CE} = 50$ V dc	$I_{CEO}$		1.0	mA dc
Emitter - base cutoff current	3061	Bias condition D; $V_{EB} = 5$ V dc	$I_{EBO}$		2.0	mA dc
Collector = emitter cutoff current	3041	Bias condition A; $V_{BE} = 1.5$ V dc; $V_{CE} = 100$ V dc	$I_{CEX1}$		0.5	mA dc
Base - emitter saturated voltage	3066	Test condition A; $I_C = 12$ A dc; $I_B = 120$ mA dc; pulsed (see 4.5.1)	$V_{BE(sat)}$		4.0	V dc
Collector - emitter saturated voltage	3071	$I_C = 12$ A dc; $I_B = 120$ mA dc; pulsed (see 4.5.1)	$V_{CE(sat)}$		3.0	V dc
Forward - current transfer ratio	3076	$V_{CE} = 3.0$ V dc; $I_C = 6.0$ A dc pulsed (see 4.5.1)	$h_{FE1}$	1,000	18,000	
Forward - current transfer ratio	3076	$V_{CE} = 3.0$ V dc; $I_C = 12$ A dc pulsed (see 4.5.1)	$h_{FE2}$	150		
<u>Subgroup 3</u>						
High - temperature operation:		$T_A = +150^\circ\text{C}$				
Collector to emitter cutoff current	3041	Bias condition C; $V_{CE} = 100$ V dc; $V_{BE} = 1.5$ V dc	$I_{CEX2}$		5.0	mA dc
Low - temperature operation:		$T_A = -55^\circ\text{C}$				
Forward - current transfer ratio	3076	$V_{CE} = 3.0$ V dc $I_C = 6.0$ A dc pulsed (see 4.5.1)	$h_{FE3}$	300		

See footnote at end of table.

TABLE I. Group A inspection - Continued.

Inspection <u>1</u> /	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 4</u>						
Switching parameters						
Turn-on		See figure 2	$T_{on}$		2.0	$\mu s$
Turn-off		See figure 2	$t_{off}$		10	$\mu s$
Magnitude of small-signal short-circuit forward-current transfer ratio	3306	$V_{CE} = 3.0$ V dc; $I_C = 5.0$ A dc; $f = 1$ MHz	$ h_{fe} $	10	250	
<u>Subgroup 5</u>						
Safe operating area (continuous dc)	3051	$T_C = 25^\circ C$ ; $t \geq 1$ s; 1 cycle; (see figure 3)				
<u>Test 1</u>		$V_{CE} = 8.3$ V dc; $I_C = 12.0$ A dc				
<u>Test 2</u>		$V_{CE} = 30$ V dc; $I_C = 3.3$ A dc				
<u>Test 3</u>		$V_{CE} = 90$ V dc; $I_C = 150$ mA dc				
Safe operating area (clamped inductive)	3053	Load condition B (clamped inductive load); $T_A = +25^\circ C$ ; $t_r + t_f \leq 1.0$ $\mu s$ ; duty cycle $\leq 2$ percent; $t_p = 1$ ms; (vary to obtain $I_C$ ); $R_s = 0.10$ ohms; $R_{BB1} = 80$ ohms; $V_{BB1} = 16$ V dc; $R_{BB2} = 100$ ohms; $V_{BB2} = 1.5$ V dc; $I_C = 12$ A dc; $V_{CC} = 20$ V dc; $R_L \leq 2$ ohms; $L = 10$ mH; (Stancor C-2688 or equivalent) clamp voltage = 100 +0, -5 V dc; Device fails if clamp voltage not reached.  See table III, steps 1 and 2.				
Electrical measurements						
<u>Subgroups 6 and 7</u>						
Not applicable						

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

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

Inspection	MIL-STD-750		Qualification conformance inspection
	Method	Conditions	
<u>Subgroup 1</u>			22 devices, c = 0
Temperature cycling	1051	500 cycles	
Hermetic seal	1071		
Electrical measurements		See table III, steps 1 and 2	
<u>Subgroup 2</u>			22 devices, c = 0
High temperature reverse bias	1039	Condition A; 1,000 hours	
Electrical measurements		See table III, steps 1 and 2	
<u>Subgroup 3</u>			
Not applicable			
<u>Subgroup 4</u>			10 devices, c = 0
Thermal resistance	3131	$R_{\theta JC} = 1.5^{\circ}\text{C/W}$ maximum. (see 4.5.2)	
<u>Subgroup 5</u>			
Not applicable			

TABLE III. Group B, C, and E electrical measurements. 1/ 2/ 3/

Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Conditions		Min	Max	
1.	Collector - emitter cutoff current	3041	Bias condition C; $V_{CE} = 100$ V dc $V_{BE} = 1.5$ V dc	$I_{CEX1}$		0.5	mA dc
2.	Forward - current transfer ratio	3076	$V_{CE} = 3.0$ V dc; $I_C = 6.0$ A dc; pulsed (see 4.5.1)	$h_{FE1}$	1,000	18,000	
3.	Collector - emitter cutoff current	3041	Bias condition C; $V_{CE} = 100$ V dc $V_{BE} = 1.5$ V dc	$\Delta I_{CEX1}$ 4/	100 percent of initial value or 100 $\mu$ A dc; whichever is greater.		
4.	Forward - current transfer ratio	3076	$V_{CE} = 3.0$ V dc; $I_C = 6.0$ A dc; pulsed (see 4.5.1)	$\Delta h_{FE1}$ 4/	$\pm 40$ percent change from initial value.		
5.	Thermal impedance	3131	See 4.5.3	$Z_{\theta JX}$		1.4	$^{\circ}$ C/W

1/ The electrical measurements for appendix E, table VIa (JANS) of MIL-PRF-19500 are as follow:

- a. Subgroup 2, see table II herein, steps 1 and 2.
- b. Subgroup 3, see table II herein, steps 3, 4, and 5.
- c. Subgroup 6, see table II herein, steps 3, 4, and 5.

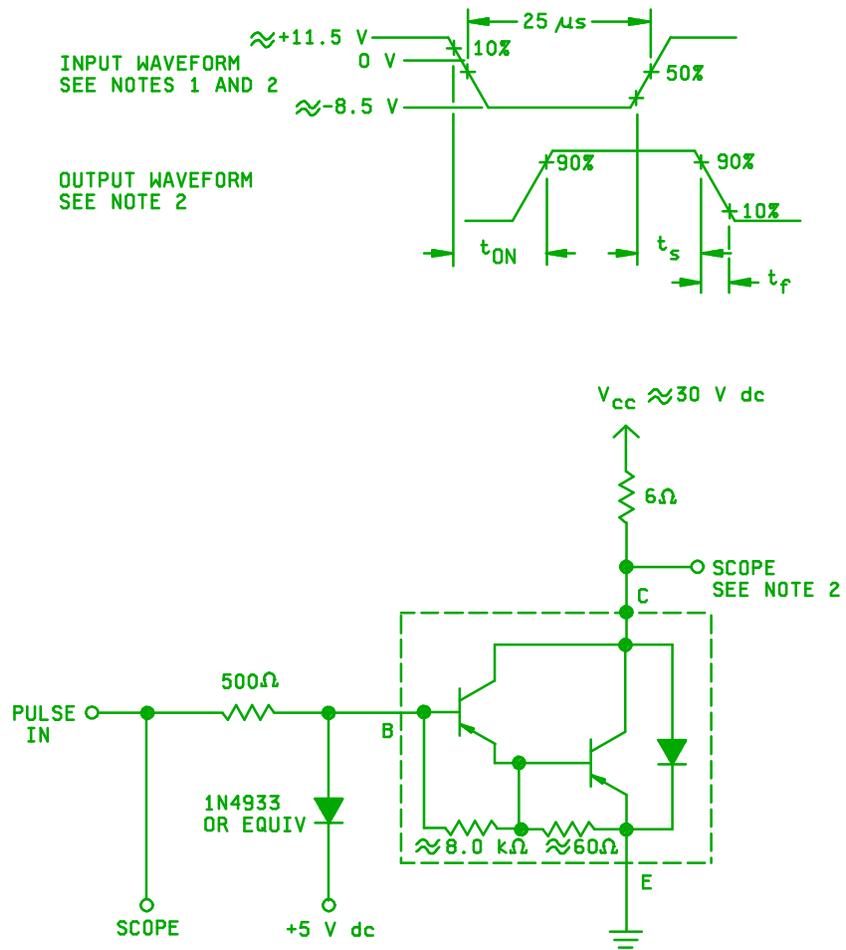
2/ The electrical measurements for appendix E; table VIb (JANTX and JANTXV) of MIL-PRF-19500 are as follow:

- a. Subgroup 2, see table II herein, steps 1 and 2.
- b. Subgroup 3, see table II herein, steps 1, 2, and 5.
- c. Subgroup 6, see table II herein, steps 1, 2, and 5.

3/ The electrical measurements for appendix E; table VII of MIL-PRF-19500 are as follows:

- a. Subgroup 2, see table II herein, steps 1 and 2.
- b. Subgroup 3, see table II herein, steps 1 and 2.
- c. Subgroup 6, see table II herein, steps 1, 2, and 5.

4/ Devices which exceed the group A limits for this test shall not be shippable but are not considered failures for the test.



NOTES:

1. The input waveform is supplied by a pulse generator with the following characteristics:  
 $t_r \leq 20 \text{ ns}$ ,  $t_f \leq 20 \text{ ns}$ ,  $Z_{OUT} = 50 \text{ } \Omega$ ,  $PW = 25 \text{ } \mu\text{s}$ , duty cycle  $\leq 2$  percent.
2. Output waveforms are monitored on an oscilloscope with the following characteristics:  
 $t_r \leq 20 \text{ ns}$ ,  $Z_{IN} \geq 20 \text{ k}\Omega$ ,  $C_{IN} \leq 11.5 \text{ pF}$ .
3. Resistors shall be noninductive types.
4. The dc power supplies may require additional by-passing in order to minimize ringing.

FIGURE 2. Pulse response test circuit.

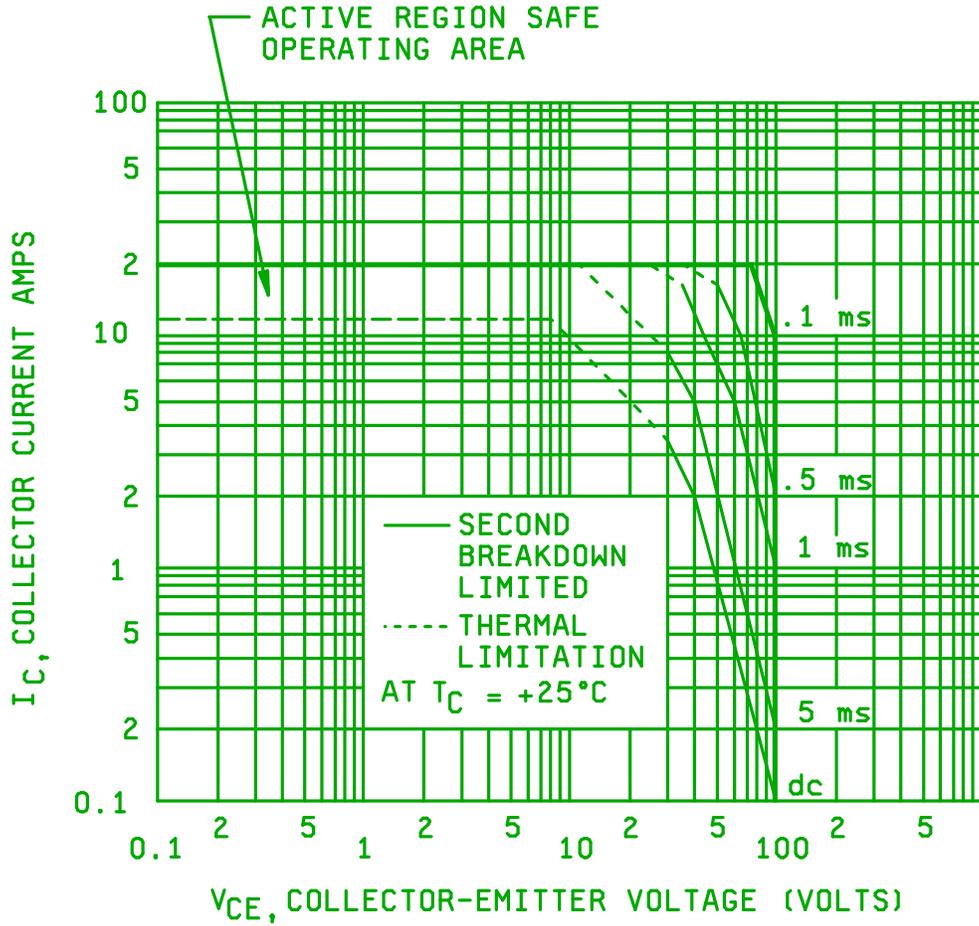


FIGURE 3. Safe operating area.

## 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.

5.2 Marking. Unless otherwise specified (see 6.2), marking shall be in accordance with MIL-STD-129.

## 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 Products List QPL No.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 Interchangeability information. MIL-PRF-19500/623 is a T0-254 package version of MIL-PRF-19500/501, which is a T0-3 package version. The military 2N7371 contains the same die as the military 2N6052. The MIL-PRF-19500/623 is preferred over the MIL-PRF-19500/501 whenever interchangeability is not a problem. For new design use 2N7371. The 2N6052 is inactive for new design.

6.5 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 - 17  
NASA - NA

Preparing activity:  
DLA - CC

(Project 5961-1899-03)

### Review activities:

Army - AR, MI, SM  
Navy - AS  
Air Force - 19, 85, 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.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-PRF-19500/623A	2. DOCUMENT DATE (YYMMDD) 971120
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3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, DARLINGTON TRANSISTOR, PNP, SILICON, HIGH-POWER TYPE 2N7371 JANTX, JANTXV, AND JANS
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4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)
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5. REASON FOR RECOMMENDATION
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6. SUBMITTER
--------------

a. NAME (Last, First, Middle initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY
-----------------------

a. NAME Alan Batrone	b. TELEPHONE (Include Area Code) (1) Commercial (614)692-0510      (2) AUTOVON 850-0510
----------------------	--

c. ADDRESS (Include Zip Code) from Defense Supply Center Columbus, ATTN: DSCC-VAT, 3990 East Broad Street, Columbus, OH 43216-5000	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340
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