The documentation and process conversion measures necessary to comply with this revision shall be completed by 1 May 1994

INCH POUND

MIL-S-19500/355D
1 November 1993
SUPERSEDING
MIL-S-19500/355C
1 August 1980

MILITARY SPECIFICATION
SEMICONDUCTOR DEVICE, UNITIZED DUAL TRANSISTOR, NPN, SILICON
TYPES 2N2919, 2N2920, 2N2919L AND 2N2920L 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 detail requirements for two electrically isolated, matched NPN silicon transistors as one dual unit. Three levels of product assurance are provided for each device type as specified in MIL-S-19500. For JAN quality level, see 6.3.

1.2 Physical dimensions. See figure 1.

1.3 Maximum ratings.

P_T 1/ T_A = +25°C		P_T 2/ T_C = +25°C		I_C	V_{CBO}	V_{CEO}	V_{EBO}	T_J and T_{STG}
One section	Both sections	One section	Both sections					
mW	mW	mW	W	mA dc	V dc	V dc	V dc	°C
300	500	750	1.25	30	70	60	6	-55 to +175

1/ For T_A > +25°C, derate linearly 2.0 mW/°C, one section; 3.33 mW/°C, both sections.
2/ For T_C > +25°C, derate linearly 5.0 mW/°C, one section; 8.33 mW/°C, both sections.

1.4 Primary electrical characteristics of each individual section.

	h_{FE1}		$\|h_{fe}\|$	$V_{CE(SAT)}$
	V_{CE} = 5 V dc, I_C = 10 µA dc		V_{CE} = 5 V dc, I_C = 0.5 mA dc, f = 20 MHz	I_C = 1 mA dc, I_B = 100 µA dc
	2N2919, 2N2919L	2N2920, 2N2920L		
				V dc
Min	60	175	3.0	
Max	240	600	20	0.3

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, U.S. Army Research Laboratory ATTN: AMSRL-EP-RD, Fort Monmouth, NJ 07703-5601 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC5961

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

1.5 Primary electrical matching characteristics of each individual section.

	$\frac{h_{FE2-1}}{h_{FE2-2}}$ V_{CE} = 5 V dc I_C = 100 µA dc 1/	$\lvert V_{BE1} - V_{BE2}\rvert_1$ V_{CE} = 5 V dc I_C = 10 µA dc	$\lvert\Delta(V_{BE1} - V_{BE2})_{\Delta TA}\rvert_1$ V_{CE} = 5 V dc I_C = 100 µA dc T_A = 25°C and -55°C	$\lvert\Delta(V_{BE1} - V_{BE2})_{\Delta TA}\rvert_2$ V_{CE} = 5 V dc I_C = 100 µA dc T_A = 125°C and -55°C
		mV dc	mV dc	mV dc
Min	0.9			
Max	1.0	5	0.8	1.0

1/ The larger number shall be placed in the denominator.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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

MILITARY

MIL-S-19500 - Semiconductor Devices, General Specification for.

STANDARD

MILITARY

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

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein the text of this document take precedence. Nothing in this document, however, supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

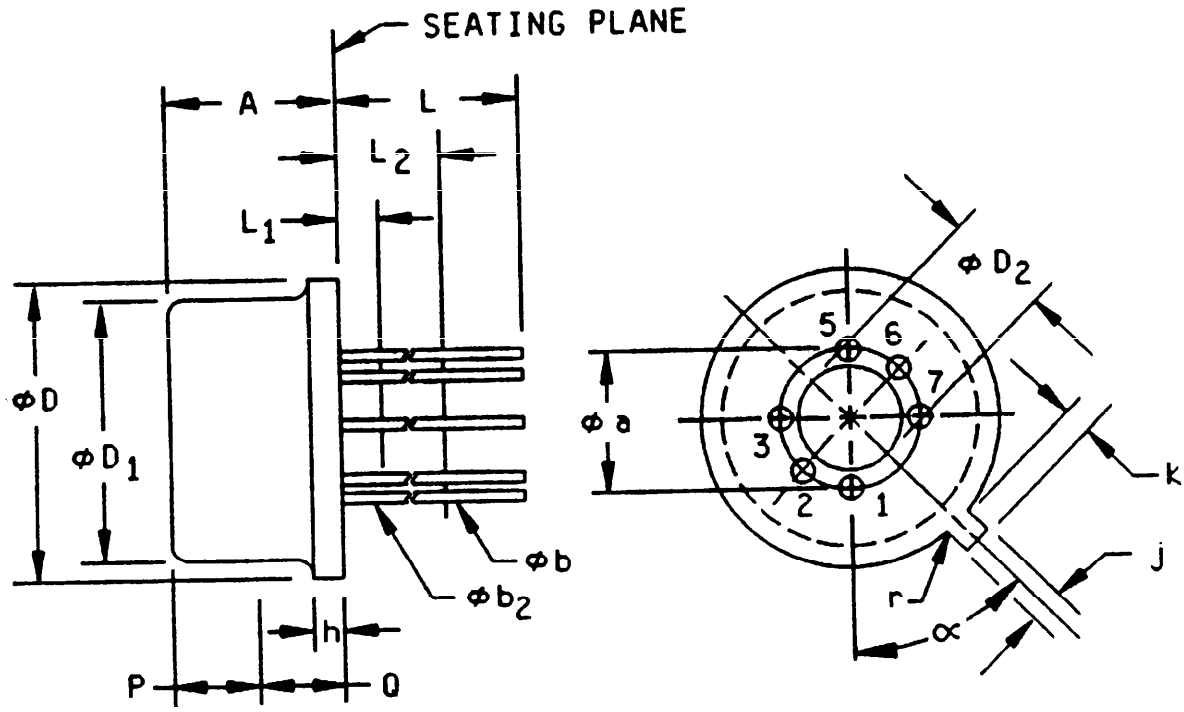
3.1 Associated detail specification. The individual item requirements shall be in accordance with MIL-S-19500, and as specified herein.

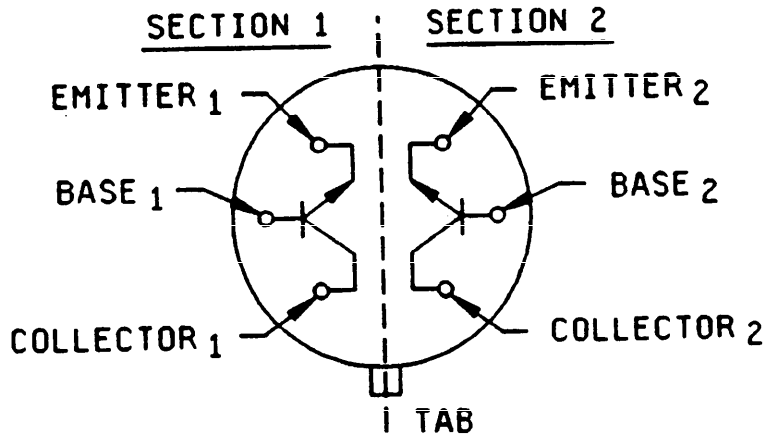
3.2 Abbreviations, symbols, and definitions. Abbreviations, symbols, and definitions used herein shall be as specified in MIL-S-19500.

$\frac{h_{FE-1}}{h_{FE-2}}$ - - - - - - - - - - - - - - - Static forward-current-gain-ratio. The matching ratio of the static forward-current transfer ratios of each section.

$\lvert V_{BE1} - V_{BE2}\rvert$ - - - - - - - - - - - Absolute value of base-emitter-voltage differential between the individual sections.

$\lvert\Delta(V_{BE1} - V_{BE2})_{\Delta TA}\rvert$ - - - - - - - - Absolute value of the algebraic difference between the base-emitter-voltage differentials between the individual sections at two different temperatures.





CONNECTION DIAGRAM

FIGURE 1. Physical dimensions.

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
ϕa	.200 TP		5.08 TP		9
ϕD	.335	.370	8.51	9.40	
ϕD_1	.305	.335	7.75	8.51	
ϕD_2	.140	.160	3.56	4.06	
A	.140	.260	3.56	6.60	
ϕb	.016	.021	0.41	0.53	10
ϕb_2	.016	.019	0.41	0.48	10
h	.009	.041	0.23	1.04	
k	.029	.045	0.74	1.14	5, 6
j	.028	.034	0.71	0.86	4, 5
L	See notes				10, 11, 12
L_1		.050		1.27	10
L_2	.250		6.35		10
P	.100		2.54		8
Q		.050		1.27	7
r		.010		1.27	
α	45° TP		45° TP		9

FIGURE 1. Physical dimensions - Continued.

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Tab shown omitted.
4. Lead numbers 4 and 8 are omitted on this variation.
5. Beyond r maximum, J shall be held to a minimum length of 0.21 inches (0.53 mm).
6. k shall be measured from maximum ϕD.
7. Details of outline in this zone are optional.
8. ϕD_1 shall not vary more than .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
9. Leads at gauge plane .054 - .055 inches (1.37 - 1.40 mm) below seating plane shall be within .007 inches (0.18 mm) radius of true position (TP) at a maximum material condition (MMC) relative to the tab at MMC. The device may be measured by direct methods or by the gauge and gauging procedures described on gauge drawing GS-1.
10. ϕb_2 applies between L_1 and L_2. ϕb applies between L_2 and L minimum. Diameter is uncontrolled in L_1 and beyond L minimum.
11. For transistor types 2N2919 and 2N2920, L is .500 inch (12.70 mm) minimum and .750 inch (19.05 mm) maximum.
12. For transistor type 2N2919L and 2N2920L, L is 1.500 inches (38.10 mm) minimum and 1.750 inches (44.45 mm) maximum.

FIGURE 1. Physical dimensions - Continued.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-S-19500, and figure 1 herein.

3.3.1 Lead finish. Lead finish shall be solderable as defined in Mil-S-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-S-19500.

4. QUALITY ASSURANCE PROVISIONS

4.1 Sampling and inspection. Sampling and inspection shall be in accordance with MIL-S-19500, and as specified herein.

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

4.3 Screening (JANS, JANTX and JANTXV levels only). Screening shall be in accordance with MIL-S-19500 (table II), 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 II of MIL-S-19500)	Measurement	
	JANS level	JANTX and JANTXV levels
9	I_{CBO1}, h_{FE2-1}, h_{FE1} / h_{FE2-2}	Not applicable
11	I_{CBO1}, h_{FE2-1}, h_{FE1} / h_{FE2-2} ΔI_{CBO1} = 100 percent of initial value or 1 nA dc, whichever is greater. Δh_{FE1} = ±20 percent	I_{CBO1}, h_{FE1}, h_{FE2-1} / h_{FE2-2}
12	See 4.3.1	See 4.3.1
13	Subgroups 2 and 3 of table I herein; ΔI_{CBO1} = 100 percent of initial value or 1 nA dc, whichever is greater; Δh_{FE2} = ±25 percent	Subgroup 2 of table I herein; ΔI_{CBO1} = 100 percent of initial value or 1 nA dc, whichever is greater; Δh_{FE2} = ±25 percent

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

(JANS): V_{CB} = 20 V dc (each section); P_T = 250 mW (each section); P_T = 500 mW (both sections); at T_A = room ambient as defined in the general requirements of MIL-STD-750.

(JANTX and JANTXV): $V_{CB} \geq$ 20 V dc (each section); P_T = 250 mW (each section); P_T = 500 mW (both sections); at T_A = room ambient as defined in the general requirements of MIL-STD-750.

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

4.4 Quality conformance inspection. Quality conformance inspection shall be in accordance with MIL-S-19500.

4.4.1 Group A inspection. Group A inspection shall be conducted in accordance with MIL-S-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 IVa (JANS) and table IVb (JANTX and JANTXV) of MIL-S-19500 and as follows. Electrical measurements (end-points) and delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.2.1 Group B inspection, table IVa (JANS) of MIL-S-19500.

Subgroup	Method	Conditions
B3	2037	Test condition A.
B4	1037	V_{CB} = 20 V dc; P_T = 250 mW (each section); P_T = 500 mW (both sections) at T_A = room ambient as defined in the general requirements of MIL-STD-750; t_{on} = t_{off} = 3 minutes minimum for 2,000 cycles. No heat sink or forced-air cooling on devices shall be permitted.
B5	1027	V_{CB} = 20 V dc; P_T = 250 mW (each section); P_T = 500 mW (both sections) at T_A = +100°C for 96 hours, or T_A = +125°C ±25°C for 96 hours with P_T adjusted according to the chosen T_A to give and average T_J = +275°C.

4.4.2.2 Group B inspection, table IVb (JANTX and JANTXV) of MIL-S-19500.

Subgroup	Method	Conditions
B3	1027	V_{CB} ≥ 20 V dc; P_T = 250 mV (each section); P_T = 500 mW (both sections) at T_A = room ambient as defined in the general requirements of MIL-STD-750. No heat sink or forced-air cooling on the devices shall be permitted.
B3	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 V of MIL-S-19500 and as follows. Electrical measurements (end points) and delta requirements shall be in accordance with the applicable steps of table II herein.

4.4.3.1 Group C inspection, table V of MIL-S-19500.

Subgroup	Method	Conditions
C2	2036	Test condition E.
C6	1026	V_{CB} ≥ 20 V dc; P_T = 250 mW (each section); P_T = 500 mW (both section) at T_A = room ambient as defined in the general requirements of MIL-STD-750. No heat sink or forced-air cooling on the device shall be permitted.

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 Testing of units. All specified electrical tests, including end-point tests, shall be performed equally on both sections of the transistor types covered herein, except where the electrical characteristic being evaluated applies to the transistor as a device entity.

4.5.3 Disposition of leads when testing characteristics of each section. During the measurement of the characteristics of each section, the leads of the section not under test shall be open-circuited.

TABLE I. Group A inspection.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 1						
Visual and mechanical examination	2071					
Subgroup 2						
Breakdown voltage, collector to base	3001	Bias condition D; I_C = 10 µA dc	$V_{(BR)CBO}$	70		V dc
Breakdown voltage, collector to emitter	3011	Bias condition D; I_C = 10 mA dc; pulsed (see 4.5.1)	$V_{(BR)CEO}$	60		V dc
Breakdown voltage, emitter to base	3026	Bias condition D; I_E = 10 µA dc	$V_{(BR)EBO}$	6		V dc
Collector to base cutoff current	3036	Bias condition D; V_{CB} = 45 V dc	I_{CBO1}		2	nA dc
Collector to emitter cutoff current	3041	Bias condition D; V_{CE} = 5 V dc	I_{CEO}		2	nA dc
Emitter to base cutoff current	3061	Bias condition D; V_{EB} = 5 V dc	I_{EBO}		2	nA dc
Forward-current transfer ratio	3076	V_{CE} = 5 V dc; I_C = 10 µA dc	h_{FE1}			
2N2919, L				60	240	
2N2920, L				175	600	
Forward-current transfer ratio	3076	V_{CE} = 5 V dc; I_C = 100 µA dc	h_{FE2}			
2N2919, L				100	325	
2N2920, L				235	800	
Forward-current transfer ratio	3076	V_{CE} = 5 V dc; I_C = 1 mA dc	h_{FE3}			
2N2919, L				150	600	
2N2920, L				300	1,000	
Base-emitter saturation voltage	3066	Test condition A; I_C = 1.0 mA dc; I_B = 100 µA dc	$V_{BE(sat)}$	0.5	1.0	V dc
Collector-emitter saturation voltage and resistance	3071	I_C = 1.0 mA dc; I_B = 100 µA dc	$V_{CE(sat)}$		0.3	V dc

See footnotes at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 2 - Continued						
Forward-current transfer ratio (gain ratio) 2/	3076	V_{CE} = 5 V dc; I_C = 100 µA dc; (see 4.5.4)	h_{FE2-1} / h_{FE2-2}	0.9	1.0	
Absolute value of base-emitter-voltage differential	3066	Test condition B; V_{CE} = 5 V dc; I_C = 10 µA dc; (see 4.5.5)	$\lvert V_{BE1} - V_{BE2} \rvert 1$		5	mV dc
Absolute value of base-emitter-voltage differential	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 µA dc; (see 4.5.5)	$\lvert V_{BE1} - V_{BE2} \rvert 2$		3	mV dc
Absolute value of base-emitter-voltage differential	3066	Test condition B; V_{CE} = 5 V dc; I_C = 1 mA dc; (see 4.5.5)	$\lvert V_{BE1} - V_{BE2} \rvert 3$		5	mV dc
Base-emitter-voltage (nonsaturated) (absolute value of differential change with temperature)	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 µA dc; T_A = +25°C and -55°C (see 4.5.6)	$\lvert \Delta V_{BE1} - V_{BE2} \rvert \Delta T_A 1$		0.8	mV dc
Base-emitter-voltage (nonsaturated) (absolute value of differential change with temperature)	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 µA dc; T_A = +125°C and +25°C (see 4.5.6)	$\lvert \Delta V_{BE1} - V_{BE2} \rvert \Delta T_A 2$		1	mV dc
Subgroup 3						
High-temperature operation		T_A = +150°C				
Collector-base cutoff current	3036	Bias condition D; V_{CB} = 45 V dc	I_{CBO2}		2.5	µA dc
Low-temperature operation		T_A = -55°C				
Forward-current transfer ratio 2N2919, L 2N2920, L	3076	V_{CE} = 5 V dc; I_C = 10 µA dc	h_{FE4}		 20 50	

See footnotes at end of table.

TABLE I. Group A inspection - Continued.

Inspection 1/	MIL-STD-750		Symbol	Limit		Unit
	Method	Conditions		Min	Max	
Subgroup 4						
Small-signal short-circuit input impedance	3201	V_{CE} = 5 V dc; I_C = 1 mA dc; f = 1 kHz	h_{ie}	3	30	kΩ
Small-signal open circuit reverse-voltage transfer ratio	3211	V_{CE} = 5 V dc; I_C = 1 mA dc; f = 1 kHz	h_{re}		$1x10^{-3}$	
Small-signal open circuit output admittance	3216	V_{CE} = 5 V dc; I_C = 1 mA dc; f = 1 kHz	h_{oe}		60	µmhos
Small-signal short-circuit forward current transfer ratio (magnitude h_{fe})	3306	V_{CE} = 5 V dc; I_C = 0.5 mA dc; f = 20 MHz	$\|h_{fe}\|$	3	20	
Open circuit output capacitance	3236	V_{CB} = 5 V dc; I_E = 0; 100 kHz ≤ f ≤ 1 MHz	C_{obo}		5	pF
Noise figure	3246	V_{CE} = 5 V dc; I_C = 10 µA dc; R_g = 10 kΩ; (See 4.5.7)				
Test 1		f = 100 Hz	F1		5	dB
Test 2		f = 1 kHz	F2		3	dB
Test 3		f = 10 kHz	F3		3	dB
Subgroups 5, 6, and 7						
Not applicable						

1/ For sample plan, see MIL-S-19500.
2/ The larger number shall be placed in the denominator.

TABLE II. Group B and C electrical end-point inspection measurements. 1/ 2/ 3/

Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Conditions		Min	Max	
1.	Collector-base cutoff current	3036	Bias condition D; V_{CB} = 45 V dc	I_{CBO1}		2	nA dc
2.	Collector-base cutoff current	3036	Bias condition D; V_{CB} = 45 V dc	I_{CBO1}		4	nA dc
3.	Emitter-base cutoff current	3061	Bias condition D; V_{EB} = 5 V dc	I_{EBO}		2	nA dc
4.	Base emitter voltage (absolute value of differential	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 µA dc; (see 4.5.5)	$\lvert V_{BE1}-V_{BE2}\rvert$2		3	mV dc
5.	Saturation voltage and resistance collector to emitter voltage	3071	I_C = 1.0 mA dc; I_B = 100 µA dc	$V_{CE(sat)}$		0.3	V dc
6.	Base-emitter voltage (saturated)	3066	Test condition A; I_C = 1.0 mA dc; I_B = 100 µA dc	$V_{BE(sat)}$	0.5	1.0	V dc
7.	Forward current transfer ratio 2N2919, L 2N2920, L	3076	V_{CE} = 5 V dc; I_C = 10 µA dc	h_{FE1}	 60 175	 240 600	
8.	Forward current transfer ratio 2N2919, L 2N2920, L	3076	V_{CE} = 5 V dc; I_C = 1 mA dc	h_{FE3}	 150 300	 600 1,000	
9.	Forward current transfer ratio (gain ratio)	3076	V_{CE} = 5 V dc; 4/ I_C = 10 µA dc; (see 4.5.4)	$\frac{h_{FE2-1}}{h_{FE2-2}}$	0.9	1.0	
10.	Forward current transfer ratio (gain ratio)	3076	V_{CE} = 5 V dc; 4/ I_C = 100 µA dc; (see 4.5.4)	$\frac{h_{FE2-1}}{h_{FE2-2}}$	0.85	1.0	
11.	Base-emitter voltage (nonsaturated) (absolute value of differential-change with temperature)	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 µA dc; T_A = +25° and -55°C (see 4.5.6)	$\lvert\Delta(V_{BE1} - V_{BE2})\Delta T_A\rvert$1		0.80	mV dc

See footnotes at end of table.

TABLE II. Group B and C electrical end-point inspection measurements - Continued.

Step	Inspection	MIL-STD-750		Symbol	Limit		Unit
		Method	Conditions		Min	Max	
12.	Base emitter voltage (nonsaturated) (absolute value of differential-change with temperature)	3066	Test condition B; V_{CE} = 5 V dc; I_C = 100 μA dc; T_A = +125° and +25°C (see 4.5.6)	$\lvert\Delta(V_{BE1} - V_{BE2})/\Delta T_A\rvert$ 2		1.0	mV dc

1/ The electrical measurements for table IVa (JANS) of MIL-S-19500 are as follows:

a. Subgroup 3, see table II herein, steps 1, 3, 4, 5, 6, 7, 8, 9, 11, and 12.

b. Subgroup 4, see table II herein, steps 1, 3, 4, 5, 6, 7, 8, 9, 11, and 12.

c. Subgroup 5, see table II herein, steps 1, 3, 4, 5, 6, 7, 8, 9, 11, and 12.

2/ The electrical measurements for Table IVb (JANTX AND JANTXV) of MIL-S-19500 are as follows:

a. Subgroup 2, see table II herein, steps 1 and 7.

b. Subgroup 3, see table II herein, steps 2, 7, and 10.

c. Subgroup 6, see table II herein, steps 2, 7, and 10.

3/ The electrical measurements for table V of MIL-S-19500 are as follows:

For JANS, subgroups 2, 3, and 6, see table II herein, steps 1, 3, 4, 5, 6, 7, 8, 9, 11, and 12.

For JANTX and JANTXV.

a. Subgroups 2 and 3, see table II herein, steps 1 and 7.

b. Subgroup 6, see table II herein, steps 2, 7, and 10.

4/ The larger number will be placed in the denominator.

4.5.4 Forward-current-gain ratio. The value for the forward-current-gain ratio for each individual section of a dual unit shall be measured using method 3076 of MIL-STD-750. The forward-current-gain ratio shall be calculated by dividing one of the values by the other. If possible, this ratio shall be measured directly to improve accuracy.

4.5.5 Base-emitter-voltage differential. The base-emitter-voltage differential shall be determined by connecting the emitters of the individual sections together, applying specified electrical test conditions to each individual section in accordance with test condition B, method 3066 of MIL-STD-750, and measuring the absolute value of the voltage between the bases of the individual sections of a dual unit.

4.5.6 Base-emitter-voltage differential change with temperature. The value of the base-emitter-voltage differential shall be measured at the two specified temperatures in accordance with 4.5.5 except that the polarities of the differentials and identities of the individual sections shall be maintained. The absolute value of the algebraic difference between the values at the two temperature extremes shall be calculated. A mathematical formula for this parameter is:

$$\left|(V_{BE1} - V_{BE2})_{T1} - (V_{BE1} - V_{BE2})_{T2}\right|$$

4.5.7 Noise figure test. Noise figure shall be measured using a model no. 2173C/2181 Quan Tech Laboratories test set, or equivalent. Conditions shall be as specified in table I.

5. PACKAGING

5.1 Packaging requirements. The requirements for packaging shall be in accordance with MIL-S-19500.

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-S-19500 are applicable to this specification.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Issue of DODISS to be cited in the solicitation.

b. Lead finish as required (see 3.3.1).

c. Type designation and quality product level.

6.3 Replacement data. JAN level devices are no longer specified. JANTX devices are oneway direct replacements for JAN devices (example, JANTX2N2919 replaces JAN2N2919).

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

CONCLUDING MATERIAL

Custodians:
Army - ER
Navy - EC
Air Force - 17
NASA - NA

Review activities:
Army - AR, MI, SM
Navy - AS, CG, MC, OS, SH
Air Force - 13, 15, 19, 85, 99
DLA - ES

Preparing activity:
Army - ER

Agent:
DLA - ES

(Project 5961-1461)

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-S-19500/355D	2. DOCUMENT DATE (YYMMDD) 931101

3. DOCUMENT TITLE SEMICONDUCTOR DEVICE, UNITIZED DUEL TRANSISTOR, NPN, SILICON TYPES 2N2919, 2N2920, 2N2919L AND 2N2920L 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) (1) Commercial (2) AUTOVON (if applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code) (1) Commercial	(2) AUTOVON
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