

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

INCH-POUND

MIL-PRF-19500/348E  
25 July 1999  
SUPERSEDING  
MIL-S-19500/348D  
6 October 1993

PERFORMANCE SPECIFICATION SHEET  
SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, SWITCHING  
TYPES 2N3467, 2N3467L, 2N3468, 2N3468L, JAN, JANTX, JANTXV, AND JANS

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

1. SCOPE

1.1 Scope. This specification covers the performance requirements for PNP silicon switching transistors. Four levels of product assurance is provided for the device type as specified in MIL-PRF-19500.

1.2 Physical dimensions. See 3.3 (similar to TO-5 and TO-39).

1.3 Maximum ratings.

P <sub>T</sub> 1/ T <sub>A</sub> = +25°C	P <sub>T</sub> 2/ T <sub>A</sub> = +25°C	V <sub>CBO</sub>		V <sub>CEO</sub>		V <sub>EBO</sub>	I <sub>C</sub>	T <sub>op</sub> and T <sub>STG</sub>
		2N3467 2N3467L	2N3468 2N3468L	2N3467 2N3467L	2N3468 2N3468L			
<u>W</u>	<u>W</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>	<u>V dc</u>	<u>A dc</u>	<u>°C</u>
1.0	5.0	40	50	40	50	5.0	1.0	-55 to +175

1/ Derate linearly at 5.71 mW/°C above T<sub>A</sub> = +25°C.

2/ Derate linearly at 28.6 mW/°C above T<sub>C</sub> = +25°C.

1.4 Primary electrical characteristics.

Limits	h <sub>FE2</sub> 1/		h <sub>FE3</sub> 1/		V <sub>CE(sat)</sub>
	V <sub>CE</sub> = 1.0 V dc I <sub>C</sub> = 500 mA dc	V <sub>CE</sub> = 1.0 V dc I <sub>C</sub> = 500 mA dc	V <sub>CE</sub> = 5.0 V dc I <sub>C</sub> = 1.0 A dc	V <sub>CE</sub> = 5.0 V dc I <sub>C</sub> = 1.0 A dc	I <sub>C</sub> = 500 mA dc I <sub>B</sub> = 50 mA dc
	2N3467 2N3467L	2N3468 2N3468L	2N3467 2N3467L	2N3468 2N3468L	
Min	40	25	40	25	<u>V dc</u>
Max	120	75			0.6

Limits	C <sub>obo</sub>	f <sub>T</sub>		t <sub>on</sub>	t <sub>off</sub>
	V <sub>CB</sub> = 10 V dc I <sub>E</sub> = 0; 100 kHz ≤ f ≤ 1 MHz	V <sub>CE</sub> = 10 V dc I <sub>C</sub> = 50 mA dc f = 100 MHz		I <sub>C</sub> = 500 mA dc I <sub>B</sub> = 50 mA dc	I <sub>C</sub> = 500 mA dc I <sub>B</sub> = 50 mA dc
		2N3467 2N3467L	2N3468 2N3468L		
Min	<u>pF</u>	<u>Mhz</u>	<u>Mhz</u>	<u>ns</u>	<u>ns</u>
Max	25	175 500	150 500	40	90

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: 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.

## 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.

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 figure 1 herein (similar to TO-5 and TO-39).

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.

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 6.3 ).

## 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).

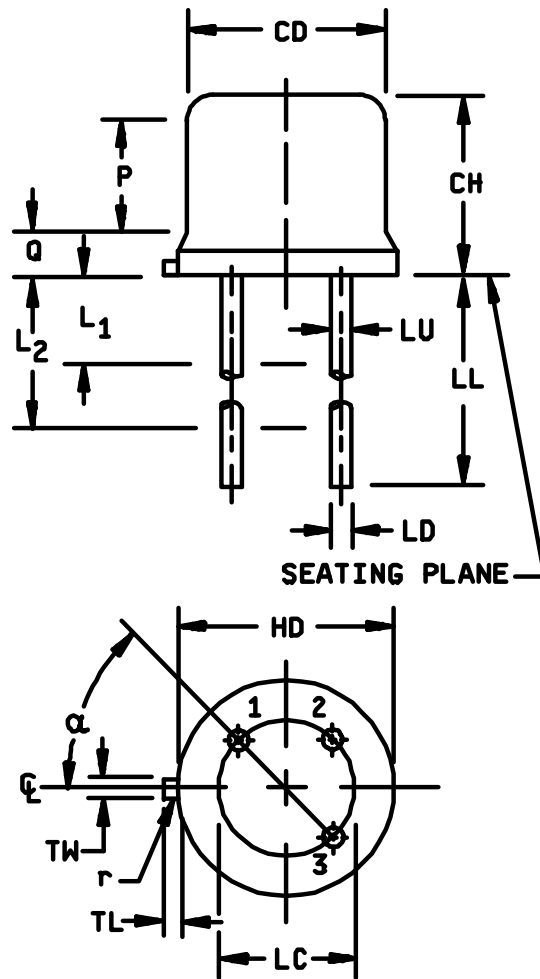


FIGURE 1. Physical dimensions. (Similar to TO-5, TO-39)

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	0.305	0.355	7.75	9.02	
CH	0.240	0.260	6.10	6.60	
HD	0.355	0.370	9.02	9.40	
LC	0.200 TP		5.08 TP		6
LD	0.016	0.021	0.41	0.53	7
LL	1.500	1.750	38.1	44.45	7,12
LL	0.500	0.750	12.7	19.05	7,13
LU	0.016	0.019	0.41	0.48	7
L1		0.050		1.27	7
L2	0.250		6.35		7
TL	0.029	0.045	0.74	1.14	3
TW	0.028	0.034	0.71	0.86	10
P	0.100		2.54		5
Q		0.040		1.01	4
r		0.010		0.25	11
a	45° TP		45° TP		6
Notes	1, 2, 8, 9		1, 2, 8, 9		

## NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Symbol TL is measured from HD maximum.
4. Details of outline in this zone are optional.
5. Symbol CD shall not vary more than 0.010 (0.25 mm) in zone P. This zone is controlled for automatic handling.
6. Leads at gauge plane 0.054 inch (1.37 mm) +0.001 inch (0.03 mm) -0.000 inch (0.00 mm) below seating plane shall be within 0.007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.
7. Symbol LD applies between L<sub>1</sub> and L<sub>2</sub>. Dimension LD applies between L<sub>2</sub> and LL minimum.
8. Lead designation, lead number 1 = emitter; lead number 2 = base; lead number 3 = collector.
9. Lead number three is electrically connected to case.
10. Beyond r maximum, TW shall be held for a minimum length of 0.011 inch (0.28 mm).
11. Symbol r applied to both inside corners of tab.
12. TO-5.
13. TO-39.

FIGURE 1. Physical dimensions (Similar to TO-5, TO-39) - Continued.

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

4.3 Screening. 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	
	JANS level	JANTX and JANTXV levels
9	$I_{CBO1}$ and $h_{FE2}$	Not applicable
11	$I_{CBO1}$ ; $h_{FE2}$ ; $\Delta I_{CBO1}$ = 100 percent of initial value or 50 nA dc, whichever is greater; $\Delta h_{FE2}$ = 25 percent of initial value.	$I_{CBO1}$ and $h_{FE2}$
12	See 4.3.1	See 4.3.1
13	Subgroups 2 and 3 of table I herein; $\Delta I_{CBO1}$ = 100 percent of initial value or 50 nA dc, whichever is greater; $\Delta h_{FE2}$ = 25 percent of initial value.	Subgroup 2 of table I herein; $\Delta I_{CBO1}$ = 100 percent of initial value or 50 nA dc, whichever is greater; $\Delta h_{FE2}$ = 25 percent of change initial value.

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 MIL-STD-750, paragraph 4.5;  $P_T$  = 1.0 W;

$V_{CB}$  = 30 V dc for 2N3467, 2N3467L

$V_{CB}$  = 40 V dc for 2N3468, 2N3468L

$V_{CB}$  = 10 V dc for JANS devices.

NOTE: No heat sink or forced air cooling on the devices shall be permitted.

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.

4.4.2 Group B inspection. Group B inspection shall be conducted in accordance with the conditions specified for subgroup testing in table VIa (JANS) and table VIb (JAN, JANTX, and JANTXV) of MIL-PRF-19500 and paragraphs 4.4.2.1 and 4.4.2.2 herein. Electrical measurements (end-points) shall be in accordance with table I, subgroup 2 herein. Delta measurements shall be in accordance with table II herein.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
3	2037	Test condition A.
4	1037	$V_{CB} \geq 10$ V dc, $T_A = \leq 35^\circ$ minimum for 2,000 cycles. No heat sink shall be permitted.
5	1027	$V_{CB} \geq 10$ V dc, 96 hours, adjusted as required according to the chosen $T_A$ to give an average $T_J = +275^\circ\text{C}$ .
5	2037	Test condition A.
6	3131	See 4.5.3.

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

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
3	1027	For eutectic die attach: $V_{CB} \geq 10$ V dc, adjust $P_T$ to achieve $T_J = 150^\circ\text{C}$ minimum. $T_A = +30^\circ \pm 5^\circ\text{C}$ . No heat sink or forced-air cooling on the devices shall be permitted.
	1037	For solder die attach, $V_{CB} \geq 10$ V dc, 2,000 cycle.
3	2037	Test condition A.

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.

<u>Subgroup</u>	<u>Method</u>	<u>Condition</u>
2	2036	Test condition E.
6	1027	For eutectic die attach: $V_{CB} \geq 10$ V dc, adjust $P_T$ to achieve $T_J = 150^\circ\text{C}$ minimum. $T_A = +30^\circ \pm 5^\circ\text{C}$ . No heat sink or forced-air cooling on the devices shall be permitted.
	1037	For solder die attach, $V_{CB} \geq 10$ V dc, 6,000 cycle.

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 Input capacitance. This test shall be conducted in accordance with MIL-STD-750, method 3240, except the output capacitor shall be omitted.

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

- Minimum collector current magnitude during power application shall be 160 mA dc for  $R_{\theta JC}$  and 32 mA dc for  $R_{\theta JA}$ .
- Collector to base voltage magnitude shall be 10 V dc.
- Reference temperature measuring point shall be the case for  $R_{\theta JC}$  and ambient air for  $R_{\theta JA}$ .
- Reference point temperature shall be selected with  $25^\circ\text{C} \leq T_R \leq 35^\circ\text{C}$  and recorded before test is started.
- Mounting arrangement shall be with heat sink to case for  $R_{\theta JC}$  and without heat sink for  $R_{\theta JA}$ .
- Maximum limits shall be  $R_{\theta JC} = 35^\circ\text{C/W}$  and  $R_{\theta JA} = 175^\circ\text{C/W}$ .

TABLE I. Group A inspection.

Inspection 1/  <u>Subgroup 1</u>	MIL-STD-750		Symbol	Limits		Unit
	Method	Conditions		Min	Max	
Visual and mechanical examination	2071					
<u>Subgroup 2</u>						
Breakdown voltage collector to base 2N3467, L 2N3468, L	3001	Bias condition D; $I_C = 10 \mu A$ dc	$V_{(BR)CBO}$	40 50		V dc V dc
Breakdown voltage emitter to base	3026	Bias condition D; $I_E = 10 \mu A$ dc	$V_{(BR)EBO}$	5.0		V dc
Breakdown voltage, collector to emitter  2N3647, L 2N3648, L	3011	Bias condition D; $I_C = 10$ mA dc; pulsed (see 4.5.1)	$V_{(BR)CEO}$	40 50		V dc V dc
Collector to base cutoff current	3036	Bias condition D; $V_{CB} = 30$ V dc	$I_{CBO1}$		100	nA dc
Collector to emitter cutoff current	3041	Bias condition A; $V_{EB} = 3.0$ V dc; $V_{CE} = 30$ V dc	$I_{CEX}$		100	nA dc
Forward to current transfer ratio  2N3467, L 2N3468, L	3076	$V_{CE} = 1.0$ V dc; $I_C = 150$ mA dc; pulsed (see 4.5.1)	$h_{FE1}$	40 25		
Forward-current transfer ratio  2N3467, L 2N3468, L	3076	$V_{CE} = 1.0$ V dc; $I_C = 500$ mA dc; pulsed (see 4.5.1)	$h_{FE2}$	40 25	120 75	
Forward-current transfer ratio  2N3467, L 2N3468, L	3076	$V_{CE} = 5.0$ V dc; $I_C = 1.0$ A dc; pulsed (see 4.5.1)	$h_{FE3}$	40 25		
Collector to emitter saturation voltage	3071	$I_C = 150$ mA dc; $I_B = 15$ mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)1}$		0.35	V dc
Collector to emitter saturation voltage	3071	$I_C = 500$ mA dc; $I_B = 50$ mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)2}$		0.6	V dc

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 2</u> - Continued						
Collector to emitter saturation voltage	3071	$I_C = 1.0$ A dc; $I_B = 100$ mA dc; pulsed (see 4.5.1)	$V_{CE(SAT)3}$		1.2	V dc
Base to emitter voltage saturated	3066	Test condition A; $I_C = 150$ mA dc $I_B = 15$ mA dc; pulsed (see 4.5.1)	$V_{BE(SAT)1}$		1.0	V dc
Base to emitter voltage saturated	3066	Test condition A; $I_C = 500$ mA dc; $I_B = 50$ mA dc; pulsed (see 4.5.1)	$V_{BE(SAT)2}$	0.8	1.2	V dc
Base to emitter voltage saturated	3066	Test condition A; $I_C = 1.0$ A dc; $I_B = 100$ mA dc; pulsed (see 4.5.1)	$V_{BE(SAT)3}$		1.6	V dc
<u>Subgroup 3</u>						
High-temperature operation:		$T_A = +150^{\circ}\text{C}$				
Collector to base cutoff current	3036	Bias condition D; $V_{CB} = 30$ V dc	$I_{CBO2}$		50	$\mu\text{A}$ dc
Low-temperature operation:		$T_A = -55^{\circ}\text{C}$				
Forward-current transfer ratio	3076	$V_{CE} = 1.0$ V dc; $I_C = 150$ mA dc; pulsed (see 4.5.1)	$h_{FE4}$			
2N3467, L 2N3468, L				16 10		
<u>Subgroup 4</u>						
Extrapolated unity gain frequency	3261	$V_{CE} = 10$ V dc; $I_C = 50$ mA dc; $f = 100$ MHz	$f_t$			
2N3467, L 2N3468, L				175 150	500 500	MHz MHz
Open circuit output capacitance	3236	$V_{CB} = 10$ V dc; $I_E = 0$ ; $100\text{ kHz} \leq f \leq 1\text{ MHz}$	$C_{obo}$		25	pF
Input capacitance (output open-circuited)	3240	$V_{EB} = 0.5$ V dc; $I_C = 0$ ; $100\text{ kHz} \leq f \leq 1\text{ MHz}$ (see 4.5.2)	$C_{ibo}$		100	pF

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> - Continued						
Pulse response						
Delay time	3251	Test condition A; $I_C = 500 \text{ mA dc}$ ; $I_{B1} = 50 \text{ mA dc}$ ; $V_{EB} = 2 \text{ V dc}$ (see figure 2)	$t_d$		10	ns
Rise time	3251	Test condition A; $I_C = 500 \text{ mA dc}$ ; $I_{B1} = 50 \text{ mA dc}$ ; $V_{EB} = 2 \text{ V dc}$ (see figure 2)	$t_r$		30	ns
Storage time	3251	Test condition A; $I_C = 500 \text{ mA dc}$ ; $I_{B1} = I_{B2} = 50 \text{ mA dc}$ ; (see figure 3)	$t_s$		60	ns
Fall time	3251	Test condition A; $I_C = 500 \text{ mA dc}$ ; $I_{B1} = I_{B2} = 50 \text{ mA dc}$ ; (see figure 3)	$t_f$		30	ns
<u>Subgroups 5, 6, and 7</u>						
Not applicable						

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

TABLE II. Groups B and C delta electrical measurements. 1/ 2/ 3/

Step	Inspection	MIL-STD-750		Symbol	Limits		Unit
		Method	Conditions		Min	Max	
1.	Collector to base cutoff current	3036	Bias condition D; $V_{CB} = 30 \text{ V dc}$	$\Delta I_{CBO1}$	100 percent of initial value or 50 nA dc, whichever is greater.		
2.	Collector to emitter voltage saturated	3071	$I_C = 500 \text{ mA dc}$ ; $I_B = 50 \text{ mA dc}$ ; pulsed (see 4.5.1)	$\Delta V_{CE(SAT)2}$	50 mV dc change from initial value.		
3.	Forward-current transfer ratio	3076	$V_{CE} = 1.0 \text{ V dc}$ ; $I_C = 500 \text{ mA dc}$ ; pulsed (see 4.5.1)	$\Delta h_{FE2}$	25 percent change from initial value.		

1/ The delta electrical measurements for table VIa (JANS) of MIL-PRF-19500 are as follows:

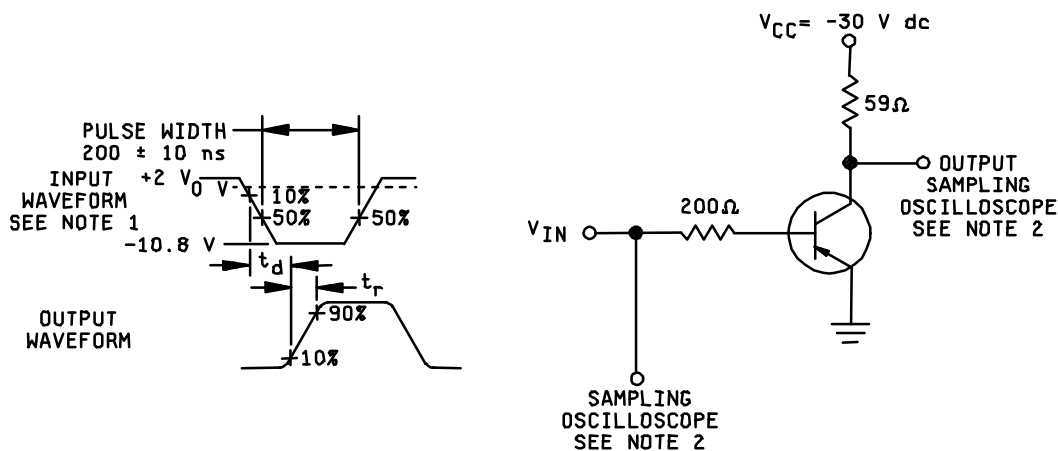
- a. Subgroup 5, see table II herein, steps 1, 2 and 3.

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

- a. Subgroups 3 and 6 see table II herein, step 3.

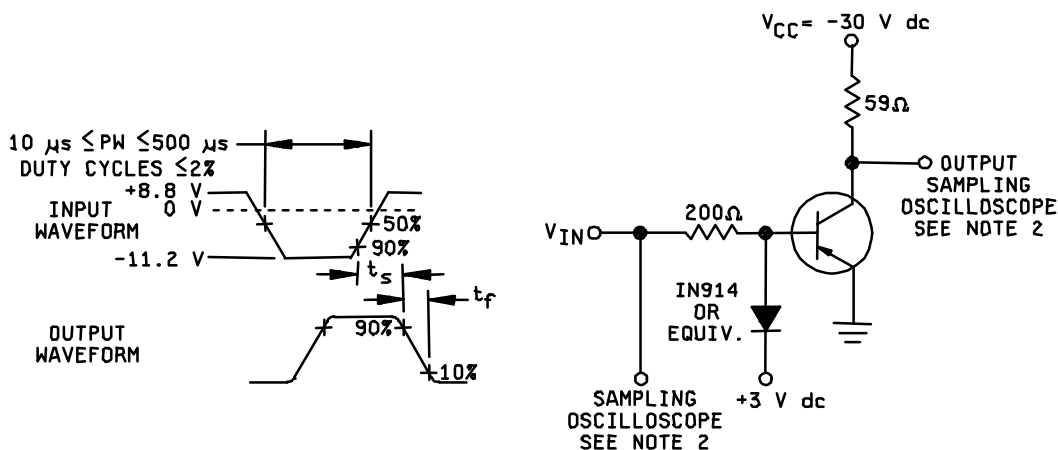
3/ The delta electrical measurements for table VII of MIL-PRF-19500 are as follows:

- a. Subgroup 6, see table II herein, step 3.



## NOTES:

1. The rise time ( $t_r$ ) of the applied pulse shall be  $\leq 2 \text{ ns}$ , duty cycle  $\leq 2$  percent and the generator source impedance shall be 50 ohms.
2. Sampling oscilloscope:  $Z_{in} \geq 100 \text{ k}\Omega$ ,  $C_{in} \leq \text{pF}$ , rise time  $\leq .2 \text{ ns}$ .

FIGURE 2. Equivalent circuit for measuring delay and rise times.

## NOTES:

1. The rise time ( $t_r$ ) of the applied pulse shall be  $\leq 2 \text{ ns}$ , duty cycle  $\leq 2$  percent and the generator source impedance shall be 50 ohms.
2. Sampling oscilloscope:  $Z_{in} \geq 100 \text{ k}\Omega$ ,  $C_{in} \leq \text{pF}$ , rise time  $\leq .2 \text{ ns}$ .

FIGURE 3. Equivalent circuit for measuring storage and fall times.

## 5. 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).

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 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.

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

### Custodians:

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

Preparing activity:  
DLA - CC

(Project 5961-2131)

### Review activities:

Army - AR, AV, MI  
Navy - AS, CG, MC  
Air Force - 13, 19

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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-19500/348E

**2. DOCUMENT DATE (YYMMDD)**  
990725

**3. DOCUMENT TITLE**

SEMICONDUCTOR DEVICE, TRANSISTOR, PNP, SILICON, SWITCHING TYPES 2N3467, 2N3467L, 2N3468, 2N3468L, JAN, JANTX, JANTXV, AND JANS

**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  
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FAX  
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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@dsc.c.dla.mil](mailto:alan_barone@dsc.c.dla.mil)

c. ADDRESS : Defense Supply Center  
Columbus, ATTN: DSCC-VAC, 3990 East  
Broad Street, Columbus, OH 43216-5000

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