

The documentation and process conversion measures necessary to comply with this revision shall be completed by 25 October 1999

INCH-POUND

MIL-PRF-19500/515C
25 July 1999
SUPERSEDING
MIL-S-19500/515B
15 March 1993

PERFORMANCE SPECIFICATION SHEET
SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, POWER
TYPE 2N6378, 2N6379 JAN, JANTX, JANTXV, JANC AND JANHC

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, power transistors. Three levels of product assurance are provided for each encapsulated device type as specified in MIL-PRF-19500, and two levels of product assurance for each unencapsulated device type.

1.2 Physical dimensions. See figure 1 (TO-3); figure 2 (JANC and JANHC).

1.3 Maximum ratings.

Types	P_T $T_C = +25^\circ\text{C}$ <u>1/</u>	P_T $T_C = +100^\circ\text{C}$ <u>1/</u>	V_{CBO}	V_{CEO}	V_{EBO}	I_B	I_C	T_J and T_{STG}
	<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>
2N6378	250	143	120	100	6	20	50	-65 to +200
2N6379	250	143	140	120	6	20	50	-65 to +200

1/ Between $T_C = +25^\circ\text{C}$ and $T_C = +200^\circ\text{C}$, linear derating factor (average) = 1.43 W/°C.

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.

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

	h_{FE3} $V_{CE} = 4\text{ V dc}$ $I_C = 50\text{ A dc}$ <u>1/</u>		h_{FE2} $V_{CE} = 4\text{ V dc}$ $I_C = 20\text{ A dc}$ <u>1/</u>		$V_{BE(sat)}$ $I_C = 20\text{ A dc}$ $I_B = 2\text{ A dc}$	$V_{CE(sat)}$ $I_C = 20\text{ A dc}$ $I_B = 2\text{ A dc}$	$R_{\theta JC}$
	Min	Max	Min	Max	Min	Max	$^\circ\text{C/W}$
2N6378	10		30	120		1.8	0.7
2N6379	10		30	120		1.8	0.7

	C_{obo}		$ h_{fe} $		Pulse response	
	$V_{CB} = 10\text{ V dc}$ $I_E = 0$ $0.1\text{ MHz} \leq f \leq 1\text{ MHz}$		$V_{CE} = 10\text{ V dc}$ $I_C = 1\text{ A dc}$ $f = 10\text{ MHz}$		t_{on}	t_{off}
	<u>pE</u>				<u>μs</u>	<u>μs</u>
	Min	Max	Min	Max	Max	Max
2N6378		1500	3	12	0.5	1.05
2N6379		1500	3	12	0.5	1.05

1/ Pulsed (see 4.5.1).

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 section 3 and 4 of this specification, whether or not they are listed.

2.1.1 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.

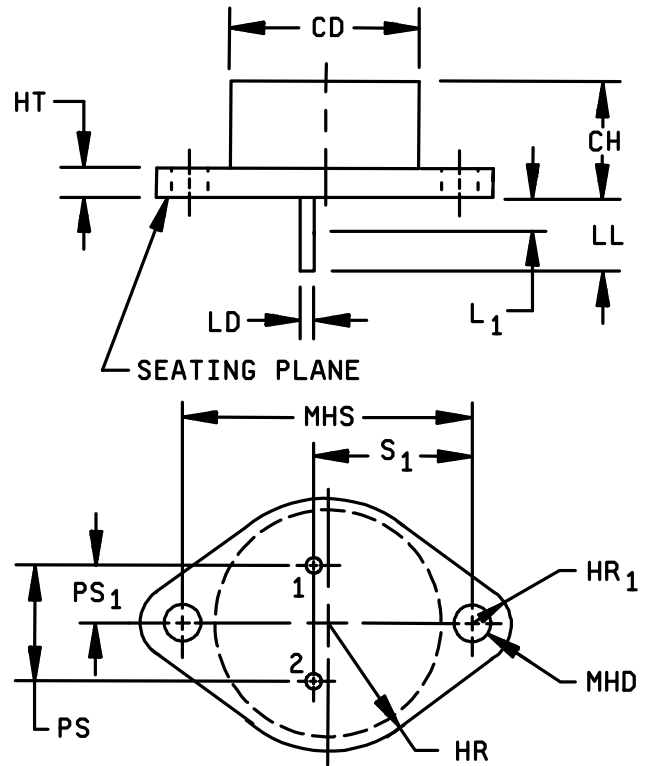
(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Defense Automated Printing Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specification sheets or MS standards), the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

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

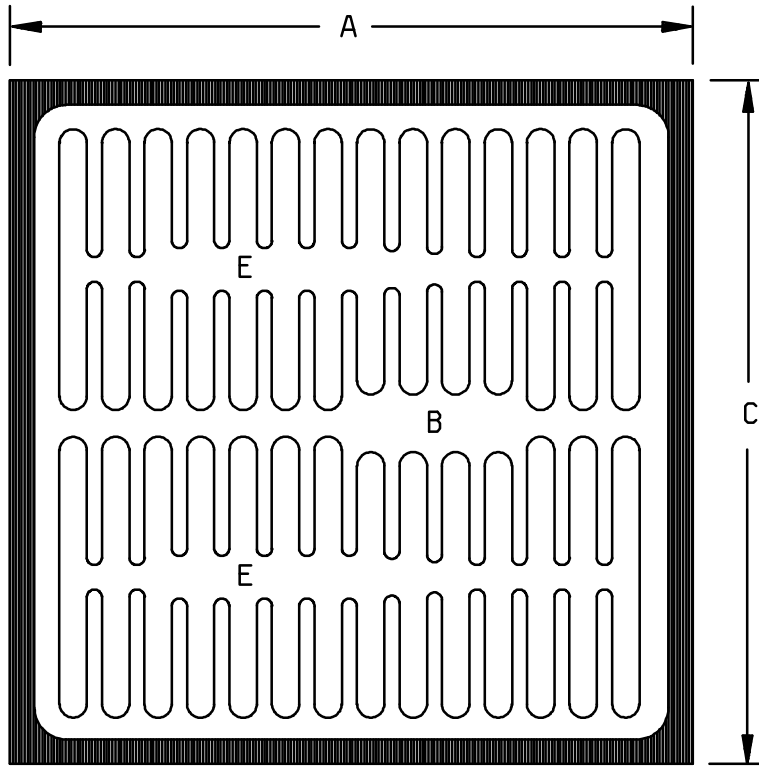
Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		0.875		22.22	3
CH	0.270	0.380	6.86	9.65	
HR	0.495	0.525	12.57	13.34	
HR1	0.131	0.188	3.33	4.78	
HT	0.060	0.135	1.52	3.43	
L1		0.050		1.27	5, 9
LD	0.057	0.063	0.97	1.09	5, 9
LL	0.312	0.500	7.92	12.70	5
MHD	0.151	0.161	3.84	4.09	7
MHS	1.177	1.197	29.90	30.40	
PS	0.420	0.440	10.67	11.18	4
PS1	0.205	0.225	5.21	5.72	4, 5
S	0.655	0.675	16.64	17.14	4



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Body contour is optional within zone defined by CD
4. These dimensions shall be measured at points 0.050 (1.27 mm) to 0.055 (1.40 mm) below seating plane. When gauge is not used, measurement shall be made at seating plane.
5. Both terminals.
6. At both ends.
7. Two holes.
8. Terminal 1 is the emitter, terminal 2 is base. The collector shall be electrically connected to the case.
9. LD applies between L1 and LL. Diameter is uncontrolled in L1.
10. In accordance with ANSI Y14.5M, diameters are equivalent to ϕ x symbology.

FIGURE 1. Physical dimensions (T0-3).



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.231	0.235	5.87	5.97
C	0.231	0.235	5.87	5.97

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ± 0.005 inches (0.13 mm).
4. The physical characteristics of the die are:
 Thickness: 0.008 inches (0.20 mm) to 0.012 inches (0.30 mm).
 Top metal: Aluminum 40,000 D minimum, 50,000 D nominal.
 Back metal: Gold 2,500 D minimum, 3,000 D nominal.
 Back side: Collector.
 Bonding pad: B = 0.016 inches (0.41 mm) x 0.060 inches (1.52 mm).
 E = 0.016 inches (0.41 mm) x 0.070 inches (1.78 mm).

FIGURE 2 Physical dimensions JANC and JANHC die.

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

3.3 Interface requirements and physical dimensions. The Interface requirements and physical dimensions shall be as specified in MIL-PRF-19500 and figures 1 (TO-3); and figure 2 (JANC and JANHC).

3.3.1 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 contract or purchase order (see 6.2).

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

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

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

3.7 Qualification. Devices furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified manufacturer's list before contract award (see 4.2 and 6.4).

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 (JANTX and JANTXV levels only). Screening shall be in accordance with table 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)	Measurements
	JANTX, JANTXV levels
<u>1/</u>	Thermal response (see 4.3.3) or SOA manufacturers option.
11	I_{CEX1} and h_{FE2}
12	See 4.3.2, MIL-STD-750, method 1039, test condition B.
13	Subgroup 2 of table I herein; ΔI_{CEX1} = 100 percent of initial value or 2 μA dc, whichever is greater. Δh_{FE2} = $\pm$ 25 percent of initial value.

1/ This test shall be performed anytime between screens 3 and 9.

4.3.1 Screening (JANC and JANHC) die. Screening of JANC and JANHC die shall be in accordance with MIL-PRF-19500. As a minimum, die shall be 100 percent probed to insure the assembled chips will meet the requirements of group A, subgroup 2.

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

T_J = + 187.5 °C, $\pm$ 12.5 °C; V_{CB} $\geq$ 20 V dc; T_A $\leq$ 35°C.

4.3.3 Thermal response (ΔV_{BE}) measurements. The ΔV_{BE} measurements shall be performed in accordance with method 3131 of MIL-STD-750. The ΔV_{BE} conditions (I_H and V_H) and maximum limit shall be derived by each vendor. The chosen ΔV_{BE} measurement and conditions for each device in the qualification lot shall be submitted in the qualification report and a thermal response curve shall be plotted. The chosen V_{BE} shall be plotted. The chosen V_{BE} shall be considered final after the manufacturer has had the opportunity to test five consecutive lots. One hundred percent safe operating area (SOA) testing may be performed in lieu of thermal response testing herein provided that the appropriate conditions of temperature, time current and voltage to achieve die attach integrity are submitted to the qualifying activity. The following parameter measurements shall apply:

- a. I_M 20 mA.
- b. V_{CE} measurement voltage 10 V (same as V_H).
- c. I_H collector heating current 5 A (minimum).
- d. V_H collector-emitter heating voltage 10 V (minimum).
- e. t_H heating time 100 ms.
- f. t_{MD} measurement delay time 50 μ s to 80 μ s (maximum).
- g. t_{SW} sample window time 10 μ s (maximum).

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 subgroup 2 of 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 table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500. . Electrical measurements (end-points) shall be in accordance with subgroup 2 of table I herein. Delta measurements shall be in accordance with table II herein.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
B3	1037	For solder die attach: $V_{CE} \geq 20$ V dc, 2,000 cycles.
B3	1027	For eutectic die attach: $V_{CE} \geq 20$ V dc adjust P_T to achieve $T_J = +175^\circ\text{C}$ minimum.
B5	3131	See 4.5.2 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. Electrical measurements (end-points) shall be in accordance with subgroup 2 of table I herein. Delta measurements shall be in accordance with table II herein.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
C2	2036	Test condition A; weight = 10 pounds; time = 15 s.
C6	1037	For solder die attach: $V_{CE} \geq 20$ V dc, 6,000 cycles.
C3	1027	For eutectic die attach: $V_{CE} \geq 20$ V dc adjust P_T to achieve $T_J = +175^\circ\text{C}$ minimum.

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 method 3131 of MIL-STD-750. The following details shall apply:

- a. Collector current magnitude during power application shall be 5 A dc.
- b. Collector to emitter voltage magnitude shall be ≥ 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 0.7°C/W .

TABLE I. Group A inspection.

Inspection <u>1</u> /	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u>						
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Collector to emitter breakdown voltage	3011	Bias condition D, $I_C = 50$ mA dc; Pulsed (see 4.5.1)	$V_{(BR)CEO}$	100 120		V dc
2N6378 2N6379						
Collector to emitter cutoff current	3041	Bias condition D $V_{CE} = 50$ V dc $V_{CE} = 70$ V dc	I_{CEO}		50	μ A dc
2N6378 2N6379						
Collector to emitter cutoff current	3041	Bias condition A; $V_{BE} = 1.5$ V dc $V_{CE} = 120$ V dc $V_{CE} = 140$ V dc	I_{CEX1}		10	μ A dc
2N6378 2N6379						
Emitter-base cutoff current	3061	Bias condition D, $V_{EB} = 6$ V dc	I_{EBO}		100	μ A dc
Collector to base cutoff current	3036	Bias condition D, $V_{CB} = 120$ V dc $V_{CB} = 140$ V dc	I_{CBO}		10	μ A dc
2N6378 2N6379						
Forward-current transfer ratio	3076	$V_{CE} = 4$ V dc; $I_C = 1$ A dc; Pulsed (see 4.5.1)	h_{FE1}	50		
Forward-current transfer ratio	3076	$V_{CE} = 4$ V dc; $I_C = 20$ A dc; Pulsed (see 4.5.1)	h_{FE2}	30	120	
Forward-current transfer ratio	3076	$V_{CE} = 4$ V dc; $I_C = 50$ A dc; Pulsed (see 4.5.1)	h_{FE3}	10		
Collector to emitter saturated voltage	3071	$I_C = 20$ A dc; pulsed (see 4.5.1) $I_B = 2.0$ A dc	$V_{CE(sat)1}$		1.0	V dc
Collector to emitter saturated voltage	3071	$I_C = 50$ A dc; $I_B = 10$ A dc; Pulsed (see 4.5.1)	$V_{CE(sat)2}$		3.0	V dc
Base –emitter saturated voltage	3066	Test condition A; $I_C = 20$ A dc; $I_B = 2.0$ A dc; pulsed (see 4.5.1)	$V_{BE(sat)}$		1.8	V dc

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 3</u>						
High-temperature operation:		T _A = +150°C				
Collector to emitter cutoff current	3041	Bias condition A; V _{BE} = -1.5 V dc	I _{CEX2}		1.0	mA dc
2N6378		V _{CE} = 120 V dc				
2N6379		V _{CE} = 140 V dc				
Low-temperature operation:		T _A = -55°C				
Forward-current transfer ratio	3076	V _{CE} = 4.0 V dc I _C = 20 A dc; Pulsed (see 4.5.1)	h _{FE4}	10		
<u>Subgroup 4</u>						
Pulse response:	3251	Test condition A, except test circuit and pulse requirements in accordance with figure 3 herein.				
Turn-on time		V _{CC} = approximately 80 V dc; I _C = 20 A dc; I _B = 2.0 A dc;	t _{on}		0.5	μs
Turn-off time		V _{CC} = approximately 80 V dc; I _C = 20 A dc; I _{B1} = I _{B2} = 2.0 A dc	t _{off}		1.05	μs
Magnitude of common emitter small-signal short-circuit forward- current transfer ratio	3306	V _{CE} = 10 V dc; I _C = 1 A dc; f = 10 MHz	h _{fe}	3	12	
Open capacitance (open circuit)	3236	V _{CB} = 10 V dc; I _E = 0; 0.1 MHz ≤ f ≤ 1.0 MHz	C _{obo}		1500	pF
<u>Subgroup 5</u>						
Safe operating area (dc operation)	3051	T _C = +25°C t = 1 s; 1 cycle; (See figure 4)				
<u>Test 1</u> (Both device types)		V _{CE} = 5 V dc; I _C = 50 A dc				
<u>Test 1</u> (Both device types)		V _{CE} = 8.6 V dc; I _C = 29 A dc				

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 5</u> - Continued						
<u>Test 3</u> 2N6378 2N6379		$V_{CE} = 80 \text{ V dc}; I_C = 165 \text{ mA dc}$ $V_{CE} = 100 \text{ V dc}; I_C = 130 \text{ mA dc}$				
Safe operating area (switching)	3053	Load condition C, (unclamped inductive load) (see figure 5) $T_C = + 25^\circ\text{C}$; duty cycle ≤ 10 percent; $R_S = 0.1 \text{ ohms}$; $t_r = t_f \leq 500 \text{ ns}$				
<u>Test 1</u>		t_p approximately 5 ms (vary to obtain I_C); $R_{BB1} = 2 \text{ ohms}$; $V_{BB1} = 12 \text{ V dc}$; $R_{BB2} = \infty$; $V_{BB2} = 0 \text{ V}$; $I_C = 40 \text{ A dc}$; $V_{CC} = 50 \text{ V dc}$; $L = 100 \mu\text{H}$; (4 each Miller type 7827 in parallel, 40 A), 0.04 ohm, or equivalent)				
<u>Test 2</u>		t_p approximately 5 ms (vary to obtain I_C); $R_{BB1} = 120 \text{ ohms}$; $V_{BB1} = 12 \text{ V dc}$; $R_{BB2} = \infty$; $V_{BB2} = 0 \text{ V}$; $V_{CC} = 50 \text{ V dc}$; $I_C = 850 \text{ mA dc}$; $L = 100 \mu\text{H}$; (= 80 + 20 mH 2 each Triad Transformer C-48u, in series), 0.713 ohm, or equivalent.				
Safe operating area (switching)	3053	Clamped inductive load $T_A = + 25^\circ\text{C}$; duty cycle ≤ 5 percent; t_p approximately 1.5 ms (vary to obtain I_C) $V_{CC} = 50 \text{ V dc}$; $I_C = 50 \text{ A dc}$; $V_{BB1} = 12 \text{ V dc}$; $V_{BB2} = 1.5 \text{ V}$; $R_{BB1} = 2 \text{ ohms}$; $R_{BB2} = 100 \text{ ohms}$; $R_S \leq 0.1 \text{ ohms}$; $L = 370 \mu\text{H}$ (Miller 7827 or equivalent)				
2N6378		Clamp voltage = 100 V dc				
2N6379		Clamp voltage = 120 V dc				
Electrical measurements		Table I, subgroup 2 herein.				
<u>Subgroups 6 and 7</u>						
Not applicable						

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

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TABLE II. Groups A, B, and C delta electrical measurements. 3/ 4/

Steps	Inspection 1/	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Collector to emitter cutoff current 2N6378 2N6379	3041	Bias condition A; $V_{BE} = +1.5$ V dc $V_{CE} = 60$ V dc $V_{CE} = 80$ V dc	ΔI_{CEX1} 2/	100 percent of initial value or 2 μ A, whichever is greater.		
2.	Forward - current transfer ratio	3076	$V_{CE} = 4$ V dc; $I_C = 20$ A dc; pulsed (see 4.5.1)	Δh_{FE2}	± 25 percent change from initial reading.		
3.	Collector to emitter voltage (saturated)	3071	$I_C = 2.0$ A dc; $I_B = 20$ A dc, pulsed (see 4.5.1)	$\Delta V_{CE(sat)1}$	± 50 mV change from previously measured value.		
4.	Thermal response	3131	See 4.3.3	ΔV_{BE}			

1/ See MIL-PRF-19500 for sampling plan.

2/ Devices which exceed the group A limits for this test shall not be acceptable.

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

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

4/ The delta electrical measurements for table VII of MIL-PRF-19500 are as follows:

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

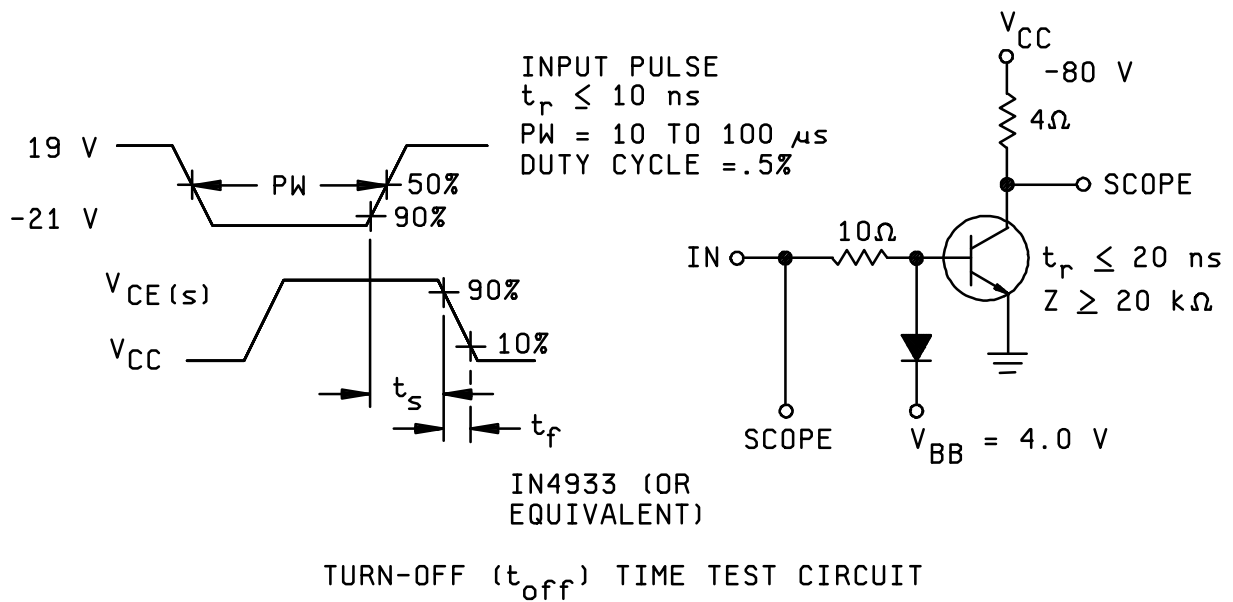
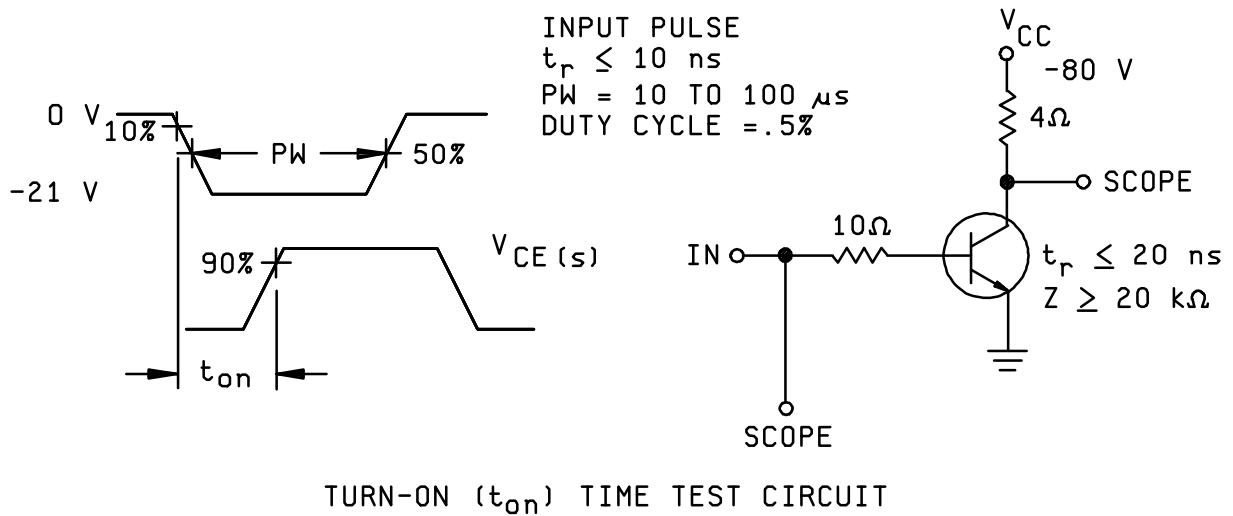


FIGURE 3. Pulse response test circuit.

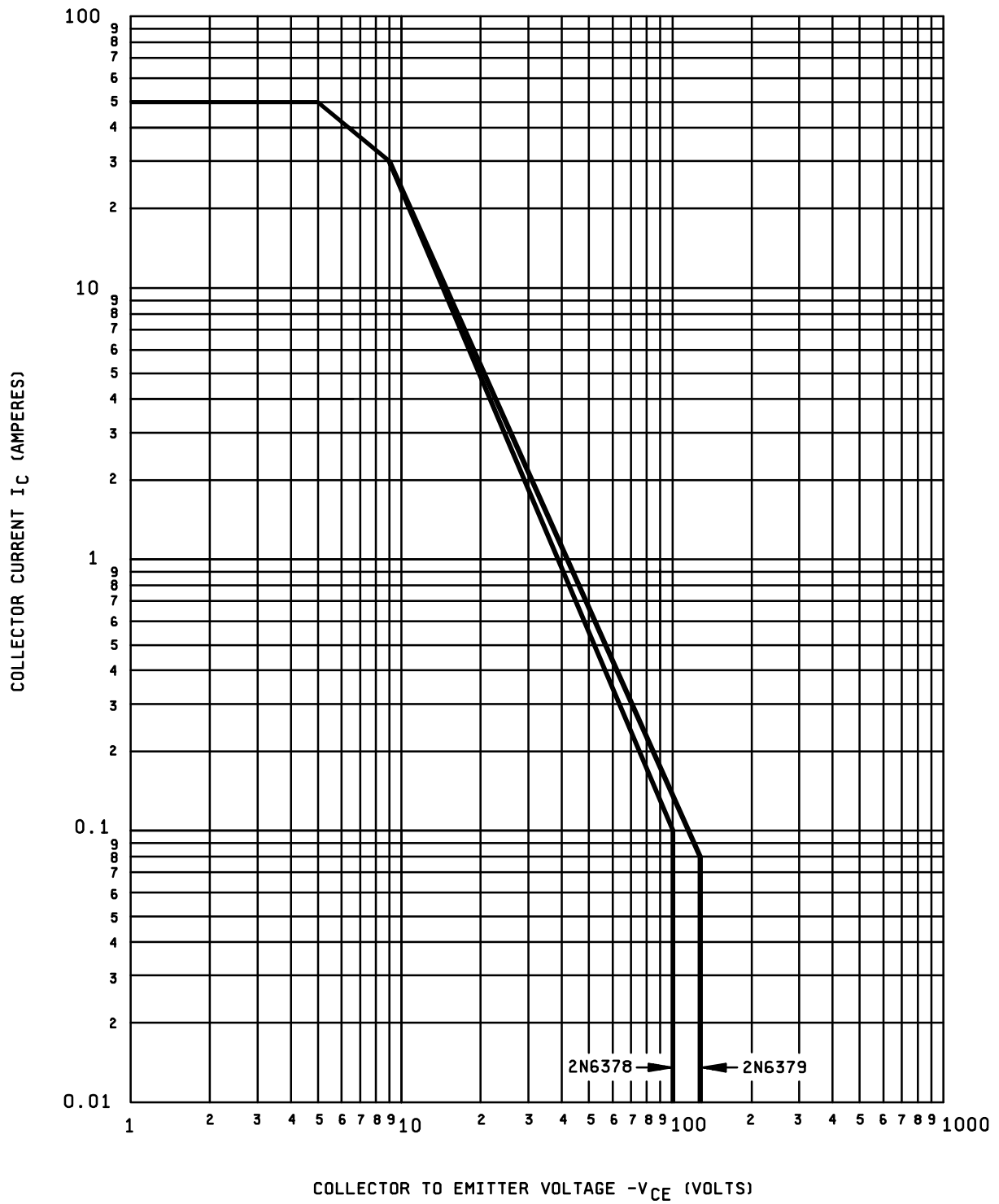


FIGURE 4. Maximum safe operating graph (continuous dc).

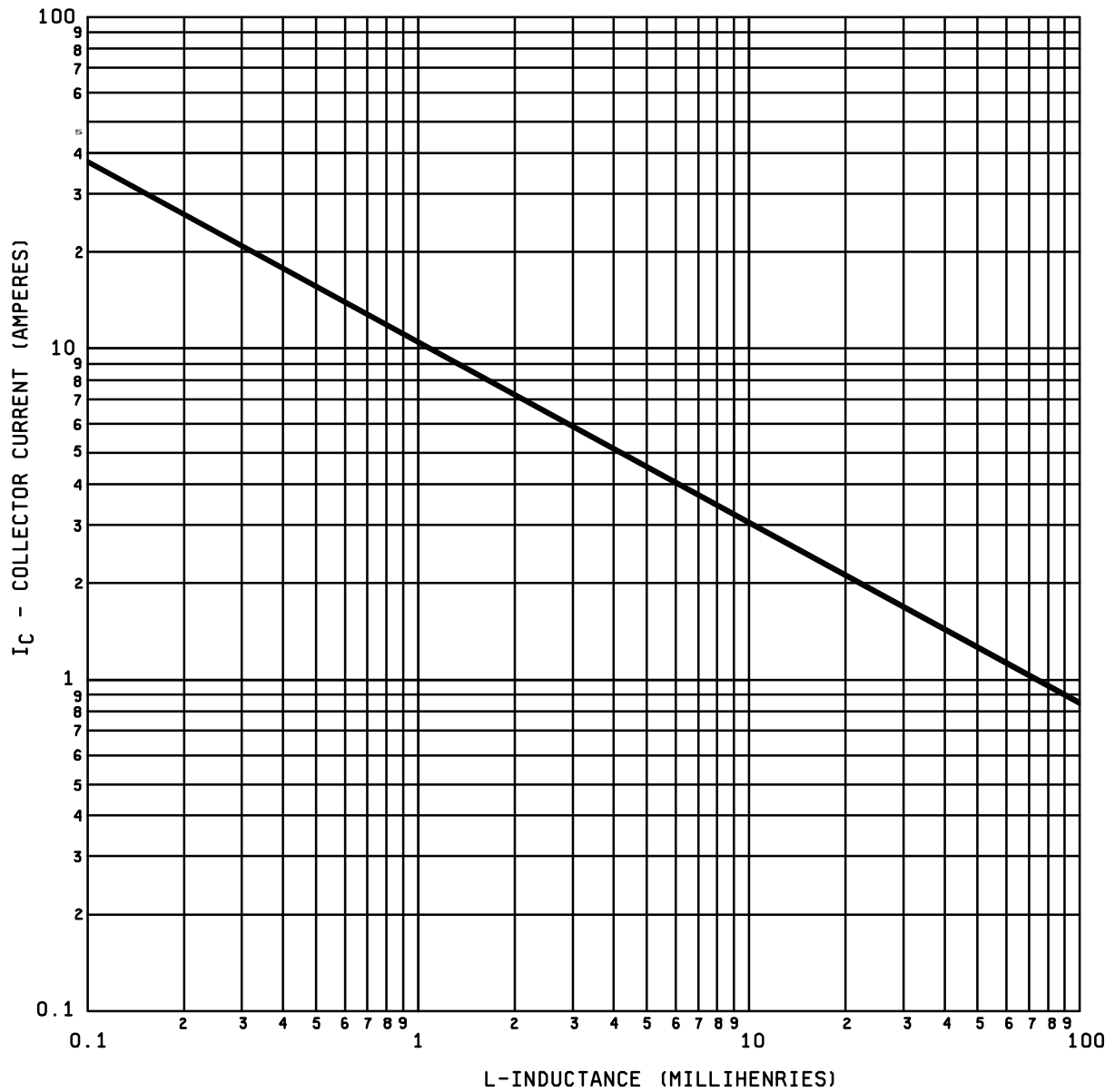


FIGURE 5. Safe operating area for switching between saturation and cutoff (unclamped inductive load).

PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements should be as specified in the contract or order (see 6.2). 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. Acquisition documents must specify the following:

- a. Issue of DODISS to be cited in the solicitation (see 2.1.1).
- b. The lead finish as specified (see 3.3.1).
- c. Type designation and quality assurance level.
- d. Packaging requirements (see 5.1).
- e. For die acquisition, the letter version shall be specified (see figure 2).

6.3 Suppliers of JANC or JANHC die. The qualified JANC or JANHC suppliers with the applicable letter version (example, JANCA) will be identified on the QML.

JANC or JANHC ordering information		
PIN	Manufacturer	
	33178	
2N6378	A6378	
2N6379	A6379	

6.4 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 Manufacturer's 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, DSCC-VQE, Columbus, OH 43216.

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 - 11
 DLA – CC

Preparing activity:
 DLA-CC
 (Project 5961-2073)

Review activities:
 Army – AV, MI, SM
 Navy – AS, CG, MC, SH
 Air Force - 13, 19, 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-19500/515C

2. DOCUMENT DATE (YYMMDD)
990725

3. DOCUMENT TITLE

SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, POWER TYPES 2N6378, 2N6379 JAN, JANTX, JANTXV, JANC AND JANHC

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)**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
(YYMMDD)

8. PREPARING ACTIVITY

a. Point of contact: Alan Barone,

b. TELEPHONE
Commercial DSN FAX EMAIL
614-692-0510 850-0510 614-692-6939 alan_barone@dscclia.mil

c. ADDRESS : Defense Supply Center
Columbus, ATTN: DSCC-VAC, 3990 East
Broad Street, 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, Suite 2533, Fort Belvoir, VA 22060-6221
Telephone (703) 767-6888 DSN 427-68880