The documentation and process conversion measures necessary to comply with this revision shall be completed by 8 December 2003.

INCH-POUND

MIL-PRF-19500/371E
8 September 2003
SUPERSEDING
MIL-S-19500/371D
23 July 1999

PERFORMANCE SPECIFICATION

* SEMICONDUCTOR DEVICE, TRANSISTOR, NPN, SILICON, HIGH POWER, TYPES 2N3902, 2N3902T1, 2N3902T3, 2N5157, 2N5157T1 AND 2N5157T3, JAN AND JANTX

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. Two 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), figure 2 (TO-254AA, T1), and figure 3 (TO-257AA, T3).

* 1.3 Maximum ratings.

Type	P_T T_A = +25°C	P_T (1) T_C = +25°C	$R_{\Theta JC}$ (2)	V_{CBO}	V_{CEO}	V_{EBO}	I_B	I_C	T_J and T_{STG}
	W	W	°C/W	V dc	V dc	V dc	A dc	A dc	°C
2N3902	6.0	175	1.00	700	400	5.0	2.0	3.5	-65 to +200
2N3902T1	6.0	175	1.00	700	400	5.0	2.0	3.5	-65 to +200
2N3902T3 (3)	4.0	125	1.30	700	400	5.0	2.0	3.5	-65 to +200
2N5157	6.0	175	1.00	700	500	6.0	2.0	3.5	-65 to +200
2N5157T1	6.0	175	1.00	700	500	6.0	2.0	3.5	-65 to +200
2N5157T3 (3)	4.0	125	1.30	700	500	6.0	2.0	3.5	-65 to +200

(1) See figures 4 and 5 for temperature-power derating curves.
(2) For thermal impedance curves, see figures 6 and 7.
(3) For TO-257 devices with typical mounting and small footprint, conservatively rated at 125 W and 1.3°C/W only.

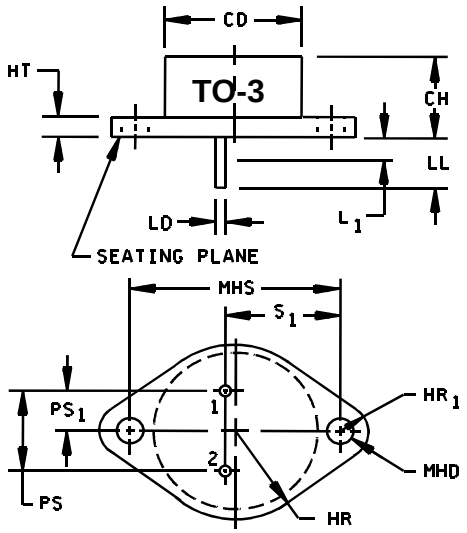
1.4 Primary electrical characteristics.

	h_{FE1} (1)	h_{FE2} (1)	$V_{CE(SAT)1}$	$V_{BE(SAT)1}$	C_{obo}	$\|h_{fe}\|$	Switching	
	V_{CE} = 5.0 V dc I_C= 0.5 A dc	V_{CE} = 5.0 V dc I_C= 1.0 A dc	I_C = 1.0 A dc I_B = 0.1 A dc	I_C = 1.0 A dc I_B = 0.1 A dc	V_{CB} = 10 V dc I_E = 0 100 kHz ≤ f ≤ 1 MHz	V_{CE} = 10 V dc I_C = 0.2 A dc f = 1 MHz	t_{on}	t_{off}
			V dc	V dc	pF		µs	µs
Min	25	30				2.5		
Max		90	0.8	1.5	250	25	0.8	1.7

(1) Pulsed (see 4.5.1).

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

AMSC N/A FSC 5961

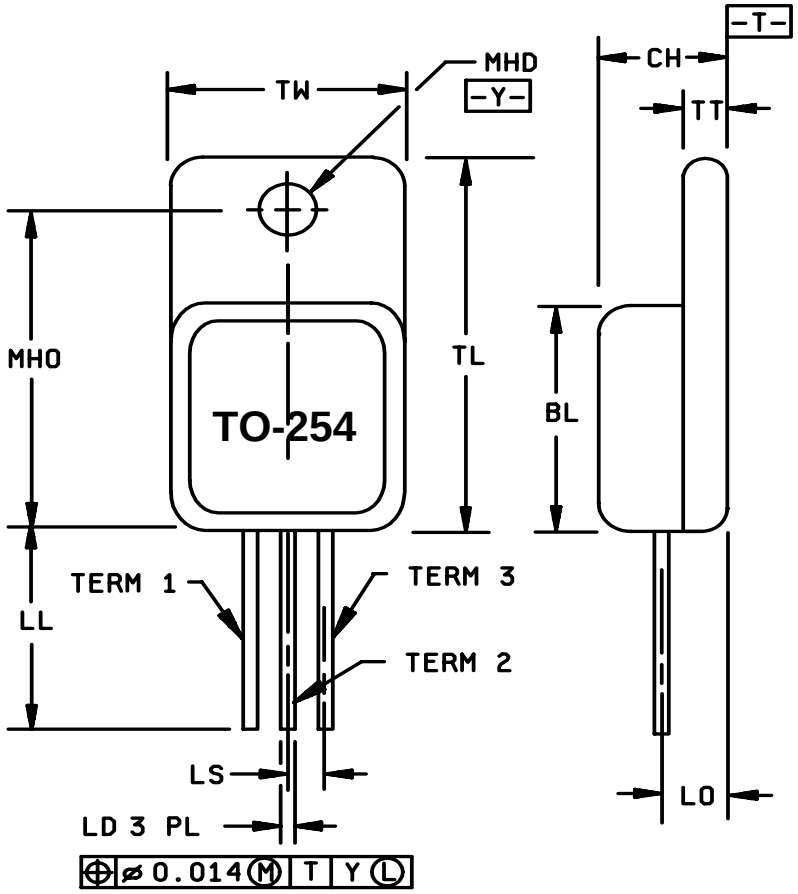


Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.875		22.22	
CH	.250	.328	6.35	8.33	
HR	.495	.525	12.57	13.34	
HR_1	.131	.188	3.33	4.78	
HT	.060	.135	1.52	3.43	
LD	.038	.043	0.97	1.09	3,6
LL	.312	.500	7.92	12.70	3
L_1		.050		1.27	6
MHD	.151	.161	3.84	4.09	4
MHS	1.177	1.197	29.90	30.40	
PS	.420	.440	10.67	11.18	
PS_1	.205	.225	5.21	5.72	
S_1	.655	.675	16.64	17.15	

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. These dimensions should be measured at points .050 inch (1.27 mm) +.005 inch (0.13 mm) - .000 inch (0.00 mm) below seating plane. When gauge is not used, measurement will be made at the seating plane.
4. Two places.
5. The seating plane of the header shall be flat within .001 inch (0.03 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 .001 inch (0.03 mm) concave to .006 inch (0.15 mm) convex overall.
6. Lead diameter shall not exceed twice LD within L_1.
7. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.
9. Lead 1 is emitter, lead 2 is base, and case is collector.

FIGURE 1. Physical dimensions, TO-3 (2N3902, 2N5157).

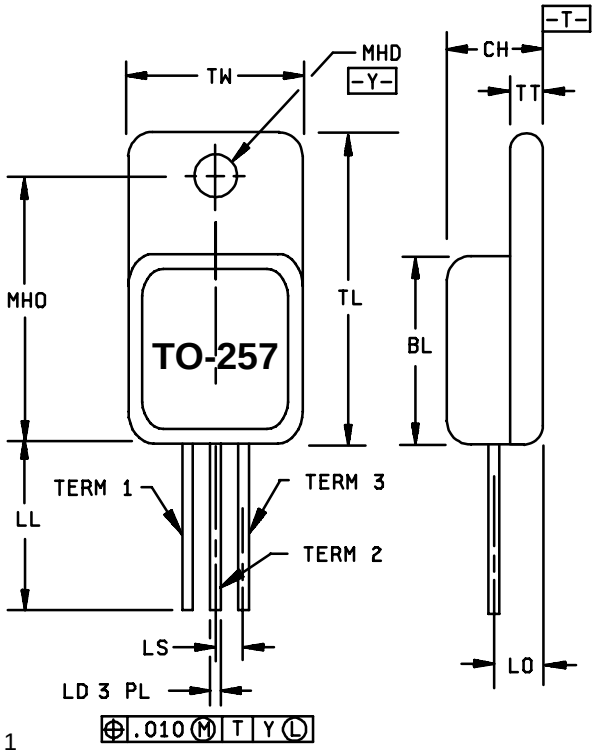
Symbol	Dimensions			
	Inches		Millimeters	
BL	.535	.545	13.59	13.89
CH	.249	.260	6.32	6.60
LD	.035	.045	0.89	1.14
LL	.510	.570	12.95	14.48
LO	.150 BSC		3.81 BSC	
LS	.150 BSC		3.81 BSC	
MHD	.139	.149	3.53	3.78
MHO	.665	.685	16.89	17.40
TL	.790	.800	20.07	20.32
TT	.040	.050	1.02	1.27
TW	.535	.545	13.59	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.
4. Methods used for electrical isolation of the terminals feedthroughs shall employ materials that contain a minimum of 90 percent AL2O3 (ceramic).
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

* FIGURE 2. Physical dimensions, TO-254AA (2N3902T1, 2N5157T1).



1

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BL	.410	.430	10.41	10.92
CH	.190	.200	4.83	5.08
LD	.025	.035	0.64	0.89
LL	.500	.750	12.70	19.05
LO	.120 BSC		3.05 BSC	
LS	.100 BSC		2.54 BSC	
MHD	.140	.150	3.56	3.81
MHO	.527	.537	13.39	13.63
TL	.645	.665	16.38	16.89
TT	.035	.045	0.89	1.14
TW	.410	.420	10.41	10.67
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.
4. Methods used for electrical isolation of the terminals feedthroughs shall employ materials that contain a minimum of 90 percent AL2O3 (ceramic).
5. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

* FIGURE 3. Physical dimensions, TO-257AA (2N3902T3, 2N5157T3).

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

DEPARTMENT OF DEFENSE

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

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Document Automation and Production Services (DAPS), Building 4D (DPM-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 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 manufacturer's 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.

* 3.4 Interface and physical dimensions. The interface and physical dimensions shall be as specified in MIL-PRF-19500, figure 1 (TO-3), figure 2 (TO-254AA), and figure 3 (TO-257AA) herein.

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

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

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

3.7 Marking. Marking shall be in accordance with MIL-PRF-19500. At the option of the manufacturer, marking of the country of origin may be omitted from the body of the transistor but shall be retained on the initial container.

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).

4.2 Qualification inspection. Qualification inspection shall be in accordance with MIL-PRF-19500.

* 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 associated specification that did not request the performance of table II tests, the tests specified in table II herein shall be performed by the first inspection lot of this revision to maintain qualification.

* 4.3 Screening (JANTX level). 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)	Measurement
	JANTX only
(1) 3	Thermal impedance (transient), method 3131 of MIL-STD-750
10	V_{CB} = 80 percent of maximum rated
11	h_{FE2} and I_{CEX1}
12	See 4.3.1
13	ΔI_{CEX1} = 100 percent of initial value or 50 μA dc, whichever is greater. Δh_{FE2} = 25 percent of initial value; subgroup 2 of table I herein

(1) Thermal impedance limits shall not exceed as shown in figures 8 and 9.

* 4.3.1 Power burn-in conditions. Power burn-in conditions are as follows: T_A = room ambient as defined in the general requirements of 4.5 of MIL-STD-750; V_{CB} = 10-30 V dc, T_J = +175°C minimum.

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 MIL-PRF-19500, and table I herein. Electrical measurements (end-points) shall be in accordance with applicable inspections of table I, subgroup 2 herein.

* 4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VIb (JAN and JANTX) of MIL-PRF-19500 and herein. Electrical measurements (end-points) shall be in accordance with the applicable inspections of table I, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

Subgroup	Method	Condition
B3	1037	Bias condition (see 4.3.1), $t_{on} = t_{off}$ = 3 minutes, 2,000 cycles.
B5	3131	(See 4.5.2).

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, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

Subgroup	Method	Condition
C2	2036	Test condition A, weight = 10 pounds, t = 15 s.
C6	1037	Bias condition (see 4.3.1), $t_{on} = t_{off}$ = 3 minutes, 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 method 3131 of MIL-STD-750. The following details shall apply:

a. Collector current magnitude during power application shall be 2.5 A dc.

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°C to +75°C.

e. Mounting arrangement shall be with heat sink to case.

* f. $R_{\Theta JC}$ see thermal impedance curves, figures 8 and 9.

* TABLE I. Group A inspection.

Inspection 1/ 2/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Collector to emitter cutoff current	3041	V_{BE} = -1.5 V dc; V_{CE} = 700 V dc;	I_{CEX1}		500	µA dc
Emitter to base cutoff current	3061	Bias condition D	I_{EBO1}			
2N3902, 2N3902T1, 2N3902T3		V_{EB} = 5.0 V dc			200	µA dc
2N5157, 2N5157T1, 2N5157T3		V_{EB} = 6.0 V dc			200	µA dc
Collector to emitter cutoff current	3041	Bias condition D	I_{CEO}			
2N3902, 2N3902T1, 2N3902T3		V_{CE} = 400 V dc			100	µA dc
2N5157, 2N5157T1, 2N5157T3		V_{CE} = 500 V dc			100	µA dc
Base emitter voltage (saturated)	3066	Test condition A; I_C = 1.0 A dc; I_B = 0.1 A dc; pulsed (see 4.5.1)	$V_{BE(SAT)1}$		1.5	V dc
Base emitter voltage (saturated)	3066	Test condition A; I_C = 3.5 A dc; I_B = 0.7 A dc; pulsed (see 4.5.1)	$V_{BE(SAT)2}$		2.0	V dc
Collector to emitter saturated voltage	3071	I_C = 1.0 A dc; I_B = 0.1 A dc; pulsed (see 4.5.1)	$V_{CE(sat)1}$		0.8	V dc
Collector to emitter saturated voltage	3071	I_C = 3.5 A dc; I_B = 0.7 A dc; pulsed (see 4.5.1)	$V_{CE(sat)2}$		2.5	V dc
Forward-current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 0.5 A dc; pulsed (see 4.5.1)	h_{FE1}	25		

See footnotes at end of table.

* TABLE I. Group A inspection - Continued.

Inspection 1/ 2/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 2 - Continued						
Forward-current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 1.0 A dc; pulsed (see 4.5.1)	h_{FE2}	30	90	
Forward-current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 2.5 A dc; pulsed (see 4.5.1)	h_{FE3}	10		
Forward-current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 3.5 A dc; pulsed (see 4.5.1)	h_{FE4}	5		
Collector to emitter sustaining voltage		I_C = 100 mA dc	$V_{CEO(SUS)}$			
2N3902, 2N3902T1, 2N3902T3				325		V dc
2N5157, 2N5157T1, 2N5157T3				400		V dc
Subgroup 3						
High-temperature operation:		T_A = +150°C				
Collector to emitter cutoff current	3041	Bias condition A; V_{BE} = -1.5 V dc	I_{CEX2}			
2N3902, 2N3902T1, 2N3902T3		V_{CE} = 400 V dc			300	µA dc
2N5157, 2N5157T1, 2N5157T3		V_{CE} = 500 V dc			300	µA dc
Low-temperature operation:		T_A = -55°C				
Forward-current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 1.0 A dc; pulsed (see 4.5.1)	h_{FE5}	10		

See footnotes at end of table.

* TABLE I. Group A inspection - Continued.

Inspection 1/ 2/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 4						
Pulse response	3251	Test condition A, except test circuit and pulse requirements in accordance with figure 8 herein.				
Turn-on time		V_{CC} = 125 V dc; I_C = 1.0 A dc; I_{B1} = 0.1 A dc	t_{on}		0.8	µs
Turn-off time		V_{CC} = 125 V dc; I_C = 1.0 A dc; I_{B1} = 0.1 A dc; $-I_{B2}$ = 0.50 A dc	t_{off}		1.7	µs
Small-signal short- circuit forward-current transfer ratio	3306	V_{CE} = 10 V dc; I_C = 0.2 A dc; f = 1 MHz	$\|h_{fe}\|$	2.5	25	
Open circuit output capacitance	3236	V_{CB} = 10 V dc; I_E = 0; 100 kHz ≤ f ≤ 1 MHz	C_{obo}		250	pF
Subgroup 5						
Safe operating area(continuous dc)	3051	T_C = 25°C; t ≥ 1 s; (see figure 9)				
Test 1		V_{CE} = 28.6 V dc; I_C = 3.5 A dc				
Test 2		V_{CE} = 70 V dc; I_C = 1.43 A dc				
Test 3						
2N3902, 2N3902T1, 2N3902T3		V_{CE} = 325 V dc; I_C = 55 mA dc				
2N5157, 2N5157T1, 2N5157T3		V_{CE} = 400 V dc; I_C = 35 mA dc				

See footnotes at end of table.

* TABLE I. Group A inspection - Continued.

Inspection 1/ 2/	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Subgroup 5 continued						
Safe operating area (switching)	3053	Load condition C (unclamped inductive load) (see figures 10, 11 and 12), T_C = 25°C; duty cycle ≤ 10 percent, R_S = 0.1Ω (see 4.5.1)				
Test 1		t_p approximately 3 ms (vary to obtain I_C); R_{BB1} = 20Ω; V_{BB1} = 10 V dc; R_{BB2} = 3 kΩ; V_{BB2} = 1.5 V dc; I_C = 3.5 A dc, V_{CC} = 50 V dc; L = 60 mH; R = 3 Ω; R_L ≤ 14 Ω.				
Test 2		t_p approximately 3 ms (vary to obtain I_C); R_{BB1} = 100Ω; V_{BB1} = 10 V dc; R_{BB2} = 3 kΩ; V_{BB2} = 1.5 V dc; I_C = 0.6 A dc; V_{CC} = 50 V dc; L = 200 mH; R = 8 Ω; R_L ≤ 83 Ω.				
Safe operating area (switching)	3053	Clamped inductive load (see figures 11, 12, and 13); T_C = +25°C; duty cycle ≤ 10 percent; t_p = approximately 30 ms (vary to obtain I_C); R_S = 0.1Ω; R_{BB1} = 20Ω; V_{BB1} = 10 V dc; R_{BB2} = 100 ohms; V_{BB2} = 1.5 V dc; V_{CC} = 50 V dc; I_C = 3.5 A dc; (see figure 11); R_L ≥ 0 Ω; L = 60 mH; R = 3 Ω A suitable clamping circuit or diode can be used. (see 4.5.1).				
2N3902, 2N3902T1, 2N3902T3		Clamp voltage = 400 +0, -5 V dc				
2N5157, 2N5157T1, 2N5157T3		Clamp voltage = 500 +0, -5 V dc (clamped voltage must be reached)				
Electrical measurements		See table II, steps 1 and 2				

1/ For sampling plan, see MIL-PRF-19500.
2/ Electrical characteristics and tests in this table apply to all package styles.

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

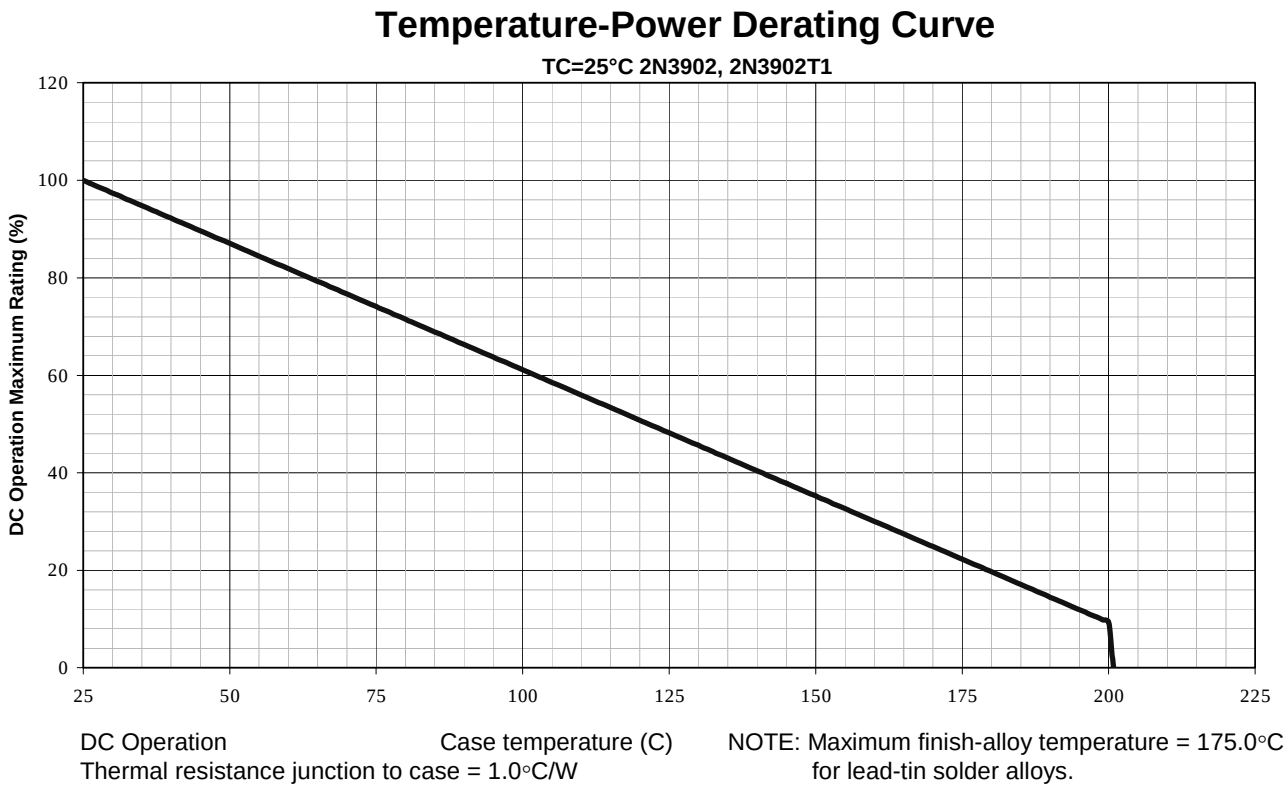
Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Conditions		Min	Max	
1.	Forward current transfer ratio	3076	V_{CE} = 5.0 V dc; I_C = 1.0 A dc, pulsed (see 4.5.1)	Δh_{FE1}	±25 percent change from previously measured value		
2.	Thermal response	3131	See figures 8 and 9 (thermal impedance curves)	$Z_{\Theta JC}$			

1/ The delta measurements for table VIb (JAN, JANTX) of MIL-PRF-19500 are as follows:
   a. Subgroup 3, see table II herein, steps 1 and 2.
   b. Subgroup 6, see table II herein, step 1.

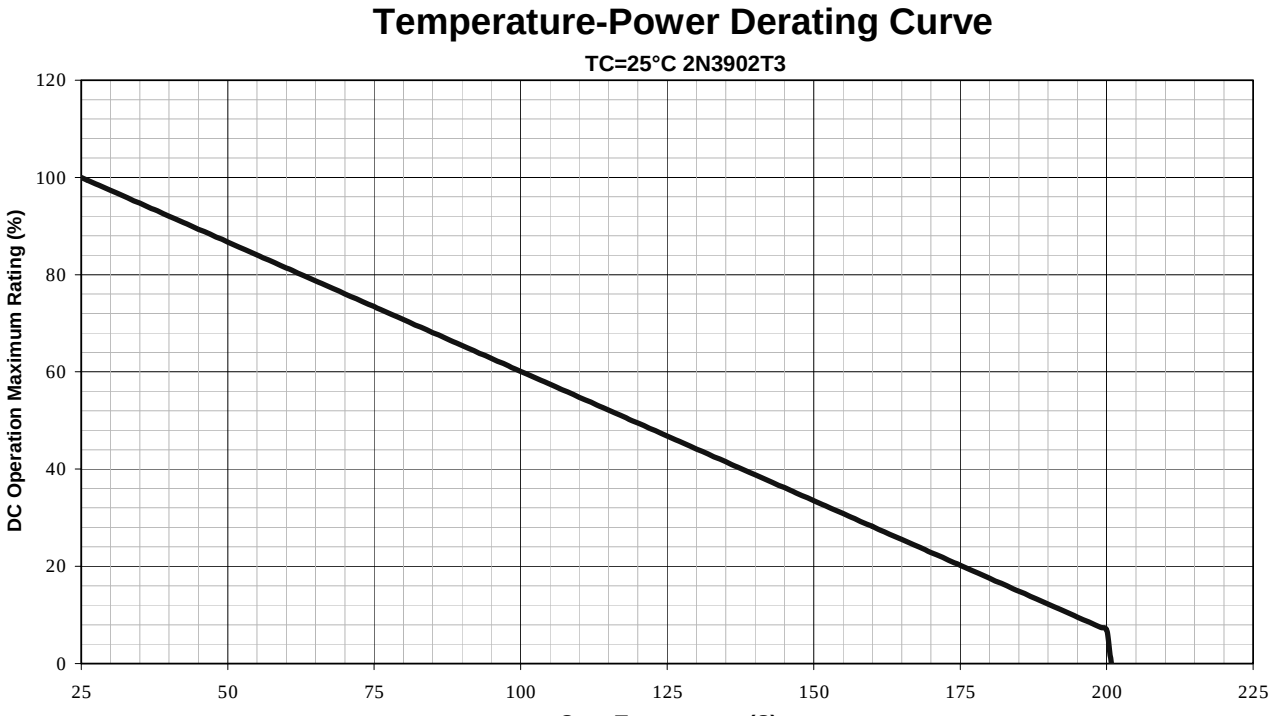
2/ The delta measurements for table VII of MIL-PRF-19500 are as follows: Subgroup 6, see table II herein, steps 1 and 2.

* TABLE III. Group E inspection (all quality levels) - for qualification and re-qualification only.

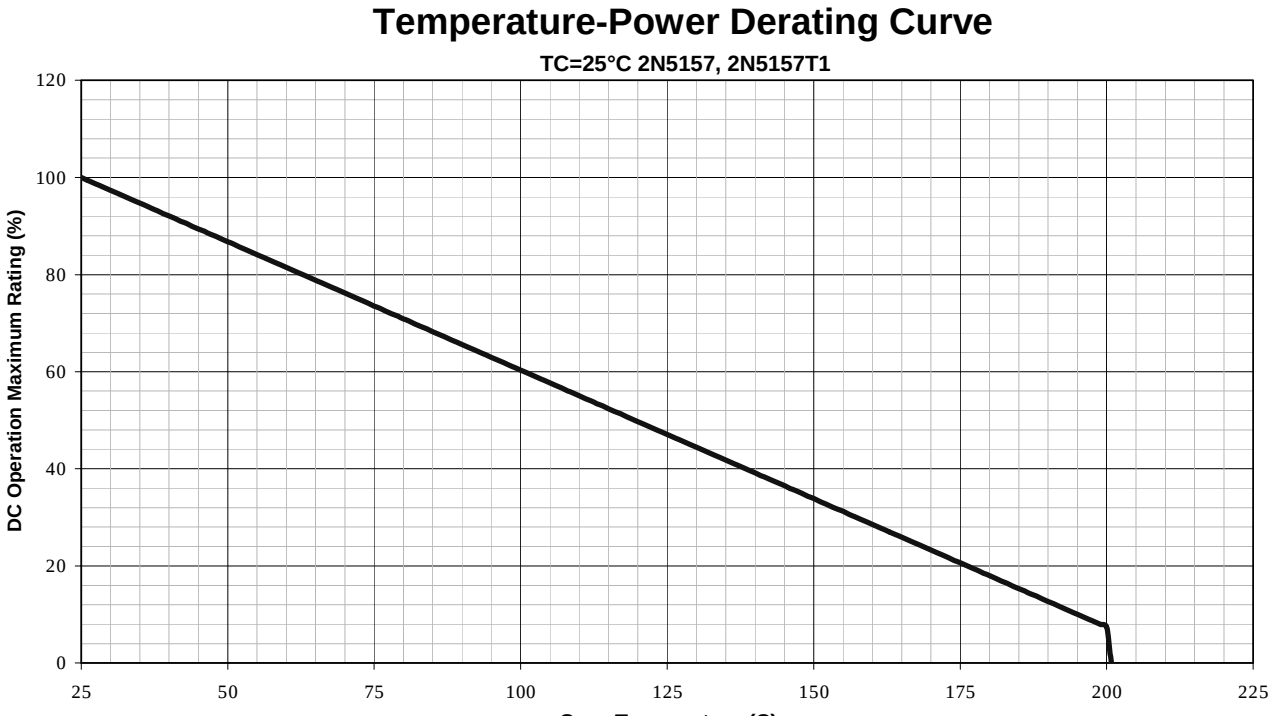
Inspection	MIL-STD-750		Qualification
	Method	Conditions	
Subgroup 1	`		45 devices c = 0
Thermal shock glass strain	1056	0°C to +100°C, 100 cycles	
Hermetic seal	1071		
Fine leak Gross leak			
Electrical measurements		See table I, subgroup 2 herein.	
Subgroup 2			45 devices c = 0
Steady-state dc blocking life	1039 or 1049	Condition A; 1,000 hrs	
Electrical measurements		See table I, subgroup 2 herein.	
Subgroup 3			3 devices
DPA	2102		
Subgroup 4			N/A
Thermal impedance curves		Each supplier shall submit their (typical) design thermal impedance curves. In addition, test conditions and $Z_{\theta JX}$ limit shall be provided to the qualifying activity in the qualification report	
Subgroup 5 and 6			
Not applicable			
Subgroup 7			22 devices c = 0
Soldering heat			
Subgroup 8			45 devices c = 0
Reverse stability	1033	Condition A for devices $\geq$ 400 V, condition B for devices < 400 V.	



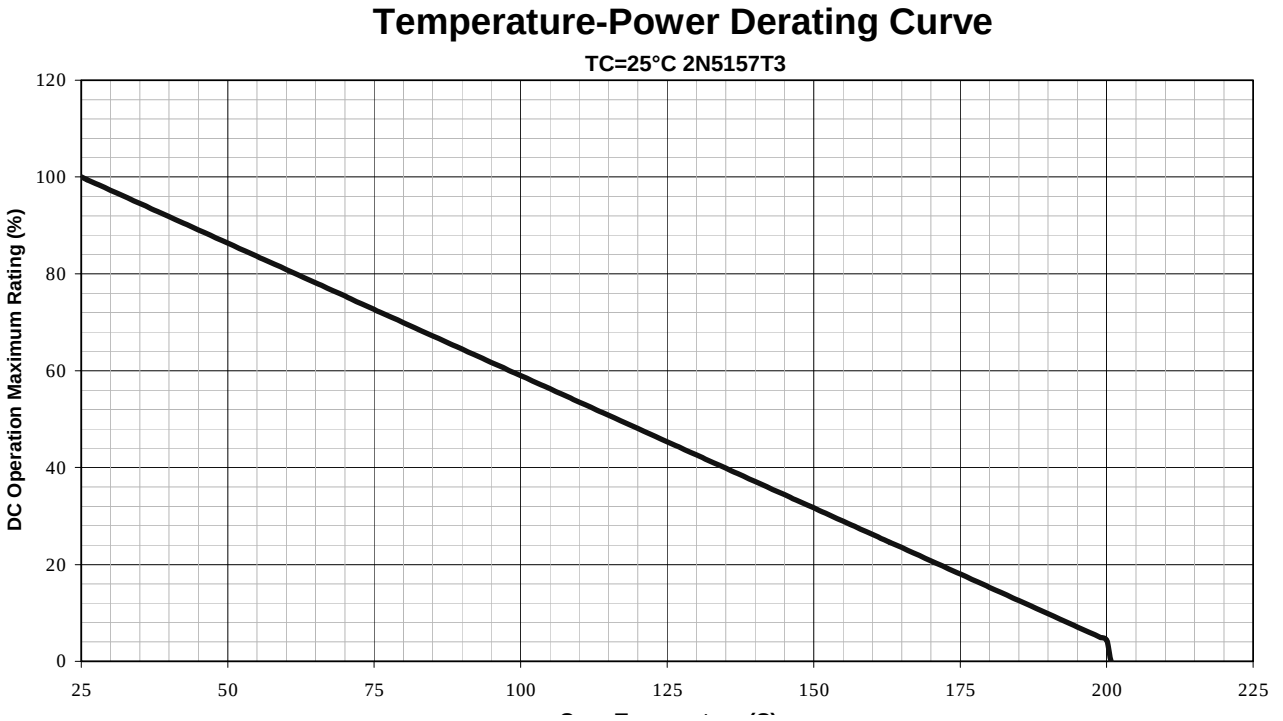
* FIGURE 4. Temperature derating graph 2N3902 and 2N3902T1 (TO-3 and TO-254).



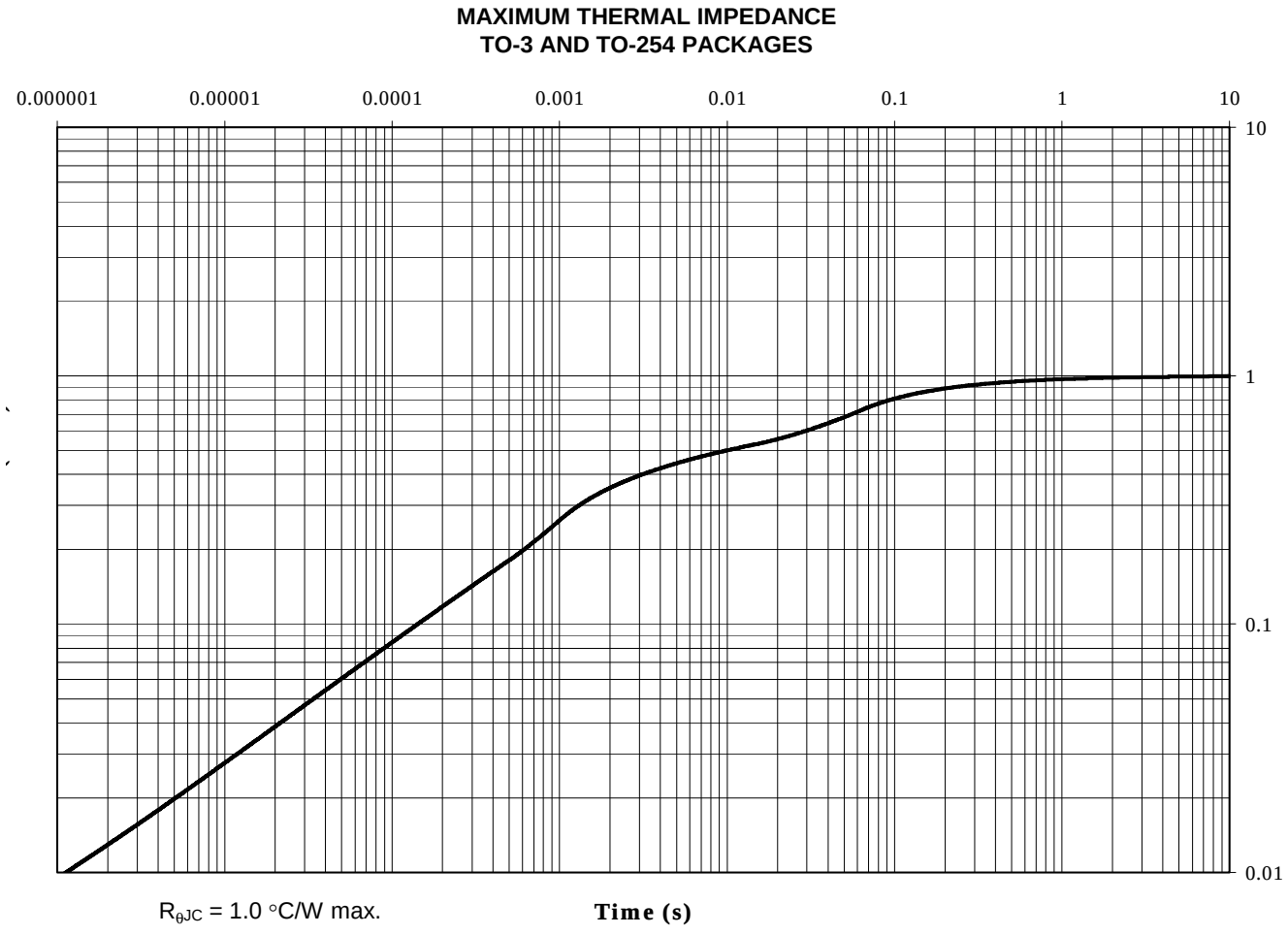
* FIGURE 5. Temperature derating graph 2N3902T3 (TO-257).



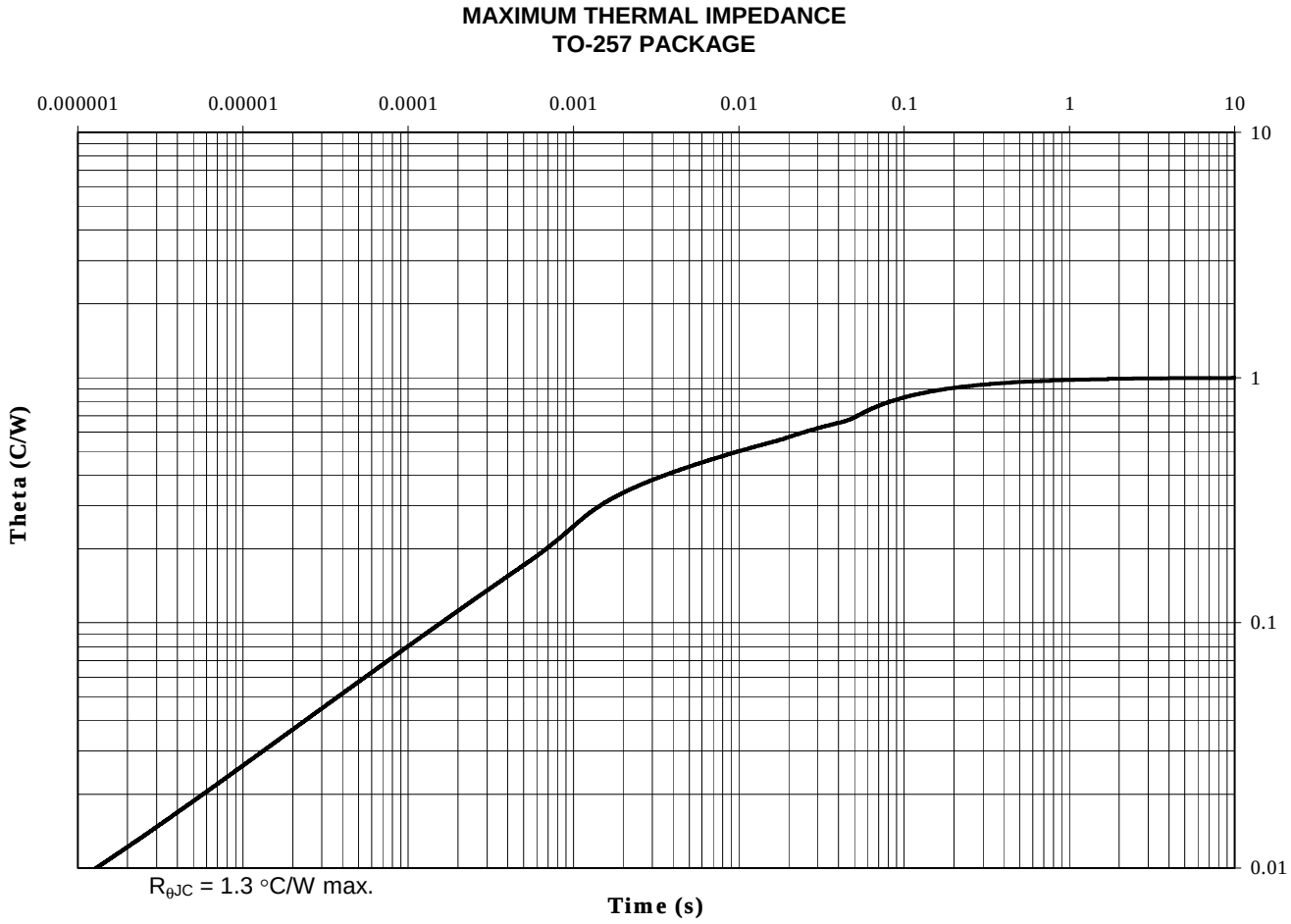
* FIGURE 6. Temperature derating graph 2N5157 and 2N5157T1 (TO-3 and TO-254).



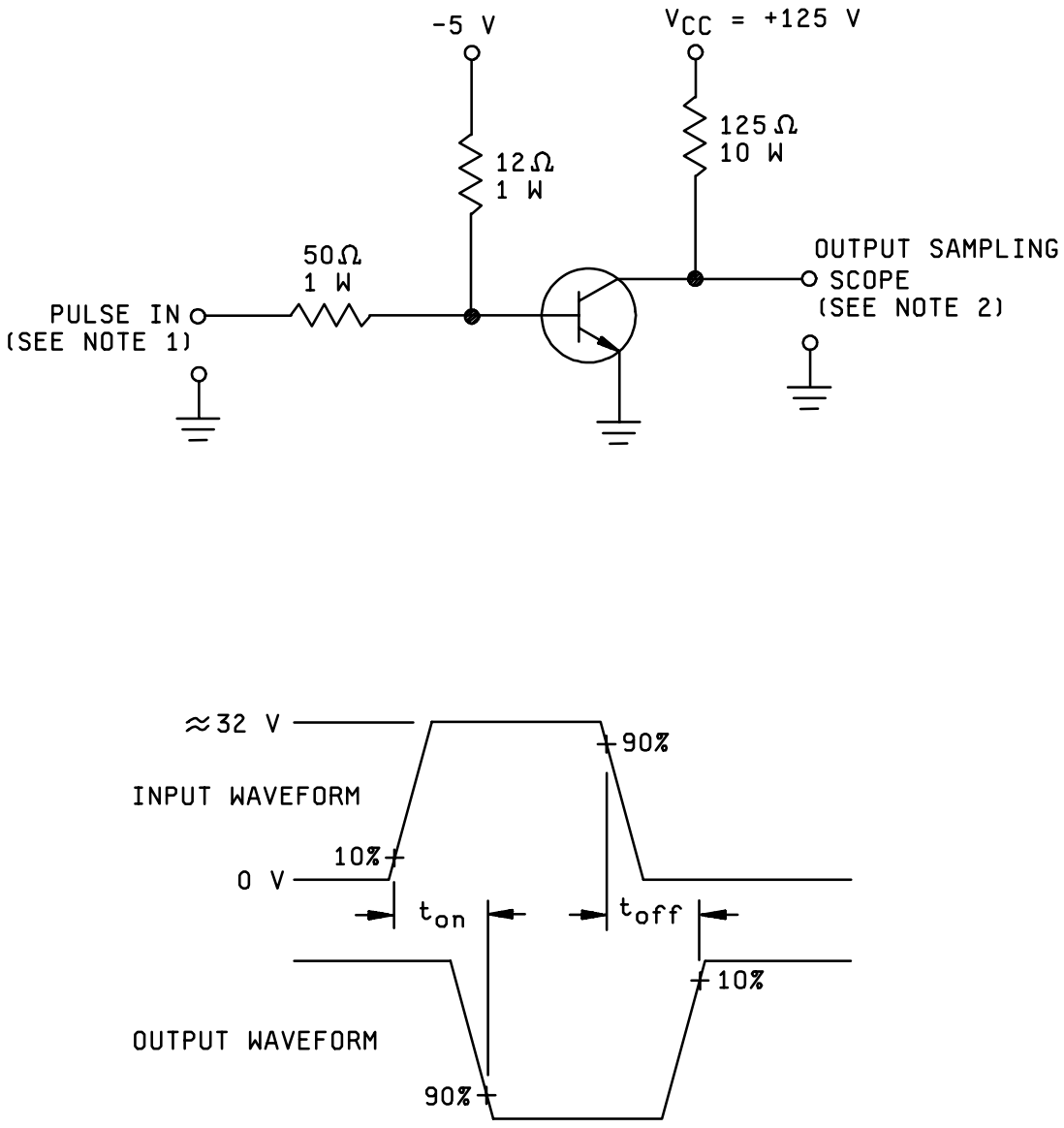
* FIGURE 7. Temperature derating graph 2N5157T3 (TO-257).



* FIGURE 8. Thermal impedance graphs (2N3902, 2N3902T1, 2N5157, and 2N5157T1).



* FIGURE 9. Thermal impedance graphs (2N3902T3, and 2N5157T3).



NOTES:

1. The rise time (t_r) and fall time (t_f) of the applied pulse shall be each ≤ 20 ns; duty cycle ≤ 5 percent; generator source impedance shall be 50Ω; pulse width = 5 μs.
2. Output sampling oscilloscope: Z_{in} ≥ 100 kΩ; C_{in} ≤ 50 pF; rise time ≤ 2.0 ns.

FIGURE 10. Pulse response test circuit.

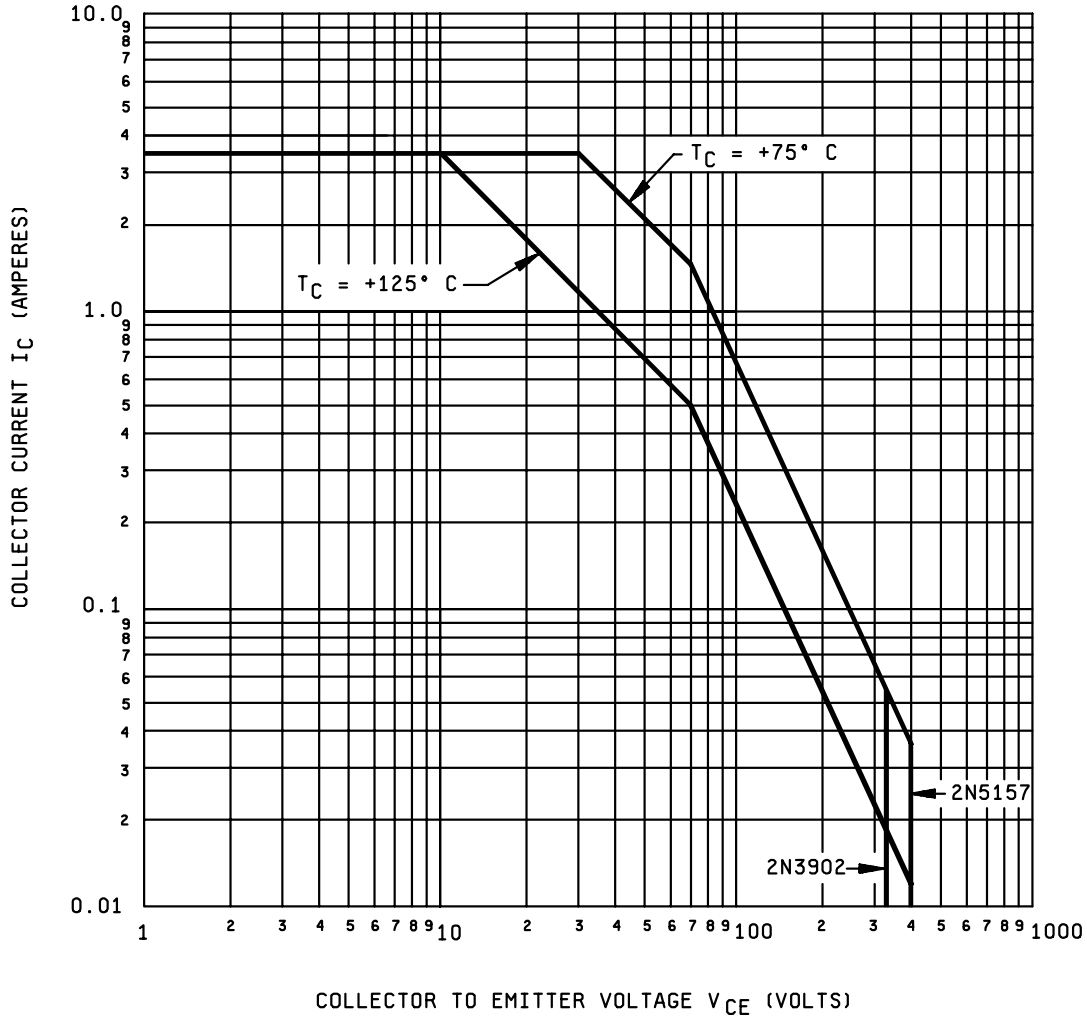


FIGURE 11. Maximum safe operating graph for all parts (continuous dc).

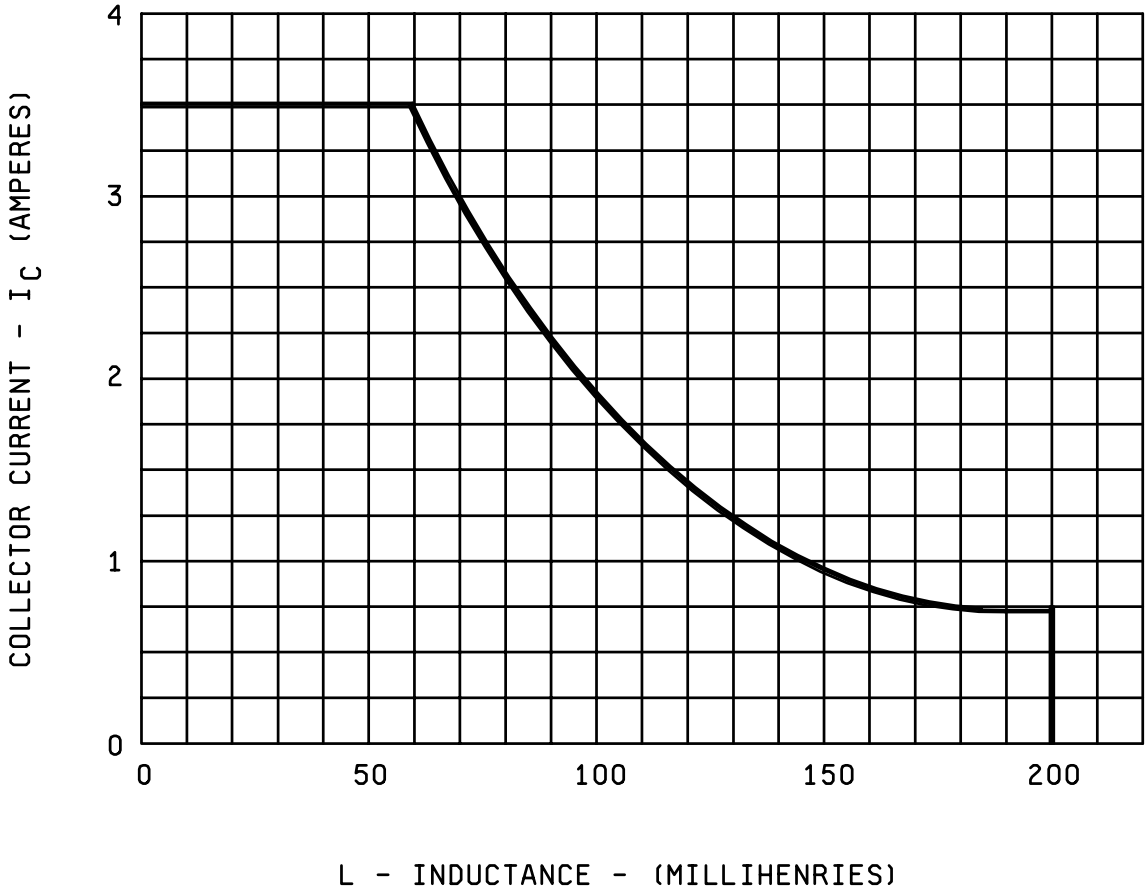


FIGURE 12. Safe operating area for switching between saturation and cutoff for all parts (unclamped inductive load).

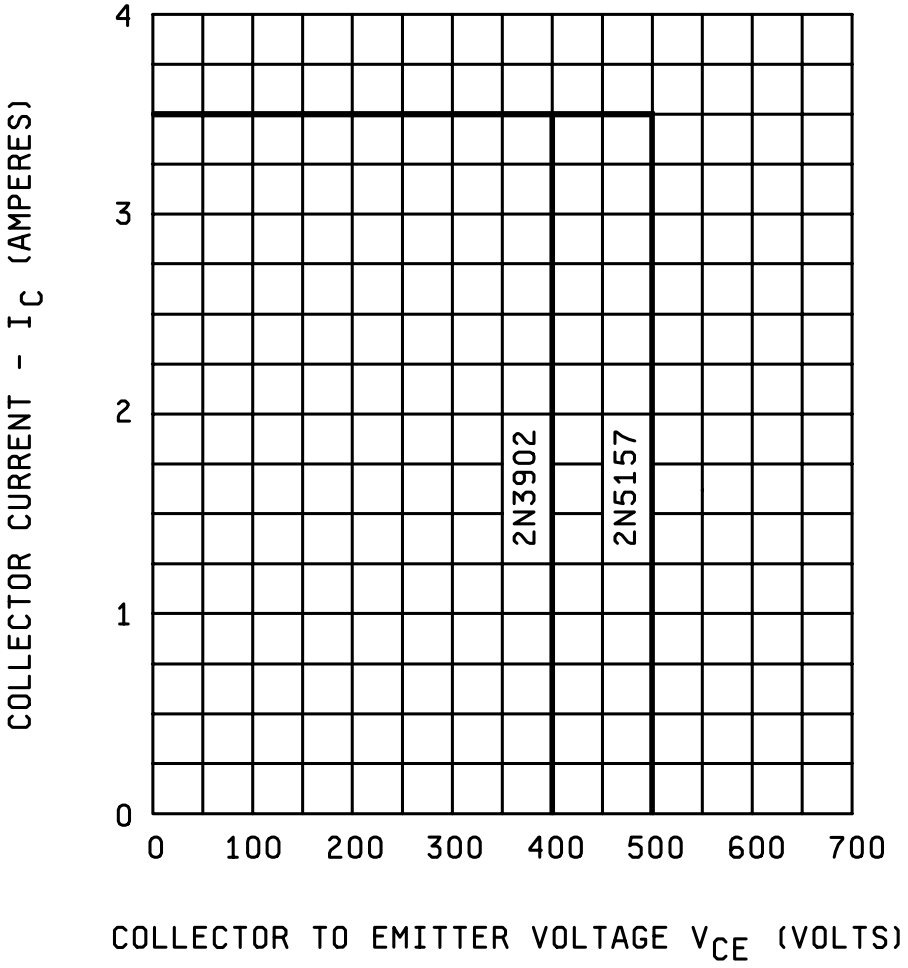


FIGURE 13. Safe operating area for switching between saturation and cutoff for all parts (clamped inductive load).

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel 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 Intended use. The notes specified in MIL-PRF-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of this specification.

b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1).

c. Packaging requirements (see 5.1).

d. Lead finish (see 3.4.1).

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) 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 Defense Supply Center, Columbus, ATTN: DSCC/VQE, P.O. Box 3990, Columbus, OH 43216-5000.

6.4 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes from the previous issue were made. 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 last previous issue.

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

Preparing activity:
DLA - CC

(Project: 5961-2619)

Review activities:
Air Force - 19, 99
Navy - AS, MC

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-19500/371E	2. DOCUMENT DATE 8 September 2003

3. **DOCUMENT TITLE** SEMICONDUCTOR DEVICE, TRANSISTOR, NPN, SILICON, HIGH-POWER, TYPES 2N3902, 2N3902T1, 2N3902T3, 2N5157, 2N5157T1 AND 2N5157T3, JAN AND JANTX

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

8. PREPARING ACTIVITY

a. Point of Contact Alan Barone	b. TELEPHONE Commercial 614-692-0510	DSN 850-0510	FAX 614-692-6939	EMAIL alan.barone@dla.mil
c. ADDRESS Defense Supply Center Columbus ATTN: DSCC-VAC P.O. Box 3990 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 427-6888			