

The documentation and process conversion measures necessary to comply with this document shall be completed by 30 March 2025.

INCH-POUND

MIL-PRF-19500/580E
w/AMENDMENT 1
31 October 2024
SUPERSEDING
MIL-PRF-19500/580E
10 December 2019

PERFORMANCE SPECIFICATION SHEET

TRANSISTOR, PNP, SILICON, AMPLIFIER,
TYPES 2N4234, 2N4235, AND 2N4236,
QUALITY LEVELS JAN, JANTX, AND JANTXV

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 PNP, silicon, amplifier transistor. Three levels of product assurance (JAN, JANTX, and JANTXV) are provided for each device type as specified in [MIL-PRF-19500](#).

1.2 Package outlines. The device package outline is TO-205AD (formerly TO-39) accordance with [figure 1](#).

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

Types	P_T (1) $T_A = +25^{\circ}\text{C}$	P_T (2) $T_C = +25^{\circ}\text{C}$	$R_{\theta JA}$	$R_{\theta JC}$ (3)	I_B	I_C	T_J and T_{STG}	V_{CBO}	V_{CEO}	V_{EBO}
	<u>W</u>	<u>W</u>	<u>$^{\circ}\text{C/W}$</u>	<u>$^{\circ}\text{C/W}$</u>	<u>A dc</u>	<u>A dc</u>	<u>$^{\circ}\text{C}$</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>
2N4234	1.0	6.0	175	29	-0.5	-1.0	-65 to +200	-40	-40	-7.0
2N4235	1.0	6.0	175	29	-0.5	-1.0		-60	-60	-7.0
2N4236	1.0	6.0	175	29	-0.5	-1.0		-80	-80	-7.0

(1) Derate linearly 5.7 mW/ $^{\circ}\text{C}$ for $T_A > +25^{\circ}\text{C}$.

(2) Derate linearly 34 mW/ $^{\circ}\text{C}$ for $T_C > +25^{\circ}\text{C}$.

(3) See (see [figure 2](#)).

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. 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

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FSC 5961



MIL-PRF-19500/580E
w/AMENDMENT 1

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

Limits	h_{FE} at $V_{CE} = -1.0\text{ V dc}$ (1)			$ h_{fe} $ $f = 1\text{ MHz}$ $V_{CE} = -10\text{ V dc}$ $I_{CE} = -100\text{ mA dc}$	C_{obo} $f = 100\text{ kHz}$ $V_{CB} = -10\text{ V dc}$ $I_E = 0$	$V_{CE(sat)1}$ (1) $I_C = -1.0\text{ A dc}$ $I_B = -0.1\text{ A dc}$	$V_{BE(sat)2}$ (1) $I_C = -1.0\text{ A dc}$ $I_B = -0.1\text{ A dc}$
	h_{FE1} $I_C = -100\text{ mA dc}$	h_{FE2} $I_C = -250\text{ mA dc}$	h_{FE3} $I_C = -500\text{ mA dc}$				
Min	40	30	20	3.0	pF	V dc	V dc
Max		150			100	-0.6	-1.5

(1) Pulsed, see 4.5.1.

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 that are applicable for this specification sheet from the lowest to the highest level are as follows: "JAN", "JANTX", and "JANTXV".

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: "4234", "4235" and "4236".

1.5.3 Lead finish. The lead finishes applicable to this specification sheet are listed on QPDSIS-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.

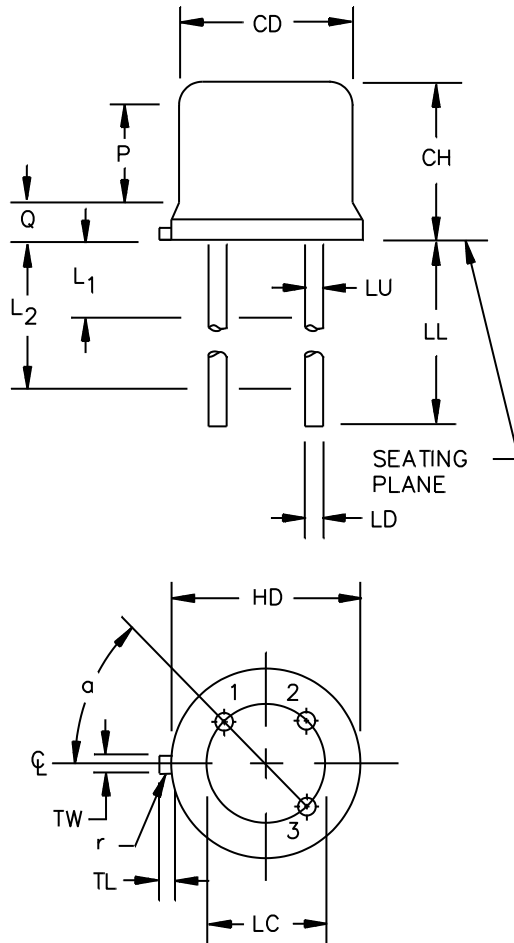
DEPARTMENT OF DEFENSE STANDARDS

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

(Copies of these documents are available online at <https://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.

MIL-PRF-19500/580E
w/AMENDMENT 1



Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.355	7.75	9.02	
CH	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	
LC	.200 TP		5.08TP		3
LD	.016	.021	0.41	0.53	4
LL	.500	.750	12.70	19.05	4
LU	.016	.019	0.41	0.48	4
L1		.050		1.27	4
L2	.250		6.35		4
P	.100		2.54		5
Q		.050		1.27	6
r		.010		0.25	7
TL	.029	.045	0.74	1.14	8
TW	.028	.034	0.71	0.86	9
α	45° TP		45° TP		3

NOTES:

1. Dimensions are in inches. Millimeters are given for general information only.
2. Lead designation shall be as follows: Terminal 1 is the emitter, terminal 2 is the base, and terminal 3 is the collector. Lead number three is electrically connected to case.
3. Leads at gauge plane .054 inch (1.37 mm) +.001 inch (0.03 mm) –.000 inch (0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.
4. Dimension LU applies between L₁ and L₂. Dimension LD applies between dimensions L₂ and LL minimum. Applies to all three terminal.
5. Dimension CD shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
6. Details of outline in this zone are optional.
7. Dimension r (radius) applied to both inside corners of tab.
8. Dimension TL is measured from dimension HD maximum.
9. Beyond dimension r maximum, dimension TW shall be held for a minimum length of .011 inch (0.28 mm).

* FIGURE 1. Physical dimensions for TO-205AD package (formerly TO-39).

MIL-PRF-19500/580E
w/AMENDMENT 1

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 (QML) 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](#).

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

3.4 Interface and physical dimensions. The interface requirements and physical dimensions shall be as specified in [MIL-PRF-19500](#) and on [figure 1](#) (TO-205AD, formerly TO-39) 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](#) and [6.6](#)).

3.4.2 Polarity. The identification of terminals of the device package shall be as shown on [figure 1](#).

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 [1.3](#), [1.4](#), and [table I](#).

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

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 herein.

MIL-PRF-19500/580E
w/AMENDMENT 1

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 (quality levels JANTX and JANTXV only). 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	Measurements for Quality levels JANTX and JANTXV
(1) 3c	See 4.3.1
11	I _{CBO} and h _{FE2}
12	See 4.3.2
13	See subgroup 2 of table I herein. $\Delta I_{CBO} = 100$ percent of initial value, or -10 nA dc whichever is greater; $\Delta h_{FE2} = \pm 15$ percent of initial value.

- (1) Thermal impedance shall be performed anytime before screen 10 and does not need to be repeated in screening requirements.

4.3.1 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_{MD}, t_{SW} (and V_C where appropriate). See subgroup 4 of [table II](#) and [figure 2](#) herein.

4.3.2 Power burn-in conditions. Power burn-in conditions shall be as follows: V_{CB} = -10 to -30 V dc. Power shall be applied to achieve T_J +135°C minimum and minimum power dissipation of P_D = 75 percent of maximum rated P_T as defined in 1.3. T_A ambient rated as defined in 1.3. With approval of the qualifying activity and preparing activity, alternate burn-in criteria (hours, bias conditions, T_J, and mounting conditions) may be used. A justification demonstrating equivalence is required. In addition, the manufacturing site's burn-in data and performance history will be essential criteria for burn-in modification approval.

4.4 Conformance inspection. Conformance inspection shall be in accordance with [MIL-PRF-19500](#), and as specified herein. If alternate screening is being performed in accordance with [MIL-PRF-19500](#), a sample of screened devices shall be submitted to and pass the requirements of [table I](#), subgroups 1 and 2 herein.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with table E-V of [MIL-PRF-19500](#) and [table I](#) herein. Subgroup 1 for small die flow of table E-V shall apply. Delta electrical measurements shall be in accordance with 4.6 herein.

MIL-PRF-19500/580E
w/AMENDMENT 1

4.4.2 Group B inspection (small die flow). Group B inspection shall be conducted in accordance with the test methods and conditions specified for the applicable steps in table E-VIC of MIL-PRF-19500 and herein. Delta electrical measurements shall be taken after each step. Delta electrical measurements shall be in accordance with the applicable step of 4.6 herein.

Step	Method	Conditions
1	1026	Steady-state operation life: 1,000 hours minimum, $V_{CB} = -10$ V dc, power shall be applied to achieve $T_J = +150^\circ\text{C}$ minimum using a minimum of $P_D = 75$ percent of maximum rated P_T as defined in 1.3. The sample size may be increased and the test time decreased so long as the devices are stressed for a total of 45,000 device hours minimum, and the actual time of test is at least 340 hours.
2	1048	Blocking life, $T_A = +150^\circ\text{C}$, $V_{CB} = 80$ percent of rated voltage, 48 hours minimum.
3	1032	High-temperature life (non-operating), $t = 340$ hours, $T_A = +200^\circ\text{C}$.

4.4.2.1 Group B small die flow sample selection. Samples selected from group B inspection shall meet all of the following requirements:

- a. Samples shall be selected from an inspection lot that has been submitted to and passed table I, subgroup 2, conformance inspection.
- b. When the final lead finish is solder or any plating prone to oxidation at high temperature, the samples for life test may be selected prior to the application of final lead finish.
- c. Separate samples may be used for each step.

4.4.2.2 Failures. In the event of a lot failure, the resubmission requirements of MIL-PRF-19500 shall apply. In addition, all catastrophic failures during conformance inspection shall be analyzed to the extent possible to identify root cause and corrective action. Whenever a failure is identified as wafer lot and /or wafer processing related, the entire wafer lot and related devices assembled from the wafer lot shall be rejected unless an appropriate corrective action to eliminate the failure mode has been implemented and the devices from the wafer lot are screened to eliminate the failure mode.

4.4.3 Group C inspection. Group C inspection shall be conducted in accordance with the test and conditions specified for subgroup testing in table E-VII of MIL-PRF-19500, and as follows herein.

Subgroup	Method	Conditions
C2	2036	Test condition E.
C5	3131	See 1.3 and 4.5.2.

4.4.3.2 Group C sample selection. Samples for subgroups in group C shall be chosen at random from any inspection lot containing the intended package type and lead finish procured to the same specification which is submitted to and passes table I tests for conformance inspection. When the final lead finish is solder or any plating prone to oxidation at high temperature, the samples for C6 life test may be selected prior to the application of final lead finish. Testing of a subgroup using a single device type enclosed in the intended package type shall be considered as complying with the requirements for that subgroup.

4.4.4 Group E inspection. Group E inspection shall be conducted in accordance with the tests and 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 4.6 herein.

MIL-PRF-19500/580E
w/AMENDMENT 1

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

4.5.1 Pulse response measurements. The conditions for the pulse response 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 test conditions shall apply:

- a. Heating power shall be chosen such that the calculated junction to reference point temperature difference is greater than +50°C.
- b. Collector to emitter voltage magnitude shall be -20 V dc.
- c. Reference temperature measuring point shall be the case.
- d. Reference point temperature shall be $+25^{\circ}\text{C} \leq T_R \leq +35^{\circ}\text{C}$ and recorded before the test is started.
- e. Mounting arrangement shall be with heat sink to case.
- f. Maximum limit shall be $R_{\theta JC} = 29^{\circ}\text{C/W}$.

4.6 Delta electrical measurements. Delta electrical measurements for groups A, B, C, and E shall be as specified below:

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1	Collector to base cutoff current 2N4234 2N4235 2N4236	3036	Bias condition D $V_{CB} = -40 \text{ V dc}$ $V_{CB} = -60 \text{ V dc}$ $V_{CB} = -80 \text{ V dc}$	ΔI_{CBO} (1)	100 percent of initial value or -10 nA dc whichever is greater.		
2	Forward current transfer ratio	3076	$I_C = -250 \text{ mA dc}$ $V_{CE} = -1.0 \text{ V dc};$ pulsed (see 4.5.1)	Δh_{FE2} (1)			
					±25 percent change from initial recorded value.		

(1) Devices which exceed the [table I](#) limits for this test shall not be acceptable.

MIL-PRF-19500/580E
w/AMENDMENT 1

TABLE I. Group A inspection.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits	Limits	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 1</u> <u>2/</u>						
Visual and mechanical examination <u>3/</u>	2071	See MIL-PRF-19500				
Solderability <u>3/</u>	2026					
Resistance to solvents <u>3/</u> <u>4/</u>	1022					
Salt atmosphere (corrosion) <u>5/</u>	1041					
Temperature cycling (air to air) <u>3/</u>	1051					
Electrical measurements		See subgroup 2 of this table				
Hermetic seal	1071	Fine and gross leak				
Bond strength <u>3/</u>	2037	See MIL-PRF-19500				
Decap internal visual (design verification)	2075	See MIL-PRF-19500				
<u>Subgroup 2</u>						
Thermal impedance <u>6/</u>	3131	See 4.3.1	Z _{θJX}			°C/W
Breakdown voltage collector to emitter 2N4234 2N4235 2N4236	3011	Bias condition D; pulsed (see 4.5.1) I _C = -100 mA dc	V _{(BR)CEO}	-40 -60 -80		V dc V dc V dc
Collector emitter cutoff current 2N4234 2N4235 2N4236	3041	Bias condition D V _{CB} = -30 V dc V _{CB} = -40 V dc V _{CB} = -60 V dc	I _{CEO}		-1.0 -1.0 -1.0	mA dc mA dc mA dc
Collector emitter cutoff current 2N4234 2N4235 2N4236	3041	Bias condition A, V _{BE} = +1.5 V dc V _{CB} = -40 V dc V _{CB} = -60 V dc V _{CB} = -80 V dc	I _{CEX1}		-100 -100 -100	nA dc nA dc nA dc
Collector base cutoff current 2N4234 2N4235 2N4236	3036	Bias condition D V _{CB} = -40 V dc V _{CB} = -60 V dc V _{CB} = -80 V dc	I _{CBO}		-100 -100 -100	nA dc nA dc nA dc

See footnotes at end of table.

MIL-PRF-19500/580E
w/AMENDMENT 1

* TABLE I. Group A inspection - Continued.

Inspection <u>1</u> /	MIL-STD-750		Symbol	Limits	Limits	Unit
	Method	Conditions		Min	Max	
<u>Subgroup 2</u> – Continued						
Emitter to base cutoff current	3061	Bias condition D, $V_{BE} = +7$ V dc	I_{EBO}		-0.5	mA dc
Forward current transfer ratio	3076	$I_C = -100$ mA dc, $V_{CE} = -1.0$ V dc; pulsed (see 4.5.1)	h_{FE1}	40		
Forward current transfer ratio	3076	$I_C = -250$ mA dc, $V_{CE} = -1.0$ V dc; pulsed (see 4.5.1)	h_{FE2}	30	150	
Forward current transfer ratio	3076	$I_C = -500$ mA dc, $V_{CE} = -1.0$ V dc; pulsed (see 4.5.1)	h_{FE3}	20		
Collector to emitter voltage (saturated)	3071	$I_C = -1.0$ A dc, $I_B = -100$ mA dc; pulsed (see 4.5.1)	$V_{CE(sat)1}$		-0.6	V dc
Collector to emitter voltage (saturated)	3071	$I_C = -500$ mA dc, $I_B = -50$ mA dc; pulsed (see 4.5.1)	$V_{CE(sat)2}$		-0.4	V dc
Base emitter voltage	3066	Test condition A, $I_C = -500$ mA dc, $I_B = -50$ mA dc, pulsed (see 4.5.1)	$V_{BE(sat)1}$		-1.1	V dc
Base emitter voltage	3066	Test condition A, $I_C = -1.0$ A dc, $I_B = -100$ mA dc, pulsed (see 4.5.1)	$V_{BE(sat)2}$		-1.5	V dc
<u>Subgroup 3</u>						
High-temperature operation:		$T_A = +150^{\circ}\text{C}$				
Collector to emitter cutoff current	3041	Bias condition A, $V_{BE} = +1.5$ V dc	I_{CEX2}			
2N4234		$V_{CE} = -30$ V dc			-1.0	mA dc
2N4235		$V_{CE} = -40$ V dc			-1.0	mA dc
2N4236		$V_{CE} = -60$ V dc			-1.0	mA dc
Low-temperature operation:		$T_A = -55^{\circ}\text{C}$				
Forward current transfer ratio	3076	$I_C = -250$ mA dc $V_{CE} = -1.0$ V dc; pulsed (see 4.5.1)	h_{FE4}	15		
<u>Subgroup 4</u>						
Magnitude of small-signal short-circuit forward-current transfer ratio	3306	$I_C = -100$ mA dc, $V_{CE} = -10$ V dc, $f = 1$ MHz	$ h_{FE} $	3		
Open circuit output capacitance	3236	$I_E = 0$, $V_{CB} = -10$ V dc, $f = 100$ KHz	C_{obo}		100	pF

See footnotes at end of table.

MIL-PRF-19500/580E
w/AMENDMENT 1

TABLE I. Group A inspection - Continued.

Inspection <u>1/</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
<u>Subgroup 5</u> Safe operating area (continuous dc) <u>Test 1</u> <u>Test 2</u> <u>Test 3</u> 2N4234 2N4235 2N4236 Electrical measurements <u>Subgroups 6 and 7</u> Not applicable	3051	$T_C = +25^{\circ}\text{C}; t \geq 0.5 \text{ s}, 1 \text{ cycle}$ $I_C = -1.0 \text{ A dc}, V_{CE} = -6 \text{ V dc}$ $I_C = -500 \text{ mA dc}, V_{CE} = -12 \text{ V dc}$ $I_C = -166 \text{ mA dc}, V_{CE} = -30 \text{ V dc}$ $I_C = -100 \text{ mA dc}, V_{CE} = -50 \text{ V dc}$ $I_C = -71 \text{ mA dc}, V_{CE} = -70 \text{ V dc}$ See subgroup 2 of this table and 4.6 , steps 1 and 2				

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

2/ For resubmission of failed subgroup 1, double the sample size of the failed test or sequence of tests. A failure in subgroup 1 shall not require retest of the entire subgroup. Only the failed test shall be rerun upon submission.

3/ Separate samples may be used.

4/ Not required for laser marked devices.

5/ Required for laser marked devices only. Not required for corrosion resistant base metals; $n = 6$ devices, $c = 0$.

6/ For end-point measurements, this test is required for the following subgroups:

Group B, step 1 JAN, JANTX, JANTXV).

Group C, subgroups 2 and 6.

Group E, subgroup 1.

MIL-PRF-19500/580E
w/AMENDMENT 1

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

Inspection	MIL-STD-750		Sample plan
	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 and gross leak.	
Electrical measurements		See subgroup 2 of table I and 4.6 , steps 1 and 2.	
<u>Subgroup 2</u>			45 devices, c = 0
Intermittent life	1037	V _{CB} = -10 V dc, 6,000 cycles, forced air cooling allowed on cooling cycle only.	
Electrical measurements		See subgroup 2 of table I and 4.6 , steps 1 and 2.	
<u>Subgroup 4</u>			
Thermal impedance curves		See MIL-PRF-19500 .	Sample size N/A
<u>Subgroup 5</u>			
Not applicable			
<u>Subgroup 8</u>			45 devices, c = 0
Reverse voltage leakage stability	1033	Condition B.	

MAXIMUM THERMAL RESISTANCE

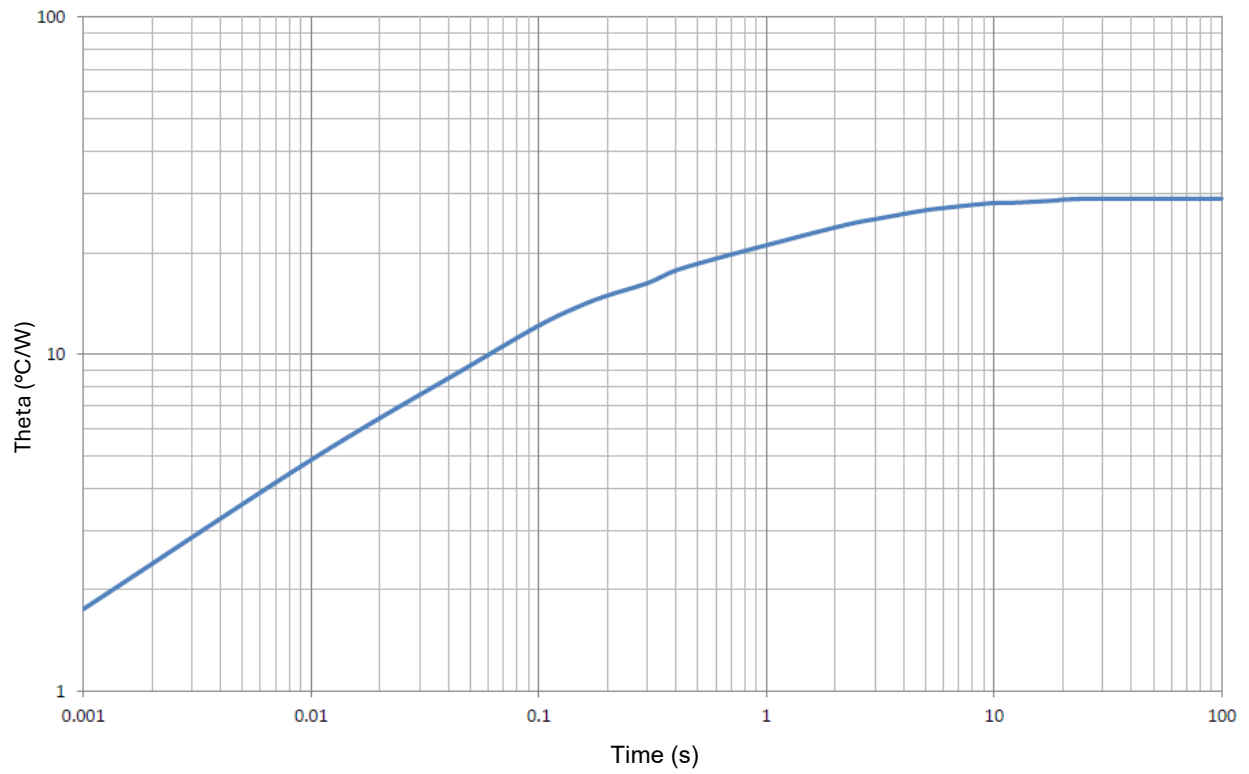


FIGURE 2. Thermal resistance $R_{\theta JC} = 29^{\circ}\text{C/W}$.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual 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.)

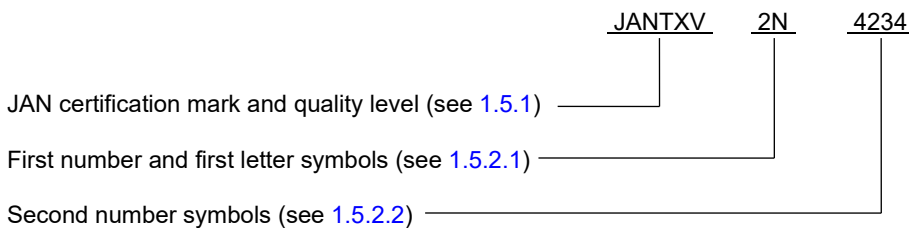
6.1 Intended use. Semiconductors conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

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. The complete PIN, see [1.5](#) and [6.5](#).

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. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://qpldocs.dla.mil>.

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



MIL-PRF-19500/580E
w/AMENDMENT 1

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

PINs for devices of the base quality level	PINs for devices of the "TX" quality level	PINs for devices of the "TXV" quality level
JAN2N4234	JANTX2N4234	JANTXV2N4234
JAN2N4235	JANTX2N4235	JANTXV2N4235
JAN2N4236	JANTX2N4236	JANTXV2N4236

6.6 Supersession information and PIN substitution.

6.6.1 Lead material. The original issue of this specification through MIL-PRF-19500/580D (10 July 2015) specified that the lead material as Kovar or Alloy 52. Because of the performance format of this document, a lead material is no longer specified.

6.6.2 PIN substitution. Devices covered by this specification are substitutable for the manufacturer's and user's PIN. This information in no way implies that manufacturer's PIN's are suitable for the military PIN.

Military PIN	Manufacturer's CAGE Code	Manufacturer's and user's PIN
JAN2N4234 or JANTX2N4234 or JANTXV2N4234	43611	2N4234 ST1054H
JAN2N4235 or JANTX2N4235 or JANTXV2N4235	43611	2N4235 ST1351H
JAN2N4236 or JANTX2N4236 or JANTXV2N4236	43611	2N4236 ST1374H ST1559H ST1711H ST347H ST675H10 ST675H11 ST675H12 ST688H ST801H ST831H

6.7 Application guidance. The PNP type transistors of this specification sheet are complementary to the NPN devices of [MIL-PRF-19500/581](#) listed below.

<u>PNP</u>	<u>NPN</u>
2N4234	2N4237
2N4235	2N4238
2N4236	2N4239

MIL-PRF-19500/580E
w/AMENDMENT 1

6.8 Request for new types and configurations. Requests for new device types or configurations for inclusions in this specification sheet should be submitted to: DLA Land and Maritime, ATTN: VAC, Post Office Box 3990, Columbus, OH 43218-3990 or by electronic mail at Semiconductor@dla.mil or by facsimile (614) 693-1642 or DSN 850-6939.

* 6.9 Amendment notations. The margins of this specification are marked with asterisks to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

Custodians:

Army – CR
* Navy – SH
Air Force – 85
NASA – NA
DLA – CC

Preparing activity:
DLA – CC

(Project 5961–2024–107)

Review activities:

Army – AR, MI, SM
Navy – AS, MC, OS
Air Force – 19

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>.